4. SPECIAL PROJECTS AND REPORTS

A. Tortugas Ecological Reserve (NOAA)

In accordance with the provisions of Section 102(2)(C) of the National Environmental Policy Act, the National Ocean Service (NOS) of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, has prepared the Final Supplemental Environmental Impact Statement/Final Supplemental Management Plan (FSEIS/FSMP) for the Tortugas Ecological Reserve. NOS/NOAA, working in cooperation with the State of Florida, the Gulf of Mexico Fishery Management Council, and NOAA's National Marine Fisheries Service (NMFS), proposes to establish a 151 square nautical mile "no-take" ecological reserve to protect the critical coral reef ecosystem of the Tortugas, a remote area in the western part of the Florida Keys National Marine Sanctuary (FKNMS or Sanctuary). The reserve would consist of two sections, Tortugas North and Tortugas South, and would require an expansion of the Sanctuary boundary to protect important coral reef resources in the areas of Sherwood Forest and Riley's Hump. This action is necessary to comprehensively protect some of the healthiest and most diverse coral reefs in the Florida Keys. Without the protection that would be provided by the proposed no-take and no-anchoring regulations, this deep-water coral reef community would continue to be degraded by activities such as anchoring and fishing. Degradation of this special part of the ecosystem jeopardizes its integrity in addition to the ability of people to experience and learn from a relatively healthy coral reef ecosystem.

An ecological reserve in the Tortugas will preserve the richness of species and health of fish stocks in the Tortugas and throughout the Florida Keys, helping to ensure the stability of commercial and recreational fisheries. The reserve will protect important spawning areas for snapper and grouper, as well as valuable deep-water habitat for other commercial species. Restrictions on vessel discharge and anchoring will protect water quality and habitat complexity. The reserve's geographical isolation will help scientists distinguish between natural and human-caused changes to the coral reef environment.

The FSEIS/FSMP: (1) establishes the need for and purpose of this action; (2) discusses the history of zoning in the FKNMS and how ecological reserves can be used to help achieve the objectives of the Sanctuary; (3) describes the area and environment that are the subject of the proposed reserve; (4) examines the alternatives, including the preferred alternative; (5) describes the environmental and socioeconomic consequences of each alternative; (6) presents the selection of the preferred boundary and regulatory alternative for the proposed ecological reserve; and (7) provides a supplemental management plan for the ecological reserve. The supplemental management plan complements the existing Sanctuary Management Plan (MP). Many of the strategies described in the MP that are now being implemented in the majority of the Sanctuary will be applied to the proposed Tortugas Ecological Reserve. Due to the unique characteristics of the Tortugas region (remoteness, deep water), some new strategies are needed.

For further information, contact Billy Causey, Sanctuary Superintendent, Florida Keys National Marine Sanctuary, P.O. Box 500368, Marathon, FL 33050, (telephone: (305) 743-2437).

B. Climate Change Impacts on the United States (USGCRP)

The U.S. Global Change Research Program (USGCRP) has published a report titled *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*. This report was prepared by the National Assessment Synthesis Team, an advisory committee chartered under the Federal Advisory Committee Act to help the USGCRP fulfill its mandate under the Global Change Research Act of 1990. The National Science and Technology Council has forwarded this report to the President and Congress for their consideration as required by the Global Change Research Act.

Responses to climate change can be of two broad types. One type involves adaptation measures to reduce the harms and risks and to maximize the benefits and opportunities of climate change, whatever its cause. The other type involves mitigation measures to reduce human contributions to climate change. After identifying potential impacts, this assessment sought to identify potential adaptation measures for each region and sector studied. While this was an important first step, it was not possible at this stage to evaluate the practicality, effectiveness, or costs of the potential adaptation measures. Both mitigation and adaptation measures are necessary elements of a coherent and integrated response to climate change. Mitigation measures were not included in this assessment, but are being assessed by other bodies, such as the United Nations Intergovernmental Panel on Climate Change (UNIPCC).

Key findings of the assessment include the following:

1. Assuming continued growth in world greenhouse gas emissions, the primary climate models used in this assessment project that temperatures in the United States will rise 5-9^{o}F (3-5^{o}C) on average in the next 100 years. A wider range of outcomes is possible.

2. Climate change will vary widely across the United States. Temperature increases will vary somewhat from one region to the next. Heavy and extreme precipitation events are likely to become more frequent, yet some regions will get drier. The potential impacts of climate change will also vary widely across the nation.

3. Many ecosystems are highly vulnerable to the projected rate and magnitude of climate change. A few, such as alpine meadows in the Rocky Mountains and some barrier islands, are likely to disappear entirely in some areas. Others, such as forests of the Southeast, are likely to experience major species shifts or to break up into a mosaic of grasslands, woodlands, and forests. The goods and services lost through the disappearance or fragmentation of certain ecosystems are likely to be costly or impossible to replace.

