Responding to the Flow
Louisiana State University’s Response to the Deepwater Horizon Drilling Disaster
## Contents

Dedication ........................................................................................................... 7

Letter from Chancellor Martin ................................................................. 8

In Memoriam ............................................................................................ 10

Timeline ...................................................................................................... 12

Introduction ............................................................................................ 19

Coordination in the Wake of Disaster .................................................... 21

Communicating Through Chaos .......................................................... 40

Science Behind the Spill ........................................................................ 55

Institutional Assets ................................................................................ 76

Lessons Learned .................................................................................... 91

Reflections on Responding to Crisis .................................................... 95

Epilogue .................................................................................................... 108

LSU/ORED Gulf of Mexico Oil Spill Expert List ................................. 113
Dedication

This volume is dedicated to the 11 people who perished on the Deepwater Horizon drilling rig. Our institution worked on your behalf, in the name of preventing the future loss of innocent lives. Rest in peace.

Adam Weise, 24, Yorktown, Texas
Aaron Dale Burkeen, 37, resident of Neshoba County, near Philadelphia, Mississippi
Donald Clark, 49, Newellton, Louisiana
Roy Kemp, 27, Jonesville, Louisiana
Jason Anderson, Bay City, Texas
Stephen Curtis, 39, Georgetown, Louisiana
Gordon Jones, 28, Baton Rouge, Louisiana
Blair Manuel, 56, Gonzales, Louisiana
Dewey Revette, 48, State Line, Mississippi
Shane Roshto, 22, Franklin County, Mississippi
Karl Kleppinger, 38, Natchez, Mississippi
Dear Reader,

In my time as chancellor of LSU, I have seen this university continually rise to meet many powerful challenges. Almost immediately following my arrival on campus, Hurricane Gustav slammed into Baton Rouge and caused massive devastation to the campus and its surroundings – yet the community rallied and came through stronger than ever. Soon afterward came the national recession and state budget woes, a financial crisis that still threatens the very nature of our job, which is to provide the best possible education to students at a reasonable cost. But our academic community perseveres – we find a way.

When the Deepwater Horizon well exploded out in the Gulf – more than 170 miles away from Baton Rouge – we didn’t understand how immediately and intensely the impact would be felt on campus. While first and foremost a human tragedy, with 11 lives lost forever in the devastation, preparations for the inevitable impact on our coast and environment were the only things left in the realm of human control. Our faculty understood that, and as employees of a public institution and citizens of Louisiana, it was a duty – and an honor – to serve their state by assessing the situation, remediating the oil, determining the impact and finding ways to make sure that a disaster of this magnitude might be prevented in the future.

Throughout this ordeal, I witnessed our large, widespread campus shrink as people from all research fields and every college and department on campus pulled together to find ways to respond to the situation. LSU faculty, as a whole, felt compelled to provide public service to their already pummeled state. Our researchers from the School of the Coast & Environment and the Colleges of Science, Engineering, Humanities & Social Sciences, and Veterinary Medicine rose to the challenge and used their expertise to become integral to the response effort. It was an honor to stand among them as peers.
In the following pages, you will read a detailed account of the many steps taken by faculty and staff in the aftermath of the Deepwater Horizon oil spill. We relay this information first as a historical document, and second as a guide to those of you who might prepare for the impact of a large-scale disaster on your own organizational community. Every situation is different, and while we certainly don’t claim to have done everything perfectly, we feel that as a university, we fulfilled and even exceeded our responsibility to our state.

Throughout its history, this university has had to respond to a wide variety of crises, whether on campus or in our community, but perhaps none have been as directly tied to the research community. We hope you will find this guide helpful and our efforts commendable.

Sincerely,

Michael V. Martin
LSU Chancellor
In Memoriam

This volume is also dedicated to the memory of our valued colleague and friend, Dr. Gregory William Stone, who passed away unexpectedly just a few short months ago.

Obituary

The coastal research community mourns the passing of Gregory W. Stone, James P. Morgan Distinguished Professor in the Coastal Studies Institute, director of the WAVCIS program and internationally-renowned coastal researcher. Stone unexpectedly passed away on Thursday, February 17, 2011.

A very well-respected faculty member of the LSU School of the Coast & Environment, Greg served as director of the Coastal Studies Institute. He graduated with a bachelor’s degree with honors from the University of Ulster in Ireland, where he showed an early aptitude and interest in coastal science. Next, Greg was accepted at West Florida University, or WFU, in Pensacola, earning his master’s degree there before moving on to the University of Maryland to work toward a Ph.D. His doctoral research focused on sediment transport along the western Florida coast. After graduation, he returned to WFU as a visiting professor, then applied for and received a coastal geographer position at LSU.

Once at LSU, Greg’s research and teaching commitments expanded in scale and notoriety. He had a vision of creating a number of instrumented stations off the Louisiana coast to track the magnitudes and variations in coastal processes that drive coastal change. In order to make this vision a reality, he transferred to LSU’s Coastal Studies Institute in 1997, accepting a faculty position in the Department of Oceanography & Coastal Sciences. His interest in the oceanic processes that drive changes in coasts of different types made him a perfect fit for CSI
and its 50-year history of similar research work and their field support
group was capable of building the system now known as the Wave-Cur-
current Surge Information System, or WAVCIS. This program has received
international acclaim for its technical innovation and scientific value.
Currently offshore data (waves, currents, wind, and temperature) from
six stations are telemetered via satellite back to LSU where data are
formatted and put on the Internet in near real time. Government agen-
cies, researchers, industry, fisherman, and others use the data routinely.
Stone established himself as an internationally respected coastal scientist
who produced cutting-edge research and attracted millions of dollars of
research support to LSU for WAVCIS and other research projects.

At the same time, he realized the importance of acquiring offshore data
for his models. WAVCIS was Greg’s signature program and his legacy.
The data collected by these offshore stations are crucial for restoration
projects in coastal Louisiana. Realizing the importance of these data,
funding for part of this program has come from both state and federal
levels.

In addition to being an outstanding researcher, Stone was an excellent
teacher and advisor of graduate students. Greg always projected a genu-
ine sense of happiness and feeling of accomplishment when he talked
about his students and they loved working for him in the congenial and
educational environment he created.

He was a valued colleague to his peers at LSU and around the world.
He leaves behind a loving wife, Ann, and a son, Carter Morgan Derek
Stone. Greg will be sincerely missed as an excellent coastal researcher
and friend.

Harry H. Roberts, Boyd Professor Emeritus
Coastal Studies Institute
School of the Coast & Environment
Louisiana State University
Baton Rouge, LA
Timeline of the Deepwater Horizon Disaster

**Tuesday, April 20, 2010** – A Transocean rig called the Deepwater Horizon catches fire. Most of the workers are evacuated, but 11 are missing and presumed dead.

**April 21** – Coast Guard Rear Admiral Mary Landry is named federal on scene coordinator.

**April 22** – The Deepwater Horizon rig, valued at more than $560 million, sinks and a five-mile-long oil slick is seen.

**April 24** – A leak is discovered by underwater cameras. It appears to be releasing 1,000 barrels of oil each day.

**April 25** – An oily sheen covers 580 square miles. The slick, which is spreading north, is about 70 miles south of the Mississippi and Alabama coastline. The Coast Guard approves a plan to have remote underwater vehicles activate a blowout preventer to stop the leak. Efforts to activate the blowout preventer fail.

**April 26** – The oil slick stretches 80 miles across the Gulf and is 36 miles southeast of Louisiana. Cleanup crews set up booms to block the oil from coming ashore. Search and rescue operations are suspended; 115 workers are evacuated, though 11 have been killed and 17 injured. Underwater robots have discovered at least two leaks. Shrimpers and oyster farmers begin to fear for this season’s catch. 23,000 ft. of containment booms are deployed with a further 70,000 ft. waiting to go up and 50,000 ft. on order.

**April 27** – Officials consider setting fire to the slick, which has grown to 600 square miles. The spill is about 20 miles off the Louisiana coast. Robot submarines are sent to try to stem the oil leak.

**April 28** – The Coast Guard estimates the flow of oil is 5,000 barrels per day (bpd). This totals 210,000 gallons/795,000 liters since the leak began and is five times greater than first estimated. A controlled burn is conducted on the giant oil slick.
April 29 – Louisiana Governor Bobby Jindal declares a state of emergency and the federal government sends in skimmers and booms to prevent environmental damage. The spill is about 16 miles off the Louisiana coast and stretches across a 600-mile area.

April 30 – President Obama halts any new offshore drilling projects unless conducted by rigs with new safeguards. BP Chief Executive Tony Hayward says the company takes full responsibility for the spill and will pay all legitimate claims and the cost of the cleanup. The Louisiana Departments of Health & Hospitals and Environmental Quality say the strong odor blanketing much of coastal Louisiana and the metro New Orleans area is “possibly” the result of the massive oil spill in the Gulf of Mexico.

May 1 – A light sheen of oil washes ashore in Louisiana. 1,900 emergency workers and 300 ships are sent to the site.

May 2 – President Obama visits the Gulf Coast to see cleanup efforts first-hand. U.S. officials close areas affected by the spill to fishing for an initial period of 10 days. BP starts to drill a relief well alongside the failed well, a process that will take two to three months to complete. The sheen of oil can be seen in the Mississippi River’s South Pass, a major channel through the salt marshes.

May 3 – BP says it will pay for all the cleanup costs from the spill. Thousands of miles of federal fishing areas remain closed. BP tries installing a shutoff valve on one of the three underwater leaks, but this is a complicated operation that might not succeed. National Oceanic and Atmospheric Administration, or NOAA, officials say the oil slick appears to be drifting toward the Alabama and Florida coasts, and the Chandeleur Islands off Louisiana’s southern tip.

May 5 – A barge begins towing a 98-ton containment chamber to the site of the leak. BP says one of the three leaks has been shut off by capping a valve, but that will not cut the amount of oil gushing out. This procedure has never been done before at a depth of 5,000 feet.

May 6 – Oil washes ashore on the Chandeleur Islands off the Louisiana
coast, uninhabited barrier islands that are part of the Breton National Wildlife Refuge. NOAA says the oil could make landfall on the eastern Gulf Coast of Alabama and the Florida Panhandle in two or three days.

May 7 – BP tries to lower the containment dome over the leak, but the device was rendered useless by a slush of frozen hydrocarbons clogging it. A fishing ban for federal waters off the Gulf is modified, expanded and extended.

May 9 – The edge of the slick reaches Louisiana’s Chandeleur Islands and tar balls begin to wash up on Alabama’s Dauphin Island.

May 10 – BP is preparing to place a smaller dome (five feet in diameter and five feet tall – shaped like a top hat) on top of the leaking well. Drifting oil arrives in Terrebonne and Atchafalaya Bays.

May 11-12 – Executives from BP, Transocean and Halliburton appear at congressional hearings in Washington. Senate Energy Committee Chairman Jeff Bingaman says that it appears that the explosion on the rig is due to a “cascade of errors,” technical, human and regulatory. The executives blame each other’s companies.

May 13 – Tony Hayward, the head of London-based BP, says the company could have done more to prepare for the deepwater oil leak.

May 14 – In his sternest comments yet, Obama slams companies involved in the spill, criticizing them for a “ridiculous spectacle” of publicly trading blame over the accident.

May 15 – BP inserts a tube into the broken pipe but one of the submersible robots collides with the pipe work and dislodges the tube. Plumes of oil are forming under the Gulf.

May 16 – BP succeeds in inserting a tube into the leaking riser pile of the well and capturing some oil and gas.

May 17 – BP begins burning off natural gas emerging from the siphon apparatus at the ocean’s surface.
May 18 – The U.S. nearly doubles a no-fishing zone in waters affected by the oil, extending it to 19 percent of U.S. waters in the Gulf.

May 19 – The first heavy oil from the spill washes ashore in fragile Louisiana marshlands and part of the fragmented oil slick enters a powerful current that could carry it to the Florida Keys and beyond.

May 20 – The EPA urges BP to use a less toxic dispersant

May 26 – To date, at least seven million gallons of crude have spilled into the Gulf, fouling Louisiana’s marshes, coating birds and other wildlife, and threatening livelihoods from fishing to tourism. A “top kill” maneuver starts, involving pumping heavy fluids and other material into the well shaft to try to stifle the flow.

May 28 – President Obama tours the Louisiana Gulf Coast on his second visit to assure residents the U.S. is doing everything it can to protect them, saying “I am the president and the buck stops with me.”

May 29 – BP says the complex “top kill” maneuver to plug the well has failed, crushing hopes for a quick end to the largest oil spill in U.S. history already in its 40th day.

May 31 – BP begins its third attempt to contain oil from leaking into the Gulf. The procedure is to slice off the leaking pipe at the top of the well’s broken blow-out preventer, placing a cap over the leak and channeling the captured oil and gas to a vessel on the surface.

June 1 – Florida officials confirm oil sheen about nine miles from Pensacola Beach. BP shares plunge 17 percent in London trading, on news the latest attempt to plug the well has failed, wiping $23 billion off its market value.

– U.S. Attorney General Eric Holder says the Justice Department has launched a criminal and civil investigation into the rig explosion and the spill.

June 2 – BP continues work on a new plan to try to capture most of the escaping oil. This involves using robot submarines to cut off what is
left of the leaking riser pipe, then lowering a containment cap over the wellhead assembly. Some difficulties are encountered with the cutting operation.

– U.S. authorities expand fishing restrictions to cover 37 percent of U.S. federal waters in the Gulf.

**June 3** – BP completes a second cut on a fractured pipe connected to the leaking well, paving the way for engineers to install a cap that officials hope will send the majority of the oil to a ship on the water’s surface.

**June 6** – BP says it collected 10,500 barrels of oil after a new containment cap was placed over the leaking well.

**June 14-15** – President Obama visits Alabama, Mississippi and Florida. In his first televised Oval Office address, Obama accuses BP of recklessness and says, “We will make BP pay for the damage the company has caused.”

**June 17** – Tony Hayward testifies in front of the House Energy and Commerce Committee on Capitol Hill.

**June 29** – Hurricane Alex puts a halt to skimming efforts off the Louisiana Coast. All near-shore skimmers are idled off the coasts of Florida, Alabama and Mississippi. The storm also pushes the oil patch toward Grand Isle and Elmer’s Island, Louisiana dumping tar balls as big as apples on the beach.

**June 30** – BP’s Tony Hayward hands over responsibility for the Gulf of Mexico oil spill containment and cleanup to Robert Dudley.

**July 5** – Tar balls from the BP spill wash up on several Texas beaches.

**July 10-12** – Undersea robots remove the existing containment cap in order to install a new sealing cap that could contain all of the oil spewing from the well.

**July 13** – BP performs a series of pressure tests to check if a new sealing
cap that could halt the oil has entirely sealed the well.

**July 15-18** – BP closes valves on a new cap and announces that oil has stopped leaking into the Gulf.

**July 23** – Clean-up vessels and equipment are moved ashore in preparation for a storm.

**July 25** – BP’s board is set to name managing director Bob Dudley as the company’s new chief executive.

**August 4** – BP says its “static kill” procedure, in which a heavy drilling mud was used to push oil from the runaway well back into the reservoir, is a success.

**August 8** – BP says that pressure testing following the cementing operations indicates an effective cement plug in the pipe.

**September 16** – Government officials say a relief well drilled nearly 2.5 miles beneath the floor of the Gulf of Mexico intersected BP’s blown-out well.

**September 19** – Government officials report the well is permanently sealed.
April 20, 2010, marked the beginning of what would be classified as the worst technological disaster in U.S. history. The onset of the Deepwater Horizon drilling rig fire and the subsequent oil leak on the seabed approximately one mile below the surface of the water, kicked off an emergency response effort of immense proportions. Private industry and federal agencies coordinated efforts to contain the damage at sea, while back on land, various entities were scrambling to play a role in the emergency response.

The size of this disaster and the complexity of the problems involved automatically limited the major interests that would come into play. As it turns out, Louisiana State University (LSU) would end up occupying a unique and central role in research and community outreach. This is mostly because Louisiana suffered the brunt of the damage related to this disaster. The Macondo well disaster, located off of the
Louisiana coast, caused oiled shorelines and, because the economy of this coastal region is heavily dependent on the oil and seafood industries, its residents became intensely distressed. But as fate would have it, as a public land-, sea- and space-grant institution and as Louisiana’s flagship university, LSU had both unique assets and obligations that fostered an unprecedented research and outreach response to the disaster.

In the pages that follow, the mobilization of these assets in response to this national disaster is chronicled. The coordination efforts to facilitate scholarly work related to the spill, the communication efforts to ensure timely and accurate sharing of information, the science behind the spill, and the lessons learned from this truly incredible experience are conveyed to the reader to both preserve this moment in time and to guide those who find themselves facing adversity in the future. The volume closes with a set of vivid reflections from key players who were instrumental in fostering the response.

