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## Review of Sediment Quality Investigations in San Francisco Bay

For decades human activities have substantially influenced the physical, biological, and chemical character of the San Francisco Bay/Sacramento-San Joaquin Delta estuary. The rapid growth and development of the entire Bay-Delta watershed since the Gold Rush in the mid-1800s has significantly affected this estuary, the largest on the U.S. Pacific Coast. Effects include an increased loading of anthropogenic contaminants into the estuary from both point and non-point sources. Bay sediments serve as a major repository for these contaminants. Both in the Bay Area and nationally, concern about sediment contamination and how to assess sediment quality has risen as more information becomes available on the potential adverse effects of sediment contamination. These concerns include:

- Various toxic contaminants found only in barely detectable amounts in the water column can accumulate in sediments to much higher levels;
- Sediments serve as both a reservoir for contaminants and a source of contaminants to the water column and organisms;
- Sediments integrate contaminant concentrations over time, whereas water-column contaminant concentrations are much more variable and dynamic;
- Sediment contaminants (in addition to water column contaminants) affect bottom-dwelling organisms and other sediment-associated organisms, as well as both the organisms that feed on them and humans; and
- Sediments are an integral part of the aquatic environment that provide habitat, feeding, spawning, and rearing areas for many aquatic organisms (EPA 1996).

Because of these and other concerns, numerous studies have investigated sediment contamination in San Francisco Bay. These investigations each have had distinct objectives and geographic scopes and have employed a wide variety of sampling methodologies and analytical techniques. Very few studies have taken a comprehensive approach to evaluating contamination throughout the Bay. However, there have been several important surveys or compilations of contaminant data in the Bay published in recent years (Citizens for a Better Environment 1987; Phillips 1987; Long et al. 1988; Davis et al. 1991; Long and Markel 1992).

Each of these reports commented on specific gaps in the available contaminant data (e.g., spatial, temporal, quality control, lack of information on specific contaminants), some arguing the need for a comprehensive contaminant database. In 1988, Long et al. reported that "No bay-wide survey and monitoring of contaminants or measures of effects have been conducted recently in the Bay with state-of-the-art methods." Phillips (1987) concluded that "the quality of the existing database which may be employed to elucidate the abundance of contaminants in the Bay-Delta ecosystem is poor." Citizens for a Better Environment concluded in a 1987 report on toxic hot spots in San Francisco Bay: "Many data have been gathered, but no comprehensive, accurate data base on sediment accumulation and bioaccumulation of toxic pollutants has yet been assembled, nor have the potential effects of toxic hot spots been systematically assessed for the Bay-Delta estuary."

Since these summary reports were produced, many more studies have been completed (e.g., investigations for military base closures, hazardous waste site assessments, dredging projects) and several important monitoring programs have been developed and begun collecting data. This report summarizes the sources for sediment contaminant data for the San Francisco Bay since the mid-1980s, focusing on long-term Bay-wide monitoring programs. Some site-specific investigations covering single event sampling investigations, including six hazardous waste sites, are also summarized.