4. Water is an issue in every region, but the nature of the vulnerabilities varies. Drought is an important concern in every region. Floods and water quality are concerns in many regions. Snowpack changes are especially important in the West, Pacific Northwest, and Alaska.

5. At the national level, the agriculture sector is likely to be able to adapt to climate change. Overall, U.S. crop productivity is very likely to increase over the next few decades, but the

gains will not be uniform across the nation. Falling prices and competitive pressures are very likely to stress some farmers, while benefiting consumers.

6. Forest productivity is likely to increase over the next several decades in some areas as trees respond to higher carbon dioxide levels. Over the longer term, changes in larger-scale processes, such as fire, insects, droughts, and disease, will possibly decrease forest productivity. In addition, climate change is likely to cause long-term shifts in forest species, such as sugar maples moving north out of the United States.

7. Climate change and the resulting rise in sea level are likely to exacerbate threats to buildings, roads, powerlines, and other infrastructure in climatically sensitive places. For example, infrastructure damage is related to permafrost melting in Alaska, and to sea-level rise and storm surge in low-lying coastal areas.

8. A range of negative health impacts is possible from climate change, but adaptation is likely to help protect much of the U.S. population. Maintaining the nation's public health and community infrastructure, from water treatment systems to emergency shelters, will be important for minimizing the impacts of waterborne diseases, heat stress, air pollution, extreme weather events, and diseases transmitted by insects, ticks, and rodents.

9. Climate change will very likely magnify the cumulative impacts of other stresses, such as air and water pollution and habitat destruction due to human development patterns. For some systems, such as coral reefs, the combined effects of climate change and other stresses are very likely to exceed a critical threshold, bringing large, possibly irreversible impacts.

10. Significant uncertainties remain in the science underlying regional climate changes and their impacts. Further research would improve understanding and the ability to project societal and ecosystem impacts, and would provide the public with additional useful information about options for adaptation. However, it is likely that some aspects and impacts of climate change will be totally unanticipated as complex systems respond to ongoing climate change in unforeseeable ways.

For further information, contact the U.S. Global Change Research Program Office, 400 Virginia Avenue, SW, Suite 750, Washington, DC 20024, (telephone: (202) 488-8630), or visit the USGCRP Web Site at http://www.usgcrp.gov.

C. Seismic Design Guidelines for Port Structures (PIANC)

The International Navigation Association (PIANC) has published a summary report (ISBN 2-87223-120-X) titled *Seismic Design Guidelines for Port Structures.* The objectives of the seismic design guidelines for port structures presented in this report are to address the limitations present in conventional design, and establish the framework for a new design approach. In particular, the guidelines are intended to be: (1) performance-based, allowing a certain degree of damage depending on the specific functions and response characteristics of a port structure and probability of earthquake occurrence in the region; (2) user-friendly, offering design engineers a

choice of analysis methods, which range from simple to sophisticated, for evaluating the seismic performance of structures; and (3) general enough to be useful throughout the world, where the required functions of port structures, economic and social environment, and seismic activities may differ from region to region.

The expected users of the guidelines are design engineers, port authorities, and specialists in earthquake engineering. The applicability of the guidelines will reflect regional standards of practice. If a region has no seismic codes or standards for designing port structures, the guidelines may be used as a basis to develop a new seismic design methodology, or codes applicable to that particular region. If a region has already developed seismic codes, standards, or established design practice, then the guidelines may be used to supplement these design and analysis procedures. These guidelines are not intended to be used instead of existing codes or standards or established design practice in the region of interest. It is anticipated, however, that the guidelines will, with continual modification and upgrading, be recognized as a new and useful basis for mitigating seismic disasters in port areas. It is hoped that the guidelines may eventually be accepted worldwide as recommended seismic design provisions.

This summary report provides an overview of the seismic design guidelines. The complete guidelines document will be available in a book to be published separately. This summary report is organized as follows: (1) Introduction; (2) Earthquakes and Port Structures (earthquake motion, liquefaction, tsunamis, port structures, and examples of seismic damage); (3) Design Philosophy (performance-based methodology, reference levels of earthquake motions, and performance evaluation); (4) Damage Criteria (gravity quay walls, sheet pile quay walls, pile-supported wharves, cellular quay walls, quay walls with cranes, and breakwaters); and (5) Seismic Analysis (types of analysis, site response/liquefaction analysis, analysis of port structures, and input and output analysis).

For further information, contact the PIANC General Secretariat, Graaf de Ferraris-gebouw – 11th floor, Boulevard du Roi Albert II 20, B.3, B-1000 Brussels, Belgium, (telephone: 32-2-553-71-57/60).