An emergent theme of this volume is that there simply is no other type of institution in American society that is capable of launching such an enormous research and outreach effort. World-class research universities like LSU have assets and expertise across a spectacular array of scholarly fields. The LSU community put this expertise to good use and responded to this challenge with incredible determination and commitment. We hope that the residents of Louisiana and our alumni all over the world have a chance to read this volume and hear the tale of how LSU, their University, proactively responded to this incredible challenge.
Coordination in the Wake of Disaster

“We must all hang together, or assuredly we will all hang separately”
Benjamin Franklin

To err is human. But sometimes, basic mistakes can have profound effects on the world. On the night of April 20, 2010, Transocean’s Deepwater Horizon drilling rig suffered a kickback of natural gas. Due to a series of human errors that had accumulated throughout the exploratory process, the blowout prevention mechanism did not activate, causing a massive explosion on the rig. The entire platform became engulfed in flames. Workers were immediately evacuated, but 11 went missing. Two
days later, the rig sank to the bottom of the Gulf of Mexico, taking any hopes of finding survivors down with it. While the world came to grips with the human tragedy, a different problem emerged when a five-mile-long oil slick was spotted from the air. Only five days later, 600 square miles of ocean were covered with oil, and word came that the riser pipe responsible for funneling oil to the surface platform had broken near the wellhead on the seafloor, leaving oil to flow unchecked into the deep-sea environment.

This technological disaster presented new and unprecedented dilemmas. Efforts to contain a leaking oil well had never been attempted in the abyss. The wellhead was approximately one mile below the surface, a depth that humans cannot access without the help of machines. Ultimately though, humans had caused the crisis, and humans alone would have to fix it.

This situation was so unique, no one knew what would happen next. The methods of response, potential environmental impacts, even the amount of oil likely to seep into the deep-sea environment were complete unknowns. Priorities being what they are, the central issue of how to cap the well and stop the flowing oil became the primary focus for several months. The world watched raptly, waiting for solutions, and in an unprecedented maneuver, a world-class, research university stepped in and laid the groundwork to provide the answers to many of those questions.
Why LSU?

As a university, LSU was uniquely situated to respond to the crisis. Positioned near the Gulf of Mexico and thus relatively close to the site of the explosion, its petroleum engineering program benefits from long-standing training agreements with international petroleum giants, allowing students and faculty access to the most current and advanced equipment available. Its Petroleum Engineering Research and Technology Transfer Laboratory, or PERTT Lab, is the only university-owned, hands-on well training facility in the country. As such, it provides on-scene training to prevent exactly the kind of blowout situation that occurred on the Deepwater Horizon, and serves as home to some of the best engineering experts in the country, indeed in the world. The LSU School of the Coast & Environment is world-renowned for its expertise in coastal studies and prowess in oil spill response and remediation research. But all the expertise in the world isn’t enough to successfully launch a significant response to an unprecedented crisis without comprehensive cross-campus coordination and cooperation.

LSU is a large university. Situated on 2,000 acres, with more than 23,000 undergraduate students, 1,200 faculty members and 5,000 graduate student scholars, bringing people together – whether in theory or in reality – is never an easy task. A faltering global economy and statewide budget cuts to higher education had recently led to a somewhat proprietary stance between departments and colleges, as all were concerned about how much they stood to lose in the upcoming months. But with a situation of this magnitude, coordination was the key to getting things done – and done right. While a university of this size and stature naturally has its fair share of bureaucracy and red tape, faculty from across campus were ready and willing to set aside everything else and come together in order to establish a comprehensive research response to this disaster. The central question became, “How does LSU coordinate a response to this situation?”
During a crisis, institutional coordination is notorious for being simultaneously essential and extraordinarily difficult to achieve. Without coordination, initiatives fail, protocol is breached and image can be tainted. Getting everyone on the same page is an almost impossible task, but sometimes there is no choice. As Louisiana’s flagship university and a public institution of higher learning, LSU had an obligation to take a leading role in responding to this crisis.

Unlike most other schools, the LSU community had prior experience in responding to large-scale disasters. Five years earlier, the university acted as a triage center for the elderly and incapacitated before, during and after Hurricane Katrina, and as a shelter for those evacuated from New Orleans. Though handled successfully, the university ran into many difficulties during the response, particularly related to communications and research, which resulted in significant learning around crisis management. While communicating during a crisis is always difficult, a lack of electricity, barrage of international media and overloaded phone networks created more problems than usual. On the academic side, in an effort to stimulate research related to the storm, LSU’s Office of Research & Economic Development, or ORED, and the LSU Faculty Senate joined forces to offer faculty a mechanism for collaborative research in the form of a workshop and public forum to share ideas. Though sound in principle, it was probably held too late after the event to truly achieve its purpose. In fact, at least one university researcher – John Pardue, Elizabeth Howell Stewart Endowed Professor of Civil & Environmental Engineering – had already published a scholarly article about the hurricane by the time the forum was held. Using institutional memory and experience to its advantage, ORED decided to act swiftly and do whatever it could to ensure an effective response to the spill so that important opportunities to collect critical data were not lost.
Coordinating Research

With so many unknowns, the situation called for immediate and thorough reactions from the academic community. No one knew how to stop the flow of oil from the seabed, or how wildlife and the environment would be impacted by an as yet undetermined amount of oil.

On April 30, one week after the rig sank into the Gulf of Mexico, ORED administrators announced a campus-wide research forum, giving researchers a week to put together brief project abstracts. The forum, held in an auditorium capable of seating more than 200 people, was standing room only, packed with faculty representing departments as diverse as mechanical engineering, environmental and biological sciences, oceanography and coastal sciences, English, agricultural economics, sociology, and veterinary medicine. That forum resulted in approximately 40 research proposals and projects, wildly exceeding expectations and truly acting as a motivating force for faculty.

Figure 1.2 Original Announcement of Oil Spill Forum.
Fostering Collaboration

LSU operates on a large and widespread campus, making it difficult for faculty to naturally associate and collaborate. While information technology has in some ways greatly reduced the limiting impact of geographic distance, the establishment of collaborative scientific research is very much a social process. It is hard for scholars to establish the trust and comfort necessary for effective collaboration from remote locations. Particularly in the early stages, scientific collaboration frequently requires a good deal of face-to-face interaction. To facilitate this, several more events were organized, each targeted to a specific area of scholarly interest. At least seven collaborative meetings were held over the course of the next two months, each one bringing together multidisciplinary teams from across the campus. Examples of these meetings include a follow-up forum held on May 12 sponsored by the College of Humanities & Social Sciences and ORED to allow interested researchers a more detailed opportunity to hear about work being conducted in the humanities and social sciences. In June 2010, ORED organized and held three research workshops conducted by subject matter experts, focusing on three distinct scholarly research areas: the impact of the oil spill on coastal human communities; the Gulf of Mexico deepwater environment as the focal point of the spill; and coastal zone shallow water impacts and remediation.

Also in June, the College of Science developed a webcast as an informational seminar to announce funding opportunities. Approximately 60 people were in attendance and, during the webcast, some 20-30 remote users logged in to participate. Questions were taken in advance as well as in real time through e-mail and instant messaging. During this time, ORED also organized a research forum focusing solely on the arts and humanities. By the end of June, the oil was still flowing freely and more than 200 LSU researchers were involved in more than 300 projects, many of which were multidisciplinary in nature.
In a similar vein, Louisiana recognized the value in bringing together not only colleagues from different disciplines and colleges, but also from across the nation. Together with the LSU-based Louisiana Experimental Program to Stimulate Competitive Research, or EPSCoR, and in partnership with Mississippi and Alabama EPSCoR, they were able to secure funding and start planning to host a national conference called “Collaborative Scientific Research in Relation to the Gulf Oil Spill,” with the goal of encouraging interdisciplinary and collaborative research focusing on four main areas:

- Engineering aspects and the transport and fate of spilled oil;
- Coastal and ocean environments: damage, remediation and recovery;
- Human communities: disaster management, sustainability and health;
- And economics, policy and decision support systems.

Though the event was held in November 2010, months after the well was capped, the planning was started early on, and it ultimately allowed researchers to come together after their initial work had begun, so that collaboration between more fully developed projects might result.

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**Institutional Coordination**

Facing anticipated funding opportunities and deadlines, administrators from across campus came together to develop a unified response effort. Bombarded with requests from the media, from their own faculty and from concerned stakeholders, these university leaders knew that it was necessary to bring everyone to the table in order to have a comprehensive picture of all aspects of the disaster, and to instill a sense of order amidst the frenzy. Protocol and process were on the verge of going out
the window as researchers, desperate to get into the mix, became frustrated with a lack of funding to carry out their work. Obtaining data and analyzing samples, while imperative to the research process, was a time-consuming and costly endeavor generally requiring a much longer period of time. In response to the frantic atmosphere, many reached deep into their own pockets and dove straight into the melee on the coastline, where the general confusion about who was in charge gave campus officials concern for their employees’ safety and whereabouts. Some were even briefly detained by law enforcement or representatives of BP due to confusion over their credentials. If something wasn’t done quickly, all control could be lost and the situation could spiral out of control.

In order to ensure that the campus remained on the same page from the top down, two committees at the upper administrative level were formed. The first, a large group featuring vice chancellors, deans and other leaders, was referred to as the Oil Spill Advisory Committee, or OSAC.

OSAC was comprised of, among others, the Interim Vice Chancellor of Research & Economic Development, Doris Carver; Assistant Vice Chancellor of Communications, Kristine Calongne; Director of the Louisiana Sea Grant College Program, Chuck Wilson; Director of the Stephenson Disaster Management Institute, Col. Joseph Booth; Dean and Associate Dean (respectively) of the School of the Coast & Environment, Chris D’Elia and Rick Shaw; Dean of the College of Science, Kevin Carman; Dean of Engineering, Rick Koubek and Associate Dean of Engineering, Kelly Rusch; Dean of Humanities & Social Sciences, Gaines Foster, and Vice Chancellor for Extension Services with the LSU AgCenter, Paul Coreil. The group met on a weekly basis to share information relevant to the key stakeholders. Each representative brought to the table collective intelligence from his/her unit to ensure that each issue facing the university could be understood from all pertinent angles.

A relatively – if not completely – unique occurrence, this representative
committee proved to be integral to the response effort. All matters were brought up for consideration, and knowledge was shared. Academic units discussed current and potential avenues of research and funding, while administrative units shared guidelines for conduct, current public relations initiatives and communication pointers. Since the oil spill was clearly a litigious situation, lawsuits were a major concern, and all involved wanted to make sure that all matters were handled appropriately. When oil began washing ashore and the first signs of wildlife impact began appearing on television screens across the globe, the impetus to get things moving as an institution grew tenfold. Everyone knew that the eyes of the world were turned toward Louisiana.

On May 11, only one day after an information-gathering visit from the Environmental Protection Agency Administrator Lisa Jackson, Dean Chris D’Elia of the School of the Coast & Environment was contacted by BP Exploration and Production Inc., and negotiations over funding contracts began in earnest. The negotiations were an intensive back-and-forth process, whereby Dean D’Elia and a small cadre of his colleagues recruited LSU scientists to draft rapid response research proposals for BP. These proposals then essentially became a negotiating mechanism to give both BP and LSU clarification on what the LSU research capacity was, and what exactly it was that BP desired LSU scien-

Figure 1.3 The LSU Oil Spill Steering Committee (OSSC), from left to right: Richard Shaw, Gary King, Kelly Rusch and Matthew Lee.
tists to do. On June 12, 2010, in large part due to the efforts of D’Elia and the bundle of short proposals that LSU scientists and engineers had developed, BP forwarded a funding contract immediately committing $5 million to LSU, with the promise of an additional $5 million over the next 10 years. In response to this award, LSU formed the Oil Spill Steering Committee, or OSSC, to serve as steward of these funds and to help chart the direction of the university research program on this topic. This effort would become known as the LSU BP Gulf Research Initiative, or the BP GRI program for short.

The OSSC, a group that truly impacted the tide of research and response at LSU, had only four members, each appointed by the vice chancellor of ORED based on recommendations from the deans of the four major colleges on the LSU campus most heavily involved with responding to the spill at that point. Members included:

- Matthew Lee, professor of sociology and, at the time, Provost Fellow in ORED (College of Humanities & Social Sciences);
- Kelly Rusch, professor of civil and environmental engineering and associate dean (College of Engineering);
- Richard Shaw, professor of oceanography and coastal sciences and associate dean (School of the Coast & Environment);
- Gary King, professor of biological sciences (College of Science).

The OSSC was immediately charged with vetting the first bundle of proposals that emerged in the negotiation process, developing a more broadly based Request for Proposals (RFP), and managing an internal competition to start the process of getting funds distributed rapidly but fairly to the LSU faculty. There was tremendous pressure on this committee to work quickly, while making sure a quality program was implemented. It was imperative to closely evaluate the first round of proposals to discern which ones remained relevant and which were obsolete in the face of a rapidly changing set of conditions. At the end of June, seven of these original proposals were funded as a set of rapid response studies, along with a small management budget for a total of
$952,629.00 in commitments. It was equally imperative that the RFP for the open competition be formulated to allow the best science to rise to the top and also ensure the appropriate checks and balances necessary to maintain transparency and the integrity of the program.

Because of a generalized skepticism toward BP due to its role in the spill, many people expressed concern that accepting money from BP would lead to tainted science and biased results. Naturally, this was never the case, as it is commonplace in academia for work to be funded through private corporations. Nevertheless, it placed even more pressure on the OSSC to ensure that the RFP clearly communicated to all interested parties that the funding process – and the origin of the funds – in no way influenced research results.

Thirteen days after its formation, the committee completed a final draft of the RFP. Researchers were eligible to submit a single proposal requesting up to $150,000 in support. Research relevance, capacity building and data management were to be highlighted in project summaries. Multidisciplinary projects were highly encouraged and an educational outreach component was mandatory. Also required in the proposal package were declarations of known conflicts of interest, budget breakdowns and other standard grant application proposal details. The RFP was vetted and ready to be distributed, and resources became available for faculty to conduct research.

To some, thirteen days may seem like a long time to put together and issue a relatively brief RFP, but due to the level of scrutiny and amount of detail it required, it would have been nearly impossible for the turnaround to be any faster and still have the same quality end result. Five million dollars is a significant amount of money; the OSSC spent a great deal of time considering the long-range vision of this program, filling in higher level administrators on the rationale for certain program elements, thinking about the technical details involved in sponsored program administration in terms of inter-institutional collaborations, cost sharing, eligibility, the funding ceiling, and so forth. In other words, the OSSC made sure to consider long-term impacts and
integrate them into a rapid response scenario, considerate of all potential ramifications. Such dedication required long days and even longer nights.

The Deepwater Horizon drilling incident and the subsequent effects of the oil leak and dispersant use pose a substantial threat to the Gulf of Mexico and the natural and human resources in the state of Louisiana. In response to this and in recognition of the tremendous expertise LSU researchers can bring to bear on these problems, BP has awarded Louisiana State University $5 million as part of its Gulf of Mexico Research Initiative (GRI). GRI funds have been provided to support the immediate needs of Gulf-based researchers to investigate the fate and effects of oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and affected coastal states in a broad context of improving fundamental understanding of environmental stresses. This Request for Proposals delineates the procedures by which funds administered by LSU will be made available to support this research.

During crisis response mode, there’s often not much time to consider anything but the task at hand and the deadline associated with it. In retrospect, though, members of the OSSC agreed that articulating an RFP of this type and delicacy and securing buy-in from senior administrators in less than two weeks was a huge achievement. Had the university not coordinated in such a rapid manner, the process would have certainly been even more daunting. When the RFP was issued on June 25, 2010, applicants were given a deadline of just over two weeks – extremely short under any circumstance, but nearly overwhelming during this time of intense worry and frustration. But at this point, the well was on the verge of being capped, time was slipping away and funds needed to get distributed to researchers as quickly as possible.
The Louisiana Sea Grant College Program, housed on LSU’s campus, graciously offered to help carry out the proposal review process. When the final deadline rolled around, the LSU community responded with gusto, submitting 71 proposals involving hundreds of LSU scientists, engineers and scholars, with nearly $10 million dollars in research funds requested. Twelve of those proposals were funded to the tune of $1,808,251, supporting research ranging from the impact of oil on deepwater fish to tracking community resilience in the wake of a disaster.

During this time, other administrative efforts were underway to continue cross-campus coordination. The chancellors and presidents of four universities in Louisiana – LSU, University of New Orleans, University of Louisiana-Lafayette and Tulane – asked their vice chancellors or vice presidents for research to form a multi-institutional collaboration in response to the spill. The deans of all university colleges were then asked to compile information about various forms of research – both active and proposed – from their areas for the development of a white paper. The goal was to be prepared in anticipation of federal grant allocation, which was assumed to be forthcoming. This resulted in the drafting of a major funding request and laid the groundwork for the establishment of an official memorandum of understanding between the four universities, called the Louisiana Universities Gulf Research Consortium.

The Office of Communications & University Relations also adapted a Moodle site, typically used as software or web support for teaching in the classroom, to allow researchers from across campus to virtually discuss their research projects, coordinate campus resources and find potential collaborators. Since the site was password protected and limited to only members of the LSU community, it inspired an unhindered dialogue between faculty members.

