
INTRODUCTION

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In the real world, all communities are not created equal. If a community is poor, black, or on the wrong side of the tracks, it receives less protection than suburbs inhabited by affluent whites. Generally, rich people take land on higher elevations, leaving the poor and working class more vulnerable to flooding and environmental pestilence.

Race tracks closely with social vulnerability and the geography of environmental risks. We saw this pattern during Hurricane Katrina in 2005 and the levee breach that flooded New Orleans. These events shone the national spotlight on government ineptness, incompetence, and severe gaps in disaster preparedness, but for decades African Americans have been complaining about differential treatment, about being left behind, and about outright racial discrimination.

Katrina raised "a new class of problems that demand rigorous analysis, prudent planning, and courageous political leadership" (Daniels et al. 2006, 4). Our analysis uses an environmental justice frame to understand factors that support and impede post-disaster rebuilding, reconstruction, redevelopment, and recovery. We examine the role of race and place and how unequal protection and unequal treatment make some populations more vulnerable in the rebuilding and recovery process. We examine how physical location, socioeconomic status, race, and institutional constraints create and perpetuate racialized place. We also explore how environmental hazards develop into public health threats and how design factors mitigate or amplify their effects.

Racial disparities exist in natural-disaster preparedness, communication, physical impacts, psychological impacts, emergency response, clean-up, recovery, and reconstruction. Disaster mitigation and investments provide location-specific benefits, restricted to populations that live or own assets in the protected areas. Thus, "by virtue of where we live, work, or own property, some members of society are excluded from the benefits of these investments" (Boyce 2000).

The disaster in New Orleans after Katrina was unnatural and man-made. Flooding in the New Orleans metropolitan area largely resulted from breached levees and flood walls (Gabe, Falk, McCarthy, and Mason 2005). A May 2006 report from the Russell Sage Foundation, *In the Wake of the Storm: Environment, Disaster, and Race After Katrina*, found these same groups often experience a "second disaster" after the initial storm (Pastor, Bullard, Boyce, Fothergill, Morello-Frosch, and Wright 2006). Pre-storm vulnerabilities limit thousands of Gulf Coast low-income communities of color participation in the storm reconstruction, rebuilding, and recovery. In these communities, days of hurt and loss are likely to become years of grief, dislocation, and displacement.

Providing a political fix for social vulnerability (improvement in the overall quality of life for low-income people) and economic vulnerability (dismantling income and wealth gaps) has proved to be more daunting than providing an engineering fix for environmental vulnerability (shoring up levees, construction of disaster-resistant buildings, changes in land use, and restoration of wetlands and floodways). It is far easier for the Army Corps of Engineers to retrofit and rebuild levees than it is for other government agencies to root out racial injustice, dismantle centuries of mistrust, and rebuild "community."

Quite often the scale of a disaster's impact, as in the case of Hurricane Katrina, has more to do with the political economy of the country, region, and state than with the hurricane's category strength (Jackson 2005). Similarly, measures to prevent or contain the effects of disaster vulnerability are not equally provided to all. Typically, flood-control investments provide location-specific benefits—with the greatest benefits going to populations who live or own assets in the protected area.

Thus, by virtue of where people live, work, or own property, they may be excluded from the benefits of government-funded flood-control investments (Boyce 2000). New Orleans' new post-Katrina levee system will not provide the same level of protection for all of that city's residents. One need not be a rocket scientist to predict who is most likely to receive the least amount of protection or which communities are likely to be left behind and left vulnerable after the flood-proofing is completed—namely, the same groups who were deserted environmentally and economically before the devastating storm.

On August 29, 2005, Hurricane Katrina laid waste to New Orleans, a city founded in 1718 and later developed largely below sea level (Regional Planning Commission of Orleans 1969; Braumbach 1981). Katrina was complete in its devastation of homes, neighborhoods, institutions, and communities. Like most major urban centers, New Orleans was in crisis before Katrina (Pastor, Bullard, Boyce, Fothergill, Morello-Frosch, and Wright 2006). The city's coastal wetlands, which normally serve as a natural buffer against storm surge, had been destroyed by offshore drilling, Mississippi River levees, canals for navigation, pipelines, highway projects, agricultural and urban development.

Over the past century, more than 2,000 of the original 7,000 square miles of coastal marsh and swamp forests that formed the coastal delta of the Mississippi River have vanished. An average of 34 square miles of South Louisiana land, mostly

marsh, has disappeared each year since the late 1950s. More than 80 percent of the nation's coastal wetland loss in this time occurred in Louisiana. From 1932 to 2000, the state lost 1,900 square miles of land to the Gulf of Mexico (Tibbetts 2006).

Hurricane Katrina pushed New Orleans closer to the coast because of extensive erosion at the coastal edge. This is a national problem. Researchers, policy makers, and environmentalists are calling for restoration of wetlands and barrier islands to help protect New Orleans the next time a hurricane strikes. Reversing this deadly trend will not be easy.

Katrina was likely the most destructive hurricane in U.S. history, costing over \$70 billion in insured damage. It was also one of the deadliest storms, with a death toll of 1,325 and still counting, surpassed only by the 1928 hurricane in Florida (2,500 to 3,000 deaths) and the 1900 Galveston hurricane (8,000 deaths).

Although more than 80 percent of New Orleans was underwater in the aftermath of Katrina, the hurricane, in fact, did not make a direct hit on the city. Flooding was largely from breached levees and flood walls (Gabe, Falk, and McCarthy 2005). Katrina exposed the limitation of local, state, and federal government operations to implement an effective emergency preparedness and response plan. Post-Katrina reconstruction and rebuilding efforts point to challenges that have been forgotten or ignored for decades—social inequality and racial apartheid-type systems that have operated to create and maintain separate and unequal black and white populations (Bullard 2007a, Bullard 2007b). Ignoring and/or rebuilding on long-standing inequities will only complicate the recovery process of those families most in need of jobs at a livable wage, affordable housing, quality education, health care, accessible public transit, full-service supermarkets, banking and insurance, and safe parks.

The lethargic and inept emergency response after Katrina was a disaster that overshadowed the deadly storm itself. Yet, there is a second disaster-in-the-making—driven by racism, classism, elitism, paternalism, and old-fashioned greed. Several months after the storm, "A Twenty-Point Plan to Destroy Black New Orleans" was widely circulated based on trends and observations around policy decisions on re-entry, repopulation, environmental clean-up, flood control, coastal restoration, rebuilding, and reconstruction (Bullard 2006).

