

**Scott A. Hemmerling, PhD**  
**Director of Human Dimensions, The Water Institute of the Gulf**

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**Education**

**Ph.D. in Geography, May 2007**

Louisiana State University, Baton Rouge, Louisiana

**M.S. in Urban Studies, August 1999**

University of New Orleans, New Orleans, Louisiana

**B.S. in Environmental Studies, May 1992**

State University of New York at Buffalo, Buffalo, New York

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**Research Interests:**

Environmental Equity, Community Vulnerability and Resilience, Social Policy Planning, Geographic Information Systems, Urban Data Analysis, Geostatistics, Qualitative Research

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**Professional Experience:**

**The Water Institute of the Gulf**

- *Director of Human Dimensions* **2015-Present**
- *Associate Director of Human Dimensions* **2013-2015**

**U.S. Geological Survey, National Wetlands Research Center** **2006-2013**

- *Geographer*

**IAP World Services at the National Wetlands Research Center** **2005-2006**

- *GIS Specialist*

**Coastal Marine Institute, Louisiana State University** **2001-2005**

- *Research Assistant*

**CADGIS Research Laboratory, Louisiana State University** **1999-2001**

- *Graduate Assistant*

**Recent Projects:**

**Assessing Temporal and Spatial Variability in Community and Parish Level Responses to Oil Spills and Other Events in Coastal Louisiana**

*U.S. Bureau of Ocean Energy Management, New Orleans, Louisiana*

This ongoing study, a partnership with the University of Arizona Bureau of Applied Research in Anthropology, seems to expand and enhance understandings of the socioeconomic effects of major disruptive events, such as oil spills, hurricanes, floods, and drought, on communities in the short- and long-term and to understand the cumulative effects of such events on communities.

### ***Participatory Modeling: Connecting Local Knowledge and Scientific Understanding***

*The Water Institute of the Gulf, Baton Rouge, Louisiana*

During five meetings in 2018, representative community members in St. Bernard Parish were involved in a fact-finding and participatory modeling activity with a number of numerical modelers. The goal of the community/researcher collaboration was to co-design a computer model representing the hydrology and ecology of Breton Sound Estuary and then use the model to test different nature-based restoration and protection projects. The models were adjusted based on the community group's feedback. Supported by the Science and Engineering Plan of The Water Institute of the Gulf.

### **Finding the Means: Investment and Adaptation in Vulnerable Communities**

*Tulane Institute on Water Resources Law and Policy, New Orleans, Louisiana*

This study used stakeholder insight to assess the social impact of nonstructural mitigation measures and potential funding streams through a series of semi-structured interviews and qualitative data analysis. The study sought to identify the main social tipping point(s) in the implementation and/or funding process for nonstructural residential programs at which it would become so taxing on the community that residents would choose to move elsewhere.

### **Data Needs to Assess Social Impacts Associated with Reforestation Projects in the Lower Mississippi River Alluvial Valley**

*The Restore the Earth Foundation, Ithaca, New York*

This study identified and quantified the social impacts of reforestation projects in the Lower Mississippi River Alluvial Valley within two sites; one in the Tensas River National Wildlife Refuge and the second in the Pointe-aux-Chenes Wildlife Management Area. Both sites contain habitat that provide ecological services, biological diversity, and recreation for local communities. This research will use a social return on investment model to assess the social and economic impacts of the projects on local communities.

### **Vulnerability Assessment of Critical and Essential Facilities in Golden Meadow and Morgan City, Louisiana**

*U.S. Army Corps of Engineers, New Orleans, Louisiana*

This ongoing study will assess variations in the exposure of critical facilities and infrastructure to SLR and storm surge within two coastal Louisiana communities, Morgan City and Golden Meadow. The potential range of SLR at each location will be determined using data modeled for Louisiana's Coastal Master Plan under three future risk scenarios. These scenarios will be used to predict when the facilities might be expected to experience SLR impacts and what the magnitude of those impacts might be.