### Location of Bay-Wide Monitoring Studies in San Francisco Bay

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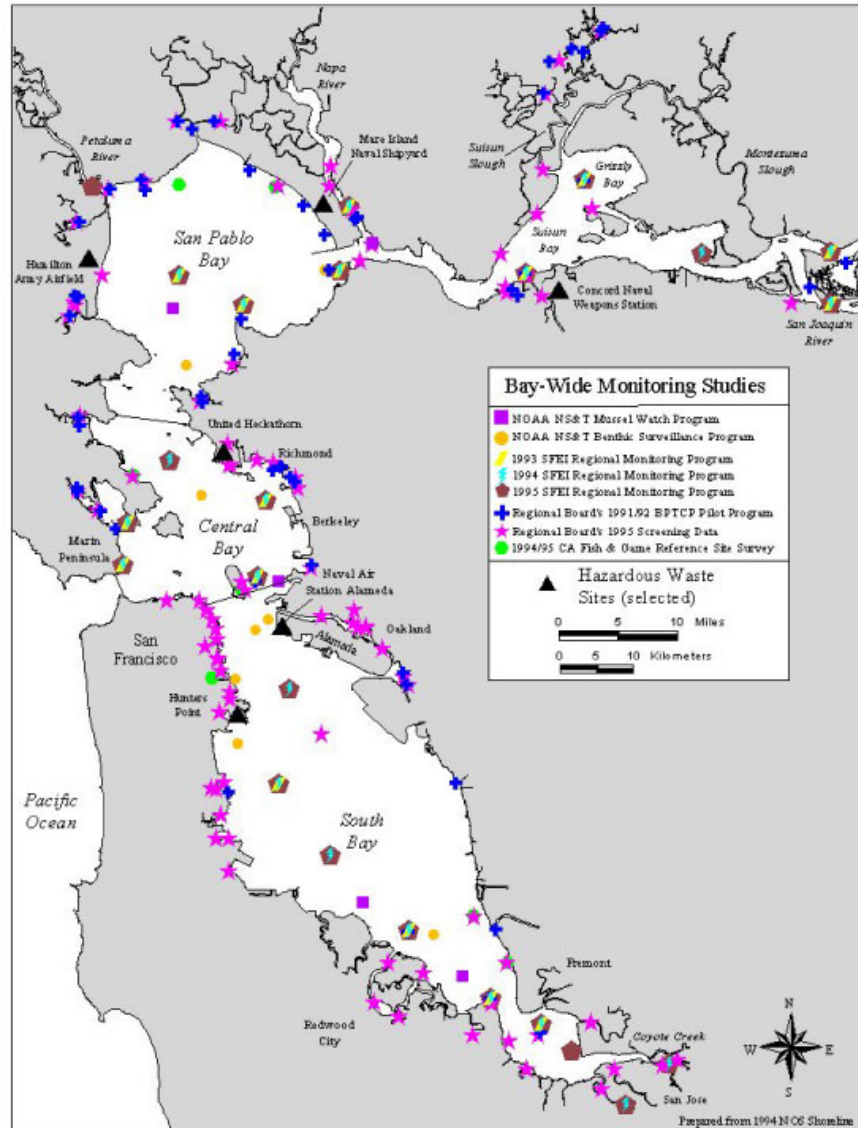
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#### Download the Report

The document is intended to serve as a quick reference for those seeking information on the current status and sources of sediment contaminant data for San Francisco Bay, providing a tool for understanding the health of this important natural resource.

- [Review of Sediment Quality Investigations in San Francisco Bay](#) The full text is available as a PDF file (Technical Memorandum NOS ORCA 116; report date 11/97; webposted 7/13/99) (Document format: **PDF**, size: **1.6 M**)
- [Review of Sediment Quality Investigations in San Francisco Bay \(Text only\)](#) Or, to save space, download the text only (473KB; PDF file) without the appendixes. You can navigate through this file by clicking on items in the table of contents. If you have Acrobat Reader 4.0, you can also use bookmarks to navigate through the f (Document format: **PDF**, size: **483.8 K**)
- [Review of Sediment Quality Investigations in San Francisco Bay: Appendix A](#) Sediment source documents organized by embayment are listed in tables in Appendix A (Document format: **PDF**, size: **48.7 K**)
- [Review of Sediment Quality Investigations in San Francisco Bay: Appendix B](#) Appendix B

provides the reference list organized by embayment.  
(Document format: **PDF**, size: **31.0 K**)

- **Review of Sediment Quality Investigations in San Francisco Bay: Appendix C** Documents are sorted alphabetically in Appendix C  
(Document format: **PDF**, size: **50.6 K**)
- **Review of Sediment Quality Investigations in San Francisco Bay: Appendix D** Documents that discuss or synthesize sediment studies in the Bay, but do not contain original data, are listed in Appendix D  
(Document format: **PDF**, size: **10.1 K**)
- **Review of Sediment Quality Investigations in San Francisco Bay: Appendix E** Maps showing sampling station locations for eight of the bay-wide sediment investigations are in Appendix E  
(Document format: **PDF**, size: **1.0 M**)



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