Meanwhile, as the summer gave way to the fall, the well was capped in July and officially declared dead on September 19, 2010. The OSSC then spent the next couple of months drafting another Request for Proposals to distribute the remainder of the BP block grant. The group
held several meetings and had candid conversations about how the prior round of awards had played out, the effectiveness of the review process and the importance of continuing to support the best possible research in light of the constantly changing conditions. In November 2010, the second RFP was issued, this time with a funding cap of $250,000 per study, and a rigorous set of expectations for collaborative and educational components. The process for this round would be two-fold, whereby applicants had to submit a Letter of Intent (LOI) by December, followed by a full proposal by the end of January. The logic of this process was that the OSSC would have a better feel for how many proposals to expect, what the topics would be and what kinds of reviewers were needed for the external evaluation process. In the end, 61 letters of intent were submitted, 49 full proposals requesting a total of $9,876,684 were reviewed, more than 115 external reviewers provided input on the proposals. Award letters for ten projects totaling $1,963,768 were issued in early April 2011, resulting in the commitment of almost the entire $5 million BP block grant.

Coordinating State Response

In addition to the internal coordination required for this response, LSU also had to coordinate with a variety of external entities. LSU’s School of the Coast & Environment played a lead role in coordinating with state officials. Secretary of the Louisiana Department of Wildlife and Fisheries Robert Barham contacted Dean D’Elia to discuss the potential impact of dispersants, asking that a multidisciplinary group of LSU faculty be brought together and polled about their thoughts regarding the chemicals. D’Elia consulted several faculty members, but the responses, while scientific and eloquent, came out divided, so the secretary took these results to the governor, who eventually brought them to the federal level – all the way to the White House – where they were carefully considered.
The Stephenson Disaster Management Institute, or SDMI, in LSU’s E. J. Ourso College of Business, played a large role in coordination and response efforts. Led by Executive Director Col. Joseph Booth, who had arrived in his position only just before the spill (and in fact was on a contractual basis until May 1), SDMI worked closely with the Louisiana Governor’s Office of Homeland Security and Emergency Preparedness to facilitate rapid turnaround time for state proposals and vendor bids. Because this wasn’t a typical state response issue, which usually centers on hurricane events, and because much of the response was federal, there was no existing protocol.

SDMI worked to develop estimates of the economic impact at the state level, information critical to determining levels of federal assistance and BP’s financial responsibility. The institute also hosted a webinar between the Louisiana Department of Economic Development and impacted business owners to collect baseline data about the economic impact of the spill, to offer assistance to the affected individuals and to inform them of available means of support and help.

During this time, state and local governments were receiving an influx of unsolicited proposals for work relating to the spill containment and cleanup including some new technologies. SDMI proactively developed a catalog and database of such technologies, making it available for the state, the Coast Guard and
BP. The list was categorized and prioritized, with preference given to those technologies that could be deployed from the coastline, since that was where the state response was focused. Interested parties were able to submit proposals online, streamlining the process even further. Thanks to LSU’s SDMI, Louisiana was the only state doing this kind of work. SDMI’s online database was able to sort and organize all proposals relating to berm work and start the bidding process almost immediately, which was a huge advantage since the deadlines were so tight.

The institute was also able to help LSU researchers get state approvals for gathering samples and conducting fieldwork in restricted areas. Often, access to oiled areas required hazardous materials training or other such preparations, and SDMI was able to identify such prerequisites and provide the required course work. Though it was challenging work because the situation shifted daily, SDMI ensured that the state had everything it needed in order to respond as quickly and effectively as possible, and helped LSU researchers get their jobs done, too.

Additionally, LSU’s Earth Scan Lab, or ESL, in the Department of Oceanography & Coastal Sciences within the School of the Coast & Environment, provided satellite imagery of the oil spill to state officials and the general public. ESL is a satellite data receiving station
and image processing facility for environmental data from six unique Earth-observing sensor systems. It specializes in real-time access to satellite imagery and measurements of the atmosphere, oceans and coastal areas within the Gulf of Mexico and Caribbean Sea region. The data is obtained directly from satellite transmissions to three antennas on LSU rooftops. In a similar vein, WAVCIS, the Wave-Current-Surge Information System for Coastal Louisiana, operates by deploying equipment in the depths of the Gulf of Mexico, particularly near oil platforms. Instruments are attached to towers on the platforms and allow meteorological measurements – air temperature, wind speed and direction, visibility – to be made; state-of-the-art oceanographic sensors are placed underwater and on the sea floor. WAVCIS, the brain-child of late coastal sciences expert Dr. Gregory Stone, made these readings available to local, state and federal government, and the general public, on its website, allowing for a more thorough understanding of where the oil was and where it was going.

The LSU School of Veterinary Medicine’s Wildlife Hospital of Louisiana, or WHL, provided medical care for non-oiled, injured birds and sea turtles. WHL coordinated these response efforts, through the Louisiana Department of Wildlife & Fisheries, to provide veterinary medical care for non-oiled injured animals from the areas affected by the oil spill. Additionally, some oiled birds with additional injuries were transported to WHL for more advanced care. SVM was also represented by approximately 100 students, staff and faculty who volunteered their time attending to animals on the coastline, treating and washing oiled birds and providing veterinary care when necessary. In total, SVM relief workers provided more than 24,000 hours from May through October 2010.
Overall, LSU’s widespread academic and administrative core was able to cut through the red tape when it really mattered to develop a coordinated and consistent university-wide effort. This level of coordination was imperative to provide structure for an organized and strategic communication plan and scientific response. Although by no means perfect, the flagship university of the state of Louisiana implemented a strong administrative effort which facilitated the two other pillars of our response: the incredible communication efforts enacted by the LSU faculty and staff, and the world-class science brought to bear on the oil spill.

Figure 1.8 Students from the LSU School of Veterinary Medicine cleaning oiled pelicans at Fort Jackson.
When tragedy strikes, the media descend – literally and figuratively. Within 24 hours of the Deepwater Horizon oil rig explosion, LSU staff, researchers and administrators were inundated with calls from reporters around the globe. Everyone from established journalists to first-time freelancers were looking for expert insight.

Figure 2.1 Florida Oil Impact Notice, Florida Gulf Coast
opinions and breaks in the story. But media weren’t the only ones looking for answers. People from LSU’s own campus wanted to know exactly what was happening at LSU and what the university was doing in terms of research and response.

With so many searching for answers, communication – both for internal and external audiences – would prove to be key in the university’s response efforts. Keeping the media, the public and our own faculty aware of new events was an enormous challenge that began at the onset of the event, and grew in complexity with each passing day. Having dealt with a number of intense crises of both long- and short-term, LSU was as prepared as possible for the unexpected. The communications staff understood that any strategy would have to be flexible, far-reaching, functional – and fast. The solid base of campus-wide coordination described in the previous chapter provided the foundation to get things done in an efficient and effective manner.

**Media Relations**

The worldwide media response to this event was nothing short of incredible, and LSU was directly in the thick of things. With a small staff of media relations personnel and a large faculty, the first problem LSU faced was funneling information through the appropriate channels of the university’s Office of Communications & University Relations, or OCUR, the university’s umbrella communications agency, to ensure a consistent and well-organized response. Within hours of the first few calls, reminders were sent out to funnel media queries through OCUR, and the major administrative offices across campus began touching base. At that point, media relations professionals were able to begin cataloging campus experts and tracking media placements, as well as locating facilities on campus that might be of interest to the media. Communications experts from departments across campus rallied for
the cause, digging deep into their resources to identify opportunities and promote their respective faculty.

The 24-hour news cycle dictated that even when there were no new developments, there still had to be a story, and as such, there still had to be someone to interview. Satellite trucks from all the major networks became a fixture on campus, and international journalists stationed in New Orleans came in and out of Baton Rouge on a daily basis. Quickly, traditional “rules” for dealing with media had to be thrown out; due to the sheer volume of calls and queries it was impossible to remain as hands-on and detail-oriented as protocol normally dictates. Trust was going to be a huge element of the communications effort.

Locating oil spill experts who were comfortable in dealing with the media was the first step toward developing an organized system of response. Ed Overton, an environmental scientist in the School of the Coast & Environment, with more than 30 years of experience in dealing with oil spills, was quickly identified as a media resource during the first phase of the crisis. In addition to his impressive level of expertise, he had an appealing on-camera demeanor and an innate ability to explain complex scientific terms in everyday language, making him an invaluable asset. Once his first New York Times interview went viral,
Overton was requested for interviews constantly. Because he was aware of the importance of clear communication during a crisis, he was willing to do these interviews back-to-back, giving the media relations team a moment to breathe, to plan out the website and the next steps. At the time of this publication, he has conducted more than 500 interviews, and was awarded the prestigious Communicator of the Year Award by the Public Relations Association of Louisiana in recognition of his services.

Locating Overton and other experts and making them available to media helped the communications team fight its way back above water. But right when it seemed like everything was coming together and the plan would hold, more bad news from the Gulf brought even more media attention. When it was determined that the oil was freely flowing into the water at worst-case scenario rates, chaos threatened to break out. It quickly became evident that something in addition to basic manpower was needed to manage the flow of information in and out of campus.

During the initial onslaught of media calls, OCUR developed an informational website for media and others seeking information. Though it originally showcased only a few experts, it was designed to be an adaptable medium and soon featured a comprehensive list of press releases, videos and photos, experts from a variety of disciplines willing to speak to the media, links to LSU resources and websites with relevant information, and news clippings featuring LSU faculty and staff. It became a one-stop-shop for journalists – and concerned individuals.

Caught in an ever-evolving situation, the website was amended daily to reflect the needs of the media. The experts list grew exponentially, and multimedia pieces such as photos and videos were uploaded. By June 30, the site had been viewed more than 20,000 times, with an average of approximately four minutes spent on the page per visit – statistics that are quite impressive compared to the average university website.

ORED also developed a similarly informative website, updating relevant information as soon as it was available. As an administrative unit,
its goals were different, focusing on presenting funding opportunities and governing policies for the campus, in addition to other spill-related details and occurrences. Many other colleges and departments across campus also developed their own sites individualized to address specific communication needs. The Stephenson Disaster Management Institute, for instance, had been identified as the entity that would serve as the primary interface with state agencies, and developed a site that would benefit their own constituents. In a similar vein, the LSU Library system developed the LSU Libraries Oil Spill Information Service, or LLOSIS, a team of liaison librarians who specialized in a variety of disciplines, along with a subject guide addressing the Deepwater Horizon oil spill. LLOSIS professionals made themselves available to assist members of the LSU community for the purposes of research and volunteerism, and also to organize and centralize information produced from research relating to the spill. The LSU School of the Coast & Environment developed a multimedia-rich site listing news stories, videos and other current information specific to their areas of focus. Also, the Louisiana Sea Grant College Program, or LSG, housed on campus, developed a very successful web portal in conjunction with the four Gulf Sea Grant programs, bringing together information from all researchers involved with the programs across the country.

Being flexible in communication response was integral to being successful. Nothing was static, not in the Gulf and not in the reactions. LSU’s communications team had to remain open to the changing needs of diverse audiences, and to try better serve them through function, form and content. Integrating different strategic approaches to information distribution played a huge role in the success of the program.

In addition to reacting to media queries and assisting journalists with locating/scheduling appropriate faculty interviews (all hours of the day and night), the LSU communications team also developed and engaged in proactive strategies, such as pitching stories to prominent media outlets like the New York Times, the Washington Post, CNN and hundreds of other national and international news outlets. Efforts to identify and encourage expert faculty members to make themselves available to
the media were ongoing, as was developing media strategies to support campus research initiatives. Staff were constantly striving to identify and coordinate relevant demonstrations for media use, developing press announcements for relevant discoveries or grants and assisting federal agencies in locating appropriate expert witnesses for congressional and expert testimony. Faculty were also recruited to provide opinions to many of the state and federal agencies responding to the spill, including chemical hazard assessment to the National Oceanic and Atmospheric Administration, or NOAA, Office of Response and Restoration and sample analysis for NOAA, Office of Response and Restoration and sample analysis for NOAA and BP.

Social media wasn’t ignored. LSU developed a Twitter account exclusively dedicated to oil spill-related information, and thousands of followers joined each week. Twitter allowed the university to establish and maintain a direct, two-way conversation about the oil spill with its constituents – the public. The LSU Facebook account was also used to spread information, to deal with inaccuracies and to address questions through dialogue-style communication with the webmaster. Our following increased by an amazing 137 percent, or just under 100,000 new followers, during the oil spill.

On June 4, in one of LSU’s most successful and beneficial media events during the situation, representatives from OCUR and the College of Engineering held a media demonstration at the PERTT Lab, the only university-owned, hands-on blowout prevention training facility in North America. This facility is so technologically advanced that it is used to train employees from many international petroleum companies before sending them out to work on oil rigs. Because of the complex nature of the oil spill and the petroleum industry in general, both the media and the general public were eager to have visual examples of what had happened – and what was still happening – out in the Gulf. Watching the demonstration from the first “high” gauge reading, to the actual “blowout” flame put the situation in perspective for those attending as well as audiences across the nation. It helped journalists to better explain the unfolding situation and any new developments to their publics.
Students at the PERTT Lab had watched the situation unfold with great interest, knowing that the outcome would likely affect their chosen career path for decades to come. As debates over methods of containing the well, specifically comparisons of a top kill versus static kill, became more prevalent in the media, the students came up with an inspired idea: why not develop a model that clearly demonstrated the steps and concepts involved in such a procedure? So they did – they developed a model purely for illustrative purposes, and were able to adapt it to showcase both scenarios. LSU filmed the demonstrations, publicized them to the media and also shared them with the general public. On YouTube, alone, nearly 4,000 people viewed the demonstrations.

Another video bubbled to the surface during the early stages of the event. After the first attempts at containment had failed due to the development and freezing of hydrates, world-renowned researchers Harry Roberts and Robert Carney unearthed a video they’d had since 1989 that showed a small-scale example of how methane bubbles froze only when contained or slowed down (such as when they’re shot through a pipe or other man-made construction). Though the video was old and fairly grainy, it was accurate. The media relations team immediately made the footage available to interested journalists by posting it on the website and sending it directly to their inboxes. It was used everywhere from local news stations to websites and national broadcasting venues.

LSU faculty members graciously offered expert opinions for journalists from around the world. In addition to research efforts to determine the effect of the oil spill, dozens of LSU researchers and administrators freely gave their time to help inform the public on matters related to the oil spill. They spoke with the local, state, national and international media to lend their expert opinions.
to media stories about the spill. A strong working relationship with the local PBS affiliate, Louisiana Public Broadcasting, or LPB, allowed the media relations team at LSU to schedule satellite link-ups with major national and international outlets on extremely short notice around the clock.

Some of the most notable media appearances for LSU experts have been in the *New York Times*, the *Financial Times*, *National Geographic*, the *Washington Post*, the *Wall Street Journal*, *Christian Science Monitor*, *Scientific American*, the *Los Angeles Times*, the *Associated Press*, the *Times-Picayune* and on CNN, NPR, NBC, CBS, Fox News, and the “Late Show with David Letterman.” Media relations staffers at OCUR logged approximately 700 calls from media interested in speaking to LSU expert faculty (a number not inclusive of media contacting researchers directly) by the beginning of June, and received an similar amount of e-mail communications from journalists and government agencies. Faculty were featured in more than 1,000 unique media placements, including an estimated 50 appearances on national televised
media outlets. Of course, these numbers are not comprehensive due to
time restrictions faced by staffers responding to the ongoing situation,
but they are impressive nonetheless.

University affiliates also contributed to the communication efforts.
The Louisiana Sea Grant College Program’s seafood specialist working
group, composed of seafood experts from the Gulf Sea Grant programs,
NOAA and FDA developed protocols to determine the safety of sea-
food products from the Gulf and criteria for re-opening areas previ-
ously closed to seafood harvest due to the spill. Louisiana Sea Grant, or
LSG, also produced a series of informational videos about the safety of
seafood and seafood contamination testing, which were viewed more
than 700 times, and hosted a media event to showcase various methods
employed by those responsible for testing seafood caught in the Gulf of
Mexico during the spill. As part of the Great American Seafood Cook-
off, three educational panel discussions were held in August 2010.
Participants of the first panel included national chefs discussing the
perception of Louisiana and Gulf seafood. The second panel concerned
seafood safety, with participants from state and federal agencies such as
NOAA, FDA, LSG and EPA discussing how seafood is currently being
tested. And the final panel included marketing and tourism profes-
sionals as participants. Louisiana Sea Grant webcast each discussion for
public dissemination.

Some researchers, frustrated to the breaking point by so many prob-
lems, began writing op-eds and other opinion pieces in national me-
dia outlets. D’Elia, together with the president and chief executive of
the Ocean Leadership Consortium, wrote an op-ed published in the
Washington Post proclaiming that science shouldn’t have to suffer for
litigation, and that our nation needs a comprehensive plan to handle
research in response to such crises. Linda Hooper-Bui, LSU scientist,
wrote an op-ed published in the New York Times, protesting the unequal
treatment of researchers when it came to accessing impacted sites.

