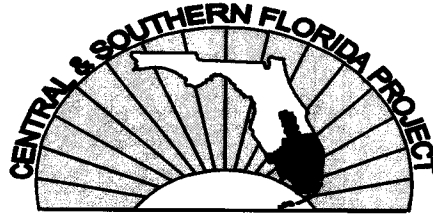


# COMPREHENSIVE EVERGLADES RESTORATION PLAN



## COMPREHENSIVE EVERGLADES RESTORATION PLAN

### QUALITY ASSURANCE OVERSIGHT TEAM

Preparation of the Quality Assessment Report (QAR)

QAOT-SOP-003

Version: Revision 1.0  
Version Date: November 9, 2009

QAOT Co-Chair Approval

 12/10/09

Deborah Hesse Scerno      Date  
USACE, Jacksonville District

 12/13/2009

Ming Chen      Date  
South Florida Water Management District

Effective Date: 12-Dec-09

## Preparation of Annual Quality Assessment Report

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### 1.0 PURPOSE AND APPLICABILITY

- 1.1 The Quality Assurance Oversight Team (QAOT) was established by Comprehensive Everglades Restoration Plan (CERP) Guidance Memorandum (CGM) 41, which specifies that the lead QAOT agencies will *compile individual QA CERP reports and produce an integrated QA report on CERP projects to CERP management.*
- 1.2 This standard operating procedure (SOP) provides guidance for the preparation of the Quality Assessment Report (QAR).
- 1.3 The purpose of the QAR is to provide to CERP management an assessment of the state of data quality for monitoring activities being conducted for CERP.
- 1.4 The goals of the QAR are to assess the quality of data being generated for CERP, to identify practices that are contributing to quality data, to report on the activities of the QAOT, and to recommend improvements to the quality system.
- 1.5 The frequency of the QAR is established in the QAOT Program Management Plan.
- 1.6 This SOP applies to the QAOT and contributors to the QAR.

### 2.0 SUMMARY OF PROCEDURE

- 2.1 The QAR will be prepared using quantitative and qualitative input from CERP QAOT members and other CERP monitoring and assessment participants, including CERP project managers, RECOVER principle investigators, consultants, laboratories, and sampling groups.
- 2.2 Input to the QAR is gathered throughout the report period either as part of the routine activities of the participating organizations (e.g., audits and data validation) or as specific activities of the QAOT (e.g., monitoring plan reviews and quality system interviews).
- 2.3 At the end of the report period, the results are compiled, tabulated, analyzed, and summarized in the QAR.
- 2.4 The Draft QAR is reviewed by the QAOT and RECOVER, the Revised QAR receives a CERP-wide review, and the Final QAR is delivered to the CERP Design Coordination Team (DCT).

### 3.0 DEFINITIONS

- 3.1 **Alternative procedure:** a variance from the established method or procedure. These variances may be driven by project limitations, areas of enhancements or improvements such as better technology, or for experimental or research purposes. The ultimate goal of the alternative procedure review process is to ensure that the proposed alternative produces the same or better quality results and will maintain consistency within the

## Preparation of Annual Quality Assessment Report

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program or within CERP. The variances may involve the use of alternate laboratory or field procedures, quality assurance/quality control (QA/QC) elements, data validation or data management procedures (QASR, 2006, Section 2.3).

- 3.2 **CERP:** acronym for Comprehensive Everglades Restoration Plan; a 30-year project whose objective is to restore the Florida Everglades. The term CERP is an umbrella term for many different activities. These include Restoration Coordination and Verification (RECOVER) system-wide monitoring efforts (i.e., Monitoring and Assessment Plan [MAP]), project monitoring, and permit- driven regulatory monitoring.
- 3.3 **Data qualifiers or flags:** symbols or letters applied to the data to alert the end user to quality problems that may impact the usability of the data (e.g., QC acceptance limits that were not met). Data qualification is essentially a *qualitative* evaluation of the data; measurement uncertainty is not evaluated in a quantitative manner (adapted from U.S. Army Corps of Engineers (USACE) EM 200-1-10, June 2005).
- 3.4 **Finding:** an assessment conclusion, referenced to a documented Standard and supported by objective evidence that identifies a deviation from the Standard requirement (adapted from NELAC Standards, 2003).
- 3.5 **QAOT:** acronym for Quality Assurance Oversight Team for the CERP Program.
- 3.6 **Quality System:** a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC (NELAC, 2003).

