

Section 4

Description of Aquatic Toxicity Testing Studies Conceptual Plan

4.1 General

An Aquatic Toxicity Testing Studies Conceptual Plan was prepared by Gary M. Rand, Ph.D., a subconsultant to CDM, detailing the conceptual plan and the information obtained to assist in the conceptual plan. A copy of this conceptual plan can be found in **Appendix C**.

The plan includes information on conducting controlled aquatic toxicity testing studies both in the laboratory and in the field, with selected animal and plant species to study the effects of reclaimed water produced by the WRDP on the freshwater and coastal wetlands ecosystem associated Biscayne Bay. The objectives of the plan include, but will not be limited to, the evaluation of acute and chronic effects such as development, growth, and reproduction.

Subsequent to the submittal of this plan, the selected consultant will conduct a literature review as part of the detailed design of the aquatic toxicity testing protocols. Contributions from the Ecological Technical Advisory Committee will be incorporated into this plan, which will then be subjected to an outside peer review. Comments generated from the peer review will be incorporated into the final aquatic toxicity and ecological testing plans, as required.

Section 5

Methodology for Developing an Ecological Testing Studies Plan

5.1 General

Further work will be required after the completion of this conceptual plan and basis of design in order to develop an ecological testing studies plan. It is the intent of this section to describe the methodology that will be used to develop this plan.

After completion of the CWRDP Conceptual Plan and Basis of Design, a technical advisory committee will be formed. This committee will be known as the Ecological Technical Advisory Committee (ETAC), and it will be comprised of members who are recognized experts in this field. Members of the ETAC will be collectively responsible for making recommendations to the MDWASD on the appropriate ecological testing protocols for the CWRDP. Of particular interest to the stakeholders are nutrient enrichment studies and evaluations of community dynamic shifts in response to the WRDP's effluent. It is anticipated that these ecological tests will be on a smaller scale than envisioned in the original 1 MGD Project. These protocols will be incorporated into a detailed aquatic toxicity and ecological testing plan. This plan will be subjected to outside Peer Review. The Peer Review Committee will comment and provide recommendations on the plan, which will be updated, as needed.

Section 6

Description of Update to Draft Monitoring Plan

6.1 General

As part of the May 10, 2006 Interim Water Use Agreement, Milian, Swain & Associates., Inc. (MSA), a sub-consultant to CDM, performed a review of readily available water quality, vegetation, soil, wetlands hydrologic, topographic, land use, and utility data to characterize the existing conditions of the subject areas, including the Cutler (formerly Lennar) Flow Way and nearby water bodies. This baseline information was provided in the Coastal Wetland Rehydration Demonstration Project Phase I, February 1, 2007. This baseline information was augmented with a proposed monitoring plan submitted to MDWASD in May 2007. The May 2007 draft monitoring plan has been revised according to the revised project scope. The monitoring plan will be updated after completion of the external peer review of the aquatic toxicity and ecological testing studies plans. The baseline assessment will be conducted in accordance with the schedule included in Section 3. The activities for this updated monitoring plan are scheduled to begin in 2008 and last for approximately seven years.

An updated monitoring plan was prepared by MSA, to summarize the proposed monitoring activities. A copy of this technical memorandum can be found in **Appendix D**.

Section 7

Stakeholder Involvement

7.1 General

The CWRDP has numerous stakeholders that are interested in the outcome and success of the project. There are a variety of stakeholders; below is a list of the primary stakeholders that have been regularly involved in the project:

- Miami-Dade Water and Sewer Department (MDWASD)
- South Florida Water Management District (SFWMD)
- Biscayne National Park (BNP)
- Department of Environmental Resources Management (DERM)
- Florida Department of Environmental Protection (FDEP)

The primary stakeholders have been actively involved in the project design, and it is expected that they will continue providing input throughout the project's development and implementation. These stakeholders will meet regularly during the implementation of the CWRDP and will be assembled at key decision-making points during the CWRDP. Some of these key decision points are represented on **Figure 7-1**, the CWRDP Flow Diagram

