Sustainability Research Supporting Gulf of Mexico Ecosystem Restoration: EPA's Office of Research and Development

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The Gulf Ecosystem Restoration Task Force was formed by Executive Order, October 2010. The Task Force leads and coordinates research in support of ecosystem restoration planning and decision-making in the Gulf Coast region.  In support of a comprehensive restoration strategy, research in EPA's Office of Research and Development (ORD) is strongly aligned with the principles of ecosystem restoration in the Gulf Coast region.  The goal of ORD's Sustainable and Healthy Communities Research Program (SHCRP) is to empower decision-makers to integrate human health, socio-economic, environmental, and ecological factors to foster sustainability in the built and natural environments.  As an element of SCHRP, the Tampa Bay study considers how ecosystem services sustain human health and well-being in the rapidly growing Tampa Bay region. The region is representative of Gulf of Mexico (GOM) coastal areas, where quality of life for many residents depends on beneficial ecosystem goods and services. We describe some of the science, innovation, and model development in the Tampa Bay project, and how it is transferable to other Gulf Coast communities. The Safe and Sustainable Water Resources Research Program, another major element of ORD's portfolio, includes a focus on GOM hypoxia. The goals of this study are to assess and predict relationships between nutrient loads and hypoxia, quantify sources of uncertainty about nutrient load reduction targets, forecast the effects of nutrient management actions in the Mississippi River Basin on hypoxia, and provide defensible options to guide restoration and decision-making. We describe how this research has yielded new insights into the processes that contribute to hypoxia, thereby improving predictions of the effects of watershed nutrient load reduction scenarios.