

Natural Disaster Mitigation in Drinking Water and Sewerage Systems

Guidelines for Vulnerability Analysis



Pan American Health Organization
Regional Office of the
World Health Organization

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Preface and Acknowledgments

For several years, the Pan American Health Organization has provided technical assistance to the water and sanitation authorities in Latin America and the Caribbean in improving their preparedness for natural disasters and other emergencies. In 1993 a book was published that served as a guide for organizing and planning responses to emergency situations that affect drinking water and sewerage systems. In addition to having emergency response capability, it is necessary to identify and carry out measures that will lessen the impact of disasters on components of water systems. Applying disaster prevention and mitigation measures is the next step in the disaster preparedness process.

This book provides basic tools that water service companies can use to evaluate the components of their systems that are vulnerable to major natural hazards (earthquakes, hurricanes, floods, landslides, volcanic eruptions, and drought).

The methodology for vulnerability analysis was presented in a document prepared by Herber Farrer for the Pan American Sanitary Engineering Center in 1996. Based on this work, four case studies were conducted with the financial support of the Humanitarian Assistance Work Group of the Ministry of Foreign Affairs of Germany. The purpose of these studies was to validate the methodology that is presented here. The four studies focused on: experience with earthquakes in Costa Rica, prepared by Saúl Trejos; landslides, prepared by José Grases in Venezuela; floods in Brazil, prepared by Ysnard Machado; and finally, a study prepared by David Lashley in Barbados on hurricanes and volcanic eruptions. The elaboration of this document was possible thanks to the valuable technical contributions of these individuals. In addition, we would like to thank Vanessa Rosales of Costa Rica, who made valuable comments during the final revision of this text.