## 4.0 PROCEDURE

- 4.1 Preparation of the QAR is a collaborative effort that is directed and coordinated by members of the QAOT.
  - 4.1.1 Collection of Data Input
    - 4.1.1.1 To the extent possible, data input for the QAR should be collected systematically so that it is representative.
    - 4.1.1.2 Identifying data input required for the QAR should commence during a kickoff meeting for the QAR held during June of the years the QAR is produced.
    - 4.1.1.3 It is not possible for the QAOT to collect all the QA/QC input for the QAR. In order for the QAR to be representative and accurate, input on QA practices and QC results will be solicited from CERP Project and CERP Systems stakeholders as input to the QAR.
  - 4.1.2 Schedule and Milestones

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### Preparation of Annual Quality Assessment Report

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4.1.2.1 A QAR year is from May 1<sup>st</sup> of one year to April 30<sup>th</sup> of the next year (e.g., May 1, 2007 through April 30, 2008). The biennial QAR will cover two water years.

4.1.2.2 The report schedule and milestones is provided in Table 1.

#### 4.1.3 Contents

The QAR will contain the elements defined in Table 2.

#### 4.1.4 Report Review Process

4.1.4.1 Four versions of the QAR are prepared for each report cycle: draft, revised draft, final draft and final. Table 1 defines the review schedule for each version.

4.1.4.2 The draft report versions are for internal QAOT and RECOVER review only, and should not be distributed beyond the review team.

4.1.4.3 The final draft report is distributed to a wider distribution list composed of QAOT interested parties and CERP reviewers.

#### 4.1.5 Records Management

4.1.5.1 The final QAR will be saved to Documentum, which is the archival record for CERP.

4.1.5.2 QARs will be available for five years on EvergladesPlan.org.

## 5.0 QUALITY ASSURANCE AND QUALITY CONTROL

5.1 It is critical that the QAR be accurate, complete, and unbiased.

5.1.1 The QAR will include data input from a variety of sources. Accurate handling, interpretation, and representation of these data in tables and figures must be verified to ensure that the report is accurate and complete. Table 3 summarizes the QA/QC procedures appropriate during the QAR development. The following report quality control procedures must be implemented:

- Hand-entered data must be verified 100% for transcription errors.
- Changes to data to achieve data uniformity must be verified 100%.
- Tables and figures that depict numeric data must be audited vs. the data input provided to the author.
- The draft QAR must receive an internal technical, editorial, and quality assurance review prior to submission to the QAOT. In particular, the report text must be verified vs. the tables and figures to ensure that data are discussed accurately.

### **Preparation of Annual Quality Assessment Report**

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- 5.1.2** It is assumed that input from SFWMD, USACE, QAOT members, RECOVER, and other stakeholders is accurate for use, as received (e.g., the accuracy of audit reports or monitoring plan review forms will be used without further investigation during QAR development).
  - 5.1.3** Completed sections of the draft QAR and potential tables and figures may be distributed to the QAOT for review and input during the QAR development for feedback.
  - 5.1.4** Any text, tables, or figures pertaining to RECOVER will either be inserted as provided by RECOVER or distributed to RECOVER for review and input during the QAR development for feedback.
- 5.2** QAOT Review
- 5.2.1** The QAOT and RECOVER will review the draft QAR to ensure that the presentation is clear, accurate, and professional. Section 4.1.4 describes the review process.
- 5.3** Corrective Action and Continuous Improvement
- 5.3.1** A lessons-learned session will be incorporated into the QAR kick-off meeting to identify problems in the preparation of the previous QAR and to identify procedures that will minimize re-occurrence of the problems.

### **6.0 REFERENCES**

- 6.1** EPA (U.S. Environmental Protection Agency), 2007. Guidance for Preparing Standard Operating Procedures (SOPs). EPA QA/G-6. EPA/600/B-07/001, Office of Environmental Information. April 2007.
- 6.2** NELAC (National Environmental Laboratory Accreditation Conference), 2003. 2003 NELAC Standards, Effective July 2005.
- 6.3** QAOT (Quality Assurance Oversight Team), 2006. Comprehensive Everglades Restoration Plan (CERP) Quality Assurance Systems Requirements (QASR) Manual. 27 June 2006.
- 6.4** USACE (U, S. Army Corps of Engineers), 2005. Environmental Quality - Guidance for Evaluating Performance-Based Chemical Data. Publication Number: EM 200-1-10. CEMP-RA/CECW-E. 30 June 2005.