Three years after the storm, it is clear that much of this "unofficial" plan has been advanced by state and federal officials and powerful local opinion leaders. Loyola University law professor Bill Quigley delineated and expanded these trends in his "How to Destroy an African-American City in Thirty-three Steps—Lessons from Katrina" (Quigley 2007). Professor Quigley states that "if there is one word that sums up the way to destroy an African-American city after a disaster, that word is delay" (Quigley 2007, 1). The contributors to this volume understand that all communities are not created equal, and thus some get more than their fair share of the benefits or residential amenities while others receive more than their fair share of the costs or disamenities. Race, class, geography, and political power mitigate the distribution of benefits and costs. Some communities become opportunity rich while others become opportunity poor. At every income level, people-of-color communities

often find themselves shortchanged on residential amenities, which many middle-income white communities take for granted, such as banking, shopping, supermarkets, parks and green space, bike lanes, nature trails, and sidewalks (Bullard 2007). The events in New Orleans and the Gulf Coast exposed institutional flaws, poor planning, and false assumptions that are built into the emergency response and homeland security plans and programs. Now after three years, questions still linger: What went wrong? Can it happen again? Is government equipped to plan for, mitigate against, respond to, and recover from natural and man-made disasters? Do race and class matter? Volumes of disaster research have found racial disparities in disaster clean-up, rebuilding, reconstruction, and recovery. Race also plays out in natural-disaster survivors' ability to rebuild, replace infrastructure, obtain loans, and locate temporary and permanent housing.

CLOSED DOORS AND BLOCKED OPPORTUNITY

Generally, compared with their middle-income and white counterparts, low-income and people-of-color disaster victims spend more time in temporary housing, shelters, trailers, mobile homes, and hotels—and are more vulnerable to permanent displacement. Some temporary trailer homes have not turned out to be all that temporary. Some disaster victims wonder if they can trust the government to protect them from harm. For example, some FEMA trailers provided to Hurricane Katrina and Rita evacuees proved to be contaminated with formaldehyde. Instead of providing decent and safe temporary housing, FEMA placed storm victims' health at risk in toxic travel trailers and took more than two years to correct this failure (Babington 2007).

In December 2005, the National Fair Housing Alliance (NFHA) released a report, *No Home for the Holidays: Report on Housing Discrimination Against Hurricane Katrina Survivors*, documenting high rates of housing discrimination against African Americans displaced by Katrina (National Fair Housing Alliance 2005). NFHA conducted tests over the telephone to determine what both African-American and white home seekers were told about unit availability, rent, discounts, and other terms and conditions of apartment leasing. In two-thirds of these tests, as we have seen, white callers were favored over African-American callers.

Generally, low-income and African-American disaster victims spend more time in temporary shelters and are more vulnerable to permanent displacement compared with their middle-income and white counterparts. More than a million Louisiana residents fled Katrina, and 100,000 to 300,000 of them could end up permanently displaced. The powerful storm ravaged an eight-parish labor market that supported 617,300 jobs (Randolph 2005). In September 2005, nearly 100,000 Katrina evacuees were still housed in 1,042 barrack-style shelters scattered across twenty-six states and the District of Columbia (Frank 2005).

FEMA contracted for 120,000 mobile homes for Louisiana, Mississippi, and Alabama storm victims until they could find more permanent housing in homes and apartments. However, the pace of getting evacuees out of shelters slowed because of

infrastructure problems—water, sewer, and electricity—to accommodate trailers. Six weeks after the storm hit, FEMA had placed 4,662 Louisiana families in trailers, hotel rooms, or cruise ships docked in New Orleans (Maggi 2005).

To discourage housing evacuees, some Louisiana parishes near New Orleans adopted emergency ordinances limiting the density of mobile-home parks (Maggi 2005). Some small white rural towns adopted NIMBY-ism (Not in My Back Yard) to keep out temporary housing (Chang, Soundararajan, and Johnson 2005). No one, including FEMA (which provides the trailers and mobile homes), homeowners (who are trying to protect their property values), and storm victims (who must live in the tight quarters), is served well if temporary or permanent “Katrina ghettos” are created.

Some “temporary” homes have not proved to be that temporary. Thousands left homeless by the hurricane waited for months for new or repaired housing while living in hotels, temporary trailers, and mobile homes. Mobile homes are derisively known as storm magnets because of the endless reports over the years of trailer parks being demolished during bad weather. More than 9,000 families were living in temporary FEMA housing in Florida when Hurricane Dennis slammed into the Florida Panhandle in July 2005—down from a peak of about 15,000 after four hurricanes hit the state in 2004 (Becker 2005).

African Americans seeking housing in the Deep South are routinely met with discrimination. Disasters worsen this problem and intensify the competition for affordable housing. East Baton Rouge Parish population surged from 425,000 to 1.2 million as a result of Katrina (Naughton and Hosenball 2005, 36). Katrina made Baton Rouge one of the fastest-growing regions in the country (Mulligan and Fausset 2005). The influx of these new residents to the region created traffic gridlock and crowded the schools. Many of the mostly white suburban communities and small towns are not known for their hospitality toward blacks. Thousands of black hurricane evacuees faced the added burden of closed doors and housing discrimination, while their white counterparts were given preference.

THE IMPACT ON SMALL AND MINORITY-OWNED BUSINESSES

Disasters hit small and minority-owned businesses hardest because they are often undercapitalized, vulnerable, and sensitive to even small market shifts. Blacks are a large share of the three Gulf Coast states hardest hit by Katrina—Louisiana, Mississippi, and Alabama. Blacks make up 32.5 percent of the population in Louisiana, 36.3 percent in Mississippi, and 26 percent in Alabama.

The U.S. Census Bureau reports that in 1997 New Orleans had 9,747 black-owned firms, 4,202 Hispanic-owned firms, and 3,210 Asian-owned firms; Biloxi-Gulfport, Mississippi, had 1,305 black-owned firms, 273 Hispanic-owned firms, and 1,063 Asian-owned firms; and Mobile, Alabama, had 2,770 black-owned businesses, 478 Hispanic-owned businesses, and 549 Asian-owned firms (U.S. Bureau of the Census 2002).

Katrina affected over 2,000 black-owned businesses in Mississippi. These firms generated over \$126 million in sales and receipts in 2004 (Hughes 2005, 149). Katrina adversely affected over 20,000 black-owned businesses in Louisiana. These firms generated sales and receipts of \$886 million. Black-owned firms and black professionals, including doctors, dentists, and other service-related businesses, have been slow to return because many lost their core customers and clientele—mainly African Americans.