### **Building Community Resilience to a Changing Louisiana Coastline through Restoration of Key Ecosystem Components**

*Louisiana Sea Grant, Baton Rouge, Louisiana*

This ongoing synthesis project brought together technical data from natural and social scientists as well as traditional ecological knowledge gathered through a series of community local knowledge mapping workshops to examine the social, cultural, and economic value of key ecosystems in coastal Louisiana. These data were integrated to develop a model of ecosystem based adaptation in coastal Louisiana that was informed by both scientific and community landscape knowledge.

### **Trends in Oil and Gas Infrastructure, Ecosystem Function, and Socioeconomic Wellbeing in Coastal Louisiana**

*National Academies of Science Gulf Research Program, Washington, D.C.*

This joint project between the People, Resources and Technology and Coastal Ecology Programs at the Water Institute of the Gulf explored the historical linkages between the expansion of oil and gas infrastructure, ecosystem health, and economic wellbeing of communities. This research compiled historical datasets and analyzed and mapped coastal conditions from 1950 to 2010. The output of this study is a Water Institute Synthesis Report.

### **2017 Coastal Master Plan: Coastal Louisiana Social Vulnerability Index (SVI)**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

The social vulnerability index calculated for coastal Louisiana offers valuable insights into the social and economic conditions that increase community vulnerability to hazards events. This index enabled an assessment of the relative vulnerability of communities and was used to interpret the findings of Louisiana Coastal Master Plan metrics by comparing metric results across the vulnerability categories determined in this report. Providing community level information to the Planning Tool supports evaluation of how communities with different levels of vulnerability may be affected by restoration projects and alternatives.

### **Louisiana Water Resources Assessment for Sustainability and Energy Management**

*Louisiana Department of Natural Resources (DNR) and Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Worked with Water Institute scientists and an expert technical coordination team to develop a framework identifying the essential elements, methods and data sources, and procedures to develop an effective ground and surface water budget for Louisiana. This study also included an assessment of the sustainability of the state's water resources given different scenarios of water use and availability.

### **Coastwide and Barataria Basin Monitoring Plans for Louisiana's System-Wide Assessment and Monitoring Program (SWAMP)**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Worked with CPRA and Water Institute scientists to develop a programmatic human system monitoring plan to monitor and evaluate social and economic changes in community structure in coastal Louisiana as it relates to the state's coastal protection and restoration program on a coastwide scale. A Barataria Basin monitoring plan that will incorporate elements of the programmatic plan with specific data collection activities was also developed.

### **Mapping Historical Resilience in Coastal Louisiana**

*The Water Institute of the Gulf, Baton Rouge, Louisiana*

Served as the principal investigator on a geographical study examining the effects of historical social, economic, and environmental stresses on community resilience. This research compiled an extensive geographical dataset and analyzed and mapped coastal conditions from 1940-2010. The output of this study is a published coastal atlas of social and environmental change.

### **Social Impact Assessment Methodology for Louisiana Coastal Master Plan Restoration and Protection Projects**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Worked with Water Institute scientists and an expert panel to identify the essential elements, methods and data sources, and procedures to operationalize an effective social impact assessment. Developed a draft workplan to develop a social impact assessment for proposed river diversions and other coastal protection and restoration projects.

### **Community Resettlement Prospects in Southeast Louisiana**

*Tulane Institute on Water Resources Law and Policy, New Orleans, Louisiana*

Worked with legal experts and scientists from Tulane University and funding from Oxfam America to explore the legal, cultural, and demographic aspects of relocating individuals and communities from high-risk areas in coastal Louisiana. Conducted an exploratory demographic and environmental justice analysis of populations susceptible to relocation in southeast Louisiana.

### **Coastal Community Resiliency Working Group**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Worked with CPRA scientists to develop a comprehensive socio-ecological resilience index for the Louisiana coastal zone incorporating social vulnerability, biophysical vulnerability, and human adaptation to increasing

risk levels. Developed local-level health accessibility ratings for the all communities within the coastal zone. Processed and analyzed raster and vector data used in development of the resilience index. Assisted in the development of the Coastal Protection and Restoration Authority Nonstructural Program.

**Master Plan Delivery Team for Louisiana's 2012 Comprehensive Master Plan for a Sustainable Coast**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Tasked with developing, maintaining, and analyzing GIS datasets and providing hardcopy and digital graphics products and custom databases for the Louisiana Coastal Protection and Restoration Authority for inclusion in Louisiana's 2012 Comprehensive Master Plan for a Sustainable Coast.

