EXPERT REPORT
U.S. v. BP Exploration & Production, Inc. et al.

Sociocultural Effects of the *Deepwater Horizon* Disaster in the U.S. Gulf of Mexico

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Table of Contents

Executive Summary

This report describes the sociocultural effects of the *Deepwater Horizon* disaster in the U.S. Gulf of Mexico, which began on April 20, 2010. Sociocultural effects accrue when many people within a community experience a disaster or event with negative environmental consequences. They are not simply the aggregate of individual harms. Because sociocultural effects generate more sociocultural effects, they persist long after the triggering event or onset of the disaster.

The *Deepwater Horizon* disaster had widespread, profoundly serious effects across nearly all the communities and economic sectors of the Gulf of Mexico coastal region. It killed 11 men and injured many more. It caused widespread disruption of livelihoods and was marked by very high levels of uncertainty, both of which produced their own sets of disruptive effects and were seriously harmful to people across the Gulf. The disaster's sociocultural effects were far from uniform and extend beyond economic harms. At the community-level, the nature and extent of the harms were influenced by many factors, including: whether or not the oil came onshore nearby; the social and political dynamics in the community; the mix of industries upon which people and businesses in the community depend; the role of members of the community in the cleanup; the community's connections to regional, state, and national resources; and the community's experience with the 2005 and 2008 hurricanes. Many effects from the *Deepwater Horizon* disaster continue today, though because some of the impacts are still unfolding and research into the longer-term effects is still ongoing, the primary focus of this report is on the known harms observed through January 2012.

Introduction

I. Professional Background

This report was prepared by Dr. Diane Austin, professor and director of the School of Anthropology at the University of Arizona. I am an applied environmental and sociocultural anthropologist specializing in social impact assessment, community dynamics amid large-scale industrial activity, and community-based, collaborative research. Much of my work is performed for government agencies and non-governmental organizations (NGOs) to inform policymaking. For example, for the U.S. Bureau of Ocean Energy Management (BOEM), I have conducted research on the social effects of the Gulf of Mexico offshore oil and gas industry to provide baseline information and examine change over time.[1] In forming my opinions, I draw upon my 18 years of direct experience in the Gulf of Mexico region; my direct experience studying the social and economic effects of the *Deepwater Horizon* disaster from April 2010 through January 2012; and the two volumes of the report, *Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities*, prepared by researchers from the University

[1] Luton, Harry., and Rodney E. Cluck. 2000. Applied Social Science for MMS: A Framework for Decision Making. Washington, DC: Minerals Management Service Environmental Studies Program.

of Arizona Bureau of Applied Research in Anthropology (BARA).[2] That report focused on the social effects of the *Deepwater Horizon* disaster stemming from the blowout and oil spill, and from the response to it. It paid particular attention to the influence of location, ethnicity, and occupation/livelihood, and to the effects of what was known and happening as well as what was unknown and uncertain. In this report, references to the *Offshore Oil and the Deepwater Horizon* report and all other documents refer to the cited document as well as to the citations within those documents. Citations included in footnotes refer to the sentences immediately preceding the footnote.

II. Organization of Report

This report is divided into two parts. Part One of the report provides background information and context underlying my analysis, including a brief description of the methodology behind the study of sociocultural effects of oil spills such as the *Deepwater Horizon* in Section I and a brief description of the people, places, and state of key industries of the Gulf region leading up to the spill in Sections II and III.

Part Two of the report sets forth the sociocultural harms of the *Deepwater Horizon* disaster in three sections: economic and material well-being effects of the spill to the fishing, offshore oil and gas, tourism, and shipbuilding sectors are set forth in Section I. Health, social well-being, and other sociocultural impacts are examined in Sections II and III. Conclusions are presented in Section IV.

Part One: Background

I. Methodology for the Report

A. Brief Overview of Sociocultural Effects of Oil Spills, Contamination, and Disasters

Social scientists have spent decades identifying patterns in how communities are affected by and respond to environmental contamination and to disaster. Victims of disaster include not only those who are in the path of the disaster and directly affected by it but also those who are

[2] I will use BARA researchers to refer to a team of 13 university-based researchers (including myself) and 6 community researchers who investigated the effects of the disaster between April 10, 2010 and January 31, 2012. I was the lead Principal Investigator and guided the research. The two reports generated by that research are:
(1) Austin, Diane, Brian Marks, Kelly McClain Thomas McGuire, Ben McMahan, Victoria Phaneuf,, Preetam Prakash, Bethany Rogers, Carolyn Ware, and Justina Whalen. 2014. Offshore Oil and the *Deepwater Horizon*: Social Effects on Gulf Coast Communities. Volume I: Methodology, Timeline, Context, and Communities. OCS Study BOEM 2014-617. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region (referred to hereafter as Austin et al. Vol I).
(2) Austin, Diane, Shannon Dosemagen, Brian Marks, Thomas McGuire, Preetam Prakash, and Bethany Rogers. 2014. Offshore Oil and the *Deepwater Horizon*: Social Effects on Gulf Coast Communities. Volume II: Key Economic Sectors, NGOs, and Ethnic Groups. OCS Study BOEM 2014-618. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region (referred to hereafter as Austin et al. Vol II).

affected because of how the disaster is portrayed and managed.[3] Comprehensive study of the effects of toxic exposure on lifestyle and on cognition has shown that exposure changes individuals' perceptions of themselves, their families and friends, their communities, and their governments.[4] William Freudenberg and Timothy Jones coined the term *corrosive communities* to emphasize the conflict that generally ensues as effects, responsibility, and compensation are sorted out, noting long-lasting patterns of economic, social, cultural and psychological impacts that occur as a result of environmental contamination and disaster.[5] In short, across almost two decades of research,[6] social scientists have documented consistent patterns of chronic impacts to individuals and communities that arise not only from the specific event that initiated the disaster but also "their continuing ramifications [which] can undermine or destroy accepted social patterns and understandings."[7] Central among the continuing impacts is the ongoing uncertainty associated with many disasters. Indeed, researchers have defined disasters as recurrent sets of blows and problems in a complex mix of physical, biological, and sociocultural elements.[8]

Significant challenges arise in investigating and documenting sociocultural effects of disasters. Social scientists have defined social impacts as "the impacts actually experienced by humans (at individual and higher aggregation levels) in either a corporeal (physical) or cognitive (perceptual) sense," which can range from loss of property values to loss of community cohesion.[9] Identifying and documenting sociocultural impacts is particularly challenging because they arise from the historical, political, economic, social, and cultural contexts within which they occur and, once manifest, they create other impacts. While there have been many frameworks developed for identifying and assessing sociocultural impacts, in this report impacts are characterized as *economic and material well-being*, *health and social well-being*, and *other sociocultural impacts*.[10] The category of health and social well-being follows Vanclay

[3] Cuthbertson, Beverley H., and Joanne M. Nigg. 1987. "Technological Disaster and the Nontherapeutic Community - A Question of True Victimization." Environment and Behavior 19(4):462-483.

[4] Edelstein, Michael. 2004. Contaminated Communities: Coping With Residential Toxic Exposure, Second Edition. Westview Press.

[5] Freudenburg, William R., and Timothy R. Jones. 1991. "Does an Unpopular Facility Cause Stress? A Test of the Supreme Court Hypothesis." Social Forces 69:1143-1168. See also Austin et al. Vol I, pp. 62-63.

[6] Picou, J. Steven, Brent K. Marshall, and Duane A. Gill. 2004. "Disaster Litigation and the Corrosive Community." Social Forces 82(4):1493-1522.

[7] Freudenburg, William R. 1997. "Contamination, Corrosion and the Social Order: An Overview." Current Sociology 45(3):31.

[8] Hoffman, Susanna M., and Anthony Oliver-Smith, Eds. 2002. Catastrophe and Culture: The Anthropology of Disaster. Santa Fe: SAR Press, pp. 5-6.

[9] Vanclay, Frank. 2002. "Conceptualising Social Impacts." Environmental Impact Assessment Review 22:191.

[10] These categories are derived from Marlies van Schooten, Frank Vanclay, and Roel Slootweg. 2003. "Conceptualizing Social Change processes and Social Impacts" in The International Handbook of Social Impact Assessment: Conceptual and Methodological Advances. Northampton, MA: Edward Elgar Publishing. The seven categories they describe include Economic and Material Well-Being; Health and Social Well-Being; Quality of the Living Environment (Liveability); Cultural; Institutional, Legal, Political, and Equity; Family and Community; and Gender Relations. In this report, Household and Community effects are addressed within each of the three categories. Quality of the Living Environment (Liveability); Cultural; Institutional, Legal, Political, and Equity are all included in the category Other Sociocultural. This report does not address gender relations.

(2002) as well as the World Health Organization definition: "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity."[11]

Two social science approaches are particularly appropriate for studying the sociocultural effects of environmental change and of disaster. The first, *ethnography*, is used to identify patterns, describe relationships and social networks, and reveal understandings and meanings that people attribute to places and events in their lives, and to contextualize all these in broader contexts. Ethnographic research is conducted by trained observers (usually anthropologists) who spend time in affected communities observing and interacting with individuals and groups within those communities, and recording those observations in written (and sometimes audio and/or video) notes. Ethnographers combine passive observation of community gatherings, such as town hall meetings and festivals; active participation in private and public events, such as family dinners and community workshops; and structured and unstructured interviews with individuals and groups. These interactions create "chains of conversations and informants."[12]

The second, *case study research*, can be explanatory, exploratory, or descriptive. A case study incorporates multiple sources of evidence, such as historic records, legal documents, and notes from questionnaires and interviews, and is particularly valuable for bringing understanding to a complex issue or event when the boundaries between the phenomenon under study and the context within which it is taking place are ambiguous.[13] "(T)he case study produces the type of context-dependent knowledge which research on learning shows to be necessary to allow people to develop from rule-based beginners to virtuoso experts... in the study of human affairs, there appears to exist only context-dependent knowledge."[14] In a process called triangulation, researchers mix approaches to get multiple viewpoints in order to control bias, deepen their understanding of the issues, and maximize their confidence in their findings. Triangulation can involve the use of multiple methods, data sources, investigators, theories, and locations.[15]

B. Methodology of the Deepwater Horizon Study

The *Deepwater Horizon* disaster in the Gulf of Mexico created a vast area of potential impact within which were located many small communities with distinct historical, social, cultural, economic and political characteristics. A study of the social effects of the disaster was conducted by researchers from the Bureau of Applied Research in Anthropology (BARA) at the

[11] http://www.who.int/about/definition/en/print.html

[12] Parthasarathy, Baliji. 2008. The Ethnographic Case Study Approach. Global Impact Study. Technology and Social Change Group. University of Washington. http://www.globalimpactstudy.org/2008/07/the-ethnographic-case-study-approach/

[13] Yin, Robert K. 1984. Case Study Research: Design and Methods. Thousand Oaks, CA: Sage Publications.

[14] Flyvbjerg, Bent. 2006. "Five Misunderstandings About Case-Study Research," Qualitative Inquiry 12(2):221.

[15] Patton, Michael Q. 2002. Qualitative Research and Evaluation Methods. Thousand Oaks, CA: Sage Publications, pp. 247-248. Guion, Lisa A., David C. Diehl, and Debra McDonald. 2011. Triangulation: Establishing the Validity of Qualitative Studies. Doc. FCS6014. University of Florida, Institute of Food and Agricultural Sciences, Department of Family, Youth and Community Sciences. Accessed online at http://edis.ifas.ufl.edu/fy394.

University of Arizona from 2010 to 2012 and included community-focused collaborative ethnographic research via case studies centered in five geographic communities (Bayou La Batre, AL; East Biloxi, MS; Lower Plaquemines (Empire, Pointe a la Hache, and Port Sulphur), LA; Larose and Cutoff, LA; Dulac, LA) and extending to the communities and urban centers nearby. The communities were chosen to represent a range of contexts and experiences with the disaster. Researchers developed a matrix of occupations and locations and used purposive sampling to identify knowledgeable participants, achieving, where possible, diversity based on gender, ethnicity, and occupation. In short, the approach was developed to allow the researchers to triangulate across methods, sources, investigators, and locations.[16]

BARA researchers, including myself, have investigated the socioeconomic effects of the offshore petroleum industry in the Gulf of Mexico since the mid-1990s. The study of the social effects of the *Deepwater Horizon* built on those earlier studies. The research team leaders had relationships with community members and organizations in some Gulf Coast communities, which they had developed during community-based team ethnographic research in the region conducted prior to the disaster. These prior relationships made it possible for the researchers to enter the communities during the very difficult period following the onset of this disaster and get beyond the individuals who were seeking publicity.

The *Deepwater Horizon* study involved ethnographers who lived in the case study communities from several weeks to several months at a time between April 2010 and January 2012 and who partnered with community researchers who had lived in the study communities for all or most of their lives and could help identify and talk with residents in those communities about the impacts of the oil spill on their lives and businesses. This particular approach to research collaboration strengthened access to local residents and fostered understanding as community research partners reached out to new contacts but also interacted with their colleagues, neighbors, and family members with whom they had long-standing relationships. In addition to these discussions, community partners attended project team meetings and were encouraged to share their observations of oil spill impacts on local economies and social dynamics. The ethnographers and community researchers informed and complemented each other's work, and incorporated the multilevel, multisite, and multitemporal perspectives that are necessary to bring understanding to complex situations involving mobility, diversity, and volatility.[17]

Using the matrix to guide their selection of participants, researchers talked with a range of community leaders, business owners, workers, and family members in the region's primary economic sectors: commercial fishing (including all four prominent fisheries across those fisheries' commodity chains), oil and gas, tourism, and fabrication and shipbuilding. The ethnographers and community research partners gathered information through semi-structured drop-in conversations at local businesses, which allowed the researchers to quickly ascertain the impacts of the disaster on a wide range of businesses across many geographic communities. They held extended discussions with industrial and economic development

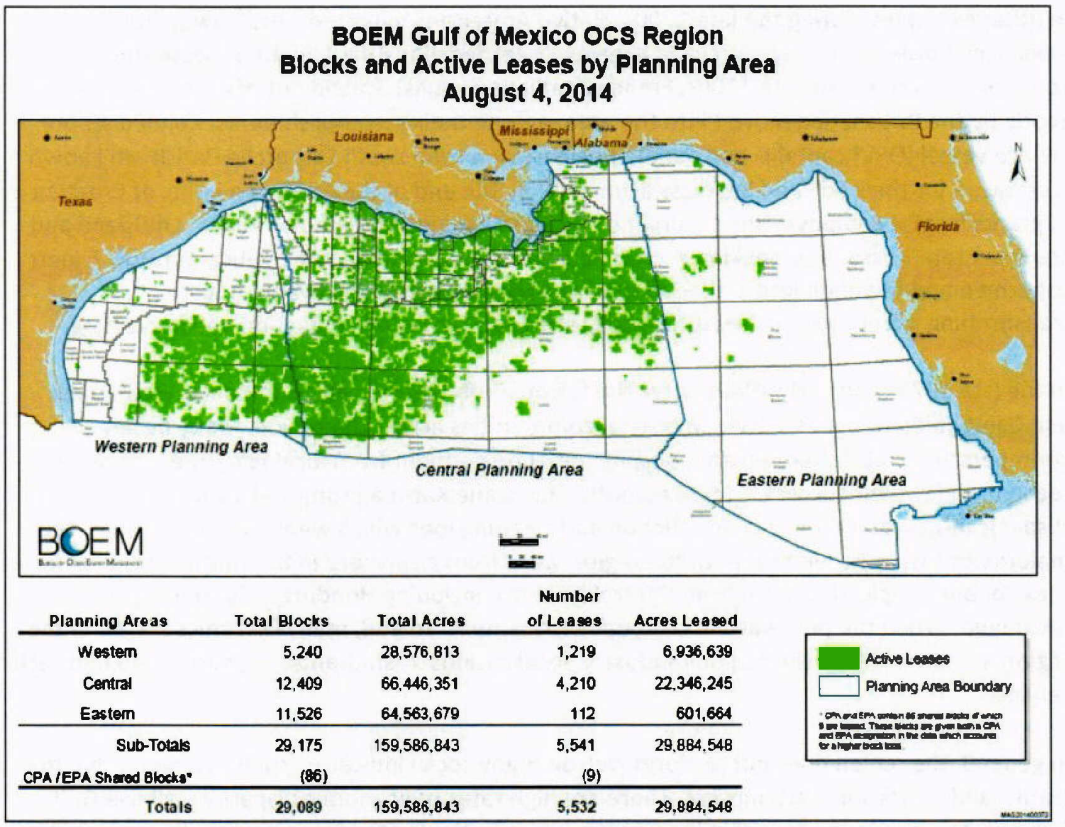
[16] Austin et al. Vol I, pp. 6-11. Austin et al. Vol II, pp. 3, 22, 70, 94, 106.
[17] Austin et al. Vol I, p. 8.

specialists, members of local chambers of commerce and tourism boards, representatives of local non-profits and government entities, workforce and employment agencies and training centers, company owners, workers, and their families in those communities and in larger urban centers within the region. Extended discussions also centered on impacts of the disaster but also covered other relevant issues, for example the history of particular businesses and of industry development in certain areas.

Researchers also participated in numerous public and private meetings about the disaster and response, read local and regional newspapers and industry publications, and listened to local radio and watched local television news and programs related to the spill, often in the company of residents they were visiting or with whom they were staying. They also attended local festivals, concerts, and other occasions that drew significant numbers of visitors to local areas. This participant observation enabled researchers to collect information, including the demographics and attendance levels, the themes around which events were focused, and the perspectives of organizers and other participants, which would have been difficult to obtain through other methods. For example, many festivals across the Gulf Coast feature the seafood industry; by attending such events ethnographers were able to document changing attitudes and practices concerning local seafood, on the part of both locals and visitors.

II. Brief description of the Region: People and Places

The sociocultural effects of the *Deepwater Horizon* disaster can only be understood in the context of the region within which it occurred. The region covered by this report is coastal Louisiana, Mississippi, and Alabama, outside the urban centers. This report does not address coastal Florida. Although its coast was among the areas potentially threatened by oil flowing from the Macondo Well, Florida has had minimal involvement in the offshore oil and gas industry due to a long-term moratorium in the Gulf of Mexico Eastern Planning Area, within 125 miles from Florida, which has restricted that area from leasing for oil and gas development (see Figure 1). I have not conducted research and have no expertise in that region.



Planning Areas	Total Blocks	Total Acres	Number of Leases	Acres Leased
Western	5,240	28,576,813	1,219	6,936,639
Central	12,409	66,446,351	4,210	22,346,245
Eastern	11,526	64,563,679	112	601,664
Sub-Totals	29,175	159,586,843	5,541	29,884,548
CPA / EPA Shared Blocks*	(86)		(9)	
Totals	29,089	159,586,843	5,532	29,884,548

Figure 1. BOEM Gulf of Mexico OCS Region Blocks and Active Leases by Planning Area. Source: BOEM, http://www.boem.gov/Gulf-of-Mexico-Region-Lease-Map/

People settled into particular places throughout the region in response to various push and pull factors. Once living in the region, they remained because of economic, social, and cultural ties to particular places or livelihoods and/or because they had few options to go elsewhere. The region includes numerous "ethnic enclaves" which weave together shared economic activity, residence, and ethnicity along the Gulf Coast. For example, French settlers established plantations around New Orleans and brought enslaved Africans into southern Louisiana in the early 1700s; French immigrants continued to arrive throughout much of the 19th century to work as plantation managers or merchants and brought new waves of African Americans.[18] During post-Civil War Reconstruction, many African Americans left the region but some established communities on former plantation lands and fought to defend and expand their rights and freedoms, and those of their descendants. Into the middle of the 20th century, other African Americans came into the region from northern counties and parishes seeking economic opportunities in the lumber mills, seafood plants, oilfields, shipyards, and tourism industry.[19]

[18] Austin et al. Vol. I, p. 161, 179-180.
[19] Austin et al. Vol. I, p. 91-99, 140, 161.

In other examples, during the late 1700s, Native Americans migrated south, away from advancing Euroamerican settlers, and eventually settled along the bayous of southern Louisiana.[20] Also by the late 1700s, French Acadians (Cajuns), forced out of present-day Nova Scotia by the British, had moved into the area; among their accomplishments, Cajun offshore service vessel (OSV) captains and oilfield businessmen from south Lafourche Parish are known worldwide for their skill and business acumen.[21] By the end of the 1800s, an influx of Croatian migrants from the impoverished Dalmatian coast settled in Plaquemines Parish, Louisiana and southwestern Mississippi, seeking economic opportunities and fleeing political turmoil. Expert fishermen and boat builders, Dalmatians soon dominated the local oyster industry, transforming it from a small, seasonal occupation to year-round cultivation and harvesting.[22]

In the late 1970s and early 1980s, after the fall of South Vietnam and Cambodia, Vietnamese and Cambodian refugees settled in coastal communities across the region. Many became shrimpers and crab fishermen and, despite initial resentment from local fishermen, became recognized for their success.[23] Most recently, Hurricane Katrina prompted a substantial Hispanic in-migration for the construction and cleaning jobs which were widely available. The majority of Hispanics who came to the region were from elsewhere in the United States or from Mexico, but people also came from Central America, including Honduras, Guatemala, and Nicaragua. When the post-Katrina cleanup work came to an end, many Hispanics stayed in the region and took jobs in the seafood industry, local casinos, restaurants, shipyards, and domestic service.[24]

In general, the region does not perform well on many social indicators such as poverty, health status, and educational attainment. There are high rates of economic disparity – all five Gulf Coast states rank in the top 10 in income inequality in the United States – as well as generally weak social services and the infrastructure to support them.[25] Nevertheless, the coastal region is distinct from counties and parishes in the northern parts of these states; Interstate 10 is considered a significant dividing line, with the region to the south better off economically, in large part due to the natural resources extracted from the coastal areas and offshore in the Gulf.[26] Many people supplement their diets by obtaining food through fishing, hunting, and gardening. Even wage earners acquire some of their food by catching/harvesting it themselves or obtaining locally caught/harvested food through their social networks.[27] Though it is impossible to produce an accurate count of active fishermen, taken together, commercial, recreational, and subsistence fishers comprise a substantial proportion of the region's

[20] Austin et al. Vol. I. p. 110-111.
[21] Austin et al. Vol. I, p. 99, 100, 212-214.
[22] Austin et al. Vol. I, p. 160, 180-181, 193-194.
[23] Austin et al. Vol. I, p. 91-92, 111-113, 116, 137-138, 141-142, 162-163, 183.
[24] Austin et al. Vol. I, p. 92, 119-122, 142-143, 169.
[25] .Sautier, Mike. 2012. The States with the Widest Gap Between Rich and Poor. 24/7 Wall Street. May 31. Accessed at http://247wallst.com/special-report/2012/05/31/ten-states-with-the-worst-income-inequality/print/
[26] Austin et al. Vol. I, p. 54.
[27] Austin et al. Vol. I, p. 99-100, 104, 192.

residents.[28] Local food plays a central role in the regional culture as well – festivals, restaurants, fishing tournaments, and backyard seafood boils, for example, all highlight the unique cuisine of the region. Festivals and tournaments play an important role in attracting people to the region from across the Gulf states and the south as well as in drawing emigrants back home.[29] Festivals take place year round, but festival season picks up in April and continues through the early fall.