Katrina negatively impacted over 60,000 black-owned businesses in the Gulf Coast region that generate \$3.3 billion a year (Hughes 2005, 150). This is not a small point since most black-owned firms employ blacks. Black-owned firms have met roadblocks and have been virtually frozen out of the clean-up and rebuilding of the Gulf Coast region. The matter was complicated by the U.S. Labor Department's decision to temporarily suspend the affirmative action rule and permit no-bid contracts. Billions of dollars were spent cleaning up the mess left by Katrina. Only 1.5 percent of the \$1.6 billion awarded by FEMA went to minority businesses, less than a third of the 5 percent normally required by law (Yen 2005). The Army Corps of Engineers awarded about 16 percent of the \$637 million in Katrina contracts to minority-owned firms.

After Katrina, President Bush suspended the Davis-Bacon Act, passed in 1931 during the Great Depression, that sets a minimum pay scale for workers on federal contracts by requiring contractors to pay the prevailing or average pay in the region (Edsall 2005, D3). Some leaders saw the suspension of the prevailing wage combined with the relaxation of federal rules requiring employees to hire only people with proper documents as spurring an influx of low-wage illegal immigrant workers (Pickel 2005).

This has heightened tension between African Americans and Latino immigrant workers. President Bush, after mounting pressure from Democrats, moderate Republicans, organized labor, and workers in the Gulf Coast region, reinstated the prevailing-wage rule (Witte 2005). The relaxation of documents rules was designed to assist Gulf Coast hurricane victims who lost their IDs, not to be a suspension of immigration laws.

Complaints about being shut out of the Gulf Coast reconstruction were not limited to minority-owned firms. Many white Gulf Coast workers and businesses also rail about being left out, while they see out-of-state companies receiving the lion's share of the contracts. The annual payroll alone in the metropolitan areas hardest hit by Katrina, New Orleans, Biloxi, and Mobile, exceeded \$11.7 billion in 2002. About 75 percent of the businesses in the disaster area were non-employer firms such as sole proprietorships. And of the remaining small businesses, 80 percent had fewer than 20 employees. Small businesses employed 273,651 workers in the New Orleans area, 54,029 in Biloxi, and 107,586 in Mobile.

FEMA and the SBA were swamped with requests for disaster assistance. FEMA doesn't offer small business loans but does provide emergency cash grants up to \$26,200 per person for housing, medical, and other disaster-related needs (Abrams

2005). Some Katrina victims claim they were unfairly denied emergency aid (Sullivan 2005). They accuse FEMA of leaving them behind a second time.

After Katrina, the staff at the SBA loan-processing center in Fort Worth tripled in size. SBA disaster loans serve as the only salvation for companies without insurance, or whose insurance didn't cover all the damage. SBA offers two types of loans to small businesses, that is, firms with fewer than 500 employees: The physical (property) disaster business loan—which provides businesses, of any size, with funds to repair or replace real estate, equipment, fixtures, machinery, and inventory—and the economic injury disaster loan are available to small businesses that have suffered substantial economic injury resulting from a disaster. Both types of disaster loans are available up to \$1.5 million (Rosenberg 2005).

SBA disaster loans are not just for small businesses. Homeowners and renters who suffered damage from Hurricane Katrina are also eligible for low-interest disaster loans from the SBA (Willis 2005). SBA makes the majority of its disaster loans to homeowners and renters. The loans are for repairing or rebuilding disaster damage to private property owned by homeowners and renters. Homeowners may borrow up to \$200,000 to repair or replace damaged or destroyed real estate. Homeowners and renters may borrow up to \$40,000 to repair or replace damaged or destroyed personal property, including vehicles.

SBA's disaster home loans have low interest rates (less than 3 percent) and long terms (up to thirty years), helping to make recovery more affordable. The federal government is expected to provide financial assistance even as private insurance companies are withdrawing disaster coverage from homeowners in hurricane-prone regions. However, most rebuilding funds after disasters come from private insurance, not the government (Comerio 1998).

Before and after disasters strike, black business entrepreneurs are significantly more likely to be denied bank credit, and when successful, receive smaller loans relative to comparable non-minority businesses. A 2005 *New York Times* study discovered that the Small Business Administration had processed only a third of the 276,000 home loan applications it received (Eaton and Nixon 2005). During the same period, the SBA rejected 82 percent of the applications it received, a higher percentage than in most previous disasters. Well-off neighborhoods like Lakeview have received 47 percent of the loan approvals, while poverty-stricken neighborhoods have gotten 7 percent. The loan denial problem is not limited to poor black areas. Middle-class black neighborhoods in New Orleans East also had lower loan rates. This trend could spell doom for rebuilding black New Orleans neighborhoods.

Katrina hit black-owned banks especially hard. In 2005, *Black Enterprise Magazine* listed Liberty Bank as the third-largest African-American bank in the United States. Before Katrina, Liberty Bank and Dryades Bank had assets of \$348.2 million and \$102.9 million, respectively. Liberty operated nine branches in New Orleans, three in Baton Rouge, and one in Jackson. Katrina cost Liberty an estimated \$40 million (Hughes 2005). In June 2008, it dropped to fifth place with assets of \$320 million.

INSURANCE TUG-OF-WAR

Disasters often set the stage for a tug-of-war between insurers and disaster victims. The total economic losses from Katrina are expected to exceed \$125 billion, with insurance companies paying an estimated \$40 to \$60 billion. How much financial responsibility the insurance companies end up bearing will depend on how insurers handle the claims—how they determine what is “wind” and what is “flood” damage.

FEMA estimates that the majority of households and businesses in the 12 Hurricane Katrina-affected counties in Alabama, Mississippi, and Louisiana do not have flood coverage. FEMA also estimates that 12.7 percent of the households in Alabama, 15 percent in Mississippi, and 46 percent in Louisiana have flood insurance, and only 8 percent of the businesses in hurricane-affected counties in Alabama, 15 percent in Mississippi, and 30 percent in Louisiana have flood coverage.

Disasters expose the unequal treatment of African Americans and intensify long-running disputes between insurance companies and consumers who live in redlined neighborhoods—disputes revolving around where standard homeowner's insurance coverage ends and flood insurance begins. For decades, consumers, black and white, have complained about insurance companies denying their claims on the basis that damage was not wind-related but flood-related. Damage from rising water is covered only by government-backed flood insurance.

