

Inventory of Existing Monitoring Efforts and Baseline Data and Information Related to CERP Monitoring and Assessment Plan Performance Measures

INTRODUCTION AND BACKGROUND

The USACE and SFWMD have retained the services of a qualified Contractor to undertake and carry out a comprehensive search and inventory of all existing monitoring efforts, as well as all baseline data and information, related to all of the performance measures currently recommended in the Monitoring and Assessment Plan to be implemented in support of the Comprehensive Everglades Restoration Plan (CERP).

The CERP provides a blueprint for the restoration and preservation of the south Florida ecosystem, while providing for the other water-related needs of the region, including water supply and flood protection. This nationally and internationally known ecosystem that comprises south Florida has deteriorated significantly over the past 50 years, and the outlook for the future, without implementation of the CERP, shows further degradation. Water management practices have disrupted the natural timing, quantity, quality and distribution of water to the natural system and the size of the remaining natural system has been substantially reduced as a result of development in south Florida. There has not been a comprehensive look at the water management system since its first authorization in 1949.

The C&SF Project Comprehensive Review Study was authorized by Congress in 1992 to review the C&SF Project systematically with an eye towards recommending structural or operational changes to the project to restore and protect the south Florida ecosystem while maintaining, and in some cases enhancing, other authorized project purposes. As implementation of the CERP moves forward, a concept that is known as "RECOVER" was devised to ensure that a system-wide focus is maintained.

RECOVER is a system-wide program of the CERP, designed to organize and provide the highest quality scientific and technical support during the implementation of the plan. The restoration plan is science-based, and it is the role of RECOVER to assure that science continues to support and enhance the plan. RECOVER has the responsibility for organizing and applying scientific and technical information in ways that are most effective in supporting the objectives of the CERP.

To establish and maintain an effective link between science and the CERP, a process known as the "Applied Science Strategy" was created. RECOVER is responsible for the coordination and application of the components of the applied science strategy during the 40-year implementation of the CERP. The major components of the science strategy are conceptual ecological models, performance measures and restoration targets, a system-wide monitoring program, and an adaptive assessment protocol.

RECOVER will meet its objectives by conducting a set of tasks, which are consistent with the Applied Science Strategy. Several of these primary tasks include:

of baseline criteria for each performance measure, and development of schedules and procedures for timely data analysis and reporting. It will also entail identifying and collecting data from various sources and other south Florida projects that may be useful to RECOVER in assessing the current status of the system and its future performance as each component of CERP is implemented.

3) Management of RECOVER Data, including the design, construction, testing and implementation of a centralized database to archive and retrieve the data generated from the system-wide monitoring program, and establishing procedures and methodologies for data flow, control, validation and formatting.

The recommended set of performance measures that form the foundation for the RECOVER monitoring and assessment program are grouped in five broad categories (Biological-Animal, Biological-Plants, Soils, Hydrologic and Water Quality) and are listed in Section III of the CERP Monitoring and Assessment Plan.

The CERP Monitoring and Assessment Program and the scope of this work conducted under this contract will cover the entire south Florida region, including the physiographic regions from the Lake Okeechobee Watershed (lower Kissimmee basin) southward through Florida Bay.

TASK – Conduct Inventory of Existing Monitoring Efforts

The Contractor shall identify all current monitoring activities being conducted in the South Florida region that are related to performance measures listed in the CERP Monitoring and Assessment Plan. Attachment I lists some likely sources of Data and Information, and Attachment II lists the types of data to be reviewed (not all-inclusive). To the extent dictated by the cooperation and timeliness of the responsible entity, the Contractor will obtain the relevant operational details of each of the monitoring programs (what, where, when, why, how, how long) that would help the AAT assess if the existing program should and can be incorporated into the CERP system-wide monitoring network. An inventory of the monitoring efforts shall be developed along with associated GIS coverages showing monitoring locations and parameters.