Within the past decades, the demographic, social, cultural, and economic characteristics of the region have been affected by global forces, national policies (such as those governing seafood imports and royalties for deepwater oil and gas development),[30] and local environmental conditions (especially hurricanes and coastal land loss). Also, oil and gas prices have a significant effect on the U.S. economy – price increases correlate with national recessions, Because offshore activity increases when prices are high, the region draws in un- and underemployed workers during oil booms, putting stress on limited housing and social services.[31]

Though not uniform across the region, recent storms and disasters have had significant effects, exposing and exacerbating disparities. The storms were followed by an influx of federal money, along with agencies, companies, non-governmental organizations (NGOs), skilled and unskilled workers, and volunteers, into affected areas.[32] This influx brought needed relief but also increased competition for and costs of housing, materials, and services and substantially altered local demographics, especially the proportion of Hispanics in the region, although the extent to which this occurred also varied by community. Many of the Hispanic hurricane response workers remained, entering the seafood, oil and gas, and tourism industries, often as low-paid, part-time and/or temporary labor.[33] Other factors, such as coastal erosion, insurance, and the availability of loans and financing, have also affected the functioning of households and small businesses and the communities within which they exist.

Race and ethnicity are tightly interwoven in Gulf Coast communities, with clear effects in the aftermath of disasters. For example, racial differentials in income and hazards vulnerability along the Gulf Coast were dramatically exposed by Hurricane Katrina in 2005 and the years of reconstruction that followed. Beyond the images broadcast from New Orleans following the storm, Native Americans living in south Louisiana rural communities struggled to rebuild due to pre-existing poverty, escalating building elevation requirements and insurance costs, and limited access to outside funds, especially within tribes lacking federal recognition. African-

[28] According to the Louisiana Department of Wildlife and Fisheries, for example, Louisiana residents bought 278,736 saltwater licenses in 2009-2010. Recreational License Sales Summary. Accessed online at www.wlf.louisiana.gov/.
[29] Austin et al. Vol. I, p. 104, 181, 223.
[30] Austin et al. Vol. I, p. 58, 61-62, 102, 145, 163-164, 249.
[31] Austin et al. Vol. I, p. 57, 223, 242. See also Austin, Diane E., and Thomas R. McGuire. 2002. Social and Economic Impacts of Outer Continental Shelf Activities on Individuals and Families: Volume I: Final Report. OCS Study MMS 2002-022. New Orleans: U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, pp. 93-94.
[32] Austin et al. Vol. I, p. 59-62, and throughout.
[33] Austin et al. Vol. I, p. 120-121.

Americans and Vietnamese in coastal Mississippi witnessed casinos and shipyards rapidly rebuilt and reopened while their shattered neighborhoods were left untouched.[34]

Ethnicity also continues to shape affinities within and divisions among coastal social networks. Important aspects of ethnicity in many coastal communities include shared language, histories of migration and settlement, employment, and religious affiliation and practices.[35] However, such ties are often community-specific and are not necessarily consistent across the entirety, or even the majority, of the Gulf Coast, or for the whole ethnic community in one town. For example, African Americans along the Mississippi Gulf Coast participate to a very minor extent in the local commercial fishing industry. However, African American participation in the seafood industry, and in particular in small scale oystering, is very significant on the eastbank of Plaquemines Parish.[36]

III. Key Industries in the Region

The livelihoods of people in the region are centered on several principal industries and the service industries that support them. These industries are distinct but interrelated – and interrelated in different ways in different communities. The work they provide is seasonal and/or cyclical. They differentially experience the effects of storms, economic recessions, and other forces. Four industries deserve particular attention due to their predominance in the Gulf economy: commercial fishing; oil and gas; tourism; and fabrication and shipbuilding.

A. Commercial Fishing

The Gulf of Mexico is among the country's most valuable and largest volume regional fisheries, second only to the Pacific Northwest (including Alaska).[37] The commercial fishing industry has faced a series of both chronic and acute challenges, including hurricanes and sharply falling prices simultaneous with rising expenses. Despite such hardships, commercial fisheries remain an important element in the Gulf region's economic and cultural landscape and in the personal and collective identity of many coastal residents.[38]

The Gulf Coast commercial fishing industry is comprised of four principal fisheries: shrimp, oysters, crabs, and finfish. Three-quarters of the Gulf seafood industry by value comes from shellfish, with the remaining 25 percent being finfish, of which menhaden, grouper, red snapper, and yellowfin tuna make up a large proportion of the regional catch.[39]

[34] Austin et al. Vol. I, pp. 100, 143-145, 165-166.
[35] Austin et al. Vol I, pp. 99, 101-103, 138, 141-142.
[36] Austin et al. Vol. I, p. 99.
[37] The spatial distribution of the fisheries depends on habitat availability. See Dale, David and Kim Santos. 2006. Gulf of Mexico: Habitat Areas of Particular Concern. Gulf of Mexico Fishery Management Council, National Marine Fisheries Service, National Oceanic and Atmospheric Administration.
[38] Austin et al. Vol I, pp. 138, 145-147, 166-168; Austin et al. Vol II, p. 21.
[39] Austin et al. Vol II, pp. 21, 26.

The Gulf shrimp commodity chain generates the highest value of any fishery in the Gulf of Mexico with the total volume caught and processed remaining fairly steady.[40] Shrimping is a traditional livelihood among many coastal families, both those resident to the region for many generations and recent immigrants. While shrimpers can be found in almost every community, the largest concentrations of licensed commercial shrimpers are in Terrebonne, Lafourche, Jefferson and Plaquemines parishes, Louisiana, and significant concentrations are in Biloxi and Pass Christian, Mississippi and Bayou La Batre, Alabama. Prominent in the shrimping industry are Croatian and French descendants along with Vietnamese shrimpers in Biloxi and Pass Christian and in Bayou La Batre. South Louisiana shrimpers include Native Americans, Anglos, Cajuns, and Vietnamese and, in a few parishes, Cambodians, Croatians, and African-Americans.[41]

Oyster harvesting is also a multigenerational pursuit and a significant economic force in many coastal communities. Larger-scale oyster harvesters with bigger boats and more leases tend to rely exclusively on oysters for income, while smaller-scale oystermen often work side jobs, most commonly in other commercial fisheries, when they are not oystering.[42] Unlike other fishing sectors harvesting wild animals as a common property resource, many oyster fishermen cultivate oysters over a number of years on leased water bottoms. Some oystermen of limited means are "sharecroppers" who work the oyster leases of oyster leaseholders and receive a portion of the harvest, work for wages for oyster processors who own their own leases, or work public beds only, while others have leases they harvest periodically when not working public areas.[43] Oyster harvesting is prominent in Plaquemines, Saint Bernard, Terrebonne, Calcasieu, and Cameron parishes, Louisiana; Pass Christian, Mississippi; and Bayou La Batre, Alabama. The oyster fishing community in Plaquemines is distinguished by a Croatian immigrant legacy and many oystermen in that parish, especially those operating large vessels full-time, are second- and third-generation Croatian fishermen. There is also a significant community of African-American and Creole oyster harvesters on the east bank of the Mississippi and in lower Plaquemines Parish. Cajun oystermen are numerous on the lower bayous of Terrebonne Parish. Across the Gulf, many hired oyster fishers working large leaseholders' boats are Hispanic.[44]

For generations, crab fishermen have harvested the blue swimming crab (*Callinectes sapidus*) from the bayous, rivers, and inlets of the region, but it was not until the 1980s that the blue crab industry became as substantial in economic value among the region's commercial fisheries as oysters and menhaden. The crab fishery is not subject to seasonal closures, so in addition to full-time crabbers, some shrimpers, oystermen and finfishermen pursue crabbing in their off seasons. Crab fishing is concentrated in Waveland and Bayou Caddy in Mississippi and Bayou La Batre in Alabama but is spread across most of Louisiana's coastal parishes. In 2010, licensed crabbers were concentrated in Terrebonne, Jefferson, and Saint Bernard parishes. Fishermen can get into crabbing with little capital investment, so the sector has attracted a considerable

[40] Austin et al. Vol II, pp. 23-24
[41] Austin et al. Vol II, p. 23
[42] Austin et al. Vol II, p. 25.
[43] Austin et al. Vol II, p. 24.
[44] Austin et al. Vol II, p. 25.

share of newcomers to commercial fishing, especially immigrants from Southeast Asia (Vietnamese, Lao, Cambodian, and Thai).[45]

Atlantic menhaden (*Brevoortia tyrannus*), also known as pogey, occupies the dominant place in the industrial Gulf of Mexico finfishery; both its volume and value are considerably higher than any of the other fisheries. The industry is highly concentrated, consisting of just two companies with four processing plants, three of them in Louisiana and one in Mississippi. In contrast to most other commercial fishermen in the Gulf, menhaden fishermen are wage laborers, part of a workforce that generally consists of at least 200 employees per menhaden plant during the harvest season.[46]

Groupers (Serranidae), snappers (Latjanidae) and tunas (Scombridae) are the other principal finfish species caught commercially in the Gulf of Mexico. Grouper come primarily from the west coast of Florida, snapper come mostly from Florida though significant catches occur in Louisiana and Texas, and tuna come primarily from Louisiana and Florida. Due to overfishing, red snapper harvests declined after 1970, leading to catch limits and gear restrictions for both commercial and recreational fishermen.[47]

Many commercial fishing jobs such as shucking oysters, picking crabs, and heading shrimp are repetitive, strenuous, seasonal, and poorly paid. Since the 1970s, processors in Louisiana, Alabama, and Mississippi have relied on Native American, African American, and Southeast Asian women and, most recently, Hispanic immigrants, some of them on H-2B (guestworker) visas.[48]

Gulf commercial fisheries generally grew in value, participation, and landings volume from 1945 to 1980. Profit margins – and the number of commercial fishermen – in the region's principal fisheries peaked at various points between the late 1970s and mid-1990s, depending on the fishery. Declining economic conditions are attributed to rising production costs (related to expenses from ice and groceries to parts and repairs, but most notably fuel), downward pressure on prices and shrinking market share due to increasing seafood imports, increased government regulations, and a number of destructive hurricanes, particularly Hurricanes Katrina and Rita in 2005 and Gustav and Ike in 2008. The Gulf shrimp and blue crab industries, especially, have been negatively impacted by less expensive imported shellfish. Efforts to counter the low-priced imports include anti-dumping tariffs and campaigns touting locally-caught seafood.[49]

The hurricanes of 2005 and 2008 were particularly devastating; Hurricanes Katrina and Rita were declared Commercial Fishery Resource Disasters. Many commercial fishing enterprises could not recover on their own given the scale of damages and their weak financial position

[45] Austin et al. Vol II, p. 25-26.
[46] Austin et al. Vol II, p. 26.
[47] Austin et al. Vol II, p. 27.
[48] Austin et al. Vol I, pp. 104, 142-143; Austin et al. Vol II, p. 25.
[49] Austin et al. Vol II, pp. 28-29.

before the storms stemming from low revenues and lack of sufficient insurance. In addition to the damages to their facilities, seafood processing plants struggled to find enough workers to get up and running again because of the significant coastal population loss.[50] Public assistance to the industry included federal grants and special loan programs through the Small Business Administration (SBA), new research programs, public and private oyster bed rehabilitation, and direct aid to qualifying fishermen, docks, and processors. Direct aid did not reach fishermen for several years due to delays in appropriating the money and setting up a distribution program in the states. For example, the Louisiana Department of Wildlife and Fisheries did not begin its disaster assistance program for Katrina and Rita until May 2008.[51]

In addition to its role as a commercial enterprise, fishing is also an important source of subsistence food and of recreation in the coastal communities of Louisiana, Mississippi, and Alabama.[52] Besides the men and women who rely on fishing as their primary source of income, many individuals trawl inshore, harvest oysters, and trap crabs to provide food for themselves and others in their social networks, as well as to sell for additional income while working another job.[53]

B. Offshore Oil and Gas

The oil and gas industry on the Gulf Coast began with the Spindletop, Texas gusher in January, 1901, spread across the salt domes of coastal Texas and Louisiana, moved from solid land across marshes and swamps and into bayous and lakes, and, by the 1930s, began moving offshore into the Gulf of Mexico. That movement was slowed by World War II, so it was not until after the war, during the late 1940s and 1950s, that offshore petroleum emerged as an *industry* in the region.[54] Since that time, thousands of wells have been drilled and some 5,500 platforms have been installed in the U.S. Gulf of Mexico. At the time of the explosion of the *Deepwater Horizon* drilling rig, more than 3,600 fixed petroleum structures were in place and producing oil and gas in the U.S. Gulf of Mexico in water depths ranging from a few to more than 8,000 feet and as far as 200 miles off of the coastlines of Texas, Louisiana, Mississippi, and Alabama.[55]

The offshore industry grew slowly at first, but by the 1960s it had evolved into a vast complex of companies, facilities, people, and infrastructure located predominantly in the Gulf Coast states, but which also increasingly extended into other parts of the United States and elsewhere around the world. Within the Gulf region, as the industry moved offshore, onshore companies modified their crews and equipment to work there and new companies formed to work in numerous sectors responsible for exploration, development (drilling), production, and transportation. The dispersed growth of the industry encouraged the formation of numerous

[50] Austin et al. Vol I, pp. 145-147; Austin et al. Vol II, p. 32.
[51] Austin et al. Vol II, pp. 31-32.
[52] Austin et al. Vol I, p. 192.
[53] Austin et al. Vol I, p. 104; Austin et al. Vol II, pp. 23, 100.
[54] Austin et al. Vol I, pp. 54-57; Austin et al. Vol II, p. 3.
[55] Austin et. al. Vol II, pp. 1, 3.

small, specialized local companies, some of which expanded to dominate particular industry sectors, at the same time it attracted large, integrated corporations to the region. A major downturn in oil prices in the 1980s significantly affected the offshore industry in the Gulf, leading to consolidation, the introduction of low cost technologies, elimination of jobs, and deepening of outsourcing.[56] To encourage industry expansion into deepwater, generally defined as deeper than 1,000 feet, the U.S. Outer Continental Shelf Deep Water Royalty Relief Act of 1995 relieved eligible offshore lessees from paying royalties on certain deepwater production.[57] The costs and challenges of deepwater operations gave majors, and consortia of majors, advantages over small companies. As the major energy companies turned their attention to deeper locations, many smaller independent producers acquired their shallow fields. Over the next decade and a half, the price of oil, supply and availability of drilling rigs, and level of investment in offshore development fluctuated.[58]

The offshore oil and gas industry employs tens of thousands of people at all skill levels, working in a wide range of environments and in a variety of shifts.[59] The industry faces periodic labor shortages when demand rises quickly and outstrips the number of available workers; rapid declines and resulting downsizing and layoffs force workers into other occupations. Mobility from one sector to another depends on the type of work, the skills and disposition of the employee, and the certification and licensing requirements of any particular job.[60] Drilling operations employ large numbers of people, from entry level workers who clean and paint and serve as general roustabouts, to riggers, crane operators, engineers, derrickmen, barge operators, drillers, and toolpushers. Drilling operations are supported by thousands of service companies which provide specialized personnel and equipment to help set up and maintain wells, move rigs from place to place, and solve problems when they arise. Production platforms employ from a few to several hundred people, depending on the size of the field and its configuration, and can include the offshore operations engineer, dynamic positioning operator, scaffolders, control room operators, catering crew, and maintenance and production technicians. Transportation companies directly employ pilots and drivers or lease trucks and operators in a specialized system designed to meet the needs of the offshore industry.[61]

The evolution of the industry and its movement offshore was fundamental in shaping the geography, economy, and social structure of the Gulf region, and particularly Louisiana and Texas, during the 20th century. The location and extent of the onshore footprint and impacts of offshore activity depend on a host of factors, from historical land use patterns to economic

[56] Austin et al. Vol I, p. 57; Austin et al. Vol II, p. 3.
[57] Austin et al. Vol I, p. 58. Shell drilled the first successful well in water deeper than 1,000 ft. in 1979, and five more projects were drilled in deepwater in the 1980s, but deepwater drilling really took off during the 1990s when 32 more deepwater projects were completed. The pace increased during the first decade of the 21st century, with 134 deepwater projects entering production. Austin et al. Vol II, p. 5 (footnote 1).
[58] Austin et al. Vol II, p. 5.
[59] Efforts to come up with reliable numbers of workers have failed due to the complex nature of the industry, encompassing operators and myriad contractors, some of whom work solely for the offshore oil and gas industry and others who work onshore as well, or for other industries.
[60] Austin et al. Vol I, pp. 57-58; Austin et al. Vol II, pp. 6-7.
[61] Austin et al. Vol II, pp. 6-7.

incentives offered to companies to establish facilities there. For example, Morgan City and Houma, Louisiana became recognized as fabrication centers and staging bases for the offshore rigs and platforms while outposts such as Grand Isle and Venice, Louisiana became regional hubs for offshore activities. As the industry became a global force in the latter half of the 20th century, efforts to meet its specialized human and technological needs have linked oil and gas provinces and companies from places as distant as Brazil, Angola, and the North Sea. As early as the 1970s, corporations and businesses which got their start in the Gulf of Mexico region expanded across the globe as they also began importing people and technologies – and attracting other companies – with origins in distant locations and shifts ranging from 14 days on followed by 14 off to 28 days on followed by 28 off make it possible for workers to travel long distances from their homes to their workplaces, resulting in an offshore workforce that is spread far beyond the coastal communities of the Gulf.[62] Many workers stay in coastal motels and eat in area restaurants before, and sometimes after, their offshore shifts.

The offshore oil and gas industry directly impacts state and local coffers through taxes, royalties, fees, salaries, and other money spent locally, and indirectly through the money spent by employees and by service companies which do business with oil and gas companies.[63] The industry permeates the region in ways not always visible. For example, many fishermen rely on seasonal employment in the industry, and supply companies modify their inventories to respond to industry needs. Households, businesses, and communities have attempted to adapt their economic strategies to the industry cycles. Thus, even as residents and community leaders have become reliant on the wages and taxes earned in the industry, many also rely on informal economic activities to buffer fluctuations in the number of jobs, or hours per week, available.[64]

The hurricanes of 2005 caused significant damage to rigs and platforms and a drop in production. The effects of the Great Recession, which began in late 2007, began to be reflected in oil prices by the end of 2008. Many Gulf Coast economies and businesses did not see the effects of the recession until 2009, when most of the post-hurricane work had been completed and falling oil prices led to lower levels of oil and gas activity.[65] By early 2010, demand for workers plummeted, and, though the region's unemployment rates had not climbed to the levels common elsewhere in the country, negative impacts on the region's workforce were evident.[66]

Despite the economic downturn, increasing Asian demand for petroleum and a desire to meet U.S. demand and reduce the nation's reliance on oil imports had led to expectations of increased offshore oil and gas activity in the Gulf of Mexico. By the end of 2009 and beginning of 2010, this had resulted in an increase in the number of drilling rigs working in the Gulf and a strong Central Gulf lease sale. At the end of March 2010, President Obama announced that he

[62] Austin et al. Vol II, p. 7.
[63] Austin et al. Vol II, p. 5.
[64] Austin et al. Vol. I, p. 102.
[65] Austin et al. Vol II, p. 6.
[66] Austin et al. Vol II, p. 7.

would lift congressional bans on offshore drilling off the Virginia coast and expand lease sales for oil and gas exploration along the Atlantic coast.[67]

C. Tourism

The tourism industry in the Gulf Coast region began in the 19th century and centered on coastal beaches and recreational fishing, important attractions for populations further inland. Mirroring nationwide trends, the number of visitors to many Gulf Coast communities began to expand considerably following World War II with the significant improvements in highways and transportation infrastructure and the proliferation of the automobile. From the 1970s and into the 1990s, further investments in transportation infrastructure and the extensive development of local, especially waterfront, real estate encouraged growth and established tourism as a significant part of the regional economy.[68] Following patterns prevalent in other parts of the United States, the industry experienced steady growth throughout the 1980s and 1990s. In Mississippi, this growth accelerated with the arrival of the first casino barges in 1991.[69]

Because the region serves a largely drive-in market, it was spared some of the economic consequences of the post-9/11 drop in air travel.[70] It did, however, suffer from the 2005 hurricanes that devastated much of the region. As the affected areas recovered, tourist activity resumed. Though the industry in the region felt the effects of the recession, especially as it affected people coming from outside the region, at the end of 2009 and the beginning of 2010 economic indicators were looking up.[71] Casinos, however, reported losses through the first quarter of 2010.[72]

Tourism is a significant employer in the region and contributes revenues to state coffers, though it is challenging to distinguish tourist-specific gains and losses.[73] Tourists travel to the region to fish, visit the beach, experience nature and environmental amenities, eat good food, attend local festivals and events, and go to casinos. Nature-based and environmental tourism are often linked to "cultural tourism," especially in southern Louisiana and elsewhere along the Gulf Coast where annual festivals and celebrations, such as Blessing of the Fleet ceremonies, food festivals featuring French and Cajun cuisine, and various music festivals integrate aspects of local landscape, traditional livelihoods, and food. These are among the most tangible manifestations of "local culture" and often attract large numbers of tourists; Louisiana alone hosts over 150 annual festivals. Key businesses in this industry, which also serve local recreational needs and business clients, include charter and recreational fishing businesses, hotels and motels, restaurants, souvenir shops, and casinos.[74]

[67] Austin et al. Vol II, p. 7-8, 96.
[68] Austin et al. Vol II, p. 70.
[69] Austin et al. Vol I, p. 163.
[70] Austin et al. Vol II, p. 68.
[71] Austin et al. Vol II, pp. 73-74.
[72] Austin et al. Vol II, p. 72.
[73] Austin et al. Vol II, pp. 68-69.
[74] Austin et al. Vol II, pp. 71-72.