African-American households are more likely than white households to lack health insurance. The uninsured rate for African Americans is more than 1.5 times the rate for white Americans. Nearly 16 percent of Americans did not have health insurance in 2003, up from 14.2 percent in 2000 (DeNavas-Walt, Proctor, and Mills 2004).

A 2001 Commonwealth Fund survey revealed that Hispanics and African Americans were most likely to be uninsured, as 46 percent and 33 percent of working-age Hispanics and African Americans, respectively, lacked insurance for all or part of the twelve months prior to the survey (Duchon et al. 2000). In comparison, 20 percent of both whites and Asian Americans ages 18–64 lacked health coverage for all or part of the previous twelve months (Duchon et al. 2000).

African-American households are also less likely to have homeowners' and rental insurance to cover storm losses and temporary living expenses (Bolin and Bolton 1986). African Americans are also less likely than whites to have insurance with major companies as a result of decades of insurance redlining (Peacock and Girard 1997). African Americans are more likely than whites to receive insufficient insurance settlement amounts. How insurance claims are settled can impact the ability of black households and neighborhoods to recover. Ultimately, this form of discrimination harms wealth creation of individual households and siphons off investments needed to rebuild the black community.

Many white insurance companies routinely redline black neighborhoods. Although insurance redlining is illegal, it is still practiced. It is not uncommon to find African Americans who live in majority-black zip codes paying twice the insurance

premium that whites pay for comparable housing in mostly white suburban zip codes (Bullard, Johnson, and Torres 2000). Race does matter in urban credit and insurance markets (Dymski 1995; Squires 1996a).

The insurance industry, like its housing industry counterpart, “has long used race as a factor in appraising and underwriting property” (Squires 1996b). In general, black neighborhoods are left with check-cashing stations, pawnshops, storefront grocery stores, liquor stores, and fast-food operations, all well buttoned-up with wire mesh and bulletproof glass (Bullard, Grigsby, and Lee 1994).

A National Fair Housing Alliance (2005) report, *No Home for the Holidays: Report on Housing Discrimination Against Hurricane Katrina Survivors*, found housing discrimination against African Americans displaced by Hurricane Katrina. In NFHA telephone tests to determine what African American and white home seekers were told about housing availability, 66 percent of these tests, 43 of 65 instances, whites were favored over African Americans. NFHA also conducted five matched pair tests in which persons visited apartment complexes. In those five tests, Whites were favored over African Americans three times.

Because of the enormity of the damage from Katrina, insurance companies tried to categorize a lot of legitimate wind claims as flood-related. This problem of white-collar insurance “looting” has hit low-income, elderly, disabled, and people-of-color storm victims hardest because these groups are likely to have their insurance with small, less reputable companies due to racial redlining. Many, if not most, Katrina victims may not have resources to hire lawyers to fight the insurance companies. In an attempt to head off a floodgate of insurance disputes, Mississippi Attorney General Jim Hood filed suit to block insurance companies from denying flood claims in cases where those floods were caused by wind. He asserted that the insurance exclusion of water damage violates Mississippi's Consumer Protection Act and “deprives consumers of any real coverage choices” (Lee 2005). The lawsuit also accused some insurance companies of forcing storm victims into signing documents that stipulate their losses were flood-related, not wind-related, before they can receive payment or emergency expenses; the lawsuit would ban such practices (Paul 2005). Such a practice is tantamount to economic blackmail.

ORGANIZATION OF THIS BOOK

Dozens of books have been written on Hurricane Katrina, but none have focused on the environmental justice implications of the storm, flooding, clean-up, levee repair and “flood proofing,” reconstruction, rebuilding, and recovery. This book uses an environmental justice and health-equity framework to examine the government response to what has been called the worst environmental disaster in U.S. history. It also focuses on environmental justice challenges in pre- and post-Katrina New Orleans and the Gulf Coast.

In exploring the geography of vulnerability, we ask why some populations and communities get left behind economically, spatially, and environmentally before and after

disasters strike. Emergency transportation plans generally reflect the shortcomings of transportation planning in that most planners assume people have cars and drive. Transportation apartheid, a two-tiered system of people with cars and people without cars, is alive and well in most metropolitan regions—and was vividly portrayed in living color before, during, and after Hurricane Katrina.

The contributors to this book make clear the connection between race, class, and environmental vulnerability. We use an equity framework to analyze the economic recovery, housing, business opportunity, education, and access to basic services, including health care, supermarkets, banking, finance, and insurance. Equity issues revolve around which community needs are addressed first and which community residents are forced to wait.

In twelve chapters, the authors cover a wide range of topics and describe factors that continue to shape the rebuilding, reconstruction, revitalizations, and recovery of post-Katrina New Orleans. The authors examine the role government and non-governmental organizations (NGOs) are playing in bringing some sense of normalcy back to the city. They examine the environmental and economic progress the city has made in the three years since the devastating storm and flood drowned 80 percent of New Orleans—forever changing one of the nation's oldest cities. From their analysis, it is clear that New Orleans and the Gulf Coast were far from achieving a race-neutral or color-blind status before the storm. Katrina exacerbated this racial and economic divide.

The introductory chapter, written by the co-editors, provides the sociological frame for the book. It places equity at the center of the analysis on a range of issues, including environmental, economic, health, and housing disparities. Our analysis also examines the role of race and class dynamics on quality of life and sustainability in pre- and post-Katrina New Orleans.

Chapter 1, also written by the co-editors, explores the challenges of racialized place in post-Katrina New Orleans. It explores the "politics" of pollution, clean-up, and waste disposal in pre- and post-Katrina New Orleans. Using an environmental justice frame, the authors explore factors that support and impede post-disaster rebuilding, reconstruction, redevelopment, and recovery. They also examine the connection of race and place and how unequal protection and unequal treatment make some New Orleans populations more vulnerable in the rebuilding and recovery process. The authors explore how physical location, socioeconomic status, race, and lingering institutional constraints create and perpetuate environmental disparities, how environmental hazards develop into public health threats, and how design factors mitigate or amplify their effects.

Chapter 2, written by Debra Lyn Bassett, explains the significance of place in law and policy. Hurricanes Katrina and Rita provided an opportunity for lawmakers, policy makers, and the public at large to take a closer look at the significance of race, place, and poverty and to recognize the broader structural considerations that often tend to favor the affluent while shifting risks onto the poor. People who are more economically and socially vulnerable—including the less educated, the low income,

the elderly, and minorities—are the ones shunted into the places that are more geographically vulnerable.