The search should be conducted in phases according to the following major groupings of performance measures in the order shown:

- a) hydrologic monitoring
- b) water quality monitoring
- c) sediment/soil monitoring
- d) biologic-plants monitoring
- e) biologic-animals monitoring

Documentation of performance will be in the form of a matrix (in Excel) listing and GIS coverages displaying all existing monitoring programs. In addition, a brief description of

ATTACHMENT I – SOURCES OF DATA AND INFORMATION

Likely sources of data and information pertaining to RECOVER performance measures (not all inclusive):

NMFS-Southeast Fisheries Science Center, Miami, Florida

U.S. Geological Survey – Sophia Site (Metadata)

-detailed information about projects, field data, interpretive results, supporting documents. Metadata and datasets, real-time data, live camera, Publications/Reports, remote sensing, Photos, maps

Web site: <http://sofia.usgs.gov>

Ecosystem Database site: <http://www.envirobase.usgs.gov>

South Florida Water Management District

Loxahatchee National Wildlife Refuge

Everglades National Park

National Park Service

US Army Corps of Engineers

USFWS

-South Florida Multi-Species Recovery Plan

Florida Fish and Wildlife Conservation

Biscayne Bay National Park

Big Cypress National Preserve

USEPA via Environmental Information Management System (EIMS)

USDA

NOAA

National Academy of Sciences

Seminole Tribe

Miccosukee Tribe

FDEP

FDEP Marine Research Institute

Miami-Dade County DERM

Broward County DPEP

Other south Florida region Counties – (i.e.: Palm Beach, Monroe, Hendry, Collier, etc.)

Florida Universities (State and Private)

Duke University

Local (Chapter 298) Water Management Districts

Private entities such as Electric Power, Sugar Cane Growers Cooperative

WEB sites

Inventory Form Instructions:

The attached South Florida Monitoring Data Questionnaire is only one mechanism the contractor may use to request information from key individuals and organizations. In addition to this questionnaire, the contractor has developed a web-based, interactive questionnaire form that enables the user to directly enter their information about particular studies and/or monitoring programs into a comprehensive South Florida Data Inventory database. The South Florida Data Inventory website can be accessed at <http://12.105.90.83/battelle/recover>.

The attached questionnaire in MS Word can also be accessed from <http://12.105.90.83/battelle/recover>. The link provided will pull up the questionnaire in MS Word and may fill out the questionnaire electronically or print a copy and fill it out by hand. Please fax or mail all hard copy questionnaires to:

Battelle
1400 Centrepark Blvd.
Suite 1005
West Palm Beach, FL 33401
Phone: 561-656-6300
Fax: 561-683-0126

Questionnaires may also be emailed to recover@battelle.org

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

Date: _____

Name: _____

Organization: _____

Address: _____

City, State, Zip: _____

Phone Number: _____

Fax Number: _____

Email: _____

Organization Website: _____

1. What is the title of this study? _____

2. How should this study be referenced? _____

3. Why is this study being conducted? (Include abstract if available) _____

4. What related information exists that resulted from or is used for planning this study? (If this study is being filled out on the computer double click on a box to select it)

- ☐ Grey Literature
- ☐ Peer Reviewed Literature
- ☐ Previous Study or Monitoring Program
- ☐ Other _____

5. What funding sources support this effort? _____

6. What is the intended audience for the information gathered in this study?

- ☐ Academic
- ☐ Government Agency (Federal)
- ☐ Government Agency (State)
- ☐ Government Agency (Local)
- ☐ Internal
- ☐ Non-Government Agency
- ☐ Private Company
- ☐ Tribal Agency
- ☐ Other _____

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

7. What types of organizations are involved in the study and approximately how many individuals from each group participate?