Tourism exists in a tenuous relationship with both commercial fishing and the offshore oil and gas industry. Large-scale waterfront development – especially that associated with the expansion of the gaming industry along the Mississippi Gulf Coast but also efforts to establish marinas and fishing camps – has transformed beachfronts and other important local landscapes.[75] In Louisiana, Mississippi, and Alabama, efforts have been undertaken to preserve "working waterfronts." Because of the overlap in seasons, commercial fishermen and those involved in tourist-related enterprises such as charter fishing remain quite distinct. Indeed, regulations, designations of certain species (such as the popular redfish) as game fish, and competition for dock space have at times inflamed tensions among commercial, charter, and recreational fishermen.[76]

The storms of 2005 and 2008, and especially Hurricane Katrina, reshaped the tourism industry in the region. Restaurants and hotels which managed to open or reopen experienced a surge in business from relief workers and the reduction in competition. However, lack of sufficient lodging limited long distance tourism for several years; in 2010, the number of hotel rooms along the Mississippi Gulf Coast was still well below pre-Katrina figures. Some tourist enterprises, especially the majority of the casinos as well as some nationally franchised restaurants along the Mississippi Gulf Coast, rebuilt very soon after Katrina and quickly regained large portions of their market share. Other businesses with less capital, including many locally owned restaurants, hotels, bait shops, and small scale family attractions, struggled to rebuild or reopen. Specialized sectors such as charter boat fishing, which rely heavily on personal relationships with clients, had difficulties recovering some long standing customers following the storm. The post-Katrina upsurge in business came to an end around 2007-2008, coinciding with the start of the national recession and with the departure of many cleanup workers.[77]

The different histories of development, social and economic conditions, and experience with recent storms have influenced the nature and extent of the tourism industry's presence across coastal communities. Some areas focus overwhelmingly on particular forms of tourism, for example charter boat fishing, whereas others possess highly diversified tourism sectors incorporating a wide range of businesses, such as recreational fishing, gaming, and ecotourism. Furthermore, the relationships among various sectors of the tourism industry, as well as those among tourism and other local industries, are often quite disparate from one area to another.[78]

The Gulf tourism industry draws its workforce from local, regional, national, and international sources. Smaller retail businesses such as non-franchise restaurants and gift and souvenir shops generally employ local residents, as do many charter and recreational fishing enterprises. Historically, African Americans provided much of the labor needed to maintain and staff larger

[75] Austin et al. Vol I, pp. 158-159. 162-165; Austin et al. Vol II, p. 72.
[76] Austin et al. Vol II, pp. 31, 72.
[77] Austin et al. Vol I, p. 166; Austin et al. Vol II, pp. 73-74.
[78] Austin et al. Vol II, p. 73.

hotels and tourist resorts in the more populated areas. Over time, these businesses, along with nationally franchised retailers and casinos, have shifted to hiring large numbers of recent migrants and immigrants. The larger businesses, such as casinos and resort hotels, also employ international guestworkers to perform domestic cleaning and maintenance duties.[79]

D. Fabrication and Shipbuilding

Demand for fabrication and shipbuilding in the Gulf of Mexico region arises from all three of the industries described above, though commercial fishing and the offshore oil and gas industry have been the clear leaders; the recreational vessel construction and repair sectors have tended to be small and distinct from the other shipyard activity. In addition, the U.S. military spurred rapid expansion of shipbuilding capacity during both world wars and sustains a handful of private domestic facilities capable of meeting the complex construction and security requirements of naval warships and support vessels and several modest-sized shipyards which construct Coast Guard patrol vessels.[80]

Physical geography (including proximity to coastal waterways of sufficient depth) and economic incentives, such as local and state tax breaks and support for workforce training activities, have led companies to favor some locations over others (see Figure 2 for a comparison of the distribution of fabrication and shipyards for south Lafourche and Terrebonne parishes, LA with those of south Mobile County, AL). A substantial portion of the newbuild activity in U.S. shipyards is buoyed by the provisions of the Merchant Marine Act of 1920 (the Jones Act), which requires that goods shipped between U.S destinations, including oil and gas rigs and platforms, be transported on U.S. built and manned vessels.[81] Thus, even before the oil and gas industry moved offshore, Gulf Coast shipyards began constructing the barges, tugboats, and oil tankers needed for transporting petroleum and petroleum products through the region's waterways.[82] Then, starting in the 1950s, the offshore oil industry in the Gulf provided a significant new customer base for the region's shipyards when military-focused yards began to build offshore service vessels (OSVs) and structures to weather slow periods. Subsequently, some existing yards diversified to serve the needs of the offshore oil industry while others opened specifically to cater to this industry.[83]

[79] Austin et al. Vol II, p. 72.
[80] Austin et al. Vol II, p. 93, 94.
[81] Austin et al. Vol II, p. 93.
[82] Austin et al. Vol II, p. 3.
[83] Austin et al. Vol I, p. 140-141; Austin et al. Vol II, p. 94.

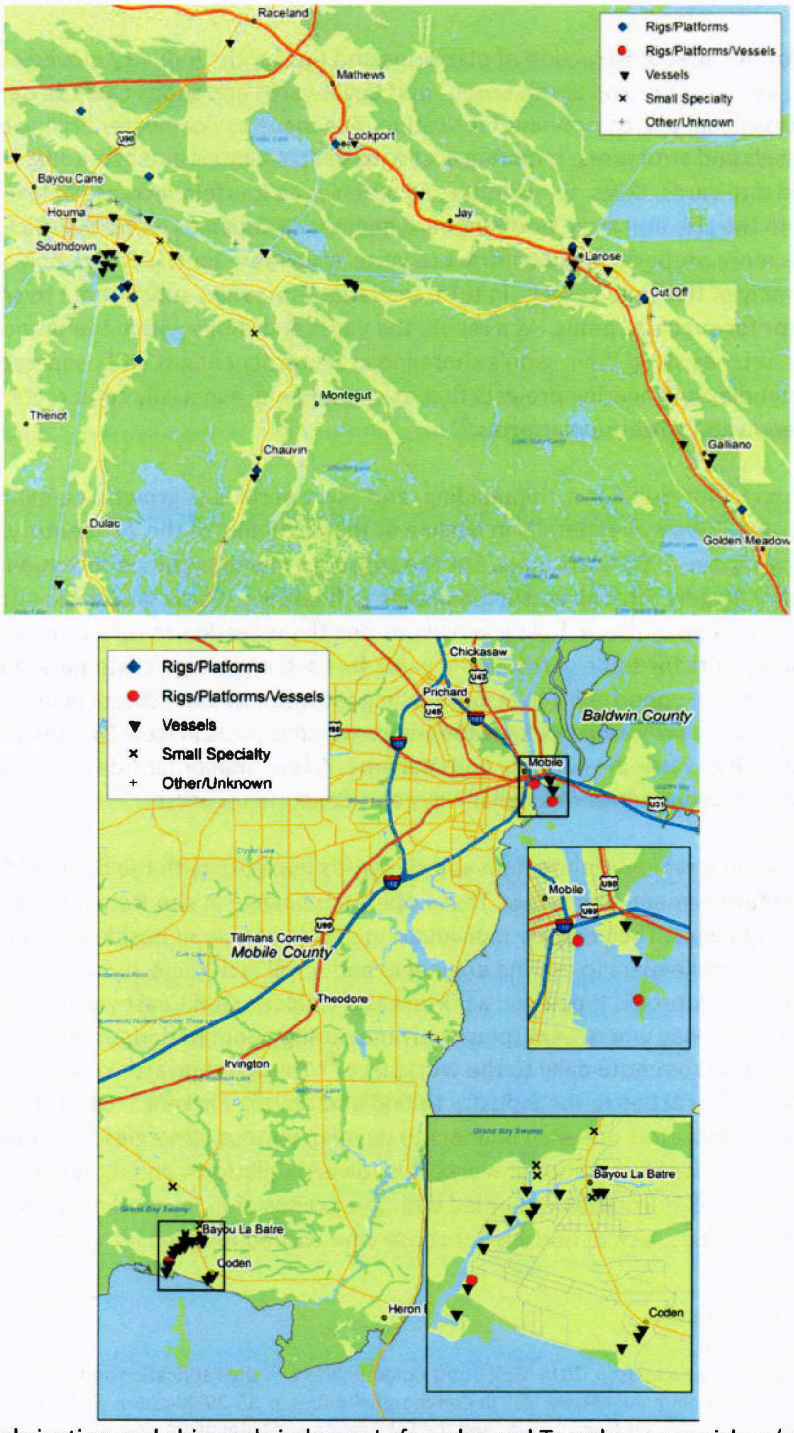


Figure 2. Fabrication and shipyards in lower Lafourche and Terrebonne parishes (above) and South Mobile County (below). Source: Austin and Woodson 2014:29, 118.

As contracts for the new construction of platforms and rigs for the industry moved overseas to locations such as Singapore and South Korea, Gulf Coast yards and shops came to depend more on repair, refurbishing, and component fabrication. The move to deepwater drilling drove up the size of vessels and structures, requiring access to deep channels and exceeding the capacity of small to mid-size yards. OSVs, for example, experienced a fourfold increase in length and an increase in both the size and number of onboard engines. Companies without sufficient space had to acquire more property or subcontract to yards elsewhere for the fabrication and even modular assembly of the large vessels. In turn, the large companies subcontract to smaller yards and shops for specialty items. As a result, the yards and shops within the fabrication corridor that stretches along the region's shoreline are interdependent and cooperate to produce the complex engineering projects that are in demand, especially construction of large vessels and deepwater offshore platforms.[84]

Despite the support for Gulf Coast shipbuilding, and short periods of growth, demand for fishing vessels and OSVs was generally in decline at the beginning of the 21st century. Activity picked up following the 2005 hurricanes, but the subsequent and enduring recession slowed newbuild activity, largely through restricted access to financing. Some vessel operators used the slowdown in oil demand and drilling activity during the recession to refurbish existing fleets, generating work for some yards. Some yards focused on foreign customers, and several existing yards took the opportunity to acquire failing facilities. Military shipbuilding continued through the recession, providing work for the major warship yards in New Orleans and Pascagoula, as well as yards in Louisiana and Alabama. A few smaller facilities received lucrative contracts for constructing series of smaller Navy and Coast Guard vessels.[85]

Labor demands in the region's fabrication and shipyards fluctuate with the demand for construction, refurbishment, and repair. These operations range in size from a few people to thousands of employees. They employ individuals in a wide variety of positions, from accountants and bookkeepers to marine engineers and naval architects, but approximately two-thirds of the workforce is employed as fitters and welders. Gulf Coast yards operate on standard four- or five-day workweeks (plus overtime during boom periods), and generally employ workers who commute daily to the workplace.[86] Though shipyards continue to rely on social networks and local ties to the industry to find and recruit workers,[87] labor shortages have forced Gulf Coast fabricators and ship builders to develop various strategies for finding workers. For example, the increased demand for workers involved in platform and rig repair which resulted from the 2005 hurricanes – coupled with the exodus of many workers from destroyed homes and communities, lack of housing for those who wished to come into the region, and

[84] Austin et al. Vol II, pp. 64-65.
[85] Austin et al. Vol II, p. 95.
[86] Austin, Diane, and Drexel Woodson. 2014. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Vol. II: Community Profiles. p. 15-20. McGuire, Tom, Diane Austin, and Drexel Woodson. 2014. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Vol. III: Technical Papers, pp. 20, 23.
[87] Austin et al. Vol I, p. 138.

competition with the rebuilding activities along the Gulf Coast – led fabricators and ship builders to turn to international contractors and guestworker programs.[88] Those arrangements had ended by 2009 and the increase in drilling activity in the Gulf, combined with President Obama's March announcement of the plan to open new areas for oil and gas exploration and development, generated optimism among the region's fabricators and shipbuilders.[89]

Throughout the region and across its major industries, people were looking forward to 2010 as one of recovery and reported having entertained high hopes for 2010 as the "come back year" for their communities and the coast.[90]

Part Two. The Unfolding Disaster

The *Deepwater Horizon* disaster officially began with the blowout of the Macondo Well and continued throughout the period covered by this report; many of its harms are ongoing.[91] The amount of oil it released into the Gulf was unprecedented in the history of the Gulf of Mexico offshore oil and gas industry. In this section, following a brief summary of the disaster and its effects,[92] I describe the economic, health and social well-being, and other sociocultural effects of the disaster as they were experienced across the region and at community, household and small business levels.

The most immediate harms of the *Deepwater Horizon* disaster were the deaths and injuries to crew members from the *Deepwater Horizon* rig and the oil gushing from the damaged well. Response to the disaster required incident command centers, vessels, staging areas, decontamination facilities, hurricane trackers, and much more. Because of the nature of the disaster and the legal and liability concerns surrounding it, as well as the existing networks of companies and contractors with which BP was involved, restrictions were placed on who could help, where, when, and how. The impacts were heightened by the fact that the region was still recovering from recent, severe hurricanes and flooding. In short, this disaster, laid upon those prior experiences, layered new trauma over a still-recovering Gulf region and created a new set of actors, resources, and responses.

Although thousands of wells have been drilled in the Gulf of Mexico, in 2010 the *Deepwater Horizon* was one of only 33 rigs operating there in water greater than 500 feet deep.[93] Consequently, despite the vast knowledge and experience with the offshore petroleum industry in the region, there was much uncertainty about the blowout and what to do about it. There

[88] McGuire, Tom, Diane Austin, and Drexel Woodson. 2014. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Vol. III: Technical Papers, pp. 28-30, 33-46.
[89] Austin et al. Vol II, pp. 95-96.
[90] Austin et al. Vol II, pp. 32, 74, 96.
[91] Austin et al. Vol I, pp. 25-38.
[92] The information in this summary is described in greater details in Sections I, II, and III of Part Two of this report. Citations are only included in the summary if the information does not appear elsewhere.
[93] Department of Interior. 2010. Q'S AND A'S: New Deepwater Drilling Suspensions. July 12. Accessed online at: http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=38349.

was also uncertainty about the amount of oil being released into the Gulf; how to best capture, disperse, or get rid of the oil; and the effects of the oil and dispersants on the Gulf ecosystem, the seafood and the people who eat it, and the people who inhaled or otherwise came in contact with them.

As the disaster continued, some questions were answered and many more emerged. How long would the oil remain in the environment? Which fishing areas would be closed and for how long? What would be the effects of a major storm in the Gulf? High levels of uncertainty continued throughout the five months between the blowout and the permanent sealing of the well and as oil was found in various places in the Gulf and continued to come ashore, uncertainty that persists as oil and tar mats continue to surface. In short, many residents and leaders experienced the *Deepwater Horizon* disaster as more debilitating, and the cause of greater stress and anxiety, than a hurricane because it was unknown, its effects continue to emerge, and response efforts created more effects.[94]

Coming less than five years after Hurricane Katrina, the disaster – and the region – again became an immediate focus of national and international media attention. That attention created economic impacts as individuals and companies seeking work in the cleanup flocked to the region while potential tourists stayed away and consumers avoided Gulf seafood. The attention created negative sociocultural impacts as residents and community leaders faced criticism for the role they played in the petroleum industry in the region. Especially in southern Louisiana, people in the communities that had given birth to the offshore oil and gas industry[95] grappled with their close relationship to this industry as they, too, watched millions of gallons of oil discharged from the well into the Gulf of Mexico.

The disaster began just prior to the 2010 hurricane season and oil continued to spill into the Gulf through much of the season, leaving open the possibility that its effects could get worse at any point should a hurricane occur, although it was unknown if and where those effects would occur. Confronting the ongoing spectacle of oil gushing into the Gulf and then coming ashore where it coated marshes and wildlife, and fearing the more rapid and widespread movement of oil ashore in the event of a major storm, residents and community leaders remained on edge through the 2010 hurricane season.[96] Their fear was re-ignited the following year as hurricane season approached, and many coastal residents remain concerned that the oil and tar still in the Gulf will be brought to shore during the next major storm.

And, unlike hurricane response, which creates lots of opportunities for locals and sympathetic outsiders to organize themselves to clean up and repair damage, and at multiple levels ranging from the household or neighborhood to the entire community, the response to the spill was almost completely top down. Locally-organized efforts to install boom were only partially

[94] Austin et al. Vol II, p. 195.
[95] The U.S. Gulf of Mexico has been central to the history and development of the global offshore petroleum industry since 1947 when the first successful well was completed out of sight of land off the coast of Morgan City, Louisiana.
[96] Austin et al. Vol I, pp. 3-4, 62. Austin et al. Vol II, pp. 123, 194.

supported and individuals were expressly prohibited from participating in other activities, such as cleaning oiled birds and mammals. Community-based organizations struggled to meet the needs of non-locals who had come looking for work and became stranded without resources at the same time they tried to help locals address mounting economic and social problems. They also endeavored to figure out what to do with volunteers due to constraints regarding who could work on what aspect of the oil spill cleanup.

A lack of information – and misinformation coming from BP[97] – exacerbated stress and increased fear and confusion about the spill and how it was being handled. As fishing areas were opened, and state and regional officials worked to emphasize recovery in order to calm fears of contaminated seafood and attract tourists back to the region, those communities where oil continued to wash ashore and where fishing areas remained closed tried to make others aware of their ongoing plight. Many community leaders were confused about the actual and potential degree of contamination, so they did not have answers to give to their constituents.

Each individual, household, organization, and community was forced to sort out for itself who and what to believe, and to adopt a perspective and then justify or legitimize it. Questions about whether or not to eat seafood or invest in a local business contributed to conflict and divisiveness at every level. This authority gap also opened the doors to many new people and perspectives. During the first year or so after the explosion, the cacophony of voices coming from every direction – from petroleum and seafood suppliers to international environmental organizations and attorneys – was overwhelming for many and added to the negative effects of this event.

Across the region, the impacts from the rig explosion, deaths and injuries, and oil spill affected everyone. In addition, particular industries (especially fishing, oil and gas, shipbuilding and fabrication) and organizations (especially local government offices and NGOs focused on environment/ecology or social services) experienced negative and often severe effects over long periods of time. Likewise, the responses to the blowout and disaster mitigated effects for some and exacerbated them for others.

Communities dominated by fishing, oil and gas, or fabrication and shipbuilding, or any combination of these, were particularly hard hit by the disaster because all these were affected at the same time. For example, virtually everyone in the area around Pointe a la Hache, LA, on the eastbank of the Mississippi River, is dependent on the commercial oyster and shrimp industries in some way. That community suffered serious harm from the spill, where oil entered nearby bayous, bays, and estuaries. To make matters worse, few locals were hired in the disaster response and, because the small-scale oyster fishing and sharecropping characteristic of the African American oystermen is carried out cooperatively, individuals had a hard time producing trip tickets and other documentation for compensation.[98]

[97] United States' Proposed Findings of Fact for Quantification Segment of the Phase Two Trial.
[98] Austin et al. Vol I, pp. 191-192.

In another example, the city of Bayou La Batre, AL and the unincorporated communities of Coden and Irvington are small, rural communities largely economically dependent on a mix of commercial fishing, seafood processing, and shipbuilding and marine fabrication, and so were severely harmed by the impacts of the spill. While few physical impacts from the oil spill were reported in the local area, fishermen, seafood processors and their employees, offshore service vessel companies and captains, and shipyards all reported losses associated with the disaster..[99]

At the small business and household level, the effects of the disaster ranged from minimal to devastating. The differences are explained by the particular configurations of livelihood/business strategies, support networks, and services to which the businesses and households had access and whether they were part of a highly regulated or informal industry (e.g., salaried employees, day laborers, shop owners). Thus, while some businesses and households were able to weather the disaster, businesses and households which already had government loans to repay or had limited access to insurance or government programs to assist in their recovery from Hurricanes Katrina, Rita, Gustav, and/or Ike were already suffering and were especially hard hit by the *Deepwater Horizon* disaster. The differences are also explained by the programs and services with which the households and businesses became involved during the disaster and the nature of the formal records they could make available in those processes. Those businesses and households which could not access programs and services during the disaster and did not have the sort of formal records that could be easily accessed in claims processes were very negatively affected. [100]

I. Economic and Material Well-Being

The economic effects of this disaster have received considerable attention and been the focus of lawsuits, settlements, and claims processes. The disaster began in the late spring, when activity in the offshore petroleum industry was picking up for the season and just prior to the start of the fishing and tourist seasons. Consequently, the region's three primary industries were affected immediately and simultaneously, harming in turn the many people, businesses, and communities that depend on those industries. In some small communities, such as Bayou La Batre, AL and Dulac, LA, the effects of the disaster were almost instantly visible while in others, such as Biloxi, MS, gaming and military enterprises made the effects harder to parse.