Chapter 3, written by Robert D. Bullard, Glenn S. Johnson, and Angel O. Torres, examines how transportation provides access to opportunity and serves as a key component in addressing poverty, unemployment, and equal-opportunity goals while ensuring access to education, health care, and other public services. The analysis focuses on who is most likely to get left behind economically, especially individuals without cars—during economic recessions and boom times—and during natural and human-induced disasters—and why. Transportation, personal automobiles and public transportation, is a necessary and essential element in emergency preparedness, response, and evacuation from natural and human-induced disasters. The primary means of emergency evacuation in most disaster plans is the personal automobile.

Chapter 4, written by Mtangulizi Sanyika, details the struggle to ensure the right to return for all New Orleans' Katrina survivors. Despite the progress made in the rebuilding of New Orleans, the author reveals that many black New Orleanians are relegated to the status of the underclass, working poor, or marginalized upon returning to the city. He chronicles how major segments of black New Orleans are being left out of the recovery and how unofficial "separate and unequal" policies and practices have resulted in many of the city's residents living on the edge of social disaster. As they struggled to get their lives back together, black storm victims have had to organize against political disenfranchisement, housing discrimination, insurance redlining, unfair insurance settlements, land grabs, and permanent displacement from neighborhoods and public housing.

In Chapter 5, Robert Godsil, Albert Huang, and Gina Solomon examine environmental health threats and injustices that existed before and after the storm that have created an unparalleled challenge to clean up and rebuild devastated areas. The Environmental Protection Agency (EPA) has the legal authority necessary to clean up the environmental contamination caused by the hurricanes. Unfortunately, the EPA has waived its vast clean-up powers. The authors present findings to show how the federal government has largely ceded its leadership over the clean-up and rebuilding to state and local authorities. EPA has chosen to defer to poorly resourced local authorities that are under significant pressure to say that everything is "safe."

In Chapter 6, Shelia J. Webb describes health disparities and the disproportionate burden of disease, illness, and preventable deaths borne by African Americans. She notes that the most vulnerable population impacted by Hurricane Katrina received the greatest wounds and is still suffering from the hurricane. While literally hundreds of thousands of people were affected by this storm, the poor and underserved populations were disproportionately impacted and significantly bore the brunt of loss, devastation, and injustice. New Orleans, with its majority African-American population and large percentage of individuals living below the federal poverty line, became the embodiment of disproportional impact. The author argues for an overhaul in the city's health care delivery system, schools, businesses, transportation systems, infrastructure, and faith-based institutions in preparation for future disasters.

In Chapter 7, Earthea Nance discusses community-based environmental laboratories as a new paradigm for achieving environmental justice in post-Katrina New Orleans. Using the environmental justice framework of grassroots empowerment, the author presents community-based laboratories as an innovative way of bringing scientists and engineers into environmentally impacted communities to do environmental testing on a not-for-profit basis. Such laboratories increase people's access to knowledge by putting them in direct contact with scientists and engineers and by giving them affordable techniques for clean-up.

Rita J. King in Chapter 8 describes how the lack of a competitive bidding system in the earliest days and continuous chaos on the Gulf Coast hindered the effort to impose any meaningful accountability on those companies staking claim to the billions in federal recovery dollars. She examines how lucrative contracts to clean up New Orleans and the Gulf Coast states went to many of the same companies that have received contracts to clean up Afghanistan and Iraq—leading to profiteering, corruption, and waste. She chronicles how no-bid, cost-plus Katrina contracts created a crisis rife with opportunity for the well-placed corporation and how the revolving door between Capitol Hill and Wall Street created a cozy club for major contractors and politicians. The Department of Homeland Security (DHS) no-bid contracts were responsible for wasting almost a billion dollars on mobile homes and travel trailers, which included about 10,000 left sitting unused in a field in Arkansas.

In Chapter 9, Robert K. Whelan and Denise Strong provide insights on the choices and challenges of New Orleans' economic development and rebuilding efforts. Their analysis shows how competing economic development programs are not integrated into the workforce development initiatives in the region. Before Hurricane Katrina, the New Orleans economy suffered from fundamental problems—a large poverty population lacking basic skills, a lack of a diverse economic base, and a general lack of opportunity and dynamism. The government's focus in the region is on rebuilding the physical aspects of the city, more specifically homeowners' and neighborhood projects. The authors suggest that innovative and creative thinking is needed, due to New Orleans' pre-Katrina status, a slow economy, tourism decreasing after 9/11, businesses having difficulty reopening, office jobs having moved to Houston, Texas, the need for the workforce to upgrade its basic skills, and the lack of adequate housing and basic services.

In Chapter 10, Mafruz Khan focuses on innovative solutions that have emerged from the ground up, discusses important planning and policy issues that address structural barriers to opportunity for Hurricane Katrina survivors, and raises some questions about prevailing models of economic development and planning in relation to race. The author examines the historical and structural context that transformed New Orleans from a relatively poor but otherwise diverse and vibrant city to an impoverished black-majority one, and how race has driven and shaped exclusionary public policies that have created concentrated racialized poverty in New Orleans. She also provides an analysis of structural barriers to opportunity and demonstrates why race needs to be explicit and embedded in both the planning and policy frameworks

for rebuilding. Race-conscious policies are critical for facilitating inclusion, participation, and accountability in rebuilding New Orleans, precisely because race-neutral policies may actually perpetuate structural barriers and historical inequities.

In Chapter 11, Lisa K. Bates and Rebekah A. Green present an empirical analysis of the reconstruction of residential housing in the Lower Ninth Ward and consider pre-storm problems, flood damage, and policy impediments to recovery. First, they present pre-Katrina data about racial disparities in housing security and affordability. Second, they examine the physical data forming the basis for depopulation plans, reporting the results of a survey of 3,211 residential units for structural damage, flood damage, and recovery activity. They then evaluate the Road Home program's effectiveness in assisting Ninth Ward homeowners' rebuilding. Finally, the authors present data on Road Home applications and funding receipt in the Ninth Ward compared to other New Orleans neighborhoods. Through this examination, they argue that due to pre-storm inequities in housing and program specifics, the post-Katrina Road Home program for housing recovery did not provide sufficient access or resources to meet the housing needs of large numbers of low- and moderate-income African-American families in New Orleans' Lower Ninth Ward after Katrina.

In Chapter 12, John R. Logan addresses four basic questions: (1) who was displaced by Hurricane Katrina, (2) how does the pattern of displacement affect people's chances of returning, (3) how are public policy decisions affecting the recovery process, and (4) what do shifts in local political influence portend for the future? His analysis indicates that policy choices for Hurricane Katrina will affect who can return to which neighborhoods and what forms of public and private assistance will significantly affect the future character of New Orleans. The new political geography of New Orleans will be a factor as policy decisions are made in the months and years to come. Some important questions—particularly whether city officials will encourage the rebuilding of the neighborhoods impacted the most—remain unanswered.