In short, the LSU faculty took their duty as public servants very seri-
ously, and part of that duty compelled them to ensure that the general
public had access to scientifically valid and current information about the spill and related remediation efforts at all times. Because LSU is such a unique university with access to a wide-ranging span of researchers and scientists, campus communicators were able to address the informational needs of the media and the public through a variety of avenues.

**Talking to Yourself**

Keeping an internal audience informed was probably even more difficult than working with the media and the general public, since there was no effective mechanism in place to reach everyone all the time. Most major universities suffer from this same issue – internal communications are nearly impossible once your audience tops 10,000 or so. The internal Moodle site, mentioned in the coordination chapter, was a successful method allowing researchers to post notes and discussions about their current projects and to search for collaborative opportunities. The administrative-level committees that had formed allowed for some information to trickle down through departments, but there was really no way to ensure that everyone on campus was on the same page. There never is, though; a crisis is not unique in that way. However, valiant efforts were consistently made toward that end.

Faculty leaders arranged for talks and lectures that brought researchers together as well. The School of the Coast & Environment, for instance, often used their weekly lecture series to bring together those funded through BP grants in order to facilitate teamwork and cohesive research. The media relations team at OCUR posted relevant news on the LSU homepage, www.lsu.edu, and distributed such stories in the daily campus newsletter called *LSU Today*. Campus communicators also posted information in their internal publications and, departmental websites, and discussed ongoing projects in staff meetings.

In order to communicate the university’s appreciation of the many long hours the faculty put in to respond to this crisis, several of those most
integral to the response efforts were recognized publicly at an LSU home football game against Mississippi State University on September 18, 2010. Those honored included:

- Richard Shaw, associate dean of the School of the Coast & Environment;
- Edward Overton, professor emeritus in the Department of Environmental Sciences;
- Gary King, professor in the Department of Biological Sciences;
- Annette Engel, associate professor in the Department of Geology & Geophysics;
- John Smith, professor of Petroleum Engineering;
- John Pardue, professor of in the Department of Civil & Environmental Engineering;

Figure 2.5 From left to right: LSU Chancellor Michael Martin; Richard Shaw, associate dean of the School of the Coast & Environment; Edward Overton, professor emeritus, environmental sciences; Gary King, professor of biological sciences; Annette Engel, associate professor of geology and geophysics; John Smith, professor of petroleum engineering; John Pardue, professor of civil & environmental engineering; Darryl Bourgoyne, director of the LSU Petroleum Engineering Research and Technology Transfer, or PERTT, lab; Matthew Lee, professor of sociology; Troy Blanchard, associate professor of sociology; and David Nieland, associate executive director of the Louisiana Sea Grant College Program.
Darryl Bourgoyne, director of the LSU Petroleum Engineering Research & Technology Transfer, or PERTT, lab;

Matthew Lee, professor in the Department of Sociology;

Troy Blanchard, associate professor in the Department of Sociology; and

David Nieland, manager of the Louisiana Sea Grant College Program.

These researchers received a resounding, long-lasting standing ovation from more than 92,000 appreciative Tiger Fans from all across the state. While it was in no way enough to truly repay the efforts that these 10 researchers and countless others had made, it was a step in the right direction.

**State & Federal Communications**

LSU acted as organizer and host to many planning and advisory meetings for a variety of organizations. Many of these federal visitors came to the university for expert opinions, input and guidance on the unwieldy situation. Immediately following the disaster, Lisa Jackson, EPA administrator, held a meeting at LSU’s School of the Coast & Environment to brainstorm with LSU faculty about potential solutions to the oil spill disaster. The Ocean Leadership Consortium, facilitated by Dean D’Elia, held a meeting on LSU’s campus that included representatives from the public, private and academic sectors to discuss the government’s response to the spill and various other aspects of the disaster. Jane Lubchenco, administrator of NOAA, came to campus to discuss the ongoing situation with LSU experts, and members of President Obama’s Oil Spill Com-
mission—Fran Ulmer, chancellor of the University of Alaska at Anchorage, and Frances Beinecke, president of the Natural Resources Defense Council, led a panel discussion on their findings to a group of faculty.

These meetings didn’t stop with the capping of the well. In fact, they continued consistently, keeping the flow of communication between federal entities and the academic community at LSU moving in the right direction. In October 2010, and in March 2011, Bureau of Ocean Energy Management, Regulation and Enforcement, or BOEMRE, director Michael R. Bromwich visited LSU’s College of Engineering and School of the Coast & Environment, respectively, in order to inform students about new opportunities for careers in public service with BOEMRE and the ways in which they can advance the agency’s mission of developing oil and gas resources on the Outer Continental Shelf in a safe and environmentally responsible manner.

In February 2011, Don Boesch, another member of the presidential commission, came to campus as part of the School of the Coast & Environment’s weekly seminar series. While on campus, he participated in a panel discussion about the spill for a group of visiting foreign press members, along with LSU faculty members R. Eugene
Turner, coastal scientist; Ralph Portier, environmental scientist; Dar-ryl Bourgoyne, PERTT Lab director; and Dean D’Elia. Gary Machlis, lead scientist for the Department of the Interior’s Strategic Sciences Working Group and science advisor to the Director of the National Park Service, came to LSU in March 2011 to discuss “Science During Crisis: Scenario-Building for the Deepwater Horizon Oil Spill.” And in April 2011, in recognition of the one-year anniversary of the tragedy, the university held a researchers’ conference bringing together scientists from LSU and the three other major Louisiana partner universities, as well as scientists from the Louisiana Universities Marine Consortium, or LUMCON.

LSU researchers were persistent in their commitment, carrying their mission to communicate the science behind the spill all the way to Capitol Hill. Researchers provided testimony about the oil spill to Congress and other powerful entities requiring expert witnesses. D’Elia testified in Washington, D.C., before a Congressional Subcommittee on Insular Affairs, Oceans and Wildlife in a program titled “Ocean Science and Data Limits in a Time of Crisis: Do NOAA and the Fish and Wildlife Service have resources to respond?” Overton provided testimony on the safety of Corexit, a dispersant used to break up the oil in the Gulf, before the Presidential Commission on the Oil Spill and the Oversight Subcommittee of the Senate Environment and Public Works Committee. Joseph Mason, LSU economist, testified before the U.S. Senate Small Business Committee, chaired by Louisiana Senator Mary Landrieu, regarding the potential economic impact of the oil and gas moratorium. Petroleum engineer John Smith served as a subject matter expert and provided information on the operations 24 hours prior to the blowout to
the Coast Guard. Smith and Darryl Bourgoynes later testified before the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. David Dismukes, associate director of LSU’s Center for Energy Studies, testified before the U.S. House of Representatives Committee on Natural Resources, warning that in developing these provisions, Congress could be missing a unique opportunity to create a performance-based regulatory structure to establish a symmetrical system of penalties and rewards. Most recently, coastal scientist Robert Carney served as a member on the National Research Council’s “Effects of the Deepwater Horizon Mississippi Canyon-252 Oil Spill on Ecosystem Services in the Gulf of Mexico” panel for their Division of Earth and Life Studies section. All in all, LSU had a powerful presence in the country’s Capitol during this time.

As a result of the concerted efforts of the dedicated LSU community of staff and faculty, the university was successfully positioned as the first stop for expert information related to the disaster in the Gulf, as reported to us by federal agencies and media outlets alike. In February 2011, the Council for the Advancement and Support of Education, or CASE, formally recognized the university for its continued efforts and awarded LSU OCUR and ORED a Grand Award for communications efforts enacted during the Gulf Oil Disaster.
Science Behind the Spill

“The way of science in disaster is to find out what needs to be done and do it. The rest we figure out later.”

R. Eugene Turner, wetlands researcher

The Deepwater Horizon oil spill presented an unprecedented situation. Drilling for oil miles below the surface is commonplace, especially in an oil-reliant state like Louisiana. But never before had a wellhead so far below the ocean’s surface been damaged this severely. The
implications for the industry, fisheries and the environment were largely unknown and would require serious investments in research to uncover. Where would the oil go, and how would it be stopped? How much would be mitigated by natural biological processes? Would the millions of gallons of synthetic dispersant being applied under pressures and in temperatures it wasn’t designed for actually work? What happens when fragile coastal ecosystems such as mangrove stands and barrier islands are oiled? How would people who lived and worked along the coastline be affected? The potential ripple effects were unknown, but their reach could be long in terms of both distance and time. What were researchers doing in order to provide answers?

The depth and breadth of scientific, engineering and scholarly expertise found at world-class, comprehensive research universities like LSU is truly staggering. With more than 1,200 faculty members and 5,000 graduate students and post doctoral scholars at LSU, there is simply no comparable type of institution that is capable of bringing such diverse expertise to a problem as complex as the Deepwater Horizon drilling disaster. This was illustrated in the wake of Hurricane Katrina; not only did the LSU community play a pivotal role in the immediate emergency response, but in the ensuing years, the research response to Hurricane Katrina from LSU has been dramatic and broad based, encompassing everything from environmental and mechanical engineering to the social sciences, humanities and arts.

As a Carnegie-classified “Research University - very high research activity” institution and Louisiana’s flagship university, LSU’s most important job was to delve into the science behind the spill. With its status as one of the premier coastal studies facilities in the nation, as well as one of the top-ranked petroleum engineering programs in the U.S., it was no wonder that so many turned to LSU to find solutions for the problems that flowed as freely as the oil.

After the initial cross-campus coordination spurred interdisciplinary research partnerships and innovation, the problem of funding came into play. While many researchers, frantic to get into the fray, dug
deeply into their own pockets to get their work off the ground, others held back waiting for funding opportunities. As all scientists know, the process of accurate, informed science is highly technical and very expensive. Complaints about the absence of funding were a common refrain, heard everywhere from the halls of academia all the way to the pages of the *New York Times*. Frustration toward the lack of forward movement in research relating to the spill was rampant. Few opportunities presented themselves early on in the situation, and with the analysis of a single sample running around $500 per test, what little homegrown money scientists had laid hands on was rapidly running out.

As a short-term solution, the National Science Foundation, or NSF, put together a relatively small pool of money for several rapid response grants. These grants allow scientists and researchers the opportunity to forgo the normal long turnarounds in the review process — typically at least six months — and the tedious work the preparation of a full-scale grant proposal requires, to receive start-up funds. Due to a long and positive history together, LSU researchers were extremely successful in securing these grants from NSF, eventually bringing home at least eight of these awards. That number places the university high among its peers. However, the oil spill was an extraordinarily large and complex issue — a few hundred thousand dollars would not go far. The research community knew that millions of dollars would be required in order to properly fund spill-related research. Hence the negotiations with BP discussed earlier.

Inaccurate claims from both on and off campus expressed concern that because the funds were from BP, the corporation might try to exert some influence in determining what kinds of science were funded. Of course, this was never an issue. LSU would never even remotely have considered accepting funding from BP if any such strings were attached. As an institution fully and completely dedicated to academic freedom and the unfettered pursuit of knowledge in all its forms, to even suggest that this institution would have compromised its very foundational principles to accept $5 million is absurd and, to many who have dedicated their professional careers to serving the people of
this state through this institution, downright offensive. Additionally, it is common practice for researchers to be funded through private companies without researchers sacrificing control over their own work and results.

Most research developed at LSU in response to the Deepwater Horizon blowout can be broken into three main categories: deep ocean, coastal and human impacts. While hundreds of projects relating to the spill have been initiated on campus, below are summaries of some representative research.

**Deepwater Impacts**

The deepwater environment is one we know relatively little about.
Some speculate that we have more information about outer space than we do about the marine environment occupying more than 75 percent of our planet. In fact, prior to the oil spill, deepwater research was a relatively unfunded and unappreciated endeavor compared to coastal efforts. But LSU is fortunate to count many top-notch, open-ocean research specialists among its faculty.

Malinda Sutor, assistant professor of research in the School of the Coast & Environment’s Department of Oceanography & Coastal Sciences, has conducted active research through both the response and damage assessment phases of the spill. Through cooperative work with NOAA, Sutor was on a boat in the disaster zone approximately one month after the crisis occurred. NOAA had anticipated that the use of dispersants would break the oil into droplets that would then become suspended in a plume midway down the water column. But, in order to accurately adjust the amount of dispersant being used, they needed to know precisely what size the oil droplets were. Sutor had previously used instruments designed to determine plankton size and gather other precise data on these tiny sea creatures; fortunately, those same instruments were able to be used for measuring oil droplets. Now well into the damage assessment phase, the state of the plankton community is a primary indicator of damage incurred due to the spill. As the primary plankton researcher with a cooperative program through NOAA and BP, Sutor is leading this initiative and hopes to house the plankton analysis lab at LSU.

Mark Benfield, professor in the LSU Department of Oceanography & Coastal Sciences, has been leading the Gulf Scien-
scientific and Environmental ROV Partnership using Existing iNdustrial Technology, or SERPENT, project since 2006. SERPENT, a worldwide project, focuses on deep sea research through the use of remotely operated underwater vehicles, or ROVs, through long-standing partnerships with oil and gas corporations. Benfield’s project in the Gulf of Mexico used the Deepwater Horizon oil rig many times before the spill and, because of this, he has some of the only available baseline data and footage of the area. This information is very valuable to the scientific community, and while there are no results yet, Benfield’s data set is huge and promising. He and his research team also collected footage after the well was capped in August 2010, and have received funding through BP to continue filming and analyzing ROV footage of the area for the next several years. The longevity of this project is essential in order to address important considerations of the spill’s impact, including the approximate ecological recovery time and bounce-back rate of individual species.

Prosanta Chakrabarty, curator of ichthyology at LSU’s Museum of Natural Science, had recently co-discovered a new species of batfish that coincidentally lived around deepwater oil rigs in the Gulf of Mexico.
Questions about the impact of oil on deepwater species such as these made the lack of baseline data even more glaring to the ichthyologist than ever before. With more than 600 known species in the northern Gulf of Mexico and new ones being discovered annually, it is of utmost importance for ichthyologists to know which fish are currently using that space as habitat so that the scale of the oil spill’s impact can then accurately be determined.

Chakrabarty and researchers from Ohio State University developed DEPTHMAP, a web-accessible mapping application that combines historical records of fish species collections (e.g., GPS coordinates of capture records, depth at capture measurements) with more recent data on the oil spill. These data are being mapped with real-time geographic information, tracking both commercially and ecologically important species. This tracking system won’t necessarily yield quick results, but rather will show the long-term effects of oil and dispersants on deep sea species.

Ed Overton, professor emeritus in the School of the Coast & Environment’s Department of Environmental Science, evaluated oil samples for NOAA, performing chemical analyses on a regular basis so that everyone with their hands in the water (so to speak) knew exactly what kind of toxins they were dealing with. His lab focuses on studying the impact of oil spills on the environment, and he has worked on the Ixtoc spill, the Exxon Valdez spill and nearly every such accident since then. His lab has been providing oil analyses and related work for NOAA since 1984, analyzing samples, interpreting data and developing conclusions about how to use mitigation strategies.
Overton’s group wanted to find out how the specific oil from the Deepwater Horizon blowout would weather and interact with the environment, because there are various types of oil as a result of weathering, and each reacts differently to a given situation. This information is integral to understanding and determining the best methods available to mitigate the spill and the impacts it may have on various components of the environment.

In order to determine the type of oil and its toxicity, Overton and his team analyzed the hydrocarbon content of each, using actual samples from the Macondo well site as well as samples weathered under carefully controlled laboratory conditions, and then comparing them. Using gas chromatograph mass spectrometers, or GCMS, Overton’s team analyzed the full spectrum of samples, then sent the information to the NOAA scientific support coordinator, who is an advisor to the spill incident commander. Overton and his team were recently recognized by NOAA with an award for their hard work, dedication and scientific excellence.

Overton also provided accurate and fact-based information about the spill via interviews to many news outlets around the world including virtually all major print, radio and broadcast outlets in the United States.

Ralph Portier, professor in the School of the Coast & Environment’s Department of Environmental Science, studied the microbial response to oil in the Gulf of Mexico. Portier’s initial samples show that natural microbial colonies do indeed exist at oiled areas of the deep sea environment; in fact, according to him, “it’s been a good year for microbes.”
He and his team also addressed the toxicological implications of the oil and the dispersants involved, developing an assessment of the oil at sea and also a protocol for the clean-up of large-scale situations such as the Deepwater Horizon.

Perhaps in response to growing public concern over the potential toxicity of dispersants being used to break up oil slicks in open water, Andrew Nyman, associate professor of wetland and wildlife ecology in the School of Renewable Natural Resources, received an NSF grant funding his exploration into the world of “green” dispersants, or biodispersants. Working with a private company, Modular Genetics, and Columbia and Iowa State Universities, he will develop genetically modified organisms through fermentation processes. Nyman’s role will be to assess the level of toxicity found in these new dispersants once they are developed. At the time of publication, testing had just begun.