Academic	_____
Government Agency (Federal)	_____
Government Agency (State)	_____
Government Agency (Local)	_____
Internal	_____
Non-Government Agency	_____
Private Company	_____
Tribal Agency	_____
Other	_____

8. When did the study begin (mm/yyyy)? _____

9. What is the current data collection stage?

- ☐ Planning
☐ Operational
☐ Dormant
☐ Complete

10. When is the anticipated end date (mm/yyyy)? _____

11. How often are formal reports generated from the study?

- | | |
|---|--------------------------------------|
| ☐ None Generated | ☐ Monthly |
| ☐ Hourly | ☐ Bi-Annually |
| ☐ Daily | ☐ Annually |
| ☐ Weekly | ☐ Other _____ |

12. Was a Quality Assurance Project Plan Prepared? ☐ Yes ☐ No ☐ Unsure

13. What specific quality assurance measures were applied?

14. If the study uses analytical laboratories, are they Florida DEP-certified or NELAP-certified?

- ☐ Yes
☐ No
☐ Analytical Lab Not Used
☐ Unsure

15. What is the availability of the data?

- ☐ Restricted Access
☐ Unrestricted Access
☐ Not Yet Available
☐ Other _____

16. How can the data be accessed?

- ☐ CD-Rom
☐ Data Center
☐ Hard Copy Maps
☐ Hard Copy Tables
☐ Internet
☐ Other Electronic
☐ Peer Reviewed Paper
☐ Other _____

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

17. Who should be contacted for information about the study?

18. Which counties are included in the study? (Select all that apply and record how many sites are within each county)

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------|
| ☐ Broward | ☐ Indian River | ☐ Osceola |
| ☐ Charlotte | ☐ Lee | ☐ Palm Beach |
| ☐ Collier | ☐ Manatee | ☐ Polk |
| ☐ Desoto | ☐ Martin | ☐ Sarasota |
| ☐ Glades | ☐ Miami-Dade | ☐ St. Lucie |
| ☐ Hardee | ☐ Monroe | |
| ☐ Hendry | ☐ Okeechobee | ☐ Other _____ |
| ☐ Highlands | ☐ Orange | |
| ☐ Hillsborough | | |

19. Which CERP conceptual model does the study apply to? (Select all that apply and record how many sites within each model)

- | | |
|--|--|
| ☐ Big Cypress | ☐ Lake Okeechobee |
| ☐ Biscayne Bay | ☐ Marl Prairie/Rocky Glades |
| ☐ Caloosahatchee Estuary | ☐ St. Lucie Estuary |
| ☐ Everglades Ridge & Slough | ☐ Southern Mangrove Estuary |
| ☐ Florida Bay | ☐ None or UNSURE |

20. Which research category or categories are most applicable to your study or monitoring program? (Select all that apply)

- ☐ Biological – animals (Go to Question 21)
- ☐ Biological – plants (Go to Question 22)
- ☐ Chemical Contaminants (Go to Question 23)
- ☐ Human Activities (Go to Question 24)
- ☐ Hydrology (Go to Question 25)
- ☐ Sediment/Soil (Go to Question 26)
- ☐ Water & Water Quality (Go to Question 27)
- ☐ Other Physical Studies (Go to Question 28)

21. Which parameters pertaining to Animals are measured in your study or monitoring program? (Select all that apply)

- | | |
|--|--|
| ☐ Amphibian life/natural history | ☐ Pink shrimp fisheries |
| ☐ Birds | ☐ Reptile (alligator, crocodile) |
| ☐ Deer abundance/distribution | ☐ Life/Natural history & distribution |
| ☐ Dolphin health distribution | ☐ Seaside sparrow abundance/distribution |
| ☐ Endangered/Threatened Species | ☐ Snail kite abundance/distribution |
| ☐ Exotic species | ☐ Snail kite nest success |
| ☐ Fauna | ☐ Wading bird (including nesting colony) abundance/distribution |
| ☐ Fish health & toxicity | ☐ Wildlife |
| ☐ Fish life/natural history | ☐ Wintering waterfowl abundance/distribution |
| ☐ Invertebrates | ☐ Zooplankton |
| ☐ Macroinvertebrate community dynamics | ☐ Other _____ |
| ☐ Macroinvertebrate health | |
| ☐ Manatee health | |
| ☐ Manatee life history | |
| ☐ Oyster health | |
| ☐ Oyster life/natural history & habitat | |