As noted above, Gulf coast residents and business owners in fishing, oilfield, tourism, and shipbuilding, and the businesses and organizations that depend on those who had reinvested and rebuilt to remain afloat through the turbulent 2000s, believed 2010 was finally going to be their chance for recovery and renewal. In commercial fisheries, for example, seafood prices were rising modestly, fuel costs had moderated considerably the year prior, and disaster recovery and tariff monies were helping some businesses shore up their firms or make new

[99] Austin et al. Vol I, pp. 147-151, 231.
[100] Austin et al. Vol I, pp. 62, 185-185, 230-231. Austin et al. Vol II, pp. 11-12, 76-77, 152-154.

investments.[101] Weary but hopeful, many fishermen and small businesses went into the season just out of debt, or with yet unpaid small business loans, vessel or building repair expenses to pay off, and waiting for customers.[102]

At the individual and household level, early impacts of the disaster were influenced by the livelihood strategies in place prior to the explosion; flexibility of employers and employees in downsizing and in moving from one sector or location to another; age of the household members; access to education and training opportunities; and the knowledge, skills, resources, and social networks that could be mobilized to participate in the response efforts or to seek compensation for loss. Many coastal residents are part of dense social networks and combine formal and informal work across sectors and industries. Their ability to take advantage of resources coming into their communities depended in large part on the particular configuration of livelihood strategies in which they and other members of their networks participated.[103]

A. Commercial Fishing

The most obvious economic damage of the oil gushing into the Gulf of Mexico relates to fishing and seafood. When it came to harvesting, processing, marketing, and consuming seafood, the presence of oil in the ecosystem – and even the threat of oil – caused direct and severe harms. These effects included closure of fishing areas; reduced catches of shrimp, blue crab, and oysters in the region; fishermen's reports of oil in their nets; refusal of distributors and customers to buy locally caught seafood; and signs in restaurant and grocery store windows announcing that seafood came from outside the Gulf.[104] Many fishermen went to work for BP contractors in the cleanup, others waited out the season and sought payments from BP, and still others tried to go fishing but were frequently moved around by shifting closed areas, fined by fisheries agents if they wandered over the line, thrown into unfamiliar but open waters where they competed with other remaining fishermen for space and catch, and stymied to find open seafood dealers who had not shut down for lack of product or willing buyers for Gulf seafood.[105]

The Gulf of Mexico is a very large body of water. Still, the perception that the oil was – or could be – everywhere stemmed from lack of knowledge of currents and how oil would move through it, the potential for storms to disrupt those processes, and global media and communication which raised the general awareness of the disaster and highlighted concerns about contaminated beaches and other negative effects but paid little attention to specifics.[106] Concerns about contamination of habitats and seafood were extensive; expectations of a strong 2010 season were quashed by fears of contaminated Gulf product. The efforts to reduce

[101] Austin et. al. Vol II, p. 32.
[102] Austin et. al. Vol I, p. 230. Austin et al. Vol II, pp. 12, 32, 49.
[103] Austin et al. Vol I, pp. 90-122. Austin et al. Vol II, pp. 172-174, 181-184.
[104] Austin et al. Vol II, pp. 33-46.
[105] Austin et al. Vol I, pp. 22-23, 147-148. Austin et al. Vol II, pp. 33-34.
[106] Austin et al. Vol II, pp. 74-75.

or avoid contamination, such as fishing closures and diversions, created confusion, increased competition in areas that were still open, and negatively affected catch.[107]

Louisiana's governor declared a state of emergency on April 29, and the following day he ordered an extraordinary opening of freshwater diversions from the Mississippi River in an attempt to prevent the influx of oil into coastal marshes. The public oyster beds in Louisiana and Mississippi were closed to harvesting, and when they reopened in November 2010 there was very little product to harvest.[108]

Figure 3. Oyster sign covered with empty burlap sack, a signal that the proprietor has no oysters, Lafourche Parish, LA. Photo: Diane Austin, February 2011.

Also on April 30, Louisiana's Department of Wildlife and Fisheries issued the first fisheries closure in the Gulf, covering waters east of the Mississippi River as surface oil slicks approached that part of Louisiana's shoreline. Federal fishery closures totaling 3% of federal Gulf waters normally open to fishing began on May 2 and would expand to 37% of the area one month later. Fisheries closures would also be declared in all or portions of Mississippi, Alabama, and Florida state waters during the summer of 2010.[109] Federal and state closures fluctuated with the movement of oil, making for constant frustration and confusion among commercial fishermen; in Louisiana alone, no less than 55 separate fishing closures, modifications, amendments, re-openings, overturned re-openings, re-closures, and final re-openings were issued between April 29, 2010 and April 26, 2011, most of them between May and August of 2010.[110] Crabbers lost not only the opportunity to keep fishing, but those who had traps in the water in an area when it was declared off-limits were also prevented from collecting their traps,

[107] Austin et al. Vol I, pp. 23, 147-148, 171-172, 253. Austin et al. Vol II, pp. 33-35. Upton, Harold F. 2011. The Deepwater Horizon Oil Spill and the Gulf of Mexico Fishing Industry. Congressional Research Service. February 17, pp. 3-7.
[108] Austin et al. Vol II, pp. 33, 40.
[109] Austin et al. Vol II, p. 33.
[110] Austin et al. Vol I, pp. 26-34; Austin et al. Vol II, pp. 33-35.

which prevented them from trying to crab elsewhere.[111] In mid-July, Louisiana's governor announced that more than 50 percent of near-shore Louisiana waters were closed to commercial and recreational fishing.[112]

The Vessels of Opportunity (VOO) program was announced by the Louisiana governor on April 29, one week after the rig sank and reports of oil leaking into the Gulf were made public. The program was designed to address the economic problems associated with fishing closures at the height of fishing season and to improve public relations. Fishermen who entered the program attended a training session and signed agreements obligating their vessels to the program for specified periods of time. For fishermen, especially given the uncertainties surrounding the location and duration of fisheries closures and the amount of work they would get in the VOO program, as well as questions that began to arise about the health effects of exposure to oil and dispersants (see Section II Health and Social Well-Being below), the decision about whether to enter the program was a difficult one. The anticipated short-term nature of the cleanup work, and the concern that their vessels nevertheless would be obligated to the VOO program for long periods of time and unable to return to fishing, led many companies and vessel owners to forego participation in the program.[113]

Figure 4. Shrimp boat carrying boom, Terrebonne Parish, LA. Photo: Diane Austin, June 2010.

[111] Austin et al. Vol II, pp. 34-35.
[112] Jindal, Bobby. 2010. Gov. Jindal Announces "Agenda for Revitalizing Coastal Louisiana." July 14. Accessed online at http://votesmart.org/public-statement/531613/gov-jindal-announces-agenda-for-revitalizing-coastal-louisiana#.U97mfJy9bw0.
[113] Austin et al. Vol II, pp. 33-35, 40.

The VOO program helped many fishermen, but problems with its requirements, management, and inconsistencies plagued it from the start.[114] A very common complaint voiced by those involved in the program concerned the unpredictability and sporadic nature of their employment, with many being put on "stand-by" for varying periods of time both prior to and after having been hired, and then having their employment terminated with little warning.[115] Some who entered the program expressed frustration at spending their time driving around in their boats watching the boom they were laying get pushed around by the waves and questioning whether it would make any difference if the oil were to approach.[116] Boat owners and others witnessed some vessels returning to local waters after participating in the cleanup, raising concerns about contamination of vessels, and the lack of appropriate decontamination facilities and processes.[117] BP officially halted the VOO program in Florida, Alabama, and Mississippi on September 16, 2010, but continued on with the program in certain areas of Louisiana, including Plaquemines and Jefferson parishes. Cleanup activities supported some local businesses, especially those frequented by cleanup workers, but they offered little to retailers in the broader Gulf Coast region because their equipment and supply needs were supplied primarily through outside contractors.[118]

The VOO program affected many who did not participate in it as well. The program was aimed at fishermen, and it was successful in taking many fishermen out of fishing, especially during the summer of 2010. However, even where it helped fishermen put money into their pockets, the program did nothing for the docks, processors, distributors, and others in the seafood industry who were directly affected by the loss of catch but did not have vessels to enroll in the program. Thus, the economic effects associated with oil in the Gulf quickly extended across the region, affecting much more than fishermen.[119] Some seafood processors suffered huge losses. Other processors, and restaurants, switched to accepting imports, especially for shrimp, creating local tensions and fears that it would be difficult to reestablish the place of local seafood in the industry.[120] Also, despite its initial purpose of aiding fishermen, the VOO program also enrolled boats belonging to non-fishermen, increasing local discord.[121]

A direct consequence of the restrictions on fishing was an increase in the price of local seafood. At the same time, due to perceptions that all seafood coming from the Gulf would be contaminated, fishermen and distributors who had seafood had a hard time selling it, further dissuading the fishermen from going out, and creating a downward spiral. Although efforts to test seafood and establish its safety began in late May 2010, concerns about the safety of Gulf seafood persist even today, as do concerns about the effects of the oil on fish populations in

[114] Austin et al. Vol I, pp. 23-24; Austin et al. Vol II, p. 40.
[115] Austin et al. Vol I, p. 229. Austin et al. Vol II, p. 77.
[116] Austin et al. Vol II, p. 9.
[117] Austin et al. Vol I, pp. 227, 229. Austin et al. Vol II, p. 40.
[118] Austin et al. Vol I, pp. 170-171, 184-185. Austin et al. Vol II, pp. 77, 112.
[119] Austin et al. Vol I, pp. 147-148; Austin et al. Vol II, pp. 36, 48-49.
[120] Austin et al. Vol II, pp. 49-50.
[121] Austin et al. Vol I, pp. 170-171, 185, 253.

the future.[122] These concerns have been particularly damaging to pre-disaster efforts to create a niche market for Gulf seafood as "local" and "wild caught" in order to address problems in the industry stemming from foreign imports.

Figure 5. Oiled Oysters June 13, 2010 Photo: N5G037-000219

B. Offshore Oil and Gas

The *Deepwater Horizon* disaster caused both immediate and longer-term economic harms to companies and personnel in the oil and gas industry. In the immediate aftermath of the explosion, access to platforms near the accident site was restricted, affecting production there and putting some individuals who worked on those platforms out of work temporarily. From the time of the explosion and throughout the disaster while deepwater drilling was halted in the Gulf, many companies sought to avert layoffs by cutting back on workers' hours or reassigning workers to other locations or jobs. Yet, despite these efforts, many offshore employees lost wages, especially those who worked for the service companies that supported offshore drilling. Hourly employees who were used to making most of their income through overtime pay saw significant cuts to their weekly wages. On-call workers such as commercial divers were not laid off but were called out rarely, if at all. The potential for being laid off remained high, contributing to ongoing stress and a reluctance of many workers to speak out about the disaster or its effects. And, divers, mechanics, and service company employees had few options for making up their lower or lost wages.[123]

[122] Austin et al. Vol I, pp. 147-148, 171, 199. Austin et al. Vol II, pp. 37-39, 51, 75. See also Upton, Harold F. 2011. The Deepwater Horizon Oil Spill and the Gulf of Mexico Fishing Industry. Congressional Research Service. February 17, pp. 3-7

[123] Austin et al. Vol I, pp. 228, 230; Austin et al. Vol II, pp. 9-12.

In addition to the immediate consequences and the loss of public confidence stemming from the disaster, the offshore industry was affected by two policy actions taken to respond to the Macondo blowout: (1) the moratorium on drilling in more than 500 feet of water in the Gulf that was ordered May 27, revoked by a federal judge, and then followed by a suspension of all deepwater drilling that was issued in July and kept in effect until October 12; and (2) the implementation of new safety and environmental standards beginning June 8, which significantly slowed the issuance of permits even for drilling in shallow water. The moratorium directly affected operators on deepwater leases in the Gulf of Mexico.[124] As of September 5, 2011, operations in the Gulf had commenced on both manned platforms and rigs, but production had not reached pre-disaster levels.

Energy companies operating in the Gulf responded to the moratorium and suspension by terminating rig contracts or using rigs to continue completion, workover, and other non-drilling activities on existing wells. Some of the rigs remained in the Gulf but were idled, leading to the removal of crews and equipment. Drilling companies tried to renegotiate leases at lower rates to keep rigs under contract, sought work elsewhere, and reduced their employees' hours. Though fewer than a quarter of the affected rigs left the Gulf, the withdrawal of some rigs, along with the threat that others would leave, led to continued speculation and concern through the end of 2010.[125]

Citing a shortage of vessels, concerns about lost income, and the shift of regulators' attention during the summer of 2010, many operators suspended or reduced their efforts to decommission wells and platforms in the Gulf, which exacerbated the economic effects on companies specializing in explosives, fabrication yards, barge companies, commercial divers, and others that rely on the fairly predictable flow of work associated with decommissioning of platforms no longer in use in the Gulf.[126]

The moratorium, drilling suspension, slowdown in the issuance of permits, and response of offshore operators to these events had differential effects on workers, companies, and communities. As noted above, those working in production were affected little, if at all, as their platforms remained at, or quickly returned to, normal levels of operation. Those working directly for drilling companies, or for the service companies involved in drilling operations, saw an immediate drop in work, which was still not at pre-disaster levels a year later.[127] Likewise, those involved in decommissioning experienced a noticeable decline in available work, which also had not returned to pre-disaster levels the following year.[128] Companies that had already opened offices outside of the region were better able to shift equipment and employees than those who had not. Communities with significant concentrations of companies and workers

[124] Austin et al. Vol II, pp. 9-10.
[125] Austin et al. Vol II, pp. 9-10.
[126] Austin et al. Vol II, p. 12.
[127] Austin et al. Vol I, p. 229. Austin et al. Vol II, pp. 13-16.
[128] Austin et al. Vol II, p. 12.

involved in the affected sectors faced greater economic problems – from lost wages and taxes – than those that were not.[129]

Despite the effects, offshore oil and gas industry employees were not initially included in economic reparations. As the disaster continued, state and local officials expressed concern that companies that had held onto workers during its first months would start letting them go. On July 30, 2010, at the request of President Barack Obama, BP established the Rig Worker Assistance Fund, which the company limited to people who worked on one of the 33 deepwater rigs operating in the Gulf of Mexico at the time of the spill.[130] BP determined that rig workers would be eligible for grants based on financial hardship determined by factors such as lost wages and expenses. The program accepted applications during the month of September 2010, but despite estimates that up to 9,000 people worked on deepwater rigs on the target date, fewer than 800 individuals applied and fewer than 350 received compensation from the first round of applications.[131] Fund managers received criticism that the time period for submitting claims was too short and that the funds were too narrowly targeted, overlooking an estimated 25,000 to 35,000 workers who were not working on the rigs but were directly supporting them by providing transportation to and from shore and deliveries of food, equipment, and materials. In response, they extended the deadline for applications and expanded eligibility to include anyone whose work involved supplying the rigs. Even then, only a fraction of the money in the fund was spent on rig workers.[132]

The failure to initially acknowledge the effects of the disaster on offshore workers – and the limited and hesitant support for workers and companies for more than three months afterwards – meant that many of those affected were unable to receive help. Small and medium service companies connected to the petroleum industry were generally hit hard, with the effects linked to the size and function of the equipment they provided or serviced. Such businesses had little access to external resources; those still paying back loans used for post-hurricane recovery were unable to put up collateral for more loans, faced serious consequences if they could not pay off those loans due to this disaster, or were reluctant to go into more debt.[133] Larger companies operating in national and international markets had more resources upon which to draw and were able to shift their workforce to other locations, disrupting the lives of those forced to move and raising concern in some sectors that those workers would not

[129] Austin et al. Vol I, pp. 149, 229; Austin et al. Vol II, pp. 9-12, 13-16.
[130] Austin et al. Vol I, pp. 29-31. Austin et al. Vol II, p. 11.
[131] Austin et al. Vol I, p. 11.
[132] Austin et al. Vol II, pp. 11-12, 15. The reasons that oilfield workers did not receive assistance were complex. These include BP's narrow interpretation of affected oilfield workers; many individuals out of work at the time of the explosion would have gotten work as the level of offshore activity picked up in the summer but were unable to do so when drilling was halted, which meant that they could not demonstrate the "lost" income necessary to qualify for compensation. Also, in many coastal communities the stigma attached to seeking assistance is particularly strong among oilfield workers. See Austin, Diane E., and Thomas R. McGuire. 2002. Social and Economic Impacts of Outer Continental Shelf Activities on Individuals and Families: Volume I: Final Report. OCS Study MMS 2002-022. New Orleans: U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, pp. 124-128.
[133] Austin et al. Vol II, pp. 98-100, 104-117.

return to the Gulf when activity returned to pre-disaster levels, raising uncertainty for businesses that such changes would exacerbate labor shortages in those sectors when drilling resumed. As a result of the variability among companies and the number of strategies they employed, neither unemployment statistics nor requests for compensation reflected the early impacts of the slowdown. Many of the workers who were struggling the most were known only to proprietors of loan companies and pawn shops.[134]

Workers in part-time and temporary positions were particularly vulnerable during this time. Many of these individuals were from the region, but an almost immediate effect of the spill was an increase in the flow of people looking for cleanup work, often with few or no resources to support them until they found a job. Some unemployed workers became involved in the cleanup efforts, but many of those in the most precarious positions were the least integrated into relevant social networks and unlikely to get work. Throughout the fall, and continuing through the spring of 2011, social service providers, pastors, and others noted that among the people they were serving at homeless shelters and in meal programs were those who had come looking for work after the spill and did not have sufficient resources to return to the communities from which they had come.[135] Another particular concern of community leaders and social service providers was that local workers who typically alternated between oil industry-related employment and fishing had nowhere to turn, since both industries were affected by the spill.[136]

Because of the mobility of workers in the seafood and oil and gas industries, the disaster affected people living outside the region. The fishing closures affected fishermen who normally fished in the closed areas, both those near the closures and from far away.[137] They also impacted fishermen from areas unaffected by oil or closures who had to compete with fishermen who had moved into those waters from affected areas.[138] Likewise, the reduction in drilling activity hurt workers who regularly commuted into the region from elsewhere in the coastal states and beyond. Within the region, the loss of those workers directly affected the motels and other establishments with which their companies had contracts as well as the myriad businesses they patronized on their way to and from their jobs.[139]

The monetary inputs that individuals and companies received in exchange for participation in cleanup efforts and payment of initial emergency claims helped reduce some of the immediate economic effects of the disaster for some people. However, throughout 2011 many individuals and groups experienced serious harms that went uncompensated. The effects included the late winter and early spring struggles of individuals and businesses that had not made enough money during 2010 to weather the slow season and prepare for the late spring/summer season. They also included the challenges facing shrimpers who caught little during the May

[134] Austin et al. Vol II, pp. 15-16, 22.
[135] Austin et al. Vol II, p. 13.
[136] Austin et al. Vol I, pp. 229-230, 253-254. Austin et al. Vol II, p. 15.
[137] Austin et al. Vol II, p. 35.
[138] Austin et al. Vol II, p. 45.
[139] Austin et al. Vol I, p. 228. Austin et al. Vol II, pp. 14-15.

and August seasons, or could not get a good price for what they did catch, and oilfield workers who had been laid off or whose hours had been cut back and had not been restored.[140]

C. Tourism

The Gulf coast tourism industry suffered from the effects of oil on the waters, wetlands, beaches, marine life, and seafood, whether they were located in directly impacted areas or victims by association. The effects were particularly pronounced because the spill had occurred at the onset of the summer season, the most important time for tourism along the Gulf Coast. Beach closures continued in some places in southern Louisiana throughout 2010 and even 2011 as oil reappeared following storms. Both the direct physical impacts of the spill as well as the more widespread effects of extended media coverage on public perceptions of the region had important consequences for many associated with the tourism industry.

Immediate impacts began even before oil reached shore as fishing areas and beaches were closed and advisories were issued. Across the region, businesses serving tourists reported receiving high volumes of calls during summer 2010 inquiring about the presence and impacts of oil and dispersants. Tourism-related businesses that normally take reservations experienced very high cancelation rates following the oil spill and a heavy loss of business during 2010. Proprietors reported that hesitancy continued into 2011 and translated into fewer advance reservations than was typical prior to the oil spill.[141]

The fear of impending water closures prompted some recreational boat owners to leave marinas located in communities which had received or might receive oil, resulting in major losses to marina owners who worried whether those boat owners who had found other places to dock would return. Restaurants serving seafood had to deal with substantial increases in the price of local seafood, scarcity in supply, and perceptions that the seafood was tainted. As noted above, some turned outside the region to domestic and foreign sources of shrimp, fish, and crabs. However, because most oysters consumed in the United States originate in the Gulf, a number of restaurants took oysters off the menu in 2010, a decision that in some cases stretched into 2011.[142]

Rips to beach
Figure 6. January 10, 2011 Photo: N3P001-000723

Cleanup work provided an opportunity for some tourism businesses while exacerbating the effects on others. Despite the help that cleanup workers provided to some establishments, proprietors of local businesses were concerned that the cleanup workers generally did not spend as much money as tourists and did not access the same range of facilities and attractions.

[140] Austin et al. Vol I, pp. 229-230, 253-255.
[141] Austin et al. Vol I, pp. 198-199, 229; Austin et al. Vol II, pp. 74-75, 78-79, 80.
[142] Austin et al. Vol II, pp. 75-76, 78-79.

In addition, some businesses were unable to take advantage of opportunities during this period because their employees had become involved in cleanup work.[143]

The tourism industry became the focus of special attention in May 2010 when BP created a fund specifically to promote tourism in the region.[144] Still, tourist events and businesses suffered throughout the summer of 2010 when oil was still gushing into the Gulf and into the following year. Afterward, even when increased advertising and special offers succeeded in drawing crowds to events such as festivals and fishing rodeos, tourism industry representatives worried that the crowds would be only temporary and that public perceptions of coastal areas remained very sensitive to future media representations of the area as well as to the results of ongoing scientific testing of waters and marine life.[145]

D. Shipbuilding

The *Deepwater Horizon* disaster also negatively affected yards constructing and servicing vessels for the offshore oil, seafood, and recreational fishing industries. In the oilfield, in addition to closing off sections of the Gulf of Mexico to drilling, the disaster introduced a great deal of uncertainty about the future and about the new regulatory environment that would come out of the tragedy into an industry which was already in a downturn. This uncertainty led to the loss of pending contracts and dissuaded OSV fleet operators from considering newbuilds; workboats delivered by Gulf Coast yards in the year following the rig explosion were overwhelmingly from contracts signed before the event. The drop in demand and uncertainty about the future led in some cases to heavy workforce reductions. Smaller yards and shops specializing in fabrication and repair generally were the hardest hit because many yards and shops were reaching the end of existing contracts, so they could not rely on pre-existing contracts to see them through the months following the spill. [146]

Loss of work on commercial fishing vessels was the direct result of reductions in the level of fishing activity, due to fisheries closures, the VOO program and claims processes, and the pervasive climate of uncertainty over seafood safety noted above. Furthermore, a number of commercial fishermen were employed with the VOO program during the summer and fall of 2010 and thus did not bring their boats in for repair during this time. Yards that mostly did work for the commercial fishing industry generally reported sharp downturns during the summer and fall of 2010. Yard and shop owners who dealt with recreational boats noted that boat owners were reluctant to invest money in boat repairs and maintenance given constantly shifting water closures and general uncertainty about the future of the Gulf during the summer of 2010.[147]

[143] Austin et al. Vol I, pp. 185, 198-199. Austin et al. Vol II, pp. 75-77.
[144] Austin et al. Vol II, p. 78.
[145] Austin et al. Vol II, pp. 78, 81.
[146] Austin et al. Vol I, pp. 229-230; Austin et al. Vol II, pp. 96-100.
[147] Austin et al. Vol I, pp. 229-230; Austin et al. Vol II, pp. 96-100, 104-106.

As in many other sectors of the coastal economy, the number of businesses in the fabrication and shipbuilding industry that could get involved in post-spill response was limited.[148] In general, companies and workers in the fabrication and shipbuilding industry received no special attention during the disaster. Unlike many other oilfield service companies, fabrication yards require large physical spaces, often with specialized bulkheads (retaining walls) and equipment, so they are not readily relocated. Thus fabrication and shipbuilding facilities were frequently more constrained in their ability to respond to and mitigate effects of the disaster and thus many of them were seriously harmed as a result.