**Cultural Heritage Working Group for Louisiana's 2012 Comprehensive Master Plan for a Sustainable Coast**

*Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, Louisiana*

Tasked with integrating social, biological, and ecological data into a single geographical database covering Louisiana's working coast for use in developing the Cultural Heritage Decision Criteria for use in the 2012 State of Louisiana Comprehensive Master Plan for a Sustainable Coast. Analyzed demographic data to establish community boundaries for use by the Risk Assessment Predictive Modeling Workgroup.

**Patterns of Historical Channel Change along the Red River, Coushatta to Shreveport, Louisiana**

*Louisiana State Land Office, Baton Rouge, Louisiana*

Served as Task Order Manager and technical expert on this project for the Louisiana State Land Office, the Louisiana Attorney General's Office, and the Louisiana Office of Mineral Resources. Conducted research on land rights issues related to Haynesville Shale development in North Louisiana. Compiled data from a variety of sources and utilized geographical and hydrologic principles and analysis to determine the impacts of anthropogenic development on Louisiana's waterways.

**Using the Historical Record to Determine Public Ownership and Access to Louisiana's Waterways**

*Louisiana State Land Office, Baton Rouge, Louisiana*

Served as Task Order Manager on this project for the Louisiana State Land Office. Provided technical, database management, and GIS support for a project developing a comprehensive database of historically navigable public waterways within Louisiana. Worked in consultation with the State to develop methods and standard operating procedures for determining ownership of state waters. Compiled data on state water bottom ownership from a variety of sources and in a number of different formats, including air photo and satellite imagery, as well as archival and legal data sources.

**Evaluating Environmental Equity in Southeast Louisiana**

*Bureau of Ocean Energy Management, New Orleans, Louisiana*

Served as primary researcher on two environmental justice studies integrating geographic, socio-economic, and toxicological data in a GIS format to compare the environmental impacts of onshore oil and gas extraction, offshore oil land-based infrastructure, and petroleum refining on selected communities in southeast Louisiana. This included a study of the environmental impacts of oil- and gas-related industries on wetlands ecology, focusing specifically on waterfowl and other game animals. Prepared graphics and GIS data for a supplemental study on Gulf of Mexico coastal communities and demographics.

**Awards, Honors:**

1. Letter of Recognition for Contributions for USGS Deepwater Horizon Oil Spill, 2011. This award was presented by the USGS Director's Office to recognize team members who provided emergency geospatial support during the Deepwater Horizon oil spill.
2. Special Achievement in GIS Award, ESRI International User Conference, 2006. This award was given to scientists and geographers in the USGS National Wetlands Research Center who assisted in search and rescue efforts during Hurricane Katrina