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22. Which parameters pertaining to Plants are measured in your study or monitoring program? (Select all that apply)

- | | |
|---|--|
| ☐ Accretion of organic material
☐ Algal blooms/harmful algal blooms/red tides
☐ Algal species identification/biomass
☐ Cattail abundance/distribution
☐ Community composition/cover
☐ Cypress forest vegetation composition/cover
☐ Endangered/Threatened Species
☐ Exotic species abundance/distribution
☐ Fire
☐ Flora
☐ Hammock vegetation composition/cover
☐ Land cover
☐ Macrophyte abundance/distribution
☐ Mangrove abundance, distribution & condition
☐ Periphyton abundance/distribution
☐ Periphyton productivity
☐ Phytoplankton
☐ Phytoplankton productivity | ☐ Pineland vegetation composition/cover
☐ Productivity/chlorophyll
☐ Protected areas
☐ Remote sensing- productivity
☐ Restoration of vegetation
☐ SAV (including seagrass) abundance/distribution
☐ Sawgrass abundance/distribution
☐ Seagrass health and condition
☐ Seagrass productivity
☐ Submerged vegetation composition/cover
☐ Tree island extent and species richness
☐ Upland vegetation composition/cover
☐ Wetland vegetation composition/cover

☐ Other _____ |
|---|--|

23. Which parameters pertaining to Chemical Contaminants are measured in your study or monitoring program? (Select all that apply)

- | | |
|--|---|
| ☐ Mercury in tissue (total or MeHg)
☐ Mercury in sediment
☐ Mercury in water (total or MeHg)
☐ Metals in tissue (total or MeHg)
☐ Metals in sediment
☐ Metals in water
☐ PBTs (persistent/bioaccumulative/toxic chemicals) in water | ☐ PBTs in tissue
☐ PBTs in sediment
☐ Toxicity bioassays (sediment or porewater)

☐ Other _____ |
|--|---|

24. Which parameters pertaining to Human Activities are measured in your study or monitoring program? (Select all that apply)

- | | |
|--|---|
| ☐ Agriculture
☐ Contaminated areas
☐ Cultural areas
☐ Hazardous materials
☐ Human health
☐ Industrial resources
☐ Infrastructure/Utilities
☐ Land use
☐ Oil/Fuel spills/Vessel groundings | ☐ Political/Jurisdictional boundaries
☐ Population/Housing
☐ Protected areas
☐ Recreation
☐ Transportation

☐ Other _____ |
|--|---|

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

25. Which parameters pertaining to Hydrology are measured in your study or monitoring program? (Select all that apply)

- | | |
|---|---|
| ☐ Dry period duration
☐ Flow rates
☐ Frequency of inundation
☐ Ground water levels
☐ Lake surface elevation/recession
☐ Meteorology/Rainfall/Hydroperiod
☐ Salinity
☐ Surface water levels | ☐ Ungraded flowed (i.e. leakage, seepage)
☐ Wastewater discharge
☐ Water management/policy
☐ Wet period duration

☐ Other _____ |
|---|---|

26. Which parameters pertaining to Sediment/Soil are measured in your study or monitoring program? (Select all that apply)

- | | |
|---|---|
| ☐ Accretion
☐ Beaches/Shores
☐ Contaminated areas
☐ Deposition/erosion
☐ Dredging
☐ Fire
☐ Geology
☐ Mineral resources
☐ Nitrogen fixation/denitrification
☐ Porewater- nutrients/nutrient loading (N, P, S) | ☐ Sediment/Soil chemical compounds
☐ Seafloor characteristics
☐ Sediment/Soil grain size
☐ Sediment/Soil nutrients
☐ Sediment/Soil organic carbon
☐ Spatial extent soil/sediment
☐ Topography/Bathymetry

☐ Other _____ |
|---|---|

27. Which parameters pertaining to Water and Water Quality are measured in your study or monitoring program? (Select all that apply)