E. Disaster Industry

The *Deepwater Horizon* disaster occurred in an active hurricane region where the government and NGO disaster response apparatus is extensive and well-practiced, particularly following the 2005 and 2008 hurricanes. This experience was an advantage. However, due to the differences between this disaster and a major hurricane (e.g., the speed with which it unfolded, its duration, the general lack of warning, the inability to predict when the oil would be stopped), the structure of the response to this disaster was different; in addition, few officials had experienced a disaster in which a private entity played such a central and key role.[149] The differences contributed to significant disparity in economic and material effects in the region as communities with sufficient economic and political capital increased their advantage in comparison to those without.

Because BP was required to compensate individuals for harms under OPA 90, large and small private donors showed little, if any, inclination to provide resources to the region.[150] Nevertheless, in the weeks and months following the explosion, a disaster industry began to emerge, drawing upon some of the companies and people poised to mobilize following hurricanes but also incorporating oilfield supplier and contractor networks and spawning new entities as well.[151] Concerns about the fairness by which resources were allocated, the number of contracts, and the amount of money flowing outside the region persisted throughout the disaster.[152]

The role of responding to the needs of local citizens was assumed by state and local governments, by BP and its surrogates, and by NGOs. As economic losses mounted and the disaster continued, in May 2010, BP established the first of a series of claims processes. Lack of

[148] Austin et al. Vol II, pp. 13-14, 96-98.

[149] A review of Perry's list of six generic functions carried out in all disasters – warnings, evacuation, sheltering, emergency medical care, search and rescue, and protection of property – makes it clear how different this disaster was. Perry, Ronald W. 1991. "Managing Disaster Response Operations." In Drabek, Thomas E., and G. Hoetmer, eds. Emergency Management. Washington, DC: International City/County Management Association, pp. 201-223.

[150] Austin et al. Vol I, p. 151. Austin et al. Vol II, p. 139. See also Olson, Laura. 2010. Social Impact Analysis and Strategic Plan. The Deepwater Horizon Gulf Oil Spill: Response, Resilience, and Recovery. Institute for Crisis, Disaster and Risk Management. The George Washington University. October 15. See also Farrell, Justin. "Moral Outpouring: Shock and Generosity in the Aftermath of the BP Oil Spill." Social Problems 61(3):483.

[151] Austin et al. Vol I, pp. 191, 230-231; Austin et al. Vol II, p. 12.

[152] Austin et al. Vol I, pp. 24, 174, 192, 230-231.

understanding of the nature of livelihoods and communities in the region, especially the varied configurations of formal and informal household and community economies and the role of subsistence and barter activities among coastal residents, led to numerous problems. These included early promises for speedy processing of claims that added to stress levels when ultimately unmet, demands for documentation that did not exist, underestimation of losses, and outright rejection of the notion of subsistence fishing and harvesting.[153] Changes in the structure and requirements of the claims processes, uneven administration of the rules, and difficulty getting information increased frustration and a sense of hopelessness among people with claims and their family members and friends trying to help them.[154] Expectations that the time frame for evaluating damages would be shorter than the frame for recoveries of the fisheries, as well as differing accounts of the damage and the validity of the testing that was being done, created tensions as seafood industry and government officials sought to make decisions and guide fishermen regarding whether to take settlements or wait until they were more certain of the full extent of the damages.[155]

Those with the fewest resources were often the least able to navigate the system and get help. For example, seafood industry workers in low-paying, temporary, and part-time jobs, such as deckhands and those employed at docks and processing plants, who lacked the documentation, resources, or access to help were especially hard hit because they were unable to participate in these systems and so their losses remain uncompensated.[156] Because these individuals and their families are in the most precarious economic situations, even a short-term loss of income can be devastating and lead to cascading, long-term effects such as loss of homes, vehicles, and the means to become employed again.

As the scope and magnitude of the problems became clear, several types of NGOs provided key services, though they were quickly overwhelmed by the demand. Multiservice non-profit agencies provided many resources and coordinated the distribution of others. Numerous smaller community-based NGOs, including individual churches and temples, helped deliver aid, provided referrals, and operated programs. Several disaster recovery and volunteer organizations that came to the region following the 2005 storms were still there in the summer of 2010 and shifted to address the new crisis as best they could. In addition, an assortment of specialized regional NGOs such as legal aid organizations offering claims assistance, medical NGOs providing health screenings and monitoring, and economic development NGOs offering business planning services and loans, responded to particular recovery needs of coastal residents.[157]

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[153] Austin et al. Vol II, pp. 152-154, 162-164.
[154] Austin et al. Vol II, pp. 154-161.
[155] Austin et al. Vol II, pp. 149-164.
[156] Austin et al. Vol II, pp. 46-52. See also Abramson, David, Irwin Redlener, Tasha Stehling-Ariza, Jonathan Sury, Akilah Banister, and Yoon Soo Park. 2010. "Impact on Children and Families of the Deepwater Horizon Oil Spill: Preliminary Findings of the Coastal Population Impact Study." National Center for Disaster Preparedness, Research Brief 2010:8. Columbia University Mailman School of Public Health, New York. August 3, pp. 9-10.
[157] Austin et al. Vol II, pp. 133-135, 138-139.

Because Gulf Coast commercial fishing communities were heavily impacted by the spill, fishermen's associations served as important conduits for information on the situation on the water and as advocates for recovery funding and programming supporting the seafood industry and fisheries-dependent communities.[158] Non-profits that serve the region's Native American, Southeast Asian, and Latino populations, who constitute a significant portion of its commercial fishing and seafood processing workforce, helped deliver aid, advocated for affected people, and provided translation and counseling to residents.[159] Though each NGO faced specific issues due to the context within which it was operating, all were stymied by severe restrictions on their ability to garner resources and offer needed recovery programming for a disaster unfamiliar to their experience in an uncertain funding environment.[160]

II. Health and Social Well-Being

The 11 victims who died in the explosion came from communities across Louisiana, Mississippi, and Texas. Their deaths severely and directly affected their immediate families and the communities in which they lived, and also their co-workers, the motel clerks and waitresses who regularly served them when the rigs to which they were assigned were working off the Gulf Coast, and the myriad others who knew them or their families.[161] Those losses are permanent and the harm from those losses is ongoing. The explosion also affected the men working on the *Deepwater Horizon* rig on April 20 who survived. They and their families continue to suffer as well.[162]

The Macondo well released an estimated 4.9 million barrels of oil by the time it was capped on July 15.[163] In responding to the release, BP used nearly 2 million gallons of dispersants.[164] Due to concerns about the effects and toxicity of the oil and dispersants, on May 26 the EPA and Coast Guard issued a directive to BP limiting the amount of dispersants to be used in the response. Questions about the safety and persistence of dispersants in the Gulf environment were raised by advocacy organizations and Gulf residents; studies to find the answers to these questions are ongoing.[165]

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[158] Austin et al. Vol II, p. 133.
[159] Austin et al. Vol II, p. 125.
[160] Austin et al. Vol II, pp. 137-141.
[161] Austin et al. Vol II, p. 8. These harms have been well documented in other court proceedings. See, for example, the Transcript of Plea and Sentencing Hearing before the Honorable Sarah S. Vance and the written Victim Impact Statements submitted in association with that hearing.
[162] These harms, too, have been documented elsewhere. See, for example, the Transcript of Plea and Sentencing Hearing before the Honorable Sarah S. Vance and the written Victim Impact Statements submitted in association with that hearing.
[163] United States' Proposed Findings of Fact for Quantification Segment of the Phase Two Trial.
[164] Lehr, B., S. Bristol, et al. (2010). Oil Budget Calculator: Deepwater Horizon. Technical Documentation; November 2010 A Report by: The Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team, A report to the National Incident Command..
[165] Austin et al. Vol I, p. 23; Austin et al. Vol II, p. 8.

The size, complexity, and uncertainty associated with this disaster raised concerns about a wide range of health effects, including negative effects of exposure to oil and dispersants during cleanup or due to living near where they were used, of eating contaminated seafood, and of ongoing stress.[166] [167] Despite efforts to block off areas, where oil came ashore, residents witnessed the oiling of beaches and marshes, vegetation and wildlife. The experience of watching oil come in – and the fear that more would follow – created profound negative effects on people who fish, hunt, and recreate in the region. Residents expressed frustration, anger, and defeat over being unable to catch an oiled pelican or to take a child to the beach, and continuing to seeing tar mats and other evidence of the spill come ashore. Even in communities where there was no oil, fishermen, those participating in VOO, and others out on boats witnessed oiled wildlife and expressed dismay at being unable to help.[168]

Figure 6. Oil Near the Shoreline, June 5, 2010 Photo: IGS173-000114

[166] Austin et al. Vol I, pp. 23, 26-38, 191, 227. See also Goldstein, Bernard D., Howard J. Osofsky, and Maureen Y. Lichtveld. 2011. "The Gulf Oil Spill." New England Journal of Medicine 364:1334-1335.

[167] In the Order and Judgment Granting Final Approval of Medical Benefits Class Action Settlement and Confirming Certification of the Medical Benefits Settlement Class, anyone not involved in the clean-up who resided in the areas included in the settlement but who worked had as tank cleaners or unloading and loading barges and trucks, for example, is excluded from the Medical Class. These are among the workers in precarious jobs who fell between the cracks elsewhere as well.

[168] Austin et al. Vol II, pp. 136-137

At its peak in July 2010, around 47,000 people were involved in the cleanup daily, through the VOO program as well as on the beaches.[169] Some of those people had come into the region seeking work following the disaster and others had considerable experience fishing but none working around hazardous materials. Community leaders, health professionals, and residents raised concerns about whether health effects were being appropriately considered and addressed, and whose health mattered.[170] Thousands of response workers were treated for injuries and as many as 200,000 people are eligible for recovery under the Medical Class settlement.[171] Independent activism about the spill began shortly after the rig explosion, generated by local, regional, and national figures attempting to direct media attention, services, and compensation to those impacted by the spill, centering prominently on issues of public health. Public and private discourse of health effects of both oil and dispersants was influenced by the pervasive presence of the oil and gas industry where topics such as the use of dispersants and effects of exposure to hydrocarbons are rarely discussed openly. Residents' and leaders' concerns about the effects of the petroleum industry on their communities and the social and economic dependence of the region on that industry sparked ongoing debates, especially in communities where both commercial fishing and the oil and gas industry were prominent.[172]

The other major worry about health effects stemmed from concerns about seafood safety. In general, questions of seafood safety affected fishermen, seafood distributors and processors, and those relying on seafood as a significant portion of a subsistence-based diet. Calls for testing – and descriptions of the tests being administered – alleviated concerns of some people but kept the issue before the public for well over a year. People who were regular consumers of seafood faced decisions about whether to consume seafood, what to consume and how much, and what to eat instead. Many households that rely on seafood to meet a significant portion of their dietary needs maintain large freezers, so they had pre-spill seafood to eat initially. As the disaster continued, though, and seafood availability was limited, freezers were not replenished and worries about where to obtain food grew.[173]

The spill affected community and household food supply, though not in the obvious ways which disasters such as hurricanes do. Grocery stores remained open, trucks continued to bring food into the region, and electricity for refrigerating and preparing food remained on. Nevertheless, the disaster affected diets as seafood distributors and local fishermen stopped supplying seafood. Households relying on locally caught seafood had to turn to other food sources, putting pressure on food pantries and social service agencies who were also trying to meet the

[169] Occupational Safety and Health Administration. 2011. Deepwater Horizon Oil Spill: OSHA's Role in the Response. May, p. 2.
[170] Austin et al. Vol I, pp. 23-25. Austin et al. Vol II, p. 178.
[171] Motion of the United States to Limit Evidence About the "Seriousness" Factor, *In Re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010*, No. 2:10-md-02179 (E.D. La. Feb 20, 2014), Rec. Doc. 12373, Appendix A at 8-9; Deposition of Captain Roger Laferriere, Transcript at 122-140, *In Re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010*, No. 2:10-md-02179 (E.D. La. Aug. 5, 2014).
[172] Austin et al. Vol I, pp. 227, 232. Austin et al. Vol II, pp. 125-127, 195.
[173] Austin et al. Vol I, pp. 173, 255.

needs of people whose incomes had been drastically reduced or who came to the region seeking work in the cleanup. The extent of the problem within each community depended on the businesses and livelihoods prominent there as well as patterns of supply and distribution.[174]

Coming on the heels of the 2005 and 2008 storms, this disaster precipitated significant mental health concerns as people who were pulling their lives back together again faced another major crisis. The disaster severely disrupted people's livelihoods – whether fishermen, oilfield workers, welders, or florists – and a lot more (see also Section III Other Sociocultural Impacts). The long timeframe and ongoing uncertainties associated with the disaster exacerbated the problems people were facing.[175] For many, given the recession and the disruption of other major occupations, there were no viable economic alternatives, which increased stress and anxiety.[176]

The lack of community health facilities exacerbated these effects. Communities that are hubs for oil and gas activity have clinics specializing in the pre-employment physicals required in that industry, but residents and community leaders struggled to find medical professionals familiar with symptoms of chemical exposure.[177] Mental health services were lacking in many areas. Residents and community leaders expressed frustration with the ineffectiveness of short-term mental health offerings, especially when combined with the lack of other social supports.[178] For those households and communities who had not recovered from the storms, many of whom have long faced barriers to education and employment and who still lack basic services such as grocery stores and health clinics, the disaster was one more stressor.[179]

III. Other Sociocultural Impacts

At the community, household, and small business levels, economic effects translated into social effects. Compounding their financial and material losses and their worries about those, many people experienced changes to their patterns of daily and seasonal living, especially during the first year of the disaster when they were unable to perform their usual jobs. The disruptions in livelihoods affected identity and culture. Fishing, for example, whether for commerce, recreation, or subsistence, is important to people across the region. For many in the commercial seafood trade, involvement in the industry goes back multiple generations and the ownership and operation of boats, docks, and plants as well as business relationships in the Gulf seafood industry are still often organized along lines of kinship and co-ethnic

[174] Austin et al. Vol I, pp. 190-191, 255. Austin et al. Vol II, pp. 37-39.
[175] Austin et al. Vol II, pp. 193-197.
[176] Austin et al. Vol II, p. 194, and throughout.
[177] The Order and Judgment Granting Final Approval of Medical Benefits Class Action Settlement and Confirming Certification of the Medical Benefits Settlement Class established a Gulf Health Outreach Program to address a significant shortage of clinicians at both the primary care and specialty levels in the region, particularly in rural areas. Among the services to be provided is a Gulf Region Health Outreach Program Library which will make available information about oil and other substances released during the *Deepwater Horizon* disaster.
[178] Austin et al. Vol II, pp. 141, 178.
[179] Austin et al. Vol II, p. 193.

identification.[180] In some communities, the composition of the fishing industry shifted as some lost their fishing vessels and docks while others, who made a lot of money in the VOO program or the claims process, reinvested in upgraded equipment or used their money to get out of the industry altogether.[181]

Working together – whether on fishing vessels or in fabrication shops – remains an important mechanism for cultural reproduction and transmission of norms about work in this region, and much of that was disrupted at the household and community levels. Across the region, residents take pride in their self-sufficiency and ability to thrive in the face of challenges.[182] People who were thrust suddenly out of work, and especially those unfamiliar with seeking assistance, were embarrassed to have to visit offices and share intimate details of their household and economic circumstances. For those who had only recently recovered from the post-hurricane processes – and many who were still enmeshed in them – this disaster reinforced a sense of helplessness.[183]

The disaster was also disempowering for local governments and NGOs and created problems for small organizations and businesses trying to obtain resources to help others and/or survive. A key responsibility of local governments is to protect citizens and property. The spill continued for months after the explosion and no one knew where or when the oil would come ashore, especially because the explosion occurred just before hurricane season began and continued well into the season. Thus, no one could be certain where and how to direct recovery resources to address a constantly shifting and indefinitely prolonged crisis. Questions regarding the proper role of governments and NGOs became source of disagreement in several communities.[184]

At the same time, local officials and NGO leaders had to modify existing operations and make personnel and other resources available to manage the increased workload resulting from the spill. For example, emergency response directors had to update their hurricane plans to take into account the possibility that oil would come ashore during a storm event.[185] However, although they bore much of the responsibility for providing direct services, because they were ineligible for compensation well into the disaster, NGOs were initially unable to expand their staffs to meet rising demand. Even when government offices and NGOs were able to hire new employees, those people had to be oriented and trained, requiring time and energy from staff who were already facing greater-than-usual workloads. Public and private organizations and enterprises expressed trepidation about the new bureaucracies and processes that formed around the oil spill recovery process, grants, and the dispensation of recovery funds.[186]

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[180] Austin et al. Vol I, pp. 137-138, 249; Austin et al. Vol II, p. 31.
[181] Austin et al. Vol I, p. 149. Austin et al. Vol II, pp. 113-114.
[182] Austin et al. Vol I, pp. 138, 184.
[183] Austin et al. Vol I, pp. 184-186.
[184] Austin et al. Vol II, pp. 121-124.
[185] Austin et al. Vol II, p. 123.
[186] Austin et al. Vol II, p. 85.

Work and workplaces are also sources of social support for many people. The disruption in daily and seasonal livelihood patterns thus disrupted social relationships as well. And, across the region, it affected the practice of cultural activities – from large festivals and events to office seafood boils, trips to the beach, and fishing tournaments.[187] In light of the significant stress that people were facing, the loss of activities that provide recreation and serve to establish and reinforce social networks exacerbated the harms they experienced.[188]

Figure 7: Oil on the Beach, June 14, 2010 Photo: IGS173-000117

The offshore oil and gas industry is important to the livelihoods and identities of many individuals, families, and communities across the region.[189] That this was a technological disaster, and the responsibility for the disaster lay within the industry, fueled conflicts over the industry, its impacts, and its relationship to the communities which host it, both within the

[187] Austin et al. Vol I, pp. 2, 99. Austin et al. Vol II, pp. 71-72, 78. See also Abramson, David, Irwin Redlener, Tasha Stehling-Ariza, Jonathan Sury, Akilah Banister, and Yoon Soo Park. 2010. "Impact on Children and Families of the Deepwater Horizon Oil Spill: Preliminary Findings of the Coastal Population Impact Study." National Center for Disaster Preparedness, Research Brief 2010:8. Columbia University Mailman School of Public Health, New York. August 3, pp. 10-11.

[188] Austin et al. Vol I, pp. 229, 230. See also Farrell, Justin. "Moral Outpouring: Shock and Generosity in the Aftermath of the BP Oil Spill." Social Problems 61(3):483-484.

[189] Austin et al. Vol II, pp. 196-197.

region and from people and organizations beyond it.[190] This created problems for workers, their families, their companies, and their communities as they confronted what had happened and struggled with whether and how to connect it to their own experiences in the industry and to share those with others. Media events, endless public meetings, and ongoing media coverage kept people stirred up. Especially at first, those connected with the industry were vilified by people with little understanding of the industry or region; some reported feelings similar to soldiers returning from the Vietnam War. This compounded the already serious economic harms members of that community were suffering as a consequence of the downturn in the industry prior to and as a consequence of the spill.[191]

The nature and extent of the social impacts of the disaster, and the ability to manage and mitigate its effects, depended on the particular configurations of industries, organizations, and programs that were operating in each community during the disaster, as well as the internal and external social networks and communication/information channels there. Residents relied on social structures to funnel information, resources, and services to them from corporate and state and federal entities. Terrebonne Parish, Louisiana, for example, has only one incorporated town, the city of Houma. Many of the outlying communities, where many of the impacts were felt, lacked even public meeting spaces at the time of the disaster. Because of its community center, which was established in 1950, Dulac became a central hub for meetings, events, and services associated with the disaster.[192]

The pre-disaster ethnic composition of communities, households, and small businesses, and their social networks within and beyond the region, also played a role in the nature and extent of the impacts they experienced. Though these were often linked to economic and livelihood pursuits (see Section I Economic and Material Well-Being above), they extended beyond those, affecting the information and assistance that circulated through these communities.[193] As subsistence claims began to be considered, claim officials associated these practices with only some groups (e.g., Native Americans), increasing tension in communities that included members of others groups whose livelihood strategies were practically indistinct but whose subsistence claims were not even considered.[194] At the same time, within Native American and Asian communities members were able to tap into networks of support while some undocumented immigrants were afraid to seek assistance.[195]

Many communities within the region had been hit by the 2005 and 2008 storms and were in various stages of recovery by 2010. Different communities had taken different approaches to development following the storms, and these affected their situation at the time this disaster began as well as their ability to respond to it. Within the communities, the number and scale of NGOs had increased due to money and resources that flowed in in response to earlier disasters

[190] Austin et al. Vol I, p. 227.
[191] Austin et al. Vol I, pp. 229-230.
[192] Austin et al. Vol I, pp. 249-252. Austin et al. Vol II, pp. 125-127.
[193] Austin et al. Vol II, pp. 181-184.
[194] Austin et al. Vol II, pp. 171-186.
[195] Austin et al. Vol I, pp. 104, 151, 192, 254-255.

and many of these were struggling by 2010, though the end of the post-hurricane reconstruction boom and the economic recession and other factors had kept the need for their services high. In Bayou La Batre, AL, for example, religious organizations that had supported post-hurricane reconstruction were withdrawing their support at the time the disaster began, causing some local organizations to close by 2011 despite ongoing need for their services.[196]

As in post-hurricane response, large sums of money flowed to major corporate entities and people from outside the region, creating tensions locally. Some Gulf Coast businesses, such as vessel contractors and hotels, received lucrative contracts and made lots of money. Many others, though, were not so fortunate. The VOO program was fraught with problems. Though many recognized that the program was aimed at providing options for out-of-work fishermen to earn money while unable to fish, the fact that some were hired, including people from outside the region, while others were not tainted residents' views of and experiences with the program, creating a set of "winners" and "losers" that divided communities already suffering heavily from the spill. Uneven hiring practices and payments, especially as the VOO program was overseen by contractors, also raised concerns. People and their boats were hired on for varying periods of time, creating confusion and concerns about unfairness. Whether in the program or not, even fishermen who were proud and prominent members of their communities became reticent to talk to others due to perceptions that people had gotten into the program unfairly or were taking money they did not deserve. By breaking down communication, this caused specific harm in close-knit communities.[197]

IV. Conclusion

The *Deepwater Horizon* disaster caused serious harm in nearly every community and almost every major economic sector across the Gulf of Mexico coastal region from Louisiana to Alabama. While perhaps most keenly felt in the fishing industry and all those connected to it, major losses were suffered by workers and businesses in the oil and gas, tourism, and shipbuilding industries as well. Historically, workers and businesses providing services to these industries have developed flexible livelihood strategies and moved among these industries as necessary to survive economic downturns, hurricane events, and other challenges. The *Deepwater Horizon* disaster took down all of these industries at once, leaving people and businesses suddenly out of work with no viable economic alternatives. While some people and businesses were able to get help or file for compensation, many who had already been out of work or had not yet recovered from Hurricanes Katrina and Rita were unable to qualify for any compensation. Thus, those already at the bottom of the economic and social ladder, who ended up losing what little they had, became the least likely to receive compensation.