Coastal Impacts

Coastal Louisiana is an already stressed environment. Manmade problems such as deforestation and pollution have led to dead zones of hypoxia in coastal waterways and increased erosion of coastal lands. These areas are not just home to humans; they serve as a nursery to fish, shrimp and other seafood that the nation depends on. Louisiana produces more than one-third of the country’s seafood supply. But even in March 2011, nearly a full year after the spill, there were still more than 300 miles of oiled coastlands along the Gulf of Mexico.

Robert Cook, associate professor of chemistry, along with Michael Perdue of Georgia Tech and Thomas S. Bianchi of Texas A&M University, received a rapid response grant from NSF to investigate the impact of oil from the Deepwater Horizon disaster on Louisiana’s highly fertile, productive and delicate marshlands by studying dissolved organic matter, or DOM. After taking more than two metric tons of water samples
from a range of sites in Barataria Bay, Cook and colleagues put the samples through reverse osmosis and electrodialysis in order to greatly reduce the salt content. After this process was complete, only 20 or so liters of the concentrate remained. It was subsequently frozen and shipped to Georgia Tech for freeze-drying in order to further isolate the DOM. Cook’s lab and colleagues are in the process of conducting an analysis giving a molecular-level carbon profile of the dissolved organic matter, which should give the scientists more information about how much oil is associated with organic materials carried in coastal water ecosystems.

R. Eugene Turner, Department of Oceanography & Coastal Sciences; Linda Hooper-Bui, Department of Entomology; and Laurie Anderson, Department of Geology & Geophysics, and their research group, received an NSF rapid response grant to study the effects of oil and dispersants on the Louisiana salt marsh ecosystem. Their results are still coming in, but Turner says that they are already seeing additional erosion of the coastline, an already damaged resource for the state of Louisiana, which loses several square miles of wetlands each year. Their
study addresses scientific questions about salt marsh community changes arising from the Deepwater Horizon oil spill in the Gulf of Mexico. More than 35 salt marshes were sampled in May and September 2010, and were sampled again in May and September 2011. Data will be collected on the below- and aboveground biomass of the dominant emergent macrophyte (*Spartina alterniflora*), soil metabolism, changes in sulfur accumulation, stable isotope signatures and the associated invertebrate community. The data collected are used to test various hypotheses about the effects of chronic and long-term stressors (oil, toxins, dispersants, or nutrients) on salt-marsh ecosystems, including predictions about indirect, long-term consequences to the salt-marsh community. These measures can be used as an indicator of health of the salt-marsh ecosystem. Although the results are currently embargoed, the researchers indicate that they have seen some definitive negative impacts on the environment after the spill, and are eager to share them with the scientific community.

Qianxin Lin, associate professor in the Department of Oceanography & Coastal Sciences, and Irv Mendelssohn, professor in the same department, have been investigating the fate and effects of the Deepwater Horizon oil spill on the ecological structure and function of coastal wetland ecosystems. Healthy wetland vegetation is vital to sustain wetland structure and to promote important wetland services, such as high biological productivity, fisheries’ support, wildlife habitat, storm mitigation, shoreline protection and water quality enhancement. The primary goal of the ongoing research is to determine the impacts of the oil spill on coastal wetland habitats in the northern Gulf of Mexico and their associated ecological functions. The ongoing project also seeks to identify those processes and mechanisms that control these impacts and the factors that determine speed of recovery.

John Pardue, professor of civil and environmental engineering, gath-

![Figure 3.9 Researchers onshore at Grand Isle, watching the oil come ashore.](image)
ered oil samples immediately after the explosion, also focusing on plant life along the coast, specifically *Spartina alterniflora*, a saltwater marsh grass. Plant life such as this marsh grass promotes the growth of bacteria, especially the type that feast on the carbon found in oil. Taking the samples back to his lab, he began to measure the rate at which these microorganisms devoured oil introduced into their ecosystems. By adding nutrients to the bacteria in his lab, he hopes to be able to speed up their reproduction, thus increasing the population while decreasing the time it would take a horde of bacteria to naturally do away with oil and oil slicks, negating any need for chemical dispersants.

Andrew Whitehead, assistant professor in biological sciences, received an NSF rapid response grant to study the genetic impact oil and dispersants might have on wildlife populations. To understand this, he focused on a particular species, the cocahoe minnow or *Fundulus grandis*, which is indigenous to the estuaries lining the Gulf of Mexico. He and his research team gathered samples before the oil hit the coastline to gather baseline data, then came back and visited when some areas were quite heavily oiled and re-sampled in June. Finally, the group came back one last time in August of 2010 and took post-impact analysis, when oil was no longer visible on the surface of the water but was undoubtedly still present in the soil and perhaps even within the water column. He took tissue samples from the minnows collected during each sampling trip, and is currently analyzing all data gathered in order to determine what, if any, impacts the chemicals had on the fish. The minnows act as a tell tale of sorts for the environment they live in, and long-term damage to their physical health could indicate the same for the coastal ecosystem.
Ken Brown, professor of biological sciences, had been studying the impact of oil on oysters for years, but started new projects in response to the Deepwater Horizon incident due to its unprecedented size and longevity. His past research tested oil introduced to oyster reefs in small quantities for short periods of time, but the magnitude of this spill left results uncertain. Brown and his students placed oysters in net bags in several sites along Louisiana’s coastline to see how they reacted. Whatever the results may be, he plans to use them in order to help coastal communities dependent on oyster fishing be better prepared for the next time an event threatens the oyster population, especially because it is an integral part of Louisiana’s ecosystem, ecology, economy and culture. Thus far, Brown and his team have found that decreased salinities due to freshwater diversions appear to have more impact on oyster condition than hydrocarbon contaminants. They are continuing this work to gather more data before they can draw more conclusive results.

**Human Impacts**

The ripple effects of a disaster on the scale of the Deepwater Horizon blowout can be overwhelming. In this case, people along the coast of Louisiana depend on the health of the Gulf of Mexico ecosystem for their livelihoods, which included generations of fishermen and businesses dependent upon the tourism generated by a pristine coastal location. Economic impacts as well as emotional tolls are hard to calculate and often even more difficult to address. Below are just a few of the LSU researchers who came forth to research and/or mitigate the human impacts of the Gulf of Mexico oil spill.

Matthew Lee, associate vice chancellor of research and economic devel-
opment and professor of sociology, and Troy Blanchard, associate professor of sociology, developed a survey to gain an understanding of the health impacts the disaster had on people living in Louisiana’s coastal communities. In conjunction with LSU’s Public Policy Research Lab, or PPRL, Blanchard and Lee conducted a telephone survey beginning June 17, less than 60 days after the onset of the Deepwater Horizon blowout. PPRL investigators conducted more than 900 interviews with coastal Louisiana residents near the spill site. Blanchard and Lee’s study was the first empirical assessment of the mental health toll the spill was taking on coastal populations. They learned that self-rated stress had more than doubled since the oil spill, as compared to a year before it, and nearly 60 percent of the sample population reported feeling almost constant worry about the oil spill during the week before being interviewed. More than eight out of 10 respondents reported worrying over family, friends and community survival due to complications caused by the oil spill, and seven in 10 worried about having to move because of it. More than 35 percent reported experiencing headaches or migraines, or feeling sick to their stomach some of the time or almost constantly in the week before the interview because of their worry over the oil spill; and nearly 43 percent reported being unable to focus on their usual jobs or tasks because of their worry over the situation in the Gulf. Professor Blanchard has spearheaded a team that has followed up on this study, collecting two more waves of data with nearly 2,000 more coastal residents.

Also, immediately following the spill, a multidisciplinary group of LSU researchers – Troy Blanchard, Tim Slack, assistant professor of sociology, and Matthew Fannin and Mark Schafer, both from the Department of Agricultural Economics and Agribusiness at the LSU AgCenter – quickly developed a series of maps charting population demographics of the regions surrounding the oil spill in the Gulf of Mexico. This step was taken in recognition of the importance of identifying at-risk populations and proactively determining support infrastructure needs. These maps detailed percentages of impoverished areas impacted by the spill, along with the amount of minorities, workers employed by the oil and
gas extraction industry, and the total population in affected areas.

The LSU School of Social Work, Louisiana Sea Grant, Mississippi-Alabama Sea Grant Consortium, LSU AgCenter and others hosted a special two-day, peer-listener training workshop focused on training people with basic knowledge to provide help to individuals impacted by the oil spill in the Gulf of Mexico. Because many people affected by technological disasters are reluctant to use traditional mental health services, research has shown that traditional mental health services may not be effective in dealing with the long-term results of disasters. Informal social support networks, including trained peer listeners, are one way to address these difficulties.

Peer listening is a type of support that occurs when people provide knowledge and experience, as well as emotional, social or practical help to each other. Properly trained peer listeners can provide a number of services to the community such as serving as an available ear to assist in problem solving or providing referrals to professionals. The training was modeled after activities that took place in the Alaska fishing communities after the Valdez oil spill and led by J. Steven Picou, an LSU alumnus and current sociology professor in the University of South Alabama’s Department of Sociology, Anthropology and Social Work. Picou’s research has shown that informal, social support networks such

![Image](percent_reporting_almost_constantly_during_last_week.jpg)

**Figure 3.12** LSU sociologists Matthew Lee and Troy Blanchard conducted a study examining the mental health impacts the disaster had on the people of coastal Louisiana. Nearly 60 percent of respondents reported feeling almost constant worry about the oil spill.
as trained peer listeners can often help individuals who may be dealing with long-term effects of technological disaster.

Participants were selected to take part in the program based on specific criteria. Since peer listeners drawn from local communities are more often trusted than outsiders, and because they better understand the community and its relationship to the disaster, many came from the coastal parishes or parishes affected by the spill and included pastors, school system officials, faith or charity representatives, extension services workers and representatives from volunteer aid groups. More than 100 Louisiana stakeholders representing areas affected by the spill took part in the training, including extension and field representatives from LSU and Southern University, outreach and counseling representatives from Department of Health & Hospitals and Department of Children & Family Services and other delegates representing religious groups, crisis intervention outlets and coastal agencies. Following the training, more than 87 percent of participants indicated that they were satisfied with the workshop and felt that it had been a beneficial experience.

Michael Pasquier, assistant professor of religious studies, has developed a project to compliment scientific investigations of the Deepwater Horizon blowout by documenting the societal impact of environmental stressors on Louisiana’s coastal communities. He has engaged in a comprehensive study of Louisiana’s relationship with the oil industry and, by extension, its effects on the everyday lives of refinery workers, offshore workers, business people, farmers, fishermen, trappers, homemakers and others with direct and indirect connections to petroleum-based services. By attaching human stories to environmental questions, he plans to demonstrate how changes to the ecosystem have historically impacted coastal communities, and how such modifications continue to dramatically shape the way of life for Gulf Coast residents. His project also aims to help policymakers and researchers identify how social networks, cultural institutions and economic resources might provide communities with the tools necessary for coping with the immediate circumstances of the situation and preparing for the future.
Funded by the LSU BP GRI Program, Kelley Pace of the Department of Finance in the E. J. Ourso College of Business, and Nina Lam and Margaret Reams of the Department of Environmental Sciences in the School of the Coast & Environment, surveyed 1,000 businesses along the 10 coastal parishes in Louisiana in order to examine local business decision-making during the first 18 months after the spill. This time period was marked by uncertainty concerning the extent of environmental and economic damages, then made more ambiguous by the potential economic consequences of an offshore drilling moratorium. The survey design was modeled closely to the surveys conducted by the team after Hurricane Katrina in New Orleans, so that better insights can be extracted from comparing the two disasters. Their preliminary findings shed light on some of the experiences and frustrations associated with the BP oil spill and subsequent moratorium on offshore drilling.

Preliminary results show that more than 60 percent of the business owners were affected by the oil spill that began on April 20, 2010. Of those affected, 75 percent reported some decline in business activities when compared to the same time during the previous year, and 6 percent had closed their businesses. As expected, a very high percentage – 85 percent, to be exact – of those businesses that had experienced a change believe that the change is related to the oil spill, and an equally high percentage of more than 74 percent attribute the change to the moratorium.

Businesses were asked if they had made changes in their business practices (such as reducing the number of employees or hours of operation) to cope with the oil spill problem, so that their adaptive capacity, or in other words, business resilience or potential for business recovery, can be evaluated and predicted. About 20 percent responded that they had not made any changes, whereas the remaining 80 percent had made some to many changes. This can be interpreted as a good sign. As businesses adapt and make changes to respond to disasters, the chance of recovery should be greater.

When businesses were asked to rank potential external problems cur-
rently affecting their firms, the results are somewhat surprising, with only 15 percent citing environmental damages from the oil spill as a serious problem. The most commonly cited challenge, at 40 percent, is the lingering economic impact of Hurricanes Katrina and Rita, followed by a reduction in customer base since the 2010 oil spill (30 percent), effects of the moratorium (29 percent) and decisions made by the federal government (21 percent). Not surprisingly, those firms located in the coastal communities closer to the spill reported the greatest decline in customer base. Other potential problems seemed to be of less concern to the business operators, with 15 percent citing lack of timely compensation for oil spill-related damages and 12 percent expressing concern about state and local decisions related to the oil spill.

The next phase of the project will include a detailed analysis and modeling of the survey results by integrating other demographic and economic data. Given the ongoing exposure of coastal communities to various natural and technological hazards, insights into the reactions and adaptations made by local firms in the aftermath of major disturbances are useful to planners and policymakers, business owners and other stakeholders along the Gulf Coast.

Jim Catano, professor of English and director of film and media arts, and Carolyn Ware, assistant professor of English and women’s and gender studies, collected stories and filmed a documentary chronicling the oil spill’s impact on the Croatian oyster farming population of coastal

Figure 3.13 The people of coastal Louisiana are dependent upon the health of the state’s fisheries.
Louisiana. The project actually originated after Hurricane Katrina and was meant to document the community’s struggle to rebound after the storm wiped out their oyster beds, and thus their way of life. But “After the Aftermath” was adapted into a longer-term project when the oil spill occurred, because once again the Croatian community’s livelihood was in danger of becoming a thing of the past. The oil spill not only shut down their oyster grounds due to fear of contamination, but could have very long-term effects as well. At the time of the spill the oysters were in a vulnerable stage, called spat, during which they take two to three years to reach market size. So even if the fishing community can somehow survive the initial and brutal financial impact, there’s no telling what the oyster crop they depend on might look like by that time. In the meantime, they have bills to pay and families to support, so the initial outlook on their community survival seems grim. But Catano says that if anyone can make it through such a string of catastrophes, it is the Croatian oyster fishing population.

Joseph Mason, LSU Endowed Chair of Banking, conducted a study to estimate the impact of the moratorium on oil and gas exploration in the Gulf of Mexico immediately following the Deepwater Horizon blowout. Funded through the Save U.S. Energy Jobs project, his report indicated that in the first six months of the moratorium, nearly 8,000 jobs would be lost along with nearly $500 million in wages and more than $2.1 billion in economic activity in the Gulf region alone. His paper, titled “The Economic Cost of a Moratorium on Offshore Oil and Gas Exploration to the Gulf Region,” outlined spillover effects the moratorium would have on the national economy, projecting a U.S. net loss of 12,000 or more jobs in six months, and a federal economic loss of about $2.8 million.

Christopher Kenny, Kate Bratton, and Chris Weber in the Department of Political Science received funding from both NSF and the BP GRI program to focus on the ways in which social context shapes individual responses to the oil spill disaster in the Gulf of Mexico. Their argument is straightforward: individuals do not experience events, such as an oil spill, in isolation—and so previous research, which focuses primarily
on individual responses, only tells part of the story. More specifically, they examine how social context structures individual responses to the spill in terms of information gathering, feelings of efficacy, attributions of blame, and other behavioral, attitudinal, and emotional reactions. Their methodology involves conducting a survey that asks people to name individuals with whom they have discussed the oil spill disaster, then asking respondents a series of questions concerning their perceptions of these named individuals, including their attitudinal, behavioral, and emotional responses to the oil spill. They then follow that up with a set of “snowball” interviews of some of these named discussants. The preliminary findings suggest that the emotional responses of affected individuals are structured by the emotions of those around them, and that men and women experience these events differently and name different sorts of individuals as discussants. Their second study will include re-interviewing the individuals contacted in the first round, as well as experimental manipulations of both the name generator question and the method of snowball sampling of discussants.