**Preparation of Annual Quality Assessment Report**

**Table 1. Schedule of QAR Milestones and Deliverables**

<b>Activity</b>	<b>Initiation Date</b>	<b>Duration</b>	<b>End Date</b>
QAR Input Period (may be multiple years)	May 1	104 weeks	April 30
Initial QAR Planning Meeting (includes participation by RECOVER and QAOT members) <ul style="list-style-type: none"> <li>Review available input and schedule</li> <li>Review lessons learned from previous QAR</li> <li>Review and finalize outline based on available input data</li> </ul>	Mid June	1 day	Mid-June
<b>Develop Draft QAR</b> <ul style="list-style-type: none"> <li>Compile input data</li> <li>Prepare text for Draft QAR</li> </ul>	Early June	10 weeks	Mid August
<b>Submit Draft QAR to QAOT and RECOVER Liaison for review</b> <ul style="list-style-type: none"> <li>QAOT and RECOVER Liaison review Draft QAR and submit comments</li> <li>QAOT and RECOVER Liaison comments discussed at September QAOT meeting</li> <li>Develop Revised Draft QAR (incorporate QAOT and RECOVER Liaison comments)</li> </ul>	Mid August	1 day	Mid August
<b>Submit Revised Draft QAR to QAOT and RECOVER Liaison for review</b> <ul style="list-style-type: none"> <li>QAOT &amp; RECOVER liaison review Revised Draft QAR to ensure comments have been incorporated adequately</li> <li>Full RECOVER Team reviews Revised Draft QAR to provide any additional comments</li> <li>Update Revised Draft QAR to incorporate RECOVER and QAOT comments</li> </ul>	Late September	1 day	Late September
<b>Submit Draft Final QAR for CERP-wide review</b> <ul style="list-style-type: none"> <li>CERP reviews Draft Final QAR and provides comments</li> <li>QAOT addresses CERP review comments and prepares Final QAR</li> </ul>	Early November	1 day	Early November
<b>Submit Final QAR to QAOT</b>	Mid December	1 day	Mid December
<b>Present Final QAR to DCT</b>	Mid December	1 day	Mid December

**Preparation of Annual Quality Assessment Report**

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**Table 2. Quality Assessment Report Outline**

<b>Quality Assessment Report Element</b>	<b>Description</b>	<b>Input Types and Sources</b>
<b>Title Page</b>		
<b>Acronyms and Abbreviations</b>		
<b>Executive Summary</b>	Discusses the purpose and presentation of the report; summarizes the major report findings, conclusions, and recommendations.	
<b>Table of Contents</b>		
<b>1.0 Introduction</b>	Background and purpose of the QAR	
<b>2.0 Scope and Application</b>	Defines the report period, input sources, applicability, and limitations	
<b>3.0 List of Key Participants and Organization</b>	Acknowledges the QAR contributors. Names of specific participants are included at the discretion of the QAOT	
<b>4.0 Current QA/QC Processes</b> <b>4.1 QAOT/CERP Document Updates</b> <b>4.2 Monitoring Plan Reviews</b> <b>4.3 Scope of Work Reviews</b> <b>4.4 QAOT Initiatives</b> <b>4.5 Summary</b>	Summarizes the status of QA/QC processes implemented and the results of general data quality assessment activities performed. Input will be provided by the CERP, RECOVER, Acceler8 stakeholders, and the QAOT.	<b><u>Input types:</u></b> <ul style="list-style-type: none"> <li>• Quality system interviews</li> <li>• Data reviews (QA Officers)</li> <li>• Questionnaires and surveys</li> <li>• Program or project reviews</li> <li>• Monitoring plan and Scope of Work reviews</li> <li>• In field observations</li> </ul>
<b>5.0 Evaluation of Field Monitoring</b> <b>5.1 Water Quality</b> <b>5.2 Hydrology</b> <b>5.3 Biological/Ecological</b>	Summarizes the results of field data quality assessments. Figures and tables will be generated to illustrate and summarize quantitative data. Input will be provided by SFWMD and USACE.	<b><u>Input types:</u></b> <ul style="list-style-type: none"> <li>• Results of field QC checks (e.g., field blanks, calibrations)</li> <li>• Results of field audits</li> </ul>