For most people of the Gulf Coast region, especially those whose cultures and self-identities are tied to their occupations, the losses caused by the oil spill were also personal. Those losses are in some ways highest in value. The deaths of the rig workers are obvious losses felt by their

[196] Austin et al. Vol 1, p. 192.
[197] Austin et al. Vol I, pp. 227, 230-231, 253. Austin et al. Vol II, pp. 33-35, 40, 47, 76-77, 163-164.

families and the often tight-knit communities – both geographic and occupational – from which they came. Those losses are permanent and continue to be felt, as do the debilitating injuries to the rig survivors and their families. Additionally, many response workers worry what they have been exposed to and what long-term health impacts await. Also important and hard to value are the losses to the multi-generational fishing families, losses that include not only their family businesses, but their way of life. Similarly painful were the sociocultural effects to people who work in the oil and gas industry – long considered a lifeblood and source of pride in the Gulf region – who faced criticism from the nation and their neighbors. Though difficult to properly value and not eligible for compensation, these harms are no less real or substantial than the economic damages of the *Deepwater Horizon* disaster. Their impacts and the repercussions from them are likely to persist into the future.

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INFORMATION REQUIRED BY THE FEDERAL RULES OF CIVIL PROCEDURE

1. This report contains my opinions, conclusions, and reasons therefor.
2. A general statement of my qualifications is contained in the Introduction section, page 1. A more detailed statement of my qualifications is included in Appendix A.
3. A list of all publications in the last ten years is included in Appendix B.
4. My compensation for the preparation of this report and any testimony as an expert witness at trial or deposition is as follows: $325 per hour.
5. I have not previously testified as an expert witness.
6. The facts and data I considered in forming my opinions are listed in Appendix C.

The opinions expressed in this report are my own and are based on the data and facts available to me at the time of writing. Should additional relevant or pertinent information become available, I reserve the right to supplement the discussion and findings in this report.

Appendix A: Curriculum Vitae for Diane Austin

Diane Austin
Curriculum Vitae

Bureau of Applied Research in Anthropology, School of Anthropology; P.O. Box 210030; 210 Anthropology Building; University of Arizona; Tucson, Arizona 85721-0030; 520-626-3879; daustin@email.arizona.edu

Chronology of Education

1989-1994	University of Michigan, Ph.D., Natural Resources and Environment Dissertation: Knowledge and Values in the Decision Making Around Hazardous Waste Facilities: An Application of the Active-Symbol Cognitive Map Directors: Stephen Kaplan and James Crowfoot Major Field: Environmental Policy and Behavior
1982-1983	California Institute of Technology, M.S., Environmental Engineering Sciences
1977-1981	Texas Christian University, B.S., Environmental Sciences and Biology, Summa Cum Laude, with Departmental Honors Texas Christian University, B.S. in Ed., Elementary Education, Summa Cum Laude

Chronology of Employment

2013-present	*Director*, School of Anthropology, University of Arizona
2014-present	*Research Anthropologist*, Bureau of Applied Research in Anthropology, University of Arizona
2014-present	*Professor*, School of Anthropology, University of Arizona
2005-2014	*Associate Research Anthropologist*, Bureau of Applied Research in Anthropology, University of Arizona
2005-2014	*Associate Professor*, School of Anthropology, University of Arizona
2001-2004	*Assistant Research Anthropologist*, Bureau of Applied Research in Anthropology, University of Arizona
2001-2004	*Assistant Professor*, Department of Anthropology, University of Arizona
1997-2001	*Research Scientist*, Bureau of Applied Research in Anthropology, University of Arizona
1994-1997	*Research Associate*, Bureau of Applied Research in Anthropology, University of Arizona
1992-1994	*Research Consultant*, Bureau of Applied Research in Anthropology, University of Arizona, Tucson

Affiliated Faculty Appointments: Department of Women's Studies, Center for Latin American Studies, Arid Lands Resource Sciences, University of Arizona

Honors and Awards

2012 Finalist for the Border Research Partnership Award for U.S.-Mexico Cross-Border Cooperation and Innovation, for the Composting Toilets Project in Nogales, through the

Asociación de Reforestación en Ambos Nogales (Ambos Nogales Revegetation Assocation) of which I am a Co-Organizer and the University of Arizona Lead Investigator.

2011 Earl H. Carroll Magellan Circle Fellowship, University of Arizona College of Social and Behavioral Sciences

2010 U.S. Department of the Interior Partners in Conservation Award, for Offshore Oil and Gas History Project of which I was Principal Investigator

2008 Distinguished Outreach Professor, University of Arizona

2007 SBSRI Graduate Assistance for Faculty Award, Social and Behavioral Sciences Research Institute, UA, Support to develop Southern Paiute basketry documentary video

2005 SBSRI Graduate Assistance for Faculty Award, Social and Behavioral Sciences Research Institute, UA, Support to develop Geographic Information Systems database for Ambos Nogales

Service/Outreach (since 2005)

Local/State Outreach

2012-2013 Invited Member, Advisory Board, Southern Arizona Green for All Coalition

2003-2013 Member, CATCHWater Consortium for Water Harvesting in Southeastern Arizona

2004-2006 Appointed Member, Special Advisory Group, Santa Cruz County Health Programs, Arizona

National/International Outreach

2008-present Chair (2011-present) and Invited Member (2008-2010), Good Neighbor Environmental Board, Federal Advisory Committee to the President and Congress on U.S.-Mexico border environmental issues

2002-present Co-Organizer, Asociación de Reforestación en Ambos Nogales (Ambos Nogales Revegetation Association), a collaboration of governmental, non-governmental, academic, and business entities to address environmental problems in Nogales, Sonora and Santa Cruz County, AZ

1998-present Advisor, Southern Paiute Consortium and Kaibab Band of Paiute Indians, Environmental and Cultural Resource Programs

2010-2012 Advisor, 4 Walls International, Inc., Tijuana, BC, Mexico

2003-2012 Invited Member, Ambos Nogales Air Quality Task Force, U.S. Environmental Protection Agency Border 2012 Program

2006-2008 Invited Member, Working Group for Underserved and Underrepresented Populations, Gulf of Mexico Alliance

2004-2005 Appointed Member, Executive Committee, Encuentro Fronterizo/Border Environmental Conference

Departmental Committees

2009-present Manager, Hopi Literacy Project, Bureau of Applied Research. in Anthropology, University of Arizona

1997-present Coordinator, Internship Program, Bureau of Applied Research in Anthropology, University of Arizona

2014 Member, Review Committee, Mary Bernard Aguirre Professorship in Gender and Women's Studies, University of Arizona

2009-2013 Chair, Research Affairs, Bureau of Applied Research in Anthropology, University of Arizona

2003-2013 Member, Executive Committee, Bureau of Applied Research in Anthropology, University of Arizona

2010-2012 Chair, Curriculum Committee, School of Anthropology, University of Arizona

2009-2010 Chair, Outreach Committee, School of Anthropology, University of Arizona

2003-2008 Member, Undergraduate Advisory Board, Department of Anthropology, University of Arizona

2006 Member, Annual Performance Review Committee, Bureau of Applied Research. in Anthropology, University of Arizona

College Committees

2011 Member, Search Committee for the Director, Social and Behavioral Sciences Research Institute, College of Social and Behavioral Sciences, University of Arizona

2009-2011 Member, Social Science Statistics Task Force, College of Social and Behavioral Sciences, University of Arizona

2009 Member, Search Committee, Dean of the College of Social and Behavioral Sciences, University of Arizona

University Committees

2010-present Member, Executive Committee, Arid Lands Resource Sciences, University of Arizona

2010-present Member, Sustainable Mining Research Group, University of Arizona

1998-present Member, Global Change Steering Committee, Global Change Interdisciplinary Program, University of Arizona

2009-2010 Member, NCA2010 University of Arizona Accreditation Team, Working Team 3B: Engagement and Service

2009 Member, Review Committee, Distinguished Outreach Faculty Award, University of Arizona

2009 Member, Academic Program Review Committee, School of Natural Resources, University of Arizona

2006-2008 Member, Annual Performance Review Committee, Planning Program, University of Arizona

2005 Member, Strategic Planning Committee, Planning Program, University of Arizona

Other Committees (internal or external)

2013-2014 Chair (2014), Member (2013), Student Poster Session Judges, Society for Applied Anthropology

2008-present Member, Hackenberg Memorial Lecture Committee, Society for Applied Anthropology

2007-present Member, Editorial Board, and Peer Reviewer, *Collaborative Anthropologies*.
2009-2012 Member, Policy Committee, Society for Applied Anthropology
2007-2011 Secretary, Alpha of Arizona Chapter, Phi Beta Kappa
2003-2009 Treasurer, Society for Applied Anthropology
2009 Consultant, Center for Applied Anthropology Revitalization, University of South Florida

Other Service

2012 Panel Member and Proposal Reviewer, Gulf of Mexico Research Institute
2011 Proposal Reviewer, National Science Foundation Cultural Anthropology Program
2008-2010 Proposal Reviewer, National Collegiate Inventors and Innovators Alliance
2007 Proposal Reviewer, Social Sciences and Humanities Research Council of Canada
2006 Report Evaluator, National Marine Fisheries Program, National Oceanic and Atmospheric Administration
2006 Panel Member and Proposal Reviewer, Ocean Workforce Education, Office of Naval Research for the National Oceanographic Partnership Program

Peer Reviewer: *American Anthropologist* (2011-present), *Human Organization* (1999-present), *Ecology and Society* (2005-2011), *Progress in Community Health Partnerships: Research, Education and Action (2010), Maritime Studies (MAST)* (2009), *Research in Economic Anthropology* (2009), *Environmental Management* (2001-2007), *ARCTIC* journal (2007), *Ecological and Environmental Anthropology* (2005)

Publications/Creative Activity (Published or Accepted)

^Based substantially on work done as a graduate (or undergraduate) student

Chapters in Scholarly Books and Monographs

*Refereed

*2014 Austin, Diane. Guestworkers in the Fabrication and Shipbuilding Industry along the Gulf of Mexico: An Anomaly or a New Source of Labor? In David Griffith, eds. *(Mis)managing Migration: Guestworkers' Experiences with North American Labor Markets.* Santa Fe, NM: SAR Press. (based on original research)

*2013 McGuire, Tom, and Diane Austin. Beyond the Horizon: Oil and Gas Along the Gulf of Mexico. In Sarah Strauss, Stephanie Rupp, and Thomas Love, eds. *Cultures of Energy: Power, Practices, Technologies.* Chicago: Left Coast Press. (based on original research)

2008 Austin, Diane, with Irma Fragoso and Arturo Frayre. Exploring Interdisciplinary Binational Partnerships for Innovation and Implementation. *NCIIA Conference Proceeding*, Dallas, Texas, March. (based on original research)

*2004 Austin, Diane E., Edna Mendoza, Michèle Kimpel Guzmán, and Alba Jaramillo. Partnering for a New Approach: Maquiladoras, Government Agencies, Educational Institutions, Non-Profit Organizations, and Residents in Ambos Nogales. In *Social Costs of Industrial Growth in Northern Mexico*. University of California San Diego: Center for U.S.-Mexican Studies. Pp. 251-281. (based on original research)

*2001 Austin, Diane E. "The American Indian Low-Level Radioactive Waste Transportation Study." In *American Indians and the Nevada Test Site: A Model of Research and Consultation*. R.W. Stoffle, M.N. Zedeño, and D.B. Halmo, eds. DOE/NO/13046-2001/001. Washington, D.C.: U.S. Government Printing Office. (based on original research)

*1999 Austin, Diane E. Chapter 7: Education and Occupation. In *Assessment of Historical, Social, and Economic Impacts of OCS Development on Gulf Coast Communities*. Report prepared for the Gulf of Mexico Region of the Minerals Management Service. With TechLaw and T.R. McGuire. December. (based on original research)

Refereed Journal Articles

2011 Austin, Diane and Brenda Drye. The Water that Can't Be Stopped: Southern Paiute Perspectives on the Colorado River and the Operations of Glen Canyon Dam. *Policy and Society* 30(4):285-300.

2010 Austin, Diane. Confronting Environmental Challenges on the U.S.-Mexico Border: Examining a Long-Term Community-Based Participatory Research Program. *Journal of Community Practice* 8(2):361-395.

2007 Austin, Diane E., and E. Moore Quinn, Guest Editors. *Practicing Anthropology* 29(3).

2007 Díaz, Estela-María, Rosalva Leprón, Diane Austin, and Irma Fragoso. Sustaining Collaboration across Borders, Languages, and Cultures. *Practicing Anthropology* 29:4-8.

2006 Austin, Diane E. Coastal Exploitation, Land Loss, and Hurricanes: A Recipe for Disaster. *American Anthropologist* 108(4): 671-691.

2006 Austin, Diane E. Women's Work and Lives in Offshore Oil. *Research in Economic Anthropology* 24:163-204.

2006 Austin, Diane E., Thomas R. McGuire, and Rylan Higgins. Work and Change in the Gulf of Mexico Offshore Petroleum Industry. *Research in Economic Anthropology* 24:89-122.

2004 Austin, Diane E. Partnerships, Not Projects! Improving the Environment Through Collaborative Research and Action. *Human Organization* 63(4):419-430.

2003 Austin, Diane E. Moving Offshore in the Gulf of Mexico: People, Technology, and the Organization of Work in the Early Years of Oilfield Diving. *Oil-Industry Journal* 4:87-105.

2003 Austin, Diane E. Community-Based Collaborative Team Ethnography: A Community-University-Agency Partnership. *Human Organization* 62(2):143-152.

2002 Finan, Timothy, Colin West, Diane Austin and Thomas McGuire. Processes of Adaptation to Climate Variability: A Case Study from the U.S. Southwest. *Climate Research* 27(3):299-310.

2002 Lemos, Maria Carmen, Diane Austin, Robert Merideth, and Robert G. Varady. Public-private Partnerships as Catalysts for Community-based Water Infrastructure Development: The Border WaterWorks Program in Texas and New Mexico Colonias. *Environment and Planning C: Government and Policy* 20:281-295.

1998 Austin, Diane E. Cultural Knowledge and the Cognitive Map. *Practicing Anthropology* 20(3):21-24.

1997 Zedeño, Maria .N., Diane E. Austin, and Richard W. Stoffle. Landmark and Landscape: A Contextual Approach to the Management of American Indian Resources. *Culture and Agriculture* 19(3):123-129.

1997 Stoffle, R.W., D. Halmo, and D.E. Austin. Cultural Landscapes and Traditional Cultural Properties: A Southern Paiute View of the Grand Canyon and Colorado River. *American Indian Quarterly* 21(2): 229-250.

^1994 Austin, Diane E. Incorporating Cognitive Theory into Environmental Policymaking. *The Environmental Professional* 16(3):262-274.

^1994 Austin, Diane E. Sociocultural Impacts of Hazardous Waste Incinerator Proposals. *Practicing Anthropology* 16(3):17-20.

^1994 Austin, D.E. and L.E. Newland. Time-resolved Leaching of Cadmium and Manganese from Lignite and Incinerator Fly Ash. *Chemosphere* 14:41-47.

Electronic Publication, Peer Reviewed

2000 Stoffle, R.W., L. Loendorf, D. Austin, and A. Bulletts. Ghost Dancing the Grand Canyon: Southern Paiute Rock Art, Shamanism, and Power Places. *Current Anthropology* 41(1) electronic edition. February.

Other Publications

Research Reports

All reports marked with an asterisk (*) have been peer reviewed by other researchers and agency personnel. Most have also been reviewed by community members.

*2014 Austin, D., B. Marks, K. McClain T. McGuire, B. McMahan, V. Phaneuf,, P. Prakash, B. Rogers, C. Ware, and J. Whalen. *Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities. Volume I: Methodology, Timeline, Context, and Communities.* OCS Study. BOEM 2014-617. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

*2014 Austin, D., S. Dosemagen, B. Marks, T. McGuire, P. Prakash, and B. Rogers. *Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities. Volume II: Key Economic Sectors, NGOs, and Ethnic Groups.* OCS Study. BOEM 2014-618. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

*2014 Austin, D. and D. Woodson, eds. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Volume II: Community profiles. OCS Study. BOEM 2014-610. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

*2014 McGuire, T., D. Austin, and D. Woodson, eds. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Volume III: Technical Papers. OCS Study. BOEM 2014-611. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

2013 Kelly-Richards, Sarah, Pedro Robles, Diane Austin. Yuma County Air Quality Awareness: Final Report. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona. June.

2012 Austin, Diane, ed. A Unique Volunteer Experience: Exchange between University of Arizona Students and the Tucson Refugee Community. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona. October.

*2012 Austin, Diane, Francisco Trujillo, and Edmundo Perez Pino. From Waste to Resource: Fibrous Concrete as an Alternative to Landfilling and Burning Paper in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona and Frente Cívico Nogalense, A.C. Tucson, AZ and Nogales, Sonora. September.

2011 Lai, Oscar, Diane Austin, and Britny Delp. Air Pollution Outreach in Ambos Nogales. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona for the Arizona Department of Environmental Quality. July.

2010 Dick, Evan, Jodi Perin, Diane Austin, Hannah Kahler, and Jim Anderson. Alternative Fuel Research for Brickmakers in Agua Prieta, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona and the School of Mechanical, Aerospace, Chemical and Materials Engineering, Arizona State University for the U.S. Environmental Protection Agency/Border Environment Cooperation Commission. March.

*2010 Austin, Diane and Francisco Trujillo. Composting Toilets and Water Harvesting: Alternatives for Conserving and Protecting Water in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the U.S. Environmental Protection Agency/Border Environment Cooperation Commission. January.

2009 Austin, Diane. Air Quality Outreach Campaign for Ambos Nogales. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. December.

*2008 Gaines, Justin, Samantha Herr, and Diane Austin. Reducing Diesel Emissions to Protect Children's Health: The Santa Cruz Valley Unified School District Bus Conversion Project. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. June.

2008 Austin, Diane, and Annika Ericksen. The Biodiesel Capacity Building and Demonstration Project in Ambos Nogales: An Assessment of the Potential for Biodiesel Production to Alter Present Use and Disposition of Waste Vegetable Oil and Grease. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Rio Rico Fire District and the Border Environment Cooperation Commission/U.S. Environmental Protection Agency. May.

*2008 Austin, Diane, Bob Carriker, Tom McGuire, Joseph Pratt, Tyler Priest, and Allan G. Pulsipher. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume I: Papers on the Evolving Offshore Industry.* OCS Study MMS 2008-042. U.S.

Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2008 Austin, Diane E. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume III: Morgan City's History in the Era of Oil and Gas: Perspectives of Those Who Were There.* OCS Study MMS 2008-044. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2008 Austin, Diane E. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume V: Guide to the Interviews.* OCS Study MMS 2008-046. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2008 Austin, Diane E. and Justin Gaines. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume VI: A Collection of Photographs.* OCS Study MMS 2008-047. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2007 Austin, Diane, Bonnie Jean Owen, Sara Curtin Mosher, Megan Sheehan, Jeremy Slack, Olga Cuellar, Maya Abela, Paola Molina, Brian Burke, and Ben McMahan. Evaluation of Small Scale Burning of Waste and Wood in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. November.

*2007 Austin, Diane, Arthur Phillips III, David Seibert, and Kevin Bulletts. Southern Paiute Participation in the Glen Canyon Adaptive Management Program: A Ten Year Review. Report prepared at the Bureau of Applied Research in Anthropology and the Southern Paiute Consortium for the Bureau of Reclamation. June.

*2006 Austin, Diane E., Brian Burke, Krisna Ruette, Jeremy Slack, and Ronald H. Villanueva. Thermal Construction and Alternative Heating and Cooking Technologies. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality.

*2006 Diamente, Daniela and Diane Austin. Ambos Nogales Soil Stabilization Through Revegetation. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona on behalf of the Asociación de Reforestación en Ambos Nogales for the U.S. Environmental Protection Agency.

*2005 Austin, Diane E., Erin Dean, and Justin Gaines. Yanawant: Paiute Places and Landscapes in the Arizona Strip. Volume II. The Arizona Strip Landscapes and Place Name Study. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Strip District, Bureau of Land Management. December.

2004 Pavri, Eric, Erin Dean, and Diane Austin. Obtaining and Evaluating User Participation in GIS Database Development in U.S.-Mexico Colonias. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the U.S. Department of Housing and Urban Development. August.

*2002 Austin, Diane E., Karen Coelho, Andrew Gardner, Rylan Higgins, and Thomas R. McGuire. *Social and Economic Impacts of OCS Activities on Individuals and Families: Volume 1.* MMS 2002-022. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2002 Austin, Diane E. and Thomas R. McGuire (eds.) *Social and Economic Impacts of OCS Activities on Individuals and Families: Volume 2: Case Studies of Morgan City and New Iberia, Louisiana.* MMS 2002-023. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2001 Wallace, Barbara, James Kirkley, Thomas R. McGuire, Diane Austin, and David Goldfield. *Assessment of Historical, Social, and Economic Impacts of OCS Development on Gulf Coast Communities. Volume II: Narrative Report.* MMS 2001-027. New Orleans: U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

*2001 Austin, Diane E. and Thomas McGuire (eds.) Urban Sprawl, Desert Conservation, and Development in Arizona. Final report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Carnegie Council on Ethics and International Affairs and the National Science Foundation. September.

*2001 Austin, Diane E. and Barbara Wolf. *Fire in Indian Country: Two Case Studies in the Southwestern United States.* CLIMAS Report Series. Tucson: Institute for the Study of Planet Earth, University of Arizona. April.