Some faculty were even able to develop research projects that were communicative in nature. LSU researchers, working with the Metcalf Institute for Marine and Environmental Reporting at the University of Rhode Island, began a program working to improve the accuracy and coverage of science news relating to the Deepwater Horizon disaster in the Gulf of Mexico. NSF chose to support the group’s work with a rapid response grant, allowing a three-state sequence of workshops and evaluation. LSU’s role in the grant was to co-host a science communication workshop in April 2011 held in Cocodrie, near the coast of Louisiana, then to evaluate the effectiveness of the seminars there by evaluating the quality of journalistic pieces developed afterward. LSU researchers leading the grant include Lisa Lundy, associate dean of research and sponsored programs at LSU’s Manship School of Mass Communication; Christopher D’Elia, dean of LSU’s School of the Coast & Environment; Kirby Goidel, professor in the Manship School of Mass Communication; and Nancy Rabalais, adjunct faculty in the Department of Oceanography & Coastal Sciences and director of the
Larry Rouse and Vince Wilson, both professors in the School of the Coast & Environment, received an NSF rapid response grant to develop the Online Clearinghouse for Education and Networking – Oil Interdisciplinary Learning, called OCEAN-OIL, a peer-reviewed collection of scientific information and educational resources about the Deepwater Horizon disaster and its broader energy and environmental issues. OCEAN-OIL is a collaborative, community-driven effort by scientists, teachers and concerned citizens. The website is comprehensive and user-friendly, featuring hundreds of multimedia pieces such as articles, photos and videos about topics relating to the spill and its impact.

Although researchers at LSU – like those at institutions across the country – had trouble getting funding to flow in the beginning, the research that has been resulting from their efforts is diverse and widespread through the sciences and humanities. The process of peer-reviewed science is long, but the results and their implications will be worth the wait. Determining the full impact of the Deepwater Horizon oil spill on the deepwater and coastal environments – and on the people of the Gulf Coast region – will likely take decades. But thanks to talented and dedicated researchers like those at LSU, whatever the determination might be, solutions will be developed to help the long-term recovery process and prevent disasters of this magnitude from happening in the future.
Institutional Assets

As a world-class, comprehensive research university, LSU has a number of institutional assets to facilitate faculty research programs. In times of crisis, it turns out that many of these assets position LSU scholars to do things that other institutions are not able to do. Below we highlight a few organizational arrangements, instruments and systems that helped set this institution apart in terms of its ability to respond to the oil spill on behalf of the citizens of this state.

Figure 4.1 LSU, Louisiana’s Flagship University, is famous for its stately oaks and arches, as well as world class research.
Louisiana Sea Grant College Program

LSU is a land-, sea-, and space-grant university. As such, it has organizational branches that allow its faculty and staff to do many things that colleges and universities not bearing these designations cannot. For example, as the disaster unfolded, all Louisiana Sea Grant (LSG) programmatic areas were activated, from research and Marine Extension to the legal program, communications office and education department.

With regard to research, Sea Grant’s seafood specialists collected archival samples of shrimp harvested before the spill to explore methods of detecting petroleum taint in seafood. Sea Grant’s statewide fisheries specialists conducted research on the effects of dispersant on juvenile blue crabs, and blue crab megalopae. In addition, less than two weeks after the Deepwater Horizon event, Louisiana Sea Grant issued their own request for proposals for short-term, rapid response research projects to monitor the effects of the spill on coastal marshes and important fishery species. More than 50 proposals were received. Initially, Sea Grant was able to underwrite five research projects. An additional five projects were funded with monies provided by the National Sea Grant Office.

Another critical dimension of Sea Grant activities is their extension work, where they bring critical information to the citizens of the state. In this case, regional Sea Grant program personnel from Louisiana, Texas, Florida and Mississippi–Alabama called on scientists, policy makers and fishermen from Alaska to tap into their experiences in the aftermath of the massive Exxon Valdez spill. Sea Grant facilitated meetings between Louisiana residents and Alaska representatives, and escorted federal representatives and the news media on tours of the Louisiana coast.

Sea Grant representatives also responded to innumerable requests from local, national and international media and facilitated community meetings (such as one in Abbeville - http://tinyurl.com/36atqppq) to answer questions and allow residents to voice concerns. Sea Grant
provided information to the general public and state and local officials and participated in meetings with emergency planners, the U.S. Coast Guard and BP representatives. Their Marine Extension agents also maintained frequent contact with local fishermen regarding closed fishing zones and provided information concerning claims, the Vessel of Opportunity Program, and training meetings. They gathered and interpreted technical reports and information to transfer to fishermen and the public, and orchestrated special outreach for members of the state’s Vietnamese fishing community.

In an example of the intersection of research and extension activity, a Sea Grant water chemistry specialist conducted a literature review of dispersant usage, toxicity, oil toxicity, and recent studies by the Environmental Protection Agency on soil sampling across the northern Gulf Coast, and provided summary information to Louisiana Sea Grant personnel and the public. Another Marine Extension specialist used geospatial technologies to create a map for parish officials that identified the location of oil-response assets such as jack-up rigs, booms and marsh openings. This map was so useful it was submitted to the federal government as part of a regional response plan.

Extension Associate Julie Falgout became the first Sea Grant representative to be embedded in Joint Incident Command, or JIC. She served as a communications conduit between Sea Grant and its constituents and other members of JIC, distributing critical information from JIC and delivering essential information on Sea Grant programs and capabilities to JIC. To address short-term seafood safety concerns, Sea Grant Extension agents and specialists spoke with regional, national and international media about the spill’s impact on Gulf seafood, participated in contamination detection workshops, and conducted contamination screening training for processors. Finally, Sea Grant personnel developed comprehensive FAQs concerning the spill’s economic impacts to fisheries in Louisiana (http://gulfseagrant.tamu.edu/oilspill/economic.htm).

Sea Grant also implemented a significant communications program of
its own. As soon as it became apparent that the well was discharging a significant amount of crude oil, Sea Grant programs in the five Gulf states joined together to develop the Gulf of Mexico Oil Spill Resources website (http://gulfseagrant.tamu.edu/oilspill/index.htm), providing a wealth of information and contacts on a variety of related topics. All Gulf of Mexico programs provided content for the site. Louisiana Sea Grant designed and maintains the site; Texas Sea Grant hosts the site on its server. Moreover, recognizing the imperative of obtaining environmental samples and data before the spill spread, the Research Sample Collection Forum (http://sg-server.lsu.edu/forums/) was created to allow researchers both to coordinate sample collection trips and to list the samples they have and those they needed.

Following the capping of the well, and in response to constant requests for this information, Sea Grant established web pages dedicated to the Natural Resource Damage Assessment (NRDA) process (http://www.laseagrant.org/nrda/index.htm) to keep Sea Grant personnel as well as stakeholders informed about restoration efforts. Sea Grant Extension and Communications also worked together to develop a short public awareness video on seafood safety (www.youtube.com/user/LouisianaSeaGrant). That video, along with other seafood safety materials, were distributed nationally across the Sea Grant network, with other programs sharing those resources with their respective constituents.

The Sea Grant program also had a substantial set of activities geared toward legal issues. For instance, amid public confusion surrounding various contracts with BP and concern over compensation for individual, business and natural resources losses, the Sea Grant Law & Policy Program developed two fact sheets, “If You Suffer Damage Because of an Oil Spill” (www.lsu.edu/sglegal/pdfs/Oil_Spill_Remedies.pdf) and “Recovery of Public Natural Resources by the Federal and State Governments in the Event of an Oil Spill” (www.lsu.edu/sglegal/pdfs/Natural_Resource_factsheet.pdf), to explain pertinent law and to inform constituents who may need to file legal claims. It also conducted legal research into a number of oil spill-related issues, including accepting assistance from foreign vessels and the Jones Act, criminalization of the
oil spill, freshwater diversion use to reduce oil intrusion and its impact on fisheries, closure procedure for state and federal waters, claims by foreign nations, problems with double recovery, securities fraud issues and recovery under the general theory of torts.

Sea Grant Law also fielded numerous inquiries regarding the claims process and the distinction between claiming lost income based on prior catch by weight or by value, conducted research on that topic and advised the fishermen accordingly. Members of the Law & Policy program also participated in public meetings, answering questions from the public on legal aspects of damage claims, and Sea Grant Law published an article in the Louisiana Coastal Law Newsletter entitled “Legal Implications of the Deepwater Horizon Disaster.”

Louisiana Sea Grant’s education program coordinated and collaborated with the LSU Department of Education and other partners to develop and disseminate oil spill educational materials, including a dozen lesson plans that can be incorporated into kindergarten through 12th grade math, science, social studies and language arts coursework. Workshops were held in fall 2010 to train teachers on how to use the materials.

Loss of income due to the oil spill created additional anxiety and stress among residents of impacted coastal communities. Similar stresses were witnessed during the Exxon Valdez spill. In conjunction with all four Gulf of Mexico Sea Grant programs, Extension and other SG personnel participated in peer listening training so they can better identify persons suffering from such stresses and refer them to appropriate healthcare providers. LSG made the training available online (http://tinyurl.com/36c6rlz).

And as part of the Great American Seafood Cookoff, three educational panel discussions were held August 8, 2010. Participants of the first panel included national chefs discussing the perception of Louisiana and Gulf seafood. The second panel concerned seafood safety with participants from state and federal agencies such as NOAA, FDA, LSG, and EPA discussing how seafood is currently being tested. The final panel included marketing and tourism professionals as participants.
Louisiana Sea Grant webcast all of the panel discussions (http://tinyurl.com/2b56klp).

**LSU AgCenter**

In addition to the Sea Grant program, the LSU AgCenter played a major role in the response. The AgCenter is an independent entity from LSU, but the LSU main campus, the Louisiana Sea Grant program, and the AgCenter maintained open lines of communication to help each other in the response efforts. The LSU AgCenter immediately activated an oil spill response task force to look at the capacity of the AgCenter to respond to issues caused by the spill. With 20 field-based research stations and extension offices in all 64 parishes, the LSU AgCenter has uniquely positioned to develop, apply and deploy unbiased, research-based technologies and solutions to the Deepwater Horizon oil spill incident. Cooperative Extension and Sea Grant program directors in Texas, Louisiana, Mississippi, Alabama and Florida created several issue-focused task forces to address topics like tourism, aquaculture and fisheries, wildlife, food safety, environmental quality, livestock and crops, bioremediation, and family and business financial management. Each task force identified resources, created content and disseminated educational and recovery information through their relevant websites.

In terms of the research response, AgCenter faculty...
brought diverse expertise to the problem. For example, upriver from where oil was washing ashore in Plaquemines Parish, LSU AgCenter research associates planted 600 individual plants of smooth cordgrass in ponds at the LSU AgCenter Coastal Area Research Station. This grass is the predominant plant species in Louisiana's intertidal marshes, and is the plant that is holding the wetlands together. These plants are expected one day to help restore deteriorating marshes and areas threatened by oil. The grass reproduces vegetatively as opposed to by seeds. It creates a strong root system and can stand up to high concentrations of salt and to the pounding of the tide. It is unclear how the oil spill will affect the smooth cordgrass plant, but their experiments will shed light on the issue. A device that can “harvest” an oil spill in open seas or in a marsh – much like a combine harvests wheat and eliminates the chaff – was developed in response to the spill by an AgCenter researcher. Chandra Theegala, an associate professor in the LSU AgCenter Department of Biological & Agricultural Engineering, developed the idea in response to the Deepwater Horizon oil spill in the Gulf of Mexico in April. Theegala’s invention uses a boom to skim surface oil and water through a positive displacement pump and into a container where the oil and water separate naturally. The oil floats up through a pipe into a collection vessel while the water goes another direction and is discharged back to where it came from. Theegala’s initial concept model can pump about 4,000 gallons of an oil-water-air mixture per hour.

The LSU AgCenter was a conduit of information to the citizens of the state, providing them factual and unbiased information related to the spill as it became available. For example, AgCenter nutritionists
confirmed that Louisiana seafood is safe for consumers to eat following the oil spill. They monitored reports from federal and state agencies that were regularly testing seafood to make this determination, and then shared that information with the constituents.

In addition, the AgCenter sponsored Marsh Maneuvers, a week-long camp offered each week in July as part of the 4-H program, which is designed to help the 4-H’ers understand the significance of Louisiana’s wetlands to the environment. Marsh Maneuvers is held every summer, using Rockefeller Refuge as a base. Students, all from 4-H clubs across the state, get hands-on experience in the wetlands, learning about a variety of topics and activities, from catching crabs to planting marsh grass.

This year though, the students got to sit in on one of several meetings held to keep everyone informed of the latest developments. Tim Creswell of the Vermilion Parish Office of Homeland Security told the students that the task force’s mission is to keep the oil out of Vermilion Bay. Students asked questions such as what would happen if someone caught fish that had been contaminated with oil? These extremely valuable experiences once again highlight the unique role played by LSU in responding to this disaster on behalf of the people of this state.

Public Policy Research Lab

Many social and behavioral scientists responded to the oil spill crisis by conducting surveys of coastal residents. These surveys were a mechanism to document attitudes toward federal, state and local officials, BP, and the perceived level of threat that the spill posed to resident’s way of life. Surveys were also utilized to gauge levels of stress, anxiety, depression, nervousness, physical illness and where people got their information about the oil spill. Social surveying is a scientifically informed method that helps to ensure the randomization of respondents and
minimize bias in sample selection, and is as much of an art form as it is a science.

LSU is lucky to have the Public Policy Research Lab (PPRL) as a significant institutional asset. The PPRL has a 52-station computer-assisted telephone interviewing system (CATI), and is one of the largest university-based telephone interviewing operations in the region. CATI, a highly advanced computing system and software platform, reduces both the cost and the time needed to conduct surveys. The CATI system allows data to be entered directly into a computerized database as interviews are conducted, providing a highly efficient and reliable system of data collection. In addition to reducing the cost and time necessary to conduct surveys, the CATI system reduces the number of data entry errors thus increasing accuracy.

In the weeks following the disaster, LSU’s Reilly Center for Media & Public Affairs had the PPRL collect public opinion data from coastal residents, gathering 924 high-quality interviews beginning less than one month after the sinking of the Deepwater Horizon drilling rig. By the end of June, the PPRL had conducted another 935 surveys for an LSU research team studying mental and physical health effects of the spill, and shortly after that, completed nearly another 1,200 surveys for a research group in political science. The public health team then received funding to field additional waves of their survey resulting in thousands of additional surveys. No other university is believed to have collected the range and depth of social science survey data in the wake of this crisis, and LSU could not have done it without the PPRL.

**Earth Scan Laboratory**

In the days and weeks following the oil spill, one of the main questions journalists, the general public, response personnel and scientists kept asking was, “Where’s the oil?” LSU was able to at least partially answer
that question by using its unique capacity to document the distribution of the oil on the ocean surface.

The LSU Earth Scan Laboratory (ESL) was founded in 1988 with a grant from the Louisiana Education Quality Support Fund. The ESL is a fully functional satellite ground station. It receives real-time data from a variety of satellites and translates that information into various data formats and different types of photographic images. The system is routinely used to track drifting buoys in the Gulf of Mexico to document and study ocean circulation patterns, and to capture sea surface temperature data. The satellite system at the ESL provided some of the first and most memorable images of the surface oil slick that remain emblazoned in the memories of many people. Its real-time capacity allowed visual tracking of the surface slick in the days and weeks following the Deepwater Horizon spill.

Notably, no other college or university in the state of Louisiana has this degree of satellite-data capturing capacity, and there are only a few in the entire southeastern region of the U.S. Faculty and staff affiliated with the ESL were some of the first in the academic community to step up to the public service challenge of the spill, and played a critical role in visually documenting the sea surface distribution of the oil.
WAVCIS is the Wave-Current-Surge Information System for Coastal Louisiana, housed in the LSU Coastal Studies Institute along with the Earth Scan Lab. This system was initiated in 1998 under the direction of the late Dr. Gregory Stone. WAVCIS is the most established ocean observing program in the Gulf of Mexico, and gives LSU researchers a set of tools unlike any other college or university in the Gulf region. Under normal conditions, the real-time nature of these systems is useful for the oil and gas industries, as well as recreational and commercial fishermen, because it allows them to gauge sea conditions and make informed decisions in terms of how dangerous it will be to make supply trips to offshore rigs or to start working fishing grounds.

WAVCIS uses an Acoustic Doppler Current Profiling (ACDP) system, in which small instruments are placed at six different sites on the seabed along the coast of Louisiana. These instruments project acoustic Doppler waves to the sea surface and record the reflection back to the sea floor. These data are recorded and transmitted via a solar-powered cellular phone system back to the WAVCIS lab at LSU, then archived online and made available. In the wake of the oil spill, these data were useful because they provided three-dimensional, real-time profiles of wave height, period, direction and differential current speed in the water column. Because of the unique nature of the Deepwater Horizon spill, no models were available to tell responders where the oil would...
go. These data, when coupled with post-hoc observations, will help inform the development of such transport models in the near future.

**CAMD**

The Center for Advanced Microstructures and Devices, or CAMD, is a synchrotron radiation research center. CAMD’s synchrotron radiation tools provide unique analytical speciation, molecular structure, and distribution within materials such as soils, plants and ocean fauna. By using X-ray absorption near edge spectroscopy measurements on Deepwater Horizon oil samples from the riser, the water column, the ocean surface and coastal marshes, LSU scientists can examine changes in the chemical composition of the oil samples over time, across places and due to various microbial forces. The scientific advances expected to be gleaned from this project will be immensely useful in understanding the effects of future oil spills and how they can vary from place to place depending on the initial composition of the oil.