## PEER REVIEWED PUBLICATIONS

1. Baustian, M. M., Jung, H., Bienn, H., Barra, M., Hemmerling, S.A., Wang, Y., White, E., & Meselhe, E. (2020). Engaging coastal community members about natural and nature-based solutions and assessing their ecosystem functions. *Ecological Engineering* (In Press).
2. Hemmerling, S. A., Barra, M., & Bond, R. H. (2020). Adapting to a Shrinking Coast: Restoration, Protection, and Social Justice in Coastal Louisiana. In S. Laska (Ed.), *Louisiana's Response to Extreme Weather- A Test Case for Coastal Resilience*. Cham, Switzerland: Springer International Publishing.
3. Meselhe, E., Wang, Y., White, E., Jung, H., Baustian, M. M., Hemmerling, S.A., Barra, M., & Bienn, H. (2019). Development of a local knowledge-based predictive tools to assess effectiveness of natural and nature-based solutions for coastal restoration and protection planning. *Journal of Hydraulic Engineering*.
4. Hemmerling, S. A., Barra, M., Bienn, H. C., Baustian, M. M., Jung, H., Meselhe, E., Wang, Y., & White, E. (2019). Elevating Local Knowledge through Participatory Modeling: Active Community Engagement in Restoration Planning in Coastal Louisiana. *Journal of Geographical Systems*, DOI 10.1007/s10109-019-00313-2.
5. Curtis, Jacqueline W., Curtis, Andrew, and Hemmerling, Scott A. 2018. Revealing the Invisible Environments of Risk and Resiliency in Vulnerable Communities through Geospatial Techniques. in *Tsunamis: Detection, Risk Assessment and Crisis Management*. Aggeliki Barberopoulou, ed. Hauppauge, NY: Nova Science Publishers.
6. Hemmerling, Scott A. 2018. Eroding Communities and Diverting Populations: Historical Population Dynamics in Coastal Louisiana. in *Mississippi Delta Restoration: Back to the Future*. John W. Day, ed. Springer Netherlands.
7. Colten, Craig E., Simms, Jessica R.Z., Grismore, Audrey A., and Hemmerling, Scott A. 2018. Social Justice and Mobility in Coastal Louisiana, USA. *Regional Environmental Change*, Volume 18, Number 2, pp. 371-383.
8. Hemmerling, Scott A. and Barra, Monica. 2017. Incorporating Local Knowledge into Ecological Restoration Assessments – Case Studies in Louisiana. *SER News*, Volume 31, Number 3.
9. Scott A. Hemmerling. 2017. *A Louisiana Coastal Atlas: Resources, Economies, and Demographics*. Baton Rouge, LA: Louisiana State University Press.
10. Elaine G. Yodis, Craig E. Colten, and Scott A. Hemmerling. 2016. *Geography of Louisiana*. McGraw Hill Education.
11. Scott A. Hemmerling and Craig E. Colten. 2004. Environmental Justice and the Spatial Distribution of Oil-Related Infrastructure in Lafourche Parish, Louisiana. *The Southwester Geographer*, Vol. 8, pp. 65-98.

## CONFERENCE PROCEEDINGS AND PRESENTATIONS

1. Scott A. Hemmerling. The Economic Benefits of Coastal Restoration in Louisiana (Presentation). National Adaptation Forum, Madison, WI, April 24, 2019.

2. Scott A. Hemmerling. Incorporating Local Knowledge into Ecological Restoration Assessments – Case Studies in Coastal Louisiana (Presentation). National Conference on Ecosystem Restoration, New Orleans, LA, August 28, 2018.
3. Scott A. Hemmerling. Putting Public-Private Partnerships to Practice to Support the Working Coast (Invited Panelist). State of the Coast, New Orleans, LA, May 30, 2018.
4. Scott A. Hemmerling and Tim J.B. Carruthers. Assessing Linkages between Oil and Gas Dependence and Economic Well-Being in Postwar Louisiana (Presentation). Louisiana Historical Association Annual Meeting, New Orleans, LA, April 13, 2018.
5. Scott A. Hemmerling and Monica Barra. Putting Social-Cultural Values on the Map: Incorporating Local Knowledge into Ecological Restoration Assessments (Presentation). Association of American Geographers Annual Meeting, New Orleans, LA, April 11, 2018.
6. Scott A. Hemmerling. The Gulf Research Program of the National Academies: Opportunities for Geographers (Invited Panelist). Association of American Geographers Annual Meeting, New Orleans, LA, April 10, 2018.
7. Scott A. Hemmerling. Assessing Temporal and Spatial Variability in Community and Parish-Level Responses to Oil Spills and Other Events (Presentation). Bureau of Ocean Energy Management Gulf of Mexico Information Transfer Meeting, New Orleans, LA, August 24, 2017.
8. Scott A. Hemmerling. A Framework to Assess Ground and Surface Water Sustainability in Louisiana (Presentation). H2O/LA: An Examination of Louisiana's Relationship with Water Symposium, Lafayette, LA, August 14, 2017.
9. Scott A. Hemmerling. Climate Change and What's at Risk (Presentation). 10th Annual National Conference on Health Disparities, New Orleans, LA, May 4, 2017.
10. Scott A. Hemmerling and Monica Barra. Putting Social-Cultural Values on the Map: Cross-Disciplinary Collaboration on Building Resilience in Coastal Louisiana (Presentation). Society for Applied Anthropology Annual Meeting, Santa Fe, NM, March 30, 2017.
11. Scott A. Hemmerling. Concerns of a Liquid Coast: Tracing Louisiana's 21st Century Environmental Crisis (Invited Panelist). Louisiana Historical Association Annual Meeting, Shreveport, LA, March 18, 2017.
12. Scott A. Hemmerling. Resilience in Vulnerable Coastal Communities: What Can Be Communicated? (Presentation). Tracking Community Resilience: Gulf Research Program Opportunity Analysis Meeting, Washington, DC, February 15, 2017.
13. Scott A. Hemmerling. Land's End: The Erosion of Louisiana's Coastal Cultures (Invited Panelist). Acadiana Encounter, Lafayette, LA, September 24, 2016.
14. Scott A. Hemmerling. Assessing Trends since the 1950s till Present in Development of Coastal Infrastructure, Ecosystem Function and Indices of Societal Well-being in Coastal Louisiana (Presentation). State of the Coast, New Orleans, LA, June 3, 2016.
15. Scott A. Hemmerling. The Louisiana Water Resources Sustainability Assessment Framework (Presentation). State of the Coast, New Orleans, LA, June 1, 2016.