In the Afterword, the editors of the book, reflecting on the third anniversary of Hurricane Katrina, examine how race operates in explaining the uneven repopulation, rebuilding, recovery, and reclaiming of neighborhoods and institutions. Repopulation of New Orleans is tied more to who has resources, including financial settlements of housing and insurance claims, transportation, and employment. Thousands of native New Orleanians who were displaced by Katrina, most of whom are black and poor, still have a desire to return home but lack the resources.

Many Katrina evacuees may not be able to return to the city because of a severe shortage of low-income and working-class housing. In measuring the recovery of New Orleans, significant progress is due in large measure not to government intervention but to the army of volunteers and NGOs that want to make a difference. As neighborhoods in New Orleans and the Gulf Coast region get rebuilt, there is no question the best green technology available and sustainable practices must be employed. However, it is imperative that rebuilding, green or otherwise, be fair, just, equitable, inclusive, and carried out in a nondiscriminatory way.

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RACE, PLACE, AND THE ENVIRONMENT IN POST-KATRINA NEW ORLEANS

Robert D. Bullard and Beverly Wright

The year 2005 saw the worst Atlantic hurricane season since record keeping began in 1851 (Cuevas 2005). An average season produces ten named storms, of which about six become hurricanes and two or three become major hurricanes. But 2005 saw the most named storms ever, 27, topping the previous record of 21 in 1933—and 13 hurricanes—breaking the old record of 12 in 1969 (Tanneer 2005). And on August 29, 2005, of course, Hurricane Katrina laid waste to New Orleans. Katrina's death toll of 1,836 and counting made it the third most deadly hurricane in U.S. history, after the 1928 Okeechobee hurricane in Florida, which killed 2,500, and the 1900 Galveston hurricane, which killed 8,000 (Ho 2005, A1). The disaster in New Orleans after Katrina was unnatural and man-made. Flooding in the New Orleans metropolitan area largely resulted from breached levees and flood walls (Gabe, Falk, McCarthy, and Mason 2005). A May 2006 report from the Russell Sage Foundation, *In the Wake of the Storm: Environment, Disaster, and Race After Katrina*, found these same groups often experience a "second disaster" after the initial storm (Pastor et al. 2006).

Hurricane Katrina demonstrated that negative effects of climate change fall heaviest on the poor and people of color (Brinkley 2006; Dyson 2006; Horn 2006; Pastor et al. 2006). Eighty percent of New Orleans was flooded. Low-income and people-of-color neighborhoods were hardest hit. Pre-storm vulnerabilities limit participation of thousands of Gulf Coast low-income communities of color in the after-storm reconstruction, rebuilding, and recovery. In these communities, days of hurt and loss are likely to become years of grief, dislocation, and displacement.

Hurricane Katrina left debris across a 90,000-square-mile disaster area in Louisiana, Mississippi, and Alabama, compared to a 16-acre tract in New York on September 11, 2001 (Luther 2006). According to the Congressional Research Service, debris from Katrina could well top 100 million cubic yards, compared to the 8.8 million cubic yards of disaster debris generated after the 9/11 terrorist attacks on New York City.

New Orleans, like most major urban centers, was in peril before Katrina floodwaters devastated the city (Pastor, Bullard, Boyce, Fothergill, Morello-Frosch, and Wright 2006). Katrina was complete in its devastation of homes, neighborhoods, institutions, and communities. The city's coastal wetlands, which normally serve as a natural buffer against storm surge, had been destroyed by offshore drilling, Mississippi River levees, canals for navigation, pipelines, highway projects, agricultural and urban development.

Over the past century, more than 2,000 of the original 7,000 square miles of coastal marsh and swamp forests that formed the coastal delta of the Mississippi River have vanished. An average of 34 square miles of south Louisiana land, mostly marsh, has disappeared each year for the past five decades. More than 80 percent of the nation's coastal wetland loss in this time occurred in Louisiana. From 1932 to 2000, the state lost 1,900 square miles of land to the Gulf of Mexico (Tibbetts 2006). Hurricane Katrina pushed New Orleans closer to the coast because of extensive erosion at the coastal edge. This is a national problem. A range of groups, including researchers, policy makers, and environmentalists, for decades have called for restoration of wetlands and barrier islands to help protect New Orleans the next time a hurricane strikes.

BLACK NEW ORLEANS BEFORE HURRICANE KATRINA

The history of New Orleans is intrinsically tied to the Vieux Carré, the French Quarter. In 1718, Jean-Baptiste Le Moyne de Bienville, a French Canadian and governor of the state of Louisiana, and a small group of men, left Mobile, Alabama, to establish a city on the banks of the Mississippi (Regional Planning Commission of Orleans, Jefferson, and St. Bernard Parishes 1969, 13; Baumbach and Borah 1981, 5). Located 90 miles from the Gulf of Mexico, it was named in honor of the Duke of Orleans. La Nouvelle Orléans was initially established as a military outpost, a trading post, and an administrative center for French holdings in Louisiana.

As a result of the official launching of the American slave trade in 1619, blacks began to appear in large numbers in New Orleans. The 1726 census recorded only 300 slaves living in the city, but by 1732, there were nearly a thousand (Wright 1991). New Orleans was unique not only because of its European inhabitants, uncommon in most southern cities, but also because of its significant number of "free colored people." The first free blacks were recorded living in New Orleans in the 1720s; and by 1803, there were 1,335.

After the Civil War, New Orleans' black population swelled, with many ex-slaves unable to find work or housing. Consequently, the poorest blacks lived where they could. They lived along the battures, or backswamps. Because New Orleans was built facing the Mississippi River, its shape followed the great crescent bend of the river, hence its nickname, the Crescent City. The batture was "the area on the river-side of the artificial levee without flood protection and without private ownership." The poorest blacks built shacks in the batture away from the dock area. These houses were, however, temporary because the river would periodically overflow and wash away the shacks.

Because New Orleans is a seaport city at the mouth of the Mississippi that largely is below sea level, with flooding its main problem, it is not surprising that whites occupied the highest and best land, protected by natural levees. Poor blacks lived in the backswamps on the inland margin of the natural levee, where drainage was bad, foundation material precarious, streets atrociously unmaintained, mosquitoes endemic, and flooding a recurrent hazard. It is along this margin that a continuous belt of black population developed. Free blacks in New Orleans, many of whom were economically well off, originally lived and owned property in the French Quarter. After the Civil War and the onset of Jim Crow laws, however, they were pushed out of that section.