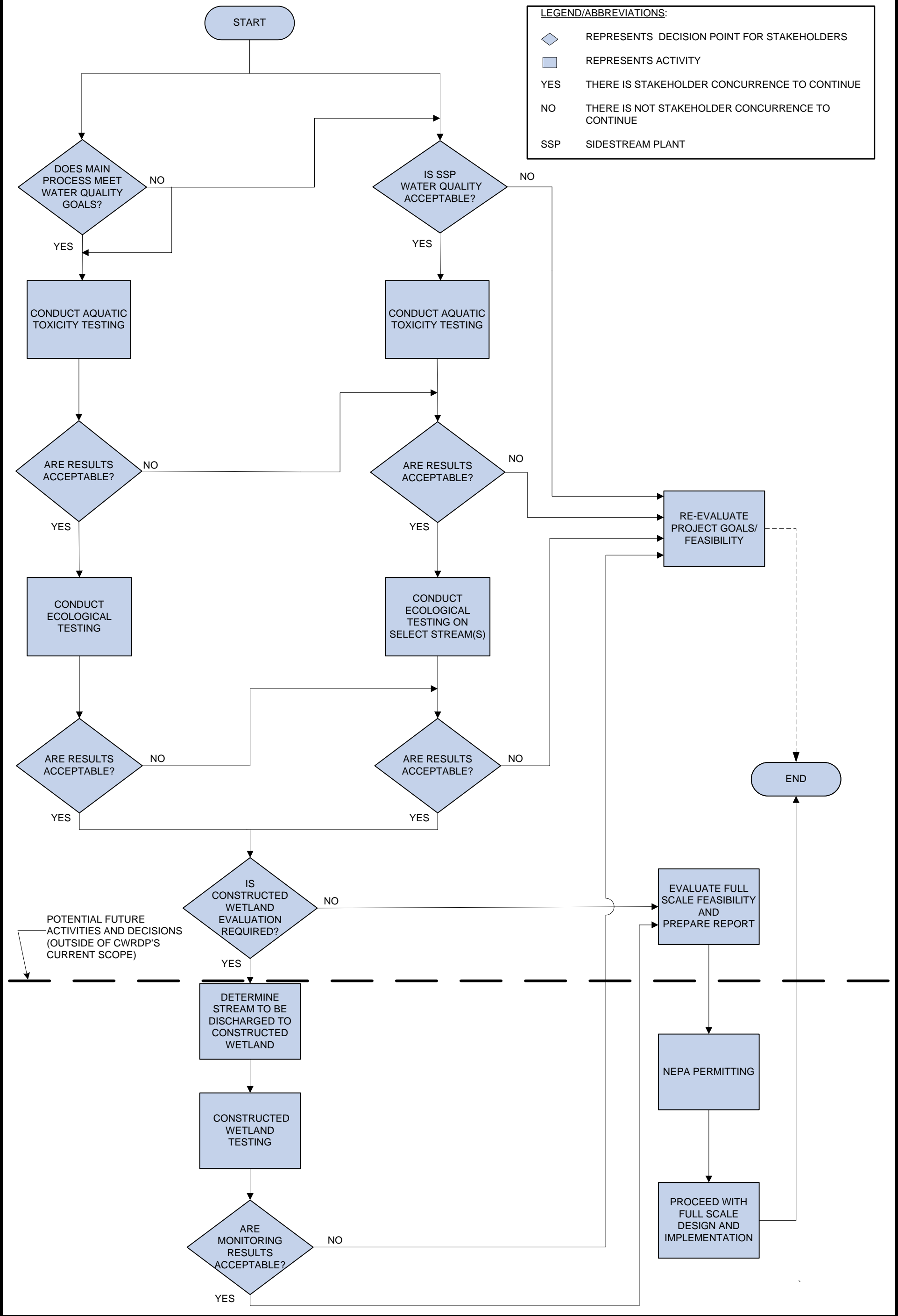
Additional stakeholder meetings, incorporating regulatory agency stakeholders, environmental organizations and other interested parties, will be held on a regular basis to update stakeholders on the progress of the CWRDP and to ensure that input from all stakeholders is considered in the CWRDP process.

7.2 CWRDP Flow Diagram

Figure 7-1 has been prepared to assist with illustrating the decision process for the stakeholders. Each diamond represents a decision point for the stakeholders. It is assumed that the WRDP's main process and sidestream plant (SSP) are operating, and that the testing of the effluent produced by both is occurring in parallel; it is anticipated that the testing of the water quality, aquatic toxicity, and ecological response will be performed in series, with some overlap. The flow diagram has been presented to the primary stakeholders and has received general concurrence.

It is important to note that one of the main purposes of the SSP is to assist in evaluating the benefits of additional treatment, while considering incremental capital costs and operational costs for a full-scale treatment plant, as well as, potential adverse effects of by-products, such as concentrated reject water. For this reason there is a default in the diagram to conduct aquatic toxicity testing for the main process, after consultation with the stakeholders, even if the main process does not stringently adhere to the established water quality goals.

COASTAL WETLANDS REHYDRATION DEMONSTRATION PROJECT
FLOW DIAGRAM FOR PLANT OPERATION AND MONITORING



It is also important to note that this flow diagram is simplified for representation, and the stakeholders may choose to revisit any activity prior to a decision that yielded a negative or unexpected result. Re-evaluation of any step in the process will result in a change to the CWRDP conceptual schedule, as will conducting additional testing during any step of the process.

Stakeholders' concern over the possible need to conduct a constructed wetland evaluation at the end of the ecological testing has also been addressed in this flow diagram. It is important to note that the CWRDP currently does not include this evaluation element, from the project's original scope. Should stakeholders require the incorporation of a constructed wetlands for ecological testing, the conceptual schedule will need to be revised.

Section 8

Peer Review Plan

8.1 General

It is the intent of MDWASD to engage a team of impartial, technical experts to assist with reviewing the monitoring and testing protocols and success/failure criteria contained in the conceptual plan. It is anticipated that this external Peer Review Committee will also review the detailed design of the chemical analyses, aquatic toxicity and ecological testing protocols, along with proposed data analysis methodologies, prior to implementation of the CWRDP. The Peer Reviewers will provide a report with their comments and recommendations for MDWASD and stakeholders to consider for incorporation into the final design of the CWRDP. External Peer Review may be necessary at other decision-making points in the CWRDP process and will be implemented as necessary.

8.2 External Peer Review Committee Member Qualifications

The members of this Peer Review Committee will be required to meet the qualifications listed below:

- May not be directly affiliated with any of the primary stakeholders; and
- Must have at least 10 years of experience in the areas of aquatic toxicology testing, ecological testing and response, effects of wastewater on aquatic ecosystems, and/or evaluation of pharmaceuticals and personal care products (PPCPs) in wastewater.

Persons associated with the following organizations/agencies may be eligible for the peer review committee (this list is not all inclusive):

- ABET Accredited Universities
- Society of Environmental Toxicology and Chemistry (SETAC)
- Environmental Protection Agency (EPA)
- U.S. Geological Survey (USGS)

8.3 Communications Plan

A website will be maintained with project information to facilitate communications and coordination between the Peer Review Committee and stakeholders. All stakeholders will have access to the website, in order to review comments and/or documents prepared by the Peer Reviewers and posted to the site.