16. Scott A. Hemmerling. A Place of Constant Change: Mapping Historical Resilience in Coastal Louisiana from 1950 to 2010 (Presentation). 5<sup>th</sup> National Forum on Socioeconomic Research in Coastal Systems, New Orleans, LA, March 22, 2016.
17. Monica Barra, Scott A. Hemmerling, and Tim J.B. Carruthers. Building Community Resilience to a Changing Louisiana Coastline through Restoration of Key Ecosystem Components: A Multi-Method Approach (Poster). 5<sup>th</sup> National Forum on Socioeconomic Research in Coastal Systems, New Orleans, LA, March 22, 2016.
18. Scott A. Hemmerling. System Shocks and Slow Burn Events – Historical System Dynamics in Coastal Louisiana (Presentation). American Planning Association National Planning Conference, Atlanta, GA, April 29, 2014.
19. Scott A. Hemmerling. Persistence and Change – Mapping Community Resilience in Coastal Louisiana, 1930-2010 (Presentation). State of the Coast, New Orleans, LA, March 20, 2014.
20. Joanne Chamberlain, Stephanie Hanses, Scott Hemmerling, Melanie Saucier, and Joseph Wyble. Cultural Heritage Decision Criteria used in the Development of the 2012 Coastal Master Plan (Poster). State of the Coast Conference, New Orleans, Louisiana, June 25, 2012.
21. Michele Deshotels, Karim Belhadjali, Melanie Saucier, Joanne Chamberlain, Harold Clarkson, Stephanie Hanses, and Scott Hemmerling. Incorporating Nonstructural Alternatives in Large Scale Protection and Restoration Plans (Poster). State of the Coast Conference, New Orleans, Louisiana, June 25, 2012.
22. Scott A. Hemmerling. Patterns of Historical Channel Change along the Red River, Shreveport, Louisiana to the Mississippi River (Presentation). Louisiana Society of Professional Surveyors 2010 Fall Technical Session, Baton Rouge, LA, October 15, 2010
23. Scott A. Hemmerling. Environmental Justice and the Spatial Distribution of Wildlife Habitat in the Urban-Rural Fringe of Southeastern Louisiana (Presentation). Association of American Geographers Annual Meeting, Denver, CO, April 8, 2005.
24. Scott A. Hemmerling. Environmental Justice in Southeast Louisiana: People, Places, Petroleum, and the Geography of Industrial Hazards (Presentation). Association of American Geographers Annual Meeting, Philadelphia, PA, March 18, 2004.
25. Scott A. Hemmerling. Cultural Impacts of Oil and Gas Activities in the Gulf of Mexico Region (Invited Panelist). U.S. Department of the Interior, Minerals Management Service Social and Economic Planning Workshop, New Orleans, LA, February 3-5, 2004.
26. Scott A. Hemmerling. Evaluating Environmental Equity: The Impacts of Outer Continental Shelf Oil Development on Selected Social Groups in Lafourche Parish, Louisiana (Presentation). Association of American Geographers Annual Meeting, New Orleans, LA, March 5, 2003.
27. Scott A. Hemmerling. Workshop on Deepwater Environmental Studies Strategy: Socio-Economic Breakout Group (Invited Panelist). U.S. Department of the Interior, Minerals Management Service Workshop on Deepwater Environmental Studies Strategy: A Five-Year Follow-Up and Planning for the Future, Kenner, LA, May 29-31, 2002.

