

Chapter 1

Introduction

Contaminated sediments have been identified in marine and estuarine ecosystems throughout the United States (Bolton *et al.* 1985). The highest levels of sediment-associated contaminants have been measured in coastal areas that are influenced by point sources of pollution, primarily from municipal and industrial sources (NOAA 1990). However, high and biologically significant concentrations of many substances have also been observed in coastal areas that are mainly affected by non-point pollution sources, usually in the vicinity of urban and agricultural developments (O'Connor 1990). As Florida coastal waters may be affected by both point and non-point sources of pollution, there is a significant potential for degradation of environmental quality in these ecosystems.

Over the past 10 years, Florida Department of Environmental Protection (FDEP 1994) and others (e.g., Delfino *et al.* 1991; Long and Morgan 1990; Long *et al.* 1991) have collected a substantial quantity of information on the chemical composition of Florida sediments. Examination of these data indicates that numerous areas in Florida are contaminated by metals (such as chromium, copper, lead, silver, and mercury) and organic substances (such as polycyclic aromatic hydrocarbons and pesticides). However, sediment chemistry data alone are not adequate for identifying or managing potential sediment quality problems in the state. For this reason, FDEP has implemented a program to develop and evaluate tools that support the efficient and effective assessment of sediment quality.

The numerical sediment quality assessment guidelines (SQAGs) developed for Florida coastal waters using the weight of evidence approach are reported in the companion Volume 1 (MacDonald 1994). An evaluation of the overall reliability of the SQAGs also was conducted in Volume 1 to provide potential users of the tools with general guidance on using the guidelines. However, potential SQAG users also require further instructions on the appropriate uses and limitations of these sediment management tools (Sediment Quality Subcommittee 1992). For this reason, guidance in this document is provided to assist potential users in applying the SQAGs and other relevant sediment quality assessment tools.

The purpose of this report is to clearly identify the intended uses of the SQAGs and to list the applications that are considered to be inappropriate. In addition, a general framework for assessing the significance of sediment-associated contaminants is presented. Numerical SQAGs are an integral component of this framework, as they provide a basis for assessing the *potential* effects of sediment-associated contaminants (MacDonald 1994). A metals

interpretive tool (Schropp and Windom 1988; Schropp *et al.* 1990) and various bioassessment tools (i.e., toxicity and bioaccumulation tests; benthic invertebrate community assessments) are also included in this framework because they provide essential information for evaluating sediment quality. Finally, this document reports the results of a preliminary assessment of sediment quality in Florida coastal waters, which may be used as a basis for identifying priority contaminants and priority areas for further investigation.