**Preparation of Annual Quality Assessment Report**

<b>Quality Assessment Report Element</b>	<b>Description</b>	<b>Input Types and Sources</b>
<p><b>6.0 Laboratory Audits</b></p> <p>    <b>6.1 Lab Audits</b></p> <p>    <b>6.2 Performance Evaluation for Inorganic Samples</b></p> <p>    <b>6.3 Summary</b></p>	<p>Summarizes the results of laboratory data quality assessments. Figures and tables will be generated to illustrate and summarize quantitative data. Input will be provided by SFWMD and USACE.</p>	<p><b><u>Input types:</u></b></p> <ul style="list-style-type: none"> <li>• QC Summaries or case narratives</li> <li>• Results of laboratory QC checks (e.g., method blanks, spikes, calibration, duplicates) will be assessed versus QASR requirements)</li> <li>• Results of laboratory audits</li> <li>• Results of performance evaluation samples and round robins</li> </ul>
<p><b>7.0 Quality of Data</b></p> <p>    <b>7.1 Water Quality</b></p> <p>    <b>7.2 Hydrology</b></p> <p>    <b>7.3 Biological/Ecological</b></p>	<p>Summarizes the quality of data by category. Figures and tables will be generated to illustrate and summarize quantitative data. Input will be provided by SFWMD and USACE.</p>	<p>Input types;</p> <ul style="list-style-type: none"> <li>• Review of data stored in databases</li> <li>• Interviews with PMs</li> <li>• Results of other quality assessment reports</li> </ul>
<p><b>8.0 Alternative Procedures Approved</b></p>	<p>Identifies any alternative procedures approved during the previous year. Input will be provided by the CERP, RECOVER, Acceler8 stakeholders, and the QAOT.</p>	
<p><b>9.0 Summary of Deviations from QASR and Corrective Actions</b></p> <p>    <b>9.1 Field Monitoring</b></p> <p>    <b>9.2 Laboratory</b></p>	<p>Summarizes any deviations from the QASR or CMGs during the reporting period, and any corrective action taken to address the immediate deviation and to avoid re-occurrence of the deviation. The discussion may include major corrective actions for recurring problems such as suspension or termination of a service provider, etc. Input will be provided by the CERP,</p>	

**Preparation of Annual Quality Assessment Report**

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<b>Quality Assessment Report Element</b>	<b>Description</b>	<b>Input Types and Sources</b>
	RECOVER, Acceler8 stakeholders, and the QAOT.	
<b>10.0 Summary of QAOT Activities</b>	Summarizes all QAOT activities during the year, including QASR revisions, presentations, workshops, and outreach activities of the QAOT during the reporting period.	<b><u>Input Types:</u></b> <ul style="list-style-type: none"> <li>• Summary of Section 4 – 9</li> <li>• SOP Reviews</li> <li>• QASR reviews and edits</li> </ul>
<b>11.0 Recommendations for QA/QC Program Improvements</b>	Summarizes action items and needs to improve CERP QA/QC processes and procedures. Input will be provided by the CERP, RECOVER, Acceler8 stakeholders, and the QAOT.	
<b>12.0 Resource and Input Needs</b>	Summarizes <ul style="list-style-type: none"> <li>• QAOT resources needed to achieve the mandate defined in CGM 41, including project, personnel, and material.</li> <li>• QA/QC resources needed by CERP project managers and RECOVER principle investigators to meet QASR requirements.</li> <li>• Data gaps and information needed to provide an accurate assessment of CERP data quality.</li> </ul>	<b><u>Input</u></b> will be provided by the CERP, RECOVER, Acceler8 stakeholders, and the QAOT.
<b>13.0 References</b>	Lists any documents referenced in the QAR.	

**Preparation of Annual Quality Assessment Report**

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**Table 3. Quality Control Procedures for QAR Data Input**

<b>Data Input Type</b>	<b>Quality Control Procedures</b>
Questionnaires, surveys, interviews	Assessment of responses must be linked to CERP requirements (e.g., CGM 40, QASR).
Field and laboratory audits	<p>Only the results of final audit reports are included in the QAR. Final audit reports include the assessment of audit responses to eliminate “non-issues” from the analysis.</p> <p>Categories of deficiencies must be assigned uniformly.</p>
Quality Control data Results of data validation	<p>Parameter names, field and laboratory organizations, and qualifiers must be synchronized prior to analysis. Non-synchronized data will not be used in assessments although at the discretion of the QAOT it may be provided as QAR attachments.</p> <p>All changes and update queries must be documented within the database to ensure traceability.</p>
Performance Evaluation Samples Round Robins	Only chemical analytes being analyzed by the laboratory for CERP will be included in the PE sample and round robin evaluation.

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**Preparation of Annual Quality Assessment Report**


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**SOP HISTORY**

<b>Version Status/Number</b>	<b>Revision Date</b>	<b>Description</b>	<b>Author</b>
Draft	5/6/04	Not applicable. Original draft	D. Ivanoff
Revised Draft	1/9/07	QAR contents modified based on experience of preparing QARs for 2006 and 2007. SOP format expanded based on guidance of EPA/QA-G-6 (2007).	R. Buhl
Revision 0.0/ Final	6/27/08	QAR review process and contents updated based on feedback for the 2007 QAR. Schedule update based on RECOVER and QAOT comments. Signature block standardized.	R. Buhl
Revision 0.1	10/10/2008	Modified the language regarding frequency of the QAR.	D. Scerno
Revision 1.0	9/21/2009	Table2 was updated to reflect changes made to the QAR outline during the QAR kickoff meeting on 6/24/2009.	S. Smith- Tembe