## **TECHNICAL REPORTS**

1. Hemmerling, Scott A., Monica Barra, and Harris C. Bienn. 2017. Restore the Earth Foundation Cypress Reforestation Social Return on Investment Report: Pointe-aux-Chenes Wildlife Management Area. The Water Institute of the Gulf, Baton Rouge, LA.
2. Hemmerling, Scott A., Monica Barra, and Harris C. Bienn. 2017. Restore the Earth Foundation Reforestation Social Return on Investment Report: Tensas River National Wildlife Refuge. The Water Institute of the Gulf, Baton Rouge, LA.
3. Hemmerling, Scott A., Sequoia Riley, Harris C. Bienn. 2017. Spatial and Temporal Variations in Exposure and Sensitivity to Coastal Flooding Resulting from a 100-Year Storm Event. The Water Institute of the Gulf, Baton Rouge, LA.
4. Carruthers, Tim J., Scott A. Hemmerling., Monica Barra, Tracey A. Saxby, and Leland Moss. 2017. "This is your shield...this is your estuary": Building community resilience to a changing Louisiana coastline through restoration of key ecosystem components (WISR-002-2017) (p. 48). Baton Rouge, LA: The Water Institute of the Gulf.
5. Scott A. Hemmerling, Tim J.B. Carruthers, Ann C. Hijuelos, Sequoia Riley, and Harris C. Bienn. 2016. Trends in Oil and Gas Infrastructure, Ecosystem Function, and Socioeconomic Wellbeing in Coastal Louisiana, The Water Institute of the Gulf, Baton Rouge, LA, WISR-001-2016.
6. Scott A. Hemmerling, F. Ryan Clark, and Harris C. Bienn. 2016. Water Resources Assessment for Sustainability and Energy Management, The Water Institute of the Gulf, Baton Rouge, LA.
7. Ann C. Hijuelos and Scott A. Hemmerling. 2016. Coast Wide and Basin Wide Monitoring Plans for Louisiana's System-Wide Assessment and Monitoring Program (SWAMP), The Water Institute of the Gulf, Baton Rouge, LA.
8. Craig E. Colten and Scott A. Hemmerling. 2014. Social Impact Assessment Methodology for Diversions and Other Louisiana Coastal Master Plan Restoration and Protection Projects, The Water Institute of the Gulf, Baton Rouge, LA.
9. Christopher Dalbom, Scott A. Hemmerling, and Joshua Lewis. 2014. Community Resettlement Prospects in Southeast Louisiana: A Multidisciplinary Exploration of Legal, Cultural, and Demographic Aspects of Moving Individuals and Communities [White Paper], Tulane Institute on Water Resources Law & Policy. New Orleans, LA.
10. Scott A. Hemmerling and Craig E. Colten. 2012. Environmental Justice in Louisiana: A Comparative Perspective, U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA, Prepared under Task Order 30951/#18175.
11. Scott A. Hemmerling. 2007. Environmental Equity in Southeast Louisiana: Oil, People, Policy, and the Geography of Industrial Hazards. Doctoral Dissertation. Louisiana State University.
12. Nicole F. Lorenz, Scott A. Hemmerling, and Andrew Curtis. 2004. Identification of Potential Habitat Sites for the Ornate Box Turtle (*Terrepe ornate*), the Crested Caracara (*Caracara cheriway*), and the Burrowing Owl (*Athene cucularia*) Using GIS Capabilities, Unpublished Report for the Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA, 30 pp.
13. Scott A. Hemmerling and Craig E. Colten. 2003. Environmental Justice Considerations in Lafourche Parish, Louisiana: Final Report, U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA, OCS Study MMS 2003-038. 354 pp.