Researchers at CAMD were awarded funding from the LSU BP GRI program to use the synchrotron light source and to study the chemical composition of the Deepwater Horizon discharge. There are only eight light-source facilities in the U.S.; CAMD is the only one that is state funded and the only one located in the southern United States.
LSU is the only university in North America home to a hands-on well control training facility. The Petroleum Engineering Research & Technology Transfer, or PERTT, Laboratory – also commonly referred to as the Well Facility – is an industrial-scale facility with full-scale equipment and instrumentation for conducting training and research related to borehole technology.

When the PERTT Lab was developed in the early 1980s, much of its equipment was assembled to support past research and training activities in the area of blowout prevention. Now the lab is utilized to provide a versatile research environment for performing multiphase flow experiments on field-scale tubulars at high pressures.

PERTT administrators, who are still active in research and practice, bring years of industry experience and knowledge as drilling engineers to the classroom and pass that experience on to their students, who get unique training by working with real equipment and real wells.

Well education focuses on fundamental concepts and techniques that students can use in multiple ways to tackle the problems they may encounter in the field. The teaching of fundamentals and being able to adapt those ideas is important for preparing students for the workforce.

In addition to training with real equipment at the PERTT Lab, students also get training on computer simulators that are designed for well control. Students take a one-semester course at the PERTT Lab where they complete a number of exercises on learning to operate equipment, such as pump startup and shutdown, and simulations.
of real operations from the field, such as pressure testing casing and pressure testing on formations, which are simulated full-scale. Other exercises include circulating fluid through pipes to see how pressure changes, simple fluid mechanics and controlling pressure on the well after taking a kick.

With the Deepwater Horizon disaster and Gulf oil spill, the faculty and staff at the LSU PERTT Lab stepped in to educate the public through the media. Local, national and international media outlets sought information from the instructors and visuals provided by the actual equipment in order to provide perspective and information on everything from blowout prevention to drilling techniques and oilfield history.

On June 4, the lab opened its doors to media for a demonstration of a well control exercise and to discuss blowout prevention. The demonstration, given by Professors John Smith and Darryl Bourgoyne along
with LSU engineering students, was attended by media from around the country including CNN, an NBC affiliate from Los Angeles, *The Advocate*, *Times-Picayune*, Gannett Newspapers, *The Reveille*, WBRZ, WAFB and the *Baton Rouge Business Report*. Media attending the event were shown the facility, which includes an 800 barrel capacity drilling fluid circulating system; a high-pressure choke manifold and process control system; a 2,787-foot model well for floating drilling operations; a 5,884-foot model well for bottom-supported drilling operations; a high-pressure, underground gas formation simulator; a full-scale model well diverter system; a 9,600-foot drill pipe flow loop; and a 100-foot derrick and 45-foot inclined wellbore analog. In addition, the Discovery Channel and the *Los Angeles Times* have visited the facility recently.

The PERTT Lab was established at LSU by Ted Bourgoyne, professor emeritus of petroleum engineering, and several other faculty members in the early 1980s with funding from the U.S. Minerals Management Service, or MMS, industry, and LSU. Much of their research, and especially Ted Bourgoyne’s work, continues to be relevant and useful today. In addition to training students and industry, the PERTT Lab is a place where new technologies can be safely tested before they are launched in the field.
Lessons Learned

As an institution of higher learning that is continually committed to intellectual growth and progress, a natural step for us in this entire disaster response has been to take some time and reflect on our strengths and weaknesses, using these reflections as a ‘teachable’ or ‘learnable’ moment if you will. In broad brush strokes, discussions among administrators involved in the response to this crisis have resulted in a set of lessons learned that are in many ways applicable...
to other colleges and universities as well. In the interest of shoring up our own ability to respond to a crisis in the future and, therefore, serve the people of this great state, and as a good faith effort to help our colleagues at other institutions prepare to mobilize on behalf of their own constituencies, we offer the following thoughts, in no particular order.

1. **Formally adopt emergency-based research response procedures.** Most universities have an emergency response plan in the event of a tornado, flood, chemical spill or some other unanticipated disaster. These response plans typically revolve around campus evacuation, securing residence halls for students living on campus, facility integrity evaluation and the like. What most universities do not have, however, is an emergency response plan focusing on the intellectual or research-based response. LSU is probably somewhat unique in this respect, in the sense that our prior history with research in response to hurricanes, in particular, has (unfortunately or not) given us more experience with rapid mobilization than most other schools. Nevertheless, colleges and universities, being critical to the research response, would do well to develop research response plans centering on communication and coordination. In the throes of a disaster, communication efforts can easily get clumsy, and trying to coordinate hundreds of eager researchers so that they are not unnecessarily duplicating research efforts, missing important collaborative opportunities, or missing out on opportunities to secure funding for their work is critical to success. Designation of key points of contact for state and federal entities, funding agencies and relevant business and industry entities is desirable. Web pages (both internal and open access), e-mail lists and faculty expert listings are necessary as well. The list could go on, but from our perspective the point is to get a structure in place where information itself flows freely and transparently, keeping all relevant parties in the loop in a nonintrusive way.

2. **Maintain an accounting of institutional assets and a research capability database.** Different institutions have different research strengths and capabilities. For example, some institutional assets,
certain centers and institutes, or specific data collection or analytical instrumentation, will be relevant in some emergencies but not others. Identifying these assets prior to a crisis will facilitate the capacity of the institution to assert itself into response efforts. A well-articulated plan would discern the relevance of assets and capabilities by type of anticipated crisis, and have protocols in place to free up or reassign assets should they be needed.

3. **Formally designate an associate dean of research in each college.** Colleges are the primary administrative sub-unit in most universities. They typically have a dean and, frequently, one or more associate deans. Our experience is that with regard to the research response to a crisis or disaster, having an associate dean for research within each college is critical. Associate deans occupy a unique position because they typically have a very strong feel for the research strengths, activities and personnel within their units, something that is difficult for university-wide administrative units like Offices of Research to get a handle on. They serve as an intimate and familiar point of contact for their own faculty, and can provide important contextual information that those more distant from the college can’t provide. This might include what personalities are likely to collaborate well together and which are likely to clash, who has discretionary self-funding at their disposal, and who is already so overburdened that they are unlikely to be able to take on additional work.

4. **Define an administrative ‘strike force’ instead of a cumbersome administrative team.** A centrally located emergency response group, or a ‘strike force’, is usually going to be preferable to a large, cumbersome administrative team. Large response committees tend to get mired down in going around the room getting input from everyone, which is inevitably influenced by their own units’ interests. What is needed is fast and decisive leadership that is not overly gung-ho but not so risk averse that it gets paralyzed into inaction. Crisis response involves calculated action; realistically, these situations are fluid and lead decision makers never have all the informa-
tion germane to any specific issue. Even if they did, some disaster situations change so quickly that some information rapidly becomes irrelevant. Thus, smaller decisive teams that can act quickly are usually going to be preferable in these situations. This group can then funnel information out rapidly to the associate research deans, who can keep the faculty informed.

5. **Have the foresight to set aside bridge or rapid response funds.** For those universities that are likely to be involved with disasters or crises with any regularity (e.g., those in states with regular hurricane activity), a bridge fund or rapid response account to jump start the research response is a good idea. Research takes money, and a rapid response funding program can get faculty projects started while waiting for slower moving evaluations of proposals from federal, state, foundation or industrial entities. A standard rapid response RFP can be articulated and made ready for release upon establishment of such an account. This will often be a good investment and point of leverage for universities because it will allow immediate baseline data collection that researchers can use to inform and enhance future funding applications. It also allows the institution a means to mobilize on behalf of the citizens of the community and state very quickly.

6. **Establish a facility for live TV feeds.** In contemporary America, disasters are media intensive events. Print and radio press are typically not difficult to accommodate, but live television feeds are more cumbersome. A designated facility for live TV feeds is a must for a disaster with any level of television media interest. A handsome and well-functioning facility allows faculty experts to put their best foot forward in a relaxed and comfortable sub-setting of an otherwise stressful atmosphere. A designated live TV interview facility will also make the queuing of journalists more efficient, and will project a positive image of the university to both the general public and media.

7. **Don’t let faculty scholars get too overwhelmed with the media.**
A common problem when responding to disasters is that a small number of highly proficient faculty scholars will agree to a few initial interviews, and then rapidly get sucked into the media vortex. This can be problematic when the scientists end up putting off their scientific work in order to accommodate media requests. Of course, this is a balancing act, but it is the responsibility of the university leadership, in conjunction with relevant faculty scholars, to know ‘when to say when’ so to speak, and not let faculty get too overwhelmed with responding to media inquiries.

8. **Understand what it is you do well, and play to your strength.** Even comprehensive research universities have certain strengths that set them apart from their local or inter-state peers. Understanding what these strengths are, and being prepared to make decisions that involve resource allocation and hence may generate conflict is an unpleasant but necessary task.

9. **Be practical and realistic.** One of the most powerful lessons to be gleaned from the entire experience is that no one – neither a private company nor a major research university – is prepared to deal with a catastrophe of this magnitude. Even a major research institution such as LSU has limitations in terms of people, power, and capacity, and private corporations like BP have enormous legal machinery that tends to slow the process down. Choose your battles, and be persistent, but realize that some things will take time to get done right.
Reflections on Responding to Crisis

In addition to the lessons learned, additional insight can be gained from the observations of those who were most closely connected to the events on the ground. Aside from the description of administrative and communication efforts and scientific studies, the zeitgeist of the times is best experienced via the thoughts of those who lived it.

Figure 6.1 LSU Associate Professor of Biological and Agricultural Engineering Chandra Theegala’s oil-skimming prototype being tested at sea.
These words were to appear late in the documentary “After the Aftermath,” a film portraying the destruction that storms, coastal erosion and declining markets have unleashed on Louisiana’s little-known Croatian fishing community.

It is a story that reads like a well-wrought version of the American Dream. Coming to Louisiana in the early 1900s, Croatian immigrants acquired the skills and materials needed to do what few others cared to do: settle in fishing camps deep in the marshes in order to fish and farm oysters. Slowly other family members were brought over, new families were begun, and the small community grew to be self-sufficient and proud of its unique heritage and way of life. As Captain Vujnovich declared, times would get better.

On April 20, 2010, things instead got much worse. The explosion and collapse of BP’s Deepwater Horizon produced yet the latest threat to the Croatian community’s heritage and its industry. Interviews taped that June were heart-wrenching: “We have to have more hope than most, because we have everything to lose;” “Just fix it;” “I can’t take much more of this—at least that’s what my doctor says.”

Six months later, in January 2011, I have just returned from taping another event: the remodeling of a building in lower Plaquemines donated
to the Croatian American community. Faced with a declining market for oysters and widespread failure of juvenile oysters to set on their beds, this community is going to work – if not fully harvesting oysters, then working instead on a Croatian Cultural Center. Why? The oysters will come back, they tell me. In the meantime, there is other work they can do to provide a future for their community and their children. So they do it.

Matthew Lee
Professor of Sociology
Associate Vice Chancellor, Office of Research & Economic Development

As the days passed and the oil continued to flow freely, the human toll of this disaster became painfully evident. By May 5, our research group was able to draft, route through sponsored programs, and submit to the National Science Foundation Sociology Program a rapid response grant proposal to begin immediately studying the human impacts of the spill. We were basing this strategy on our approach to studying the human impacts of Hurricane Katrina five years earlier, when members of our research team had been awarded both SGER and HSD grants from NSF. Alas, we had no such luck this time around. The sociology program was not interested in funding anything we were doing, and so we had to search for other sources of funds. After a few more weeks passed, we were starting to get desperate: if we didn’t get in the field soon and start conducting public health surveys to document the levels of stress and anxiety in coastal communities the spill was invoking, a tremendous opportunity would be lost.

We contacted the Public Policy Research Lab, the unit on campus that typically carries out our telephone-based survey research for us. They agreed to do a study ‘for cost’ if we could scrape together a few thousand dollars. We discussed that we each had a couple thousand dollars in discretionary research funds at our disposal. Maybe we could approach our
dean and ask him to match what we could come up with. This would put us in the $8,000 dollar range – hardly the numbers of ‘big science’, but enough to get us roughly 1,000 short telephone interviews with targeted coastal community residents to gauge their mental and physical reactions to the spill. When we approached the dean of our college, he appreciated our willingness to invest our own funds and offered to cover the whole cost of the survey. With incredible cooperation from the PPRL, we were able to begin fielding surveys almost immediately, and between June 17 and July 1, 2010 we were able to collect nearly 1,000 completed surveys. Our report was issued by mid-July. It was the first empirical assessment of the mental health toll the spill was taking on coastal populations, and received far reaching nationwide press coverage, including a piece on the CNN.com health blog by Dr. Sanjay Gupta. Since then, that report has been circulated among hundreds, and probably thousands, of scholars, journalists and laypersons, and we continue to get frequent inquiries from all over the place based on that report.

Nan Walker
Director of the Earth Scan Laboratory, School of the Coast & Environment

The disaster offshore showed up as a large smoke plume in the LSU Earth Scan Lab’s April 21 morning MODIS satellite image. We “saw” the oil spill for the first time on April 25, when it was relatively small, about the size of the Mississippi “birdfoot” delta. We had some experience tracking oil spills along the Louisiana coast since there were at least 300 after Hurricane Katrina. However, this one was different. This one was easier to track, it grew too big too fast, and it seemed to last a lifetime. The lab, tucked away on the fourth floor of the “Old” Geology Building, bustled with film crews from WAFB local news, CBS national news, Nova in the Netherlands, and National Geographic, to name a few. The staff and students looked at image after image
and animated image frames to track the spill across the Gulf towards the Loop Current. They hurried to put the images on the lab web page (www.esl.lsu.edu) where the archive of oil grew larger and larger. When would the oil reach Florida? Would it go all the way to Europe? What would a hurricane do to the oil? These were some of the many questions that the interviewers asked the director and her staff. It seemed that the entire digital world focused on this calamity in the Gulf, analogous in a way to the intense focus on Louisiana after the disaster called Hurricane Katrina.

Jim Bates
Executive Director, Office of Sponsored Programs

Evidence of the crucial role that LSU played in the response to the 2010 Deepwater Horizon oil spill can be found in the number of oil spill-related, sponsored research proposals and awards that were processed and approved by the Office of Sponsored Programs, or OSP. Nearly 200 distinct research projects investigating various aspects of the oil spill and its impact were proposed. OSP grant specialists worked with the researchers and department administrators to review and submit the proposals within a reduced time frame. Due to the time sensitive nature of the research, specialists prioritized oil spill-related proposals and awards while still managing and maintaining regular workloads. The first three months after the spill were the most hectic as 65 percent of the oil spill-related proposals were submitted in the period from May-July 2010. In addition to funding provided directly from BP, funding for oil spill-related research came from numerous other sponsors including federal agencies such as the National Oceanic and Atmospheric Administration and the National Science Foundation, and state agencies such as the Louisiana Department of Wildlife and Fisheries and the Louisiana Department of Culture, Recreation and Tourism. Additionally, LSU researchers obtained funding in the form of sub-awards for research with collaborators at other universities in the Gulf Coast region and contracts from industrial partners.
R. Eugene Turner
Professor, Department of Oceanography & Coastal Studies

A ‘Black Swan’ arose from unpredicted, but knowable cause-and-effect consequences, and came ashore as a floating red mousse with a diarrhea-like grossness, embedded in the nauseating memories of the 2005 hurricanes. There was the immediate understanding that this could be another Katrina-like despair permeating the Gulf, affecting families and the environment they fished, hunted, and played music in. Everyone’s indestructible urge to help came to the surface: what could we do? There were more people from outside Louisiana offering to help than reporters calling for tidbits for the 10 o’clock news – and we had little to offer them. We were without means to sufficiently measure the impacts on the oiled beaches and marshes that would eventually be slimed. And then the situation turned worse – institutional behaviors became dysfunctional, and in diverse ways. Contractors on Coast Guard and State hired boats turned us away within sight of our few pre-spill sampling sites; required collecting permits would not be counter-signed; boats were blocked by unguarded booms. We volunteered, bullied, snuck around and legitimately made use of newly formed resources (primarily from the National Science Foundation), while taking financial risks to get in the field. Research groups formed to work together, to write proposals and recommendations, and to stir the pot a little. We fielded hundreds of questions by e-mail, phone and on-camera, and offered what we wished to be constructive advice to those that didn’t ask for it. And we were the lucky ones.
Ashley Berthelot
Media Relations

As a media relations professional, what I remember best was that there was no time to breathe. This horrible tragedy had occurred, but reflection wasn’t an option at that time – there was just too much to do. My phones never stopped ringing – not even at 2 a.m. – and my inbox was overwhelmed. The world was hungry for information and wanted experienced, reliable experts to provide it. News outlets from around the world came to Louisiana in order to get the latest information about the oil spill, and because of LSU’s reputation, they wanted our experts to comment. Working with so many visiting journalists was a true learning experience – try giving a French journalist directions to a specific place on LSU’s campus, and you’ll know what I mean. I know that I personally took more than 700 media calls during this time, and that’s probably a low estimate. That doesn’t count the work others were doing.