- | | |
|--|--|
| ☐ Algal blooms/harmful algal blooms/red tides
☐ Algal species identification/biomass
☐ Biological oxygen demand
☐ Connectivity of waterways
☐ Contaminated areas
☐ Flow, natural run-off or managed
☐ Grain size
☐ Hardness
☐ Irradiance measures
☐ Locations of water bodies, watershed boundaries
☐ Mercury in sediment
☐ Mercury in tissue (total or MeHg)
☐ Mercury in water (total or MeHg)
☐ Metals in sediment
☐ Metals in tissue
☐ Metals in water
☐ Meteorology/Rainfall hydroperiod
☐ Nutrients/nutrient loading (N, P, S)
☐ Organic carbon (dissolved or total)
☐ PBTs (persistent/bioaccumulative/toxic chemicals) in water | ☐ PBTs in sediment
☐ PBTs in tissue
☐ Productivity/chlorophyll
☐ Remote sensing- productivity
☐ Runoff (nonpoint sources)
☐ Suspended solids
☐ Temperature/Salinity/Conductivity/Ph/Alkalinity/Turbidity/Dissolved Oxygen
☐ Total fecal coliform
☐ Toxicity bioassays (sediment or porewater)
☐ Wastewater discharge
☐ Water Clarity/Transmissivity/Secchi depth
☐ Water control structures (canals, levees, stormwater facilities)
☐ Water management policy assessment
☐ Water uses

☐ Other _____ |
|--|--|

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

28. Which parameters pertaining to Other Physical Sciences are measured in your study or monitoring program? (Select all that apply)

- ☐ Air Quality
- ☐ Climatology/Meteorology
- ☐ Other _____

29. What is the total area covered by the study? (Include Units)

30. How many individual sites are sampled?

31. What is the area of individual sampling sites? (Include Units)

32. How is the study designed?

Full Coverage

- ☐ Census/Complete Inventory
- ☐ Remote Sensing

Intensive Site Examination

- ☐ Area/Preserve
- ☐ Ecosystem Hydrology/Biochemistry Area

Survey

- ☐ Fixed Site
- ☐ Probability Based/Random
- ☐ Targeted Populations/Systems

Other _____

33. What measurement methods are used for the study?

- ☐ Point Measurements
- ☐ Transects
- ☐ Quadrant/Plots
- ☐ Complete Coverage
- ☐ Survey/Questionnaire
- ☐ Other _____

34. What is the sampling frequency of the study?

- | | |
|-------------------------------------|--------------------------------------|
| ☐ Continuous | ☐ Monthly |
| ☐ Minute | ☐ Yearly |
| ☐ Hourly | ☐ Variable |
| ☐ Daily | |
| ☐ Weekly | ☐ Other _____ |

35. Describe what type of data manipulation and processing is used to obtain the resulting data (i.e., statistical analyses)?

SOUTH FLORIDA MONITORING DATA INVENTORY QUESTIONNAIRE

36. Does geo-spatial data exist for this study? (If no or unsure please go to question 41)

☐ Yes

☐ No

☐ Unsure

37. What is the format of the geo-spatial data?

☐ ASCII

☐ AutoCAD DWG

☐ AutoCAD DXF

☐ ESRI ArcInfo Export

☐ ESRI ArcInfo Generate

☐ ESRI ArcInfo Other

☐ ESRI ArcView Shapefile

☐ MapInfo MIF

☐ Other Compressed Image

☐ Other Uncompressed Image

☐ Other Vector Forma

☐ SDTS

☐ TIFF LZW Compressed

☐ TIFF Uncompressed

☐ Other _____

38. What type of geo-spatial data is available?

☐ Grid

☐ Image

☐ Line

☐ Point

☐ Polygon

☐ Region

39. How was the geo-spatial data obtained?

☐ Aerial Imagery

☐ Aerial Photos

☐ Digitized From Maps

☐ Digitized Using GPS

☐ Satellite Imagery

☐ Other _____

40. Is the geo-spatial data accessible and available for inclusion in this inventory?

☐ Restricted Access

☐ Unrestricted Access

☐ Not Yet Available

☐ Other _____

41. Additional information, comments, or questions?