Many of the blacks moved their families to the Treme, or Sixth Ward, an area adjacent to the French Quarter. As the Sixth Ward became crowded, many moved to the old Seventh Ward, next to the Sixth Ward, making for a natural extension of the black community. These early black residential patterns developed over the years into long-standing, traditionally black neighborhoods, although early New Orleans' residential patterns were peculiarly integrated.

Several inventions influenced the racial geography of New Orleans in the twentieth century. These included the invention of a screw pump and the expansion of the city's public transportation system through use of the streetcar. The Wood Screw Pump is a drainage pump designed by A. Baldwin Wood in 1913. In 1915 the first four of these pumps were installed in New Orleans to help alleviate drainage problems in the city. Thanks to the pumps, the city was able to eliminate some of its flooding problems, allowing residents to settle in areas previously flooded. World War I brought with it a virtual halt in the construction of housing. Until the war, black residents of New Orleans had lived in housing comparable to their white working-class counterparts, but they were now relegated to the less desirable homes in the backswamp area. There was also a large in-migration of rural blacks and whites, attracted by defense jobs in the city.

It became clear in the early 1920s that additional housing units were needed in the city, but there were many early barriers to their construction. There was an apparent drive to improve housing conditions when the 1920 census showed that New Orleans had dropped from twelfth to sixteenth place in population. The loss of population was blamed on the local authorities' inability to solve the housing problems of the city, resulting in many of the townspeople moving out beyond the city's boundaries.

The expansion of the city's streetcar system also affected its racial geography. As public transportation expanded, old black neighborhoods established in the nineteenth-century backswamp areas expanded into the newly drained margins of that area. The expanded transportation system made it possible for blacks to live in areas away from their jobs. The Wood Screw Pump made it possible for whites to move to the suburbs and for blacks, with the aid of the expanded streetcar system, to move closer into the city. The black and white populations, it seems, were moving in opposite directions.

For three decades, beginning in 1978, with the election of Ernest "Dutch" Morial, New Orleans has had an uninterrupted succession of black mayors. In 2002, Orleans Parish (a parish is comparable to a county) had the highest percentage of black residents of any older county in the United States. Roughly 68 percent of New Orleans-area residents were black. "White flight" from New Orleans to the suburbs and continuing racial segregation, poverty, unemployment, crime, and low levels of educational achievements stand in marked contrast to the city's growing black middle class, which has elected to settle in all-black affluent areas to the east of New Orleans, an area known as New Orleans East (Wright 1997).

New Orleans, like most major urban centers, was a city in peril long before Hurricane Katrina's floodwaters devastated the city (Pastor et al. 2006; Dyson 2006). New Orleans (Orleans Parish) had a population of 484,674 in 2000. Of this total, 325,947 (68 percent) were African Americans, 135,956 (28 percent) were non-Hispanic whites, and 22,871 (4 percent) were of other ethnic groups. Like many great cities, New Orleans also had its share of problems. The economic structure of the city made it difficult to provide jobs with wages high enough to support a family. New Orleans' economy was built around low-wage service jobs in the tourism sector.

In the 1970s, New Orleans East was the fastest-growing section of the city. Spurred by the prosperity of the oil industry, construction in the east was at an all-time high. Newly constructed moderate-to-expensive homes and comparable luxury apartments dotted the landscape of New Orleans' newest residential area. Between 1979 and 1980, the oil boom turned to bust, and the city fell into decline. Banks that held the mortgages on large luxury apartment complexes built by contractors who overestimated the housing needs of the city and the ability of the population to pay were losing money. At the same time, the city was facing a housing shortage. The inner-city housing stock was increasingly dilapidated. Public housing was in ruin and in short supply. The city was in deep trouble, and the City Council was desperate for answers.

Population patterns in the 1980s changed the race and class composition of New Orleans East. White residents very quickly began to migrate to St. Tammany Parish, a bedroom community across Lake Pontchartrain. Middle-class African Americans began buying more homes in the eastern suburb, and more and more luxury apartments were becoming filled with poorer African-American New Orleanians on rent subsidies. Interstate 10, designated in 1955 as part of the Interstate Highway System, made it possible for middle-class black New Orleanians to move to the eastern suburbs and for white New Orleanians to move to St. Tammany Parish and drive

into the central business district every day for work, taking the city's tax dollars with them. The result of this new migration pattern devastated the city's economy. Suburban New Orleans East, just like its inner city, became increasingly black and with pockets of poverty.

AGRICULTURE STREET LANDFILL COMMUNITY—A BLACK LOVE CANAL

Dozens of toxic "time bombs" along Louisiana's Mississippi River Industrial Corridor, dubbed Cancer Alley, the 85-mile stretch from Baton Rouge to New Orleans, made the region a major environmental justice battleground in the 1990s and early 2000s. For decades, black communities there have been fighting against environmental racism and demanding relocation from polluting facilities (Bullard 2005).

Two mostly black New Orleans subdivisions, Gordon Plaza and Press Park, have special significance to environmental justice and emergency response. Both subdivisions were built on a portion of land that had been a municipal landfill for decades. The Agriculture Street Landfill, covering approximately 190 acres in the Ninth Ward, was used as a city dump as early as 1910. After 1950, the landfill was mostly used to discard large solid objects, including trees and lumber. The landfill was a major source for dumping debris from the very destructive Hurricane Betsy that struck New Orleans in 1965. It is important to note that the landfill was classified as a solid waste site and not a hazardous waste site.

In 1969, the federal government created a home ownership program to encourage lower-income families to purchase their first home. Press Park was the first subsidized housing project on this program in New Orleans. The federal program allowed tenants to apply 30 percent of their monthly rental payments toward the purchase of a family home. In 1987, some 17 years later, the first sale was completed. In 1977, construction began on a second subdivision, Gordon Plaza. This development was planned, controlled, and constructed by the U.S. Department of Housing and Urban Development (HUD) and the Housing Authority of New Orleans (HANO). Gordon Plaza consists of 67 single-family homes.

In 1983, the Orleans Parish School Board purchased part of the Agriculture Street Landfill site for a school. That this site had previously been used as a municipal dump prompted concerns about its suitability for a school. The board contracted engineering firms to survey the site and assess it for contamination of hazardous materials. Heavy metals and organics were detected.