While everyone knows we have an exceptional faculty here at LSU, most people don’t know – or maybe don’t notice – that many of our faculty are also great communicators. They really take public service to their state seriously, and many of them stepped forward to explicate the complicated scenarios presented on the news each night to make sure the public was well informed. I was fortunate to work closely with many of these internationally respected researchers during the oil spill. It made the job easier, but more importantly, it made the news getting out to the public more accurate.
Holly Carruth  
Assistant to the Associate Vice Chancellor

During this time, as the assistant to the interim vice chancellor for the Office of Research & Economic Development, I saw firsthand the immediate response by ORED and LSU to pull up their bootstraps and collaboratively work to find solutions to an ever-growing disaster. Within a week or so of the disaster, I created an ORED Gulf of Mexico Oil Spill Resources page listing LSU and state resources, which was updated daily. As well as the resources, summaries of the oil spill forums were attached for future reference and a list of experts at LSU for quick reference. Our website was linked directly to the Office of Communications & University Relations website as another source of information. I worked with Matthew Lee, associate vice chancellor, to coordinate the ORED forums across campus in addition to collecting information for the Oil Spill Expertise database. Communication of pertinent information, whether by e-mail or through the website, was critical during this time. I am very proud to have been a part of the ORED/LSU collaboration during the Deepwater Horizon disaster.

Gaines Foster  
Professor of History  
Dean, College of Humanities & Social Sciences

The Deepwater Horizon oil spill of 2010 was an environmental disaster but even more a human tragedy. Eleven people lost their lives and others were injured in the explosion, which should always remain at the center of our memory of the event. In the aftermath of the explosion, people across South Louisiana and the Gulf Coast suddenly found their lives and livelihoods threatened.

Members of the faculty of the College of Humanities & Social Sci-
ences quickly applied their scholarly expertise to the study of the human problems that the disaster brought. They explored various aspects of the emergency – from how people communicate in the midst of disaster to its impact on their mental and emotional health. These and other projects continue and seek not just to aid affected communities but to learn lessons that can be applied in other disasters. Other faculty members sought to put Deepwater Horizon into the historical context of earlier extreme events, again with the goal of finding better ways to respond to future ones.

Watching LSU respond to the human tragedy, I gained a renewed and deepened appreciation of the way colleagues in our college and throughout the university help meet the needs of the people of our state and the nation.

Josh Chamot
National Science Foundation

Before most of us realized the scale of the disaster, LSU had already compiled a web-accessible list of resources, including experts capable of communicating to a general audience. The resources established at that early point were a valuable tool for those of us hundreds of miles away who needed to find knowledgeable expertise quickly. Because of the LSU team’s foresight, the university became a principal resource for myself and for reporters who came to me for help.
Michael R. Bromwich
Director, Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)

Louisiana State University is home to the Craft & Hawkins Department of Petroleum Engineering and the School of the Coast & Environment, both premier national programs. These schools make LSU a natural fit for collaboration with the Bureau of Ocean Energy Management, Regulation and Enforcement on ensuring the safe and responsible development of our oil and natural gas resources in the Outer Continental Shelf.

Rick Koubek
Professor of Construction Management and Industrial Engineering
Dean, College of Engineering

This was a tragic event that impacted the lives of our community. I am proud of the dedicated and selfless response by the students, faculty and staff in the College of Engineering, who came together with their respective expertise to help. Faculty members in environmental engineering monitored the impact of the oil on the marsh as it came ashore. Chemical engineering faculty members were called on to assess the effect of dispersants used to break up the oil slicks. Faculty from petroleum engineering served as technical experts, developing alternatives to stop the flow when it was at its peak. Faculty and staff members from the Well Facility were interviewed by newspapers around the world and appeared on such media outlets as CNN to provide the public with an unbiased, factual account of the disaster as it unfolded. Simultaneously, our faculty experts were advising the government throughout the process. Even the students got involved. I was particularly proud of the petroleum engineering students, who took it upon themselves to build a working model of a relief well.
and posted a YouTube video so that other students could understand the solutions being proposed at the time. This video has been viewed over 3,500 times. The College of Engineering faculty, students and staff came together as a team across the university in a manner that reflects their commitment to the mission of our university.

**Prosanta Chakrabarty**  
Assistant Professor of Biological Sciences  
Curator of Ichthyology at LSU’s Museum of Natural Science

The Gulf spill was a strange event for me personally and professionally. I was starting my second year at LSU as an assistant professor and curator of fishes at the Museum of Natural Science. My research interests are varied but I never anticipated being interested in the Gulf of Mexico. I thought, as many did, that because of its proximity to major research centers that we knew all there was to know about the Gulf. To my surprise, shortly after I started looking, I discovered, with two collaborators, two new species of shallow-water anglerfishes in the Gulf. These pancake batfishes are flattened, bumpy, sand-colored monstrosities. That these conspicuous animals were somehow previously unknown made me rethink my interests on the Gulf. When the spill happened, our fish discovery made some press and I found myself in a position to tell people from around the world the potential impact of the disaster on local wildlife. What I told people continually was how amazed I was to learn how little we really knew about life in the Gulf, particularly in the deep-sea region where the wellhead was spilling its venom. With a collaborator, Dan Janies of Ohio State University, we created a mapping program (DepthMap) that will help us compare the pre- and post-spill distributions of Gulf fishes. Based on this program, we are starting to make a list of species that may have been the most affected. Amazingly, for many Gulf fish species, we know little else about their biology other than where they are found, and even this information is incomplete. When asked a year later what we have
learned from last year’s tragedy, I still say that I’ve learned that we still know only a small fragment of what we could and should know. How can we address the impact of something that happened in an environment we knew so little about to begin with?

Kevin Carman
Professor of Biological Sciences
Dean, College of Science

The BP oil spill resulted in an interesting combination of professional challenges, opportunities and experiences. My own research involves the effects of oil contamination on coastal marshes and I was inundated with interview requests from regional, national and international media. Overall, I was impressed with the journalists that I worked with – they tried to get the story right from a scientific basis. The hardest thing to communicate was that there was so much we didn’t know about what was happening and what the consequences would be. In spite of my personal research interests, my primary role was dean of the College of Science, helping our faculty get the resources that they needed and promoting LSU at the regional and national level. Funding for quick scientific responses was grossly inadequate and many of our faculty used personal funds to cover expenses. It was a sad irony that LSU was in the midst of major budget cuts, which limited resources and capacity to respond. Dean Chris D’Elia did a great job of leading our national response, and I have enjoyed working with him in that capacity.

The jury is still out on the environmental and socioeconomic impact of the spill, but it would be a tragedy if we did not learn from this experience to better prepare ourselves for the next time. We, as a nation, must reconcile ourselves to the fact that we require energy, and that the extraction and use of energy of all kinds comes with risks, consequences and responsibilities.
Perhaps more than anything, LSU was tremendously fortunate to have a widely recognized School of the Coast & Environment, staffed by a number of scholars with a long history of oil spill research. In addition, the dean of the school, Dr. Christopher D’Elia, proved to be a pivotal figure in the LSU response. D’Elia, employed at LSU for less than a year before the onset of the oil spill, showed significant leadership in helping the faculty get their research programs started, and in helping shape the administrative response to the disaster. This effort extended to other academic units at LSU as well.

A longtime marine scientist and senior administrator at a variety of research institutions, D’Elia’s expansive experience proved invaluable to LSU’s success, including serving as the lead negotiator on the major grant from BP. It is therefore only fitting that he provide some closing thoughts on the role of his school in the response efforts, and the need for a national plan to integrate the academic research community into federal disaster response capabilities.
The Deepwater Horizon/Macondo oil well blowout upended the lives of countless Gulf Coast residents, had the nation’s intense focus, and drew immense worldwide attention in the media. The nature and breadth of the crisis were unprecedented. From the beginning, it was universally recognized that normal response measures used in the past would clearly be insufficient. In the course of the spill, nearly 50,000 individuals and over 6,000 vessels were engaged in spill-related activities, 4.9 million barrels of oil spewed from the riser pipe and wellhead, and 1.2 million gallons of dispersant were used. At the outset, no one seemed to have a clue as to how to stop the gusher or remove the large pool of oil at the surface, much less track the oil that remained below the surface. No one knew what would happen to the oil and natural gas released in the deep ocean environment, a place in which ecological effects of the spill had never been studied. At no time before had a spill occurred so deep in the ocean, and the use of dispersants in the quantities applied was unprecedented and untested. The transport, fate and effects of the spill were regarded by most scientists as difficult and possibly even intractable topics to address. In the first two months of the spill, estimates of the rate of flow of the oil kept increasing. Clearly, the response needed extensive, in-depth research to back it.

The faculty at LSU’s School of the Coast & Environment (SC&E), among the foremost experts in the world in environmental and coastal research, had the expertise and the desire to help, particularly with respect to the fate and effects of oil near and on the coast. So, too, did others from other senior colleges at LSU, particularly Engineering, Science and Humanities & Social Sciences. However, even in normal circumstances, notwithstanding being in the middle of a serious budget crisis, LSU did not have the internal resources required to support the research so desperately needed. From the outset, I was therefore quite hopeful when BP
flew its distinguished Chief Chemist Vernon Gibson, F.R.S., on short no-
tice to see me in early May to talk about providing research funding spe-
cifically for the School of the Coast & Environment. Due to our school’s
international reputation and our ongoing negotiations, and Louisiana’s
proximity to the Macondo site, LSU was the first university selected by
BP to receive funding for oil spill-related research.

The initial offer BP made was to fund SC&E for $1 million per year for
a decade. During the early negotiations, I impressed on BP that the spill
had many aspects that my school alone could not address, such as petro-
leum engineering and many other areas of expertise represented at LSU.
I also said that other universities had considerable expertise as well and
would want to be involved. In the end, BP decided to commit $5 million
to LSU immediately with another $5 million to follow over the course
of 10 years. (Ed. Note: BP has since fulfilled its entire commitment to
LSU.) This was then made part of an overall 10-year, $500 million “Gulf
Research Initiative,” open to the broader research community. It is im-
portant to note that although BP did define areas of research interest, it
sought to expend this funding on independent, peer-reviewed science and
social science. BP also sought to expend the funding quickly, which was
a very tough challenge given that no infrastructure existed to manage a
program of this nature.

Our school’s work was not constrained to research alone. We did an
impressive amount of education and outreach. Congressman Bill Cassidy
spent an entire Saturday morning being briefed by SC&E experts. Several
of us were later called to testify before the U.S. House of Representatives
and the U.S. Senate. Since the spill was of such interest to the general
public, media outlets were constantly seeking expert opinions. Our facul-
ty fit the bill nicely in terms of expertise and the ability to communicate.

It is nearly impossible to understand the amount of time SC&E scientists
have spent with the media regarding this spill. At one point, I walked
into Professor Ed Overton’s office and found him typing a response by
e-mail to one reporter, while talking to another on his office phone and
still another on his cell phone. While he had strong support from LSU’s
media specialists such as Ashley Berthelot, everyone was so overwhelmed that each individual pretty much had to take on personally the job of managing media contacts. Communication was intense not only between us and the media, but with others involved with the spill response as well. One afternoon, I noted with chagrin that the e-mails were coming into my inbox at the rate of about one per minute. And that was on a Sunday! I recall a Saturday evening when Chancellor Martin and I were exchanging calls with each other and others until late at night. This was not unusual for me or for many others at LSU who were focusing on the spill response.

My colleagues and I appeared on all three major U.S. network news shows (ABC, CBS, NBC), as well as Fox, CNN, MSNBC, BBC, CBC, ABC (Australia), NPR, and have been quoted numerous times in national and international newspapers. Our school’s prime media contact, Ed Overton, who later was named Louisiana Communicator of the Year, appeared on the David Letterman Show on very short notice. He did a remarkable job. Responding to press inquiries became a second job of sorts, but informing the public with accurate scientific information is an important part of our jobs as researchers and educators. I have a great deal of pride in SC&E’s performance in this regard. Our scientists presented a balanced view on oil spills and their effects because they had the most up-to-date data available.

The oil spill presented a unique and difficult situation for scientists and the federal government. There was never an all-encompassing “science plan” developed for research on the spill, at least one that involved the academic community. The federal government is better able to coordinate and execute its actions because it has a single CEO, the president, and considerable financial, military and legal assets. In contrast, the academic community is diverse and difficult to coordinate. Each university has its own CEO and scores of deans, department chairs and center directors. Academe is not a “command-and-control” environment, and for that reason, its enormous intellectual resources are difficult to identify and coordinate. The federal government has three legislated responsibilities: stop a spill, remove oil contamination from the environment and
assess the natural resources damage. Research that serves these purposes is the logical and legally required priority.

However, more sophisticated and in some ways “fundamental” or “basic” research to observe, model and understand the dynamics of the spill, normally in the province of the academic community, must take a back seat. Because funds to support research must be garnered from outside sources, large delays are inevitable and fieldwork is inevitably delayed at a considerable cost of information.

Research on the spill, or any other such complex disaster rife with scientific, technical and public health ramifications, requires involvement and input from the academic community. Conducting disaster research is not the legislated responsibility of any single governmental entity. Few agencies have even rudimentary capabilities for this, although the National Science Foundation is able to fund a small number of rapid response grants ("RAPIDS"), nor is there any plan to marshal the United States’ full intellectual capacity to deal with environmental disasters. Yet the Deepwater Horizon spill demonstrates a need for this capability. This disaster represents one of only a fraction of the potential nightmarish situations we could find ourselves in without a scientific plan to guide response and remediation. One only has to look at the crisis that unfolded in Japan in 2011 to understand how necessary this is.

In the case of an oil spill, the Oil Pollution Act of 1990 does not provide adequately for funding of science, which has been reflected in the difficulty in getting research moving after the Deepwater Horizon spill. The Oil Spill Act provides for immediate spill response - cleaning up the spill and removing contaminants from the environment, and a process called the Natural Resource Damage Assessment ("NRDA"), that consists of three stages including: (1) Preliminary Assessment to collect time-sensitive data and reviewing scientific literature about the released substance and its impact on resources. (2) Injury Assessment/Restoration Planning to quantify injuries and identify possible restoration projects; perform economic and scientific studies to assess the injuries to natural resources and the loss of services; and to develop a restoration plan to accelerate recovery of injured
resources and compensate for their loss or impairment. (3) Restoration Implementation to implement restoration and monitor its effectiveness.

Science that doesn’t directly either impact the spill clean-up or the NRDA process is not a legally mandated priority. In my view, this is a serious shortcoming of existing legislation. The fact is that we need both applied and basic research to respond to and even plan for the eventually of a disaster of this magnitude. Neither gets the consideration needed due to political constraints and lack of resources committed for this kind of research and observation. We need to be able to conduct long-term research to understand the more subtle long term effects of a major spill. Again, existing legislation and federal resources fall short of meeting this need. Fortunately, in the case of the Macondo spill, BP has made available $500 million over a decade to fund this sort of research and that helps greatly.

The Deepwater Horizon tragedy and resultant Macondo spill with its attendant environmental and economic effects remind us how important energy is to our nation, and that there are risks associated with its production and use. Without a national energy policy in place, we find ourselves in a difficult dilemma. We desperately need fossil fuels and especially oil to offset escalating fuel prices, rising demand and falling production. But, as is the case of every form of energy production, there are risks and deficiencies with oil and gas production, refinement, transport and use. There is no magic bullet that can solve our national energy dilemma.

In my view, we need to increase our energy efficiency while conducting research to find and implement new and reliable energy sources. Conservation is necessary but in itself is insufficient to meet the nation’s energy needs. Because our country is currently dependent on petroleum, we need to explore methods to make drilling safer and to further understand the implications of spills and spill mitigation. We need to confront the CO₂ issue that is such a politically charge topic. We need to bring science and the academic community into the response mode more quickly and cohesively. Otherwise, the impacts may not be cataloged and understood, and we may find ourselves dealing with repercussions we did not see coming our way.
Ecological/Environment Impact

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Wildlife (birds, alligators, fish, etc.)

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Biographical Sketches of Editorial Team

Matthew R. Lee is a professor of sociology and associate vice chancellor in the Office of Research & Economic Development at LSU. A criminologist specializing in communities and violence, he revived an earlier interest in public health research after Hurricane Katrina. He has published on the public health impacts of both Katrina and the Deepwater Horizon oil spill. He has been heavily involved in administrative aspects of LSU’s response to the oil spill since April, 2010.

Ashley Berthelot is a media relations editor for LSU’s Office of Communications and University Relations and the Office of Research & Economic Development. She specializes in gaining critical national media coverage of science- and research-related topics, including the Gulf of Mexico oil spill and the broad spectrum of hurricane research. In addition to facilitating media coverage, she develops strategies to maximize coverage of important breakthroughs and serves as a public information officer in the university’s Emergency Operations Center.

Holly Carruth is an administrative coordinator in the Office of Research & Economic Development at LSU. Her role in response to the oil spill was to facilitate organizational communication between ORED and administrators and faculty throughout campus. She provided oversight for the development and production of this volume from its initial conceptual inception through final publication.
Notes