*2000 Austin, Diane E., Sherri Gerlak and Carolyn Smith. *Building Partnerships with Native Americans in Climate-Related Research and Outreach.* CLIMAS Report Series, CL2-00. Tucson: Institute for the Study of Planet Earth, University of Arizona. November.

*2000 Austin, Diane E., Patrick Barabe, Nicholas Benequista, Allison Fish, Andrew Gardner, Ellen Hansen, Thomas McGuire, Sara Stewart, and Petra Tschakert. *An Assessment of Climate Vulnerability in the Middle San Pedro River.* CLIMAS Report Series, CL3-00. Tucson: Institute for the Study of Planet Earth, University of Arizona. Timothy J. Finan, Ed. August.

*1998 Austin, Diane E. (ed. and lead author). Native Americans Respond to the Transportation of Low Level Radioactive Waste to the Nevada Test Site. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for Department of Energy, Nevada Operations Office, Las Vegas, NV. September.

1997 Smith, Patrick H., Eda Saynes-Vazquez, Nicholas P. Benequista, Rana S. Badri, and Diane E. Austin. Community and Pollution Prevention in Nogales, Arizona: Household and Business Perspectives. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Environmental Engineer, City of Nogales, AZ. November.

*1997 Austin, Diane E. Hopi Language Assessment Project: Presentation of Hopi Language Survey Results. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Hopi Tribe, Cultural Preservation Office. September.

<u>Conference Proceedings</u>

2009 Austin, Diane E. Exploring a Cognition-Interaction-Action Framework for Community-Based Participatory Research. Critical, Creative and Innovative Approaches to Feminist Participatory Action Research. Feminist Research Methods Conference Papers. Published online at http://www.kvinfo.su.se/femmet09/papers.htm.

Other

2013 Austin, D., and J. Whalen. Energy from the Ocean: A Curriculum for Grades 5-8. Produced at the University of Arizona, Bureau of Applied Research in Anthropology for the U.S. Department of the Interior, Bureau of Ocean Energy Management.

2012 Austin, D., Chair, with the Good Neighbor Environmental Board. The Environmental, Economic, and Health Status of Water Resources in the U.S.-Mexico Border Region. Report prepared for President Barack Obama, Vice President Joseph Biden, and Senator John Boehner. December.

2011 Austin, D., Chair, with the Good Neighbor Environmental Board. The Potential Environmental and Economic Benefits of Renewable Energy Development in the U.S.-Mexico Border Region. Report prepared for President Barack Obama, Vice President Joseph Biden, and Senator John Boehner. December.

2010 Austin, Diane E. Composting Toilets in Nogales, Sonora: An Opportunity to Forge a New Way Forward. Article for the Watershed Management Group Newsletter, Tucson, AZ.

2009 Austin, Diane E. The Nogales, Sonora Composting Toilets Project. Article for the Friends of the Santa Cruz River Newsletter, Rio Rico, AZ.

Work in Progress

nd Austin, Diane E. and Harry Luton. (In Preparation) Rethinking the Assessment of Social Impacts of Offshore Petroleum Development in the Gulf of Mexico. Prepared for the journal, *Environmental Impact Assessment Review.*

Media

Exhibits

2005 Austin, D.E., J. Fields, L. Miller. Pioneers in the Louisiana Oil and Gas Industry. A Traveling Exhibit on the History of the Offshore Oil and Gas Industry. Permanently established at the Culture and Heritage Expo in Morgan City, Louisiana in 2010.

Videotapes/DVDs

2013 Stinnett, A.A., Director, Foxx-Lupo, T. and D. Austin, Executive Producers. Welcome to the Library Video Project. A series of videos in six languages (Spanish, English, Maay-Maay, Somali, Arabic, and Nepalese) produced at the University of Arizona, Bureau of Applied Research in Anthropology for the Pima County Public Library. Available at: www.library.pima.gov/welcome/

2012 Stinnett, A. A. Director, and Austin, D., Principal Investigator. Pima County Public Library - Seed Library How-To. An educational documentary produced at the University of Arizona, Bureau of Applied Research in Anthropology for the Pima County Public Library.
Available at: www.youtube.com/watch?v=oH-TMvHH-c0

2011 Stinnett, A. Editor, M. Sheehan, Assistant Editor, Austin, D.E., Principal Investigator, K. Bulletts, Tribal Liaison. *Southern Paiute Consortium Monitoring and Education Program*. Video produced at the University of Arizona, Bureau of Applied Research in Anthropology for the Southern Paiute Consortium and U.S. Bureau of Reclamation.

2009 Stinnett, A. Editor, M. Sheehan, Assistant Editor, Austin, D.E., Principal Investigator, K. Bulletts, Tribal Liaison. *Woven Together: Southern Paiute Weaving Traditions*. Video produced at the University of Arizona, Bureau of Applied Research in Anthropology for the U.S. Department of the Interior, National Park Service, the Kaibab Band of Paiute Indians, the Moapa Band of Paiute Indians, the Paiute Indian Tribe of Utah, and the San Juan Southern Paiutes.

2007 Gardner, A. and D. Austin, Authors. *Developing the Offshore Petroleum Industry: Southern Louisiana's Pioneers*. K. Bulletts, Production. Video produced at the University of Arizona, Bureau of Applied Research in Anthropology, for the U.S. Department of the Interior, Minerals Management Service and in cooperation with the University of Houston.

Scholarly Presentations (since 2005):

Colloquia
Invited

2014 "Partnerships, Pilot Projects, and Persistence: A Framework for Approaching Environmental Problems." Presentation to the BLUEGRASS Workshop: The Struggles for Blue Gold: From Grassroots Mobilizations for Water to the Internationalization of Environmental Policies. Interdisciplinary and Global Environmental Studies Program, French National Centre for Scientific Research. Tucson. May.

2013 "The Offshore Petroleum Industry in the U.S. Gulf of Mexico: 75 Years of Accommodation, Adaptation, and Alignment." Presentation to The Power of the Residents: Resistance, Accommodation, Illusion? History and Anthropology of Local Community Actions (18th-21st c.). Namur, Belgium. December.

2012 "Adapting and Adopting Technologies and Ways of Thinking." Coloquio Internacional: Desarrollo Sustentable. Norte-Sur: Diálogos de Frontera. (International Colloquium: Sustainable Development North/South: Border Dialogues). Nogales, Sonora. November.

2011 "Coastal Louisiana Community Dynamics: Complex Challenges, Changes and Opportunities." Louisiana Office of Coastal Protection and Restoration Colloquium. Baton Rouge. October.

Symposia
Submitted

2012 "Social Effects of Offshore Oil and the *Deepwater Horizon* Disaster: Phase One Findings." Presentation to the Bays and Bayous Symposium. Diane Austin, Brian

Marks, Kelly McClain, Tom McGuire, Ben McMahan, Victoria Phaneuf, Preetam Prakash, Bethany Rogers, Carolyn Ware, and Justina Whalen. Biloxi, MI. November.

2010 "Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities." Presentation to the Bays and Bayous Symposium. Mobile, AL. December.

2008 "Assessing the Impacts of Industrial Activity: Addressing Local Needs within a Federally-Driven Process." Presentation to the Coastal Community Action and Stewardship Track, Bays and Bayous Symposium, Gulfport, MS. October.

Conferences

Invited

2013 "Future Science, Current Crisis: Turning Research into the Science Behind Policy." Executive Roundtable. American Anthropological Association Annual Meeting. Chicago, IL. November.

2011 "Elaboración de Proyectos Ambientales en Ambos Nogales." Presentation to the 2nd Annual Congreso Verde (Green Congress), Instituto Tecnológico de Nogales, Nogales, Sonora. November.

2011 "Composting Toilets to Address Water Quality and Quantity." Presentation to the National Coordinators Meeting, U.S. Environmental Protection Agency and Mexican SEMARNAT Border 2012 Program. San Antonio, Texas. May.

2011 "From Waste to Resource: Fibrous Concrete as a Construction Alternative." Presentation to the National Coordinators Meeting, U.S. Environmental Protection Agency and Mexican SEMARNAT Border 2012 Program. San Antonio, Texas. May.

2011 "Addressing Labor Issues in the Offshore Petroleum Industry in the Gulf of Mexico: What Role for Women?" Presentation to the Fueling the Future Conference. St. Johns, Newfoundland. March.

Submitted

2014 "An Emergent Economy along the Gulf of Mexico." Presentation at the Society for Economic Anthropology Annual Meeting. Austin, TX. April.

2014 "Ecological Restoration: A Critical Look." Presentation at the Society for Applied Anthropology Annual Meeting. Albuquerque, NM. March.

2014 "Moving Targets and Interconnected Webs: Studying Socioeconomic Effects of Ecosystem Change." Presentation to the Gulf of Mexico Oil Spill and Ecosystem Conference. Mobile, AL. January.

2013 "Community-Based, Community-Driven Research: Reflections on Where We've Been and Where We're Going." Session at the Society for Applied Anthropology Annual Meeting. Denver, CO. March.

2013 "Researching Together: Introducing the Approach and Session." Presentation to the Society for Applied Anthropology Annual Meeting. Denver, CO. March.

2012 "Exploring Local-Level Adaptation: A Case Study from Southern Louisiana." Adaptation Futures Conference. Tucson, AZ. May.

2012 "Staying the Course: Conducting Long-Term Ethnographic Research via Short-Term Studies." With Tom McGuire. Presentation to the Society for Applied Anthropology Annual Meeting. Baltimore, MD. March.

2012 "Dulac, Louisiana Case Study: Narrowing the Scope." With Justina Whalen (lead) and John Silver. Presentation to the Society for Applied Anthropology Annual Meeting. Baltimore, MD. March.

2011 "Guestworkers in the Fabrication and Shipbuilding Industry along the U.S. Gulf of Mexico: An Anomaly or a New Source of Labor?" Presentation to the Society for Applied Anthropology Annual Meeting. Seattle, WA. March.

2011 "Combining Oral History and Ethnographic Interviews to Document the Social Effects of the Deepwater Horizon Disaster. Presentation to the Organization of American Historians Meeting. Houston, TX. March.

2011 "Understanding the Fabrication and Shipbuilding Industry Along the U.S. Gulf of Mexico: An Ethnographic Perspective." Presentation to the U.S. Bureau of Ocean Energy Management, Regulation and Enforcement Information Transfer Meeting. New Orleans, LA. March. Lead author, with Tom McGuire, Ben McMahan, Lauren Penney, and Preetam Prakash.

2010 "Addressing U.S.-Mexico Environmental Issues through Formal and Informal Policy Networks." Presentation to the Society for Applied Anthropology Annual Meeting. Mérida, Yucatan, México. March.

2010 "Compounded Risks and Heightened Vulnerabilities: The Offshore Petroleum Industry in the Gulf of Mexico." Session organized for the Society for Applied Anthropology Annual Meeting. Mérida, Yucatan, México. March. Served as discussant as well as organizer.

2009 "The U.S.-Mexico Border: Overcoming Walls and Fear in the Search for Understanding." Round table discussion organized for the Society for Applied Anthropology Annual Meeting. Santa Fe, NM. March.

2009 "Composting Toilets in Nogales Sonora: Helping Change Policy through Practice." Poster presented at the Society for Applied Anthropology Annual Meeting. Santa Fe, NM. March. With Francisco Trujillo.

2009 "Diversity in Environmental Education in the Gulf of Mexico: Moving from Ideas to Action." Poster presented at the Society for Applied Anthropology Annual Meeting. Santa Fe, NM. March. With Samantha Herr and Bonnie Jean Owen (lead authors).

2009 "Exploring a Cognition-Interaction-Action Framework for Community-Based Participatory Research." Paper presented at Feminist Research Methods – An International Conference. University of Stockholm, Sweden. February.

2009 "Augmenting Local Infrastructure to Meet Industry Needs: Community Responses to the Fabrication and Shipbuilding Industries." Paper presented at the 2009 Minerals Management Service Information Transfer Meeting, New Orleans, LA. January.

2008 "Baños de Composta y Recolección de Agua: Alternativas para la Recolección y Protección del Agua en Nogales, Sonora" ("Composting Toilets and Water Harvesting: Alternatives for the Collection and Protection of Water in Nogales, Sonora"). Poster presented at the IV Reunión sobre Medio Ambiente de Sonora

(Fourth Meeting of the Environment of Sonora). Hermosillo, Sonora, Mexico. April. With Carolyn Lipnick.

2008 "Contours of the Gulf Coast's Industrial Landscape." Session organized for the Annual Meetings of the Society for Applied Anthropology. Memphis, TN. March. With Tom McGuire.

2008 "We Can't Find Any Workers: Sources of and Perspectives on Labor since WWII." Paper presented at the Annual Meetings of the Society for Applied Anthropology. Memphis, TN. March.

2008 "Linking Communities, Resources, and Researchers: A Collaborative Effort Based in the Study of Southern Paiute Basketry." Paper presented at the Annual Meetings of the Society for Applied Anthropology. Memphis, TN. March. With Angela Storey, Megan Sheehan, and Kevin Bulletts (lead authors).

2007 "Community-Based Participatory Research: A Framework for Multidisciplinary Engagement in and with Communities." Session organized for the Teaching and Learning Conference, Coconino Community College. Flagstaff, AZ. August.

2007 "Opportunities and Challenges in Community-Based Participatory Research in a Binational Setting: A Review of Five Years of Experience." Session organized for the Annual Meetings of the Society for Applied Anthropology. Tampa, FL. March.

2007 "Developing and Maintaining the Partnership: The Ideal and the Reality," Paper presented at the Annual Meetings of the Society for Applied Anthropology. Tampa, FL. March.

2007 "Vanishing Coastal Landscapes: A Roundtable Discussion," Organized and participated in panel. American Society for Environmental History Conference. Baton Rouge, LA. March.

2007 "History of Offshore Oil Development in the Gulf of Mexico: Designing and Managing a Project to Benefit Multiple Stakeholders." U.S. Minerals Management Service Information Transfer Meeting. New Orleans, LA. January.

2006 "From Solid Land to Wetland to Outer Continental Shelf: How Oil and Gas Development Changed the People and Landscape of Coastal Louisiana." Restore America's Estuaries Conference. New Orleans, LA. December.

2006 "Water Harvesting in Nogales, Sonora: Challenges, Opportunities, and Lessons Learned." Poster presented at the Looking Ahead: Managing Stormwater and Harvesting Rainwater for Conservation Conference. Tucson, AZ. October.

2006 "Building and Maintaining Collaboration in a Changing Border Environment." Sixth Conference on Research and Resource Management in the Southwestern Deserts. Tucson, AZ. May.

2006 "Living and Working in Louisiana and Mississippi Following the 2005 Hurricanes: A Roundtable." Annual Meetings of the Society for Applied Anthropology. Vancouver, BC. March. With Thomas McGuire.

2006 "Roundtable on Community-Based Research and Service Learning." Annual Meetings of the Society for Applied Anthropology. Vancouver, BC. March. With Carolyn Behrman.

2005 "Integrating Environmental Education in the Development of Sustainable Community Associations for Environmental Improvement." Presentation at the

Annual Meeting of the North American Association for Environmental Education. Albuquerque, NM. November.

2005 "Border Security Policies and their Impacts on the Environment and Environmental Community." Developing Collaborations in a Changing Border Environment. Session organized for the *Encuentro Fronterizo/* Meeting on the Border Environment. Rosarito, BC. May.

2005 "Exploring the Viability of Community-based Research and Service Learning." Session organized for the 2005 Annual Meeting of the Society for Applied Anthropology. April. With Carolyn Behrman.

2005 "Moving from Seesaws to Merry-go-Rounds: Extending CBR through Partnerships that Increase Viability and Success." Paper presented at the 2005 Annual Meeting of the Society for Applied Anthropology. April.

2005 "Working Underwater: The History of Commercial Oilfield Diving." Paper presented at the 2005 Meeting of the American Society for Environmental History. Houston, TX. March.

2005 "Impacts of the Offshore Oil and Gas Industry in the Gulf of Mexico: Past and Present." Bureau of Applied Research in Anthropology Brown Bag Series. University of Arizona. Tucson, AZ. March. With Tom McGuire.

Other Scholarly Presentations

Invited

2014 "Applied Anthropology: Perspectives of an Environmental Anthropologist," Presentation to the Rock Art Ranch Field School. Joseph City, AZ. June.

2014 "Applied Anthropology: Perspectives of an Environmental Anthropologist," Presentation to the Mule Creek Field School. Mule Creek, NM. June.

2014 "Addressing Infrastructure Gaps in an Urban Setting: A Case Study in Nogales, Sonora," Presentation to Teachers' Institute for k-12 teachers. Center for Latin American Studies and Center for Middle Eastern Studies, University of Arizona. Oracle, AZ. May.

2014 "U.S. Environmental Health Policy: The Evolution and Integration of Environmental Justice," Presentation to the Environmental Health Policy Course. College of Public Health, University of Arizona. Tucson, AZ. February.

2013 "Access: Keys to Social Justice," Panelist for the 7th Annual Social Justice Forum. College of Public Health. University of Arizona. Tucson, AZ. April.

2013 "Urbanization of the U.S.-Mexico Border: Confronting the Challenges." Presentation to the Environmental Anthropology Course. University of Arizona. Tucson, AZ. April.

2013 "Social Science and the *Deepwater Horizon*." Presentation to the Disaster and Risk Course, University of Louisiana at Lafayette. Lafayette, LA. January.

2012 "Ethics in Fieldwork." Workshop for the Political Ecology Lab, University of Arizona. Tucson, AZ. December.

2012 "Community-Based Participatory Research and Action Amid Ongoing Environmental Degradation." Presentation to the Cultural Anthropology Course. University of Arizona. Tucson, AZ. October.

2011 "Cultural Engagement." Session for the Engineers without Borders – USA 2011 Mountain Region Training Workshop. Tucson, AZ. November.

2011 "Seeking a Way Forward: Community-Based Participatory Research and Action to Promote Human Rights and Responsibilities in the Wake of Ongoing Environmental Degradation." Presentation to the Honors College Fall Forum Luncheon. University of Arizona. Tucson, AZ. October.

2011 "Working with Communities in the Quest toward Sustainability." Presentation to the Sustainable Development Course, College of Engineering, University of Arizona. Tucson, AZ. September.

2011 "Addressing Environmental Contamination at the Arizona-Sonora Border: Using Community-Based Collaborative Approaches to Create Critical Social Infrastructure." Presentation to the Superfund Research Program University of Arizona. Tucson, AZ. August.

2011 "Striking Out Against Immigrants in Arizona and Elsewhere: The Convenient Disregard of Historic Patterns. Panel Presentation, Western Washington University, Bellingham, WA. March.

2011 "Colaboración Binacional: UA, CONALEP, y Otras" ("Binational Collaboration: UA, CONALEP, and Others"). Presentation to the Sonoran Directors of the Colegio Nacional de Educación Profesional Técnica. Nogales, Sonora. February.

2011 "The Deepwater Horizon in the Context of the Offshore Petroleum Industry." Presentation to the School of Anthropology Lecture Series, University of Arizona. Tucson, AZ, February.

2011 "Engaged Scholars, Students, and Communities." Presentation to the Department of Geography and Anthropology Lecture Series, Louisiana State University. Baton Rouge, LA. January.

2011 "Enhancing Community-Based Efforts at Sustainability." Presentation to the College of Engineering and the Alternative Energy Club, Vanderbilt University. Nashville, TN. January.

2010 "Replanteamiento de nuestras Ciudades: Proyectos Ambientales en Nogales." ("Replanting our Cities: Environmental Projects in Nogales"). Presentation to the Sustainable Development Program, Instituto Tecnológico de Nogales. Nogales, Sonora. November.

2010 "The Deepwater Horizon in the Context of the Gulf of Mexico Offshore Petroleum Industry." Presentation to the English Department, Nicholls State University. Thibodaux, LA. October.

2010 "Strengthening Binational Collaboration to Address Environmental Problems: Challenges and Strategies at the Arizona-Sonora Border." Presentation to the Latin American Studies Charla Series, University of Arizona. Tucson, AZ. October.

2010 "Who do you Believe? Sorting out the Effects of the Deepwater Horizon Disaster in the Gulf of Mexico." Presentation to the School of Anthropology Lecture Series, University of Arizona. Tucson. AZ. September.

2010 "The Ethics of Geospatial Research with Politically Vulnerable Populations: A Panel Discussion." Presentation to the School of Geography and Development Colloquium Series, University of Arizona. Tucson, AZ. March.

2010 "Proyectos Ecológicos para Ambos Nogales (Ecological Projects for Both Nogales)" Presentation to the Sustainable Development Committee, Instituto Tecnológico de Nogales, Nogales, Sonora. March.

2010 "Successful Strategies for Community Engagement." Presentation to the Honors Civic Engagement Teams, Honors College, University of Arizona, Tucson, AZ. March.

2010 "Southern Paiutes in the Grand Canyon." Presentation to the Western Hemisphere Institute. Tucson, AZ. February.

2009 "Engaging Students, Engaging Communities: Building Partnerships to Foster Learning and Change." Panel Presentation to the School of Anthropology Lecture Series, University of Arizona. Tucson, AZ. October.

2009 "Collaboration to Address Environmental Challenges on the U.S.-Mexico Border." Presentation to the NEH Summer Institute: Nature and History at the Nation's Edge: A Field Institute in Environmental and Borderlands History. Tucson, AZ. July.

2009 "Air Quality Outreach Campaign for Ambos Nogales / Plan de Acción para Mejorar la Calidad del Aire en Ambos Nogales." Presentation to the Ambos Nogales Air Quality Task Force. Nogales, AZ. April.

2009 "Composting Toilets in Nogales, Sonora: Results from an Ongoing Pilot Survey." Poster presented at the Santa Cruz River Researcher's Day. Tucson, AZ. March. With Francisco Trujillo.

2009 "Community-Based Participatory Research: Linking Study to Action." Presentation to the Penn State University Geography Coffee Hour, State College, PA. February.

2009 "Applied Anthropology and Public Policy," Presentation to the Senior Capstone Course, Department of Anthropology, University of Arizona, Tucson, AZ. February.

2009 "Water Harvesting (and Composting Toilets): Alternatives for the Conservation and Protection of Water Supplies in Nogales, Sonora, Mexico." Presentation to the Department of Soil, Water, and Environmental Science Water Harvesting Course. University of Arizona, Tucson, AZ. January.

2009 "Applied Anthropology and the Bureau of Applied Research in Anthropology." Presentation to the Anthropology Club, University of Arizona, Tucson, AZ. January.

2008 "Investigating Social Issues." Presentation to the Workshop on Environmental Research Needs in Support of Potential Virginia Offshore Oil and Gas Activities." Presentation to the Virginia Institute for Marine Sciences. Williamsburg, VA. December.

2008 "Working with Communities Across the Globe." Presentation to the University of Arizona Chapter of Engineers Without Borders, Tucson, AZ. November.

2008 "Semi-Structured and Unstructured Interviewing." Workshop for the Series - Methods of Social Research: Collecting and Analyzing Qualitative Data. Department of Sociology , University of Arizona. Tucson, AZ. October.

2008 "The Exotic Culture of Public Policy: Learning to Act Like a Native." Workshop for the Society for Applied Anthropology Annual Meetings. Memphis, TN. March. With Merrill Eisenberg.

2007 "Fabrication and Shipbuilding along the Gulf of Mexico: A Comparative Community Study." Brown Bag Seminar. Gulf Coast Research Laboratory, University of Southern Mississippi. Gulfport, MS. July.

2007 "History of the Offshore Oil and Gas Industry: Oral and Community Histories," Offshore Oil and Gas History Project Workshop. LSU Center for Energy Studies. Baton Rouge, LA. March.

2007 "Working Collaboratively to Address Environmental Issues on the U.S.-Mexico Border." Presentation to the College of Public Health Graduate Seminar, Community-Based Participatory Research to Decrease Health Disparities. University of Arizona. Tucson, AZ. February.

2006 "Integrating Political Ecology and Community-Based Research to Address Environmental Problems on the Arizona-Sonora Border." Presentation to the Environmental Breakfast Club. University of Arizona. Tucson, AZ. December.

2006 "Living with Oil and Gas: The Effects on Louisiana of Petroleum Development on the U.S. Outer Continental Shelf." Presentation to the Coastal Vulnerability Series, Yale School of Forestry and Environmental Studies. New Haven, CT. November.

2006 "Social Justice for Engineers." Presentation to Sustainable Development Course, College of Engineering, University of Arizona. Tucson, AZ. September.

2006 "Research Approaches and Challenges: Community-Based Research and Partnering with Tribal Governments." Research and Data Collection Needs to Assess the Use and Impact of Food Assistance Programs on Indian Reservations. Research Summit. American Indian Studies Program & the Native Peoples Technical Assistance Office, University of Arizona and the Food Assistance and Nutrition Research Program, ERS, USDA. Tucson, AZ. January.

2005 "Applied Anthropology in the 21st Century." Presentation to the Senior Capstone Course, Department of Anthropology, University of Arizona. Tucson, AZ. November.

2005 "Conducting Community-Based Research." Workshops for the Professional Skills Class, Instituto Tecnológico de Nogales, Nogales, Sonora. October.

2005 "Katrina In Context: Understanding the Ongoing Impacts of the Hurricane in Light of Southern Louisiana's Social and Environmental Landscape." Panel Presentation organized for the University of Arizona. Tucson, AZ. September.

2005 "Applied Anthropology and Long-Term Engagement in Communities." Presentation to Sustainable Development Course, College of Engineering, University of Arizona. Tucson, AZ. September.

2005 "When Traditional Knowledge Isn't Enough: Framing and Reframing Environmental Issues Through Community-Based Research and Action." Presentation to Ecological Anthropology Graduate Course, Department of Anthropology, University of Arizona. Tucson, AZ. March.

Community Presentations

2014 "The Nogales EcoCasa: Appropriate Alternative Technologies," Presentation to the University Women's Group. Green Valley, AZ. April.

2013 "The Welcome to the Library Video Project." Presentation at the Launch of the Videos at the Loft Cinema. Tucson, AZ. December.

2013 "Social Effects of Offshore Oil and the Deepwater Horizon: Phase One Study Findings." (on behalf of research team) Presentation at the Dulac Community Center. Dulac, LA. October.

2013 "Celebrating Earth Day Every Day." Earth Day Speaker for Nogales High School. Nogales, AZ. April.

2013 "Extreme Composting: Using Human Waste to Enhance Soil – Case Studies from the U.S.-Mexico Border." Webinar for the Watershed Management Group Desert Soils Series. February.

2012 "The Environmental, Economic, and Health Status of Water Resources in the U.S.-Mexico Border Region" to the White House Council on Environmental Quality and Southwest Border Interagency Work Group on behalf of the Good Neighbor Environmental Board. Washington, D.C. December.

2012 "The Potential Environmental and Economic Benefits of Renewable Energy Development in the U.S.-Mexico Border Region." Border Energy Forum. Hermosillo, Sonora. October.

2011 "The Potential Environmental and Economic Benefits of Renewable Energy Development in the U.S.-Mexico Border Region" to the White House Council on Environmental Quality on behalf of the Good Neighbor Environmental Board. Washington, D.C. December.

2011 "Composting Toilets in Nogales, Sonora to Address Water Quality and Quantity." Presentation to the Eco-Sanitation Workshop, Watershed Management Group, Tucson, AZ. December.

2009 "Proyectos Ecológicos para Ambos Nogales." Presentation to Managers, ITT Canon, Nogales, Sonora. October.

2009 "Festivals in the United States: From Balloons to Powwows." Presentation to the Fourth Grade Class of Geisbeuren School, Bad Walsee, Germany, February.

2009 "Air Quality and Human Health in Ambos Nogales" Presentation to the Health Careers Club of the Southeast Arizona Area Health Education Center, Nogales High School. January.

2008 "Tecnologías Alternativas para la Comunidad." ("Alternative Technologies for the Community"). Community Workshop on Alternative Technologies for Cooking and Heating. Organización Cuidadana Popular, Colonia Alvaro Obregón, Hermosillo, Sonora, and Puebla Miguel Alemán, Sonora. December.

2008 "Composting Toilets: An Alternative for the Conservation and Protection of Water Supplies." Presentation to the Friends of the Santa Cruz River Board of Directors. October.

2008 "Evaluation of Small Scale Burning of Waste and Wood in Nogales, Sonora." Presentation to the Ambos Nogales Air Quality Task Force for the Border 2012 Program. April.

2008 "Identifying and Promoting Sustainable Technologies in Santa Cruz County." Speaker Series. National Audubon Society - Appleton-Whittell Research Ranch. Elgin, AZ. February

2008 "A Framework for Understanding Native American History." Workshop for the Teaching American History Series. Lafourche and Terrebonne Parish School Boards. Houma, LA. January. Also in 2006, 2007 in Thibodaux and Houma, LA.

2006 "Composting Toilets/Baños de Composta." Presentation to the Arizona-Sonora Water Task Force for the Border 2012 Program. Nogales, Sonora. With Francisco Trujillo. July.

2006 "Alternativos para la Construcción." Presentation to the Meeting of the Asociación de Profesionales en Seguridad y Ambiente. Nogales, Sonora. May.

2006 "La Asociación de Reforestación en Ambos Nogales: Una Experiencia en Colaboración Binacional." Keynote Presenter for Celebration of El Día Internacional de la Mujer. Secretaría de Medio Ambiente y Recursos Naturales. Hermosillo, Sonora. March.

2005 "Building Social Infrastructure to Achieve Long-Term Environmental Improvement." Presentation to the Ambos Nogales Air Quality Task Force. Nogales, Sonora. April.

2005 "Facilitating Learning Across Boundaries: A Binational, Interdisciplinary, Cross-Sector Environmental Collaborative on the U.S.-Mexico Border. Presentation to Cross Border Collaborators. Tucson, AZ. March.

Grants and Contracts (since 2005):

Federal

2012-14 Social Impacts of the *Deepwater Horizon* Oil Spill on Coastal Communities along the U.S. Gulf of Mexico for the Bureau of Ocean Energy Management. 100%, Principal Investigator. $300,162, 8-12 to 2-14.

2008-14 History of the Gulf of Mexico Offshore Oil and Gas Industry during the Deepwater Era for the Gulf of Mexico OCS Region of the Minerals Management Service. Co-principal investigator/project manager. 60% with Thomas McGuire $249,931, 5-08 to 6-13.

1998-14 Monitoring, Education, and Data Management of Southern Paiute Cultural Resources in the Grand Canyon - Contribution to the Southern Paiute Consortium proposal for the Bureau of Reclamation. Research and project development grant to establish a monitoring and education and multimedia data management program. 100%, $12,000. Renewed annually.

2012-13 History Based Education Package for the Bureau of Ocean Energy Management. Principal Investigator. 100%, $24,720, 9-12 to 6-13.

2010-13 Ethnic Groups and Enclaves affected by Outer Continental Shelf Activities for the Bureau of Ocean Energy Management, Regulation, and Enforcement. Extension to Focus on the Social Effects of the Deepwater Horizon Disaster on Gulf Coast Communities. Principal Investigator. 100%, $410,547, 6-10 to 6-13.

2007-13 Southern Paiute Monitoring Protocols and Expansion of Tribal Participation in the Glen Canyon Dam Adaptive Management Program for the Southern Paiute Consortium and Bureau of Reclamation. Principal Investigator/project mger. 100%. $10,000. Renewed annually.

2010-12 From Waste to Resource: Fibrous Concrete as an Alternative to Landfilling and Burning Paper in Nogales, Sonora, for the Border Environment Cooperation Commission/Environmental Protection Agency. Principal Investigator. 100%, $95,300, 5-10 to 8-12.

2006-12 Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study for the U.S. Minerals Management Service, Gulf of Mexico Region. Co-Principal Investigator. 60% with Thomas McGuire, $301,000, 10-06 to 1-12.

2008-10 Investigation of Alternative Fuels for Brick Kilns in Agua Prieta, Sonora for the U.S. Environmental Protection Agency and Border Environment Cooperation Commission. Principal Investigator. 100%, $8,740, 5-08 to 3-10.

2008-09 Managing Water and Human Waste Disposal: A Demonstration of Composting Toilets and Water Harvesting for the U.S. Environmental Protection Agency and Border Environment Cooperation Commission. Principal Investigator. 100%, $4,415, 4-08 to 8-09.

2008-09 Southern Paiute Basketry – A Video Documentary II. Zion National Park. Principal Investigator. 100%. $30,000, 5-08 to 1-09.

2008 Southern Paiute Basketry: Change and Adaptation. Graduate Assistant Grant, Social and Behavioral Sciences Research Institute, University of Arizona. Principal Investigator. 100%. One-term GRA, 1-08 to 6-08.

2007-08 Southern Paiute Basketry – A Video Documentary, for the National Park Service, Zion National Park. Principal Investigator. 100%. $25,000, 9-07 to 6-08.

2006-08 Biodiesel Capacity Building and Demonstration Project in Ambos Nogales for the U.S. Environmental Protection Agency and Border Environment Cooperation Commission. Principal Investigator/project manager for the University of Arizona team. 100%, $21,000, 10-06 to 8-08.

2001-07 Comprehensive History of the Offshore Oil and Gas Industry and its Effects on Louisiana for the Gulf of Mexico OCS Region of the Minerals Management Service. Co-principal investigator/project manager. Ethnographic and oral history study in six Louisiana parishes. 50% with Thomas McGuire, $506,911, 4-01 to 12-07.

2004-06 Ambos Nogales Soil Stabilization Through Vegetation for the U.S. Environmental Protection Agency. Co-principal Investigator/project manager. 50% with Dana Mastro, $100,000, 7-04 to 1-06.

2004-05 Collaboration with National D-Day Museum: Collecting Oral Histories of the Impacts of World War II on the Early Development of the Offshore Oil and Gas Industry for the U.S. Minerals Management Service. 100%, $42,804, 12-04 to 6-05.

State

2013-14 Campus Sustainability Assessment for the University of Arizona Office of Sustainability. Principal Investigator. 100%, $22,922, 1-13 to 12-13.

2012-13 Welcome to the Library Video Project for the Pima County Public Library. Principal Investigator. 100%, $26,244, 8-12 to 6-13.

2012-13 Yuma/San Luis Rio Colorado Air Quality Awareness for the Arizona Department of Environmental Quality. Principal Investigator. 100%, $40,000, 7-12 to 6-13.

2011-12 Chemical Management Campaign for Arizona Border Schools for the Arizona Department of Environmental Quality and Border Environment Cooperation Commission/Environmental Protection Agency. Principal Investigator. 100%, $37,828, 12-11 to 8-12.

2010-11 Air Quality Outreach Campaign for Ambos Nogales for the Arizona Department of Environmental Quality. Principal Investigator. 100%, $40,000, 7-10 to 6-11.

2008-09 Air Quality Outreach Campaign for Ambos Nogales for the Arizona Department of Environmental Quality. Principal Investigator. 100%, $15,000, 4-08 to 4-09.

2008-09 Sustainability on the Arizona-Sonora Border: Examining Discourse, Practice, and Dreams. SBSRI Small Grant, University of Arizona. Principal Investigator. 100%, $1,999, 9-08 to 8-09.

2006-07 Small-Scale Burning Assessment in Ambos Nogales for the Arizona Department of Environmental Quality. Principal Investigator/project manager. 60% with Sarah Moore and Drexel Woodson. $99,998, 7-06 to 12-07.

2005-07 Reducing Diesel Emissions to Protect Children's Health for the Arizona Department of Environmental Quality. Principal Investigator/project mgr. 100%. $25,000, 7-05 to 12-07.

2005-06 Thermal Construction and Alternative Heating Technologies for the Arizona Department of Environmental Quality. Principal Investigator/proj. mgr. 100%. $55,000, 7-05 to 7-06.

2004-06 Engaging Youth in Environmental Health Issues on the Arizona-Sonora Border for the Arizona Department of Health Services. Principal Investigator/project manager. 100%, $24,313, 7-04 to 6-06.

2004-05 Improving Communication and Information Access within the Community Environmental Leadership Program for the Arizona Board of Regents. Program development grant to establish a foundation from which students from various campus departments can continue to work together through ongoing community-based environmental projects. Co-Principal Investigator/project manager. 50% with Julio Cammarota, $25,000, 1-04 to 6-05.

Private Foundation/Non-Governmental Organization

2004-05 Innovations of Higher Education on the Border: Recycling Bicycles for New Opportunities for the Consortium for North American Higher Education Collaboration. Principal Investigator. 100%, $15,000, 7-04 to 6-05.

Appendix B: Publications in the Last Ten Years

Journal Articles and Book Chapters

2014 Austin, Diane. Guestworkers in the Fabrication and Shipbuilding Industry along the Gulf of Mexico: An Anomaly or a New Source of Labor? In David Griffith, eds. *(Mis)managing Migration: Guestworkers' Experiences with North American Labor Markets.* Santa Fe, NM: SAR Press.

2013 McGuire, Tom, and Diane Austin. Beyond the Horizon: Oil and Gas Along the Gulf of Mexico. In Sarah Strauss, Stephanie Rupp, and Thomas Love, eds. *Cultures of Energy: Power, Practices, Technologies.* Chicago: Left Coast Press.

2011 Austin, Diane and Brenda Drye. The Water that Can't Be Stopped: Southern Paiute Perspectives on the Colorado River and the Operations of Glen Canyon Dam. *Policy and Society* 30(4):285-300.

2010 Austin, Diane. Confronting Environmental Challenges on the U.S.-Mexico Border: Examining a Long-Term Community-Based Participatory Research Program. *Journal of Community Practice* 8(2):361-395.

2008 Austin, Diane, with Irma Fragoso and Arturo Frayre. Exploring Interdisciplinary Binational Partnerships for Innovation and Implementation. *NCIIA Conference Proceeding*, Dallas, Texas, March.

2007 Austin, Diane E., and E. Moore Quinn, Guest Editors. *Practicing Anthropology* 29(3)

2007 Díaz, Estela-María, Rosalva Leprón, Diane Austin, and Irma Fragoso. Sustaining Collaboration across Borders, Languages, and Cultures. *Practicing Anthropology* 29:4-8.

2006 Austin, Diane E. Coastal Exploitation, Land Loss, and Hurricanes: A Recipe for Disaster. *American Anthropologist* 108(4): 671-691.

2006 Austin, Diane E. Women's Work and Lives in Offshore Oil. *Research in Economic Anthropology* 24:163-204.

2006 Austin, Diane E., Thomas R. McGuire, and Rylan Higgins. Work and Change in the Gulf of Mexico Offshore Petroleum Industry. *Research in Economic Anthropology* 24:89-122.

2004 Austin, Diane E. Partnerships, Not Projects! Improving the Environment Through Collaborative Research and Action. *Human Organization* 63(4):419-430.

2004 Austin, Diane E., Edna Mendoza, Michèle Kimpel Guzmán, and Alba Jaramillo. Partnering for a New Approach: Maquiladoras, Government Agencies, Educational Institutions, Non-Profit Organizations, and Residents in Ambos Nogales. In *Social Costs of Industrial Growth in Northern Mexico.* University of California San Diego: Center for U.S.-Mexican Studies. Pp. 251-281.

Research Reports

2014 Austin, D., B. Marks, K. McClain T. McGuire, B. McMahan, V. Phaneuf,, P. Prakash, B. Rogers, C. Ware, and J. Whalen. *Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities. Volume I: Methodology, Timeline, Context, and Communities.* OCS Study. BOEM 2014-617. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

2014 Austin, D., S. Dosemagen, B. Marks, T. McGuire, P. Prakash, and B. Rogers. *Offshore Oil and the Deepwater Horizon: Social Effects on Gulf Coast Communities. Volume II: Key Economic Sectors, NGOs, and Ethnic Groups*. OCS Study. BOEM 2014-618. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

2014 Austin, D. and D. Woodson, eds. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Volume II: Community profiles. OCS Study. BOEM 2014-610. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

2014 McGuire, T., D. Austin, and D. Woodson, eds. Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study. Volume III: Technical Papers. OCS Study. BOEM 2014-611. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

2013 Kelly-Richards, Sarah, Pedro Robles, Diane Austin. Yuma County Air Quality Awareness: Final Report. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona. June.

2012 Austin, Diane, ed. A Unique Volunteer Experience: Exchange between University of Arizona Students and the Tucson Refugee Community. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona. October.

2012 Austin, Diane, Francisco Trujillo, and Edmundo Perez Pino. From Waste to Resource: Fibrous Concrete as an Alternative to Landfilling and Burning Paper in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona and Frente Cívico Nogalense, A.C. Tucson, AZ and Nogales, Sonora. September.

2011 Lai, Oscar, Diane Austin, and Britny Delp. Air Pollution Outreach in Ambos Nogales. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona for the Arizona Department of Environmental Quality. July.

2010 Dick, Evan, Jodi Perin, Diane Austin, Hannah Kahler, and Jim Anderson. Alternative Fuel Research for Brickmakers in Agua Prieta, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, School of Anthropology, University of Arizona and the School of Mechanical, Aerospace, Chemical and Materials Engineering, Arizona State University for the U.S. Environmental Protection Agency/Border Environment Cooperation Commission. March.

2010 Austin, Diane and Francisco Trujillo. Composting Toilets and Water Harvesting: Alternatives for Conserving and Protecting Water in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the U.S. Environmental Protection Agency/Border Environment Cooperation Commission. January.

2009 Austin, Diane. Air Quality Outreach Campaign for Ambos Nogales. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. December.

2008 Gaines, Justin, Samantha Herr, and Diane Austin. Reducing Diesel Emissions to Protect Children's Health: The Santa Cruz Valley Unified School District Bus Conversion Project. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. June.

2008 Austin, Diane, and Annika Ericksen. The Biodiesel Capacity Building and Demonstration Project in Ambos Nogales: An Assessment of the Potential for Biodiesel Production to Alter Present Use and Disposition of Waste Vegetable Oil and Grease. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Rio Rico Fire District and the Border Environment Cooperation Commission/U.S. Environmental Protection Agency. May.

2008 Austin, Diane, Bob Carriker, Tom McGuire, Joseph Pratt, Tyler Priest, and Allan G. Pulsipher. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume I: Papers on the Evolving Offshore Industry.* OCS Study MMS 2008-042. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

2008 Austin, Diane E. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume III: Morgan City's History in the Era of Oil and Gas: Perspectives of Those Who Were There.* OCS Study MMS 2008-044. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

2008 Austin, Diane E. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume V: Guide to the Interviews.* OCS Study MMS 2008-046. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

2008 Austin, Diane E. and Justin Gaines. *History of the Offshore Oil and Gas Industry in Southern Louisiana. Volume VI: A Collection of Photographs.* OCS Study MMS 2008-047. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

2007 Austin, Diane, Bonnie Jean Owen, Sara Curtin Mosher, Megan Sheehan, Jeremy Slack, Olga Cuellar, Maya Abela, Paola Molina, Brian Burke, and Ben McMahan. Evaluation of Small Scale Burning of Waste and Wood in Nogales, Sonora. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality. November.

2007 Austin, Diane, Arthur Phillips III, David Seibert, and Kevin Bulletts. Southern Paiute Participation in the Glen Canyon Adaptive Management Program: A Ten Year Review. Report prepared at the Bureau of Applied Research in Anthropology and the Southern Paiute Consortium for the Bureau of Reclamation. June.

2006 Austin, Diane E., Brian Burke, Krisna Ruette, Jeremy Slack, and Ronald H. Villanueva. Thermal Construction and Alternative Heating and Cooking Technologies. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Department of Environmental Quality.

2006 Diamente, Daniela and Diane Austin. Ambos Nogales Soil Stabilization Through Revegetation. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona on behalf of the Asociación de Reforestación en Ambos Nogales for the U.S. Environmental Protection Agency.

2005 Austin, Diane E., Erin Dean, and Justin Gaines. Yanawant: Paiute Places and Landscapes in the Arizona Strip. Volume II. The Arizona Strip Landscapes and Place Name Study.

Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the Arizona Strip District, Bureau of Land Management. December.

2004 Pavri, Eric, Erin Dean, and Diane Austin. Obtaining and Evaluating User Participation in GIS Database Development in U.S.-Mexico Colonias. Report prepared at the Bureau of Applied Research in Anthropology, University of Arizona for the U.S. Department of Housing and Urban Development. August.

Appendix C: Consideration Materials
(Documents Cited in Report are Consideration Materials even if Not Listed Below)

Bates, Exhibit, TREX, or Other Description
Deposition Exhibit 11925
Deposition Transcript Luton, Harry
IGS173-000114
IGS173-000117
N3P001-000723
N5G037-000219
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(Documents Cited in Report are Consideration Materials even if Not Listed Below)

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