In May 1986, the U.S. Environmental Protection Agency (EPA) performed a site inspection (SI) in the Agriculture Street Landfill community. Although lead, zinc, mercury, cadmium, and arsenic were found, based on the Hazard Ranking System (HRS) model used at that time, the score of 3 was not high enough to place the site on the EPA's National Priorities List (NPL) of hazardous substances, pollutants, and contaminants. Despite warnings, Moton Elementary School, an \$8 million state-of-the-art public school, opened with 421 students in 1989 (Lyttle 2000).

On December 14, 1990, the EPA published a revised HRS model in response to the Superfund Amendment and Reauthorization Act (SARA) of 1986. Upon the request of community leaders, in September 1993, an Expanded Site Inspection (ESI) was conducted. On December 16, 1994, the Agriculture Street Landfill community was placed on the NPL with a new score of 50.

The Agriculture Street Landfill community is home to approximately 900 African-American residents. The average family income is \$25,000, and the educational level is high school graduate and above. The community pushed for a buy-out of their property and to be relocated. However, this was not the resolution of choice by EPA. A clean-up was ordered at a cost of \$20 million, even though the community buyout would have cost only \$14 million. The actual clean-up began in 1998 and was completed in 2001 (Lyttle 2000).

Disagreeing with the EPA's clean-up plans, the Concerned Citizens of Agriculture Street Landfill filed a class-action lawsuit against the city of New Orleans for damages and cost of relocation. The case was still pending when Hurricane Katrina struck. It is ironic that the environmental damage wrought by Katrina may force both the clean-up and the relocation of the Agriculture Street Landfill community from the dumpsite, but then again it may not, given the slow pace black New Orleans neighborhoods are being cleaned up and rebuilt and the fact that New Orleans, the defendant in the suit, is bankrupt.

In 2002, the federal EPA sued the city and several companies that owned or operated portions of the landfill where hazardous material was found and to recoup the \$20 million it spent on clean-up. The case was settled in federal court in a May 2008 consent decree that called for the city to place a synthetic liner and a soil cap over the site. The city was not required to pay for any clean-up costs or civil penalties since the government determined New Orleans could not afford to pay any part of the settlement due to "extraordinary financial difficulties" after Hurricane Katrina (U.S. Department of Justice 2008, 4).

In 2005, CFI, Inc., and its parent company, IPC, Inc., had already agreed to pay \$1.75 million, plus interest, and BFI Waste Systems of North America, Inc., agreed to pay \$335,000 plus interest. The U.S. Department of Justice reached tentative settlement agreements with Delta By-Products, Inc., and Edward Levy Metal, Inc., but those negotiations are still in progress (Associated Press 2008).

The EPA and city settlement has no impact on the Agriculture Street Landfill class-action lawsuit judgment issued in 2006 by Civil District Court Nadine Ramsey, who ruled in favor of the residents, declaring the neighborhood "unreasonably dangerous" and "uninhabitable." The judge ordered HANO, the city, and the insurers to pay fair-market value, plus \$4,000 to \$50,000 for emotional distress, depending on how long a resident had lived in the neighborhood before contamination was found in 1993. The ruling was appealed, and in January 2008, Louisiana's Fourth Circuit Court of Appeals largely upheld Ramsey's ruling but cut the emotional distress awards in half (Hammer 2008a).

Nearly a year after Katrina, the EPA gave the city a clean bill of health. There was one glaring exception—the Agriculture Street Landfill neighborhood. EPA scientists discovered cancer-causing benzo(a)pyrene in residents' yards at levels 50 times the normal level. No new clean-up was in the works, but FEMA trailers were supplied to area residents, who later learned that the trailers themselves posed a health hazard from deadly formaldehyde fumes (Associated Press 2008b).

When Ag Street homeowners applied under Louisiana's \$10.3-billion The Road Home program (designed to provide compensation to Louisiana homeowners affected by Katrina or Rita for the damage to their homes) to rebuild, they were refused funds. They were told their applications were put on hold indefinitely because they lived on a Superfund clean-up site. HUD, which financed and guaranteed loans in the neighborhood, also took the position that none of its money could be used to purchase contaminated land (Hammer 2008a). The Road Home officials later placed former residents of the landfill neighborhood back in The Road Home pipeline for consideration pending the drafting of policies toward Superfund neighborhoods—neighborhoods with federally designated hazardous waste sites. Homeowners would have the option of having their Road Home grants calculated based on a regular rebuilding grant, but they would also be allowed to use the money to relocate.

In July 2008, after nearly 15 years of struggle, the Louisiana Supreme Court handed a victory to some 8,000 Ag Street residents who sued the city of New Orleans, its public housing authority, and its school board for putting their homes and school on a toxic waste dump without warning them. In a 5–2 vote, the Louisiana Supreme Court upheld the 2006 ruling of Judge Ramsey (Hammer 2008a).

CLEANING UP AFTER KATRINA

Before Katrina, over 50 percent (some studies place this figure at around 70 percent) of children living in the inner-city neighborhoods of New Orleans had blood lead levels above the current guideline of 10 micrograms per deciliter (mcg/dl) (Mielke 1999). Childhood lead poisoning in some New Orleans black neighborhoods was as high as 67 percent (Rabito, White, and Shorter 2004).

Even 10 mcg/dl is not safe. Some medical and health professionals advocate lowering the threshold to 2.5 mcg/dl (Lamphear 2001). The World Health Organization estimates the effect of lead poisoning to be about 1 to 3 points of IQ lost for each 10 mcg/dl lead level. At higher levels, the effect may be larger. Lead affects almost every organ and system in the body, including the kidneys and the reproductive system.

Katrina has been called one of the worst environmental disasters in U.S. history. A September 2005 *BusinessWeek* commentary described the handling of the untold tons of "lethal goop" as the "mother of all toxic cleanups" (2005). However, the billion-dollar question facing New Orleans is which neighborhoods will get cleaned up, which ones will be left contaminated, and which ones will be targeted as new sites to dump storm debris and waste from flooded homes.

Hurricane Katrina left debris across a vast disaster area in Louisiana, Mississippi, and Alabama. According to the Congressional Research Service, debris from Katrina could well top 100 million cubic yards. Ten months after the storm, FEMA had spent \$3.6 billion to remove 98.6 million cubic yards of debris from Katrina (Jordan 2006). This is enough trash to pile two miles high across five football fields. Still, an estimated 20 million cubic yards littered New Orleans and Mississippi waterways—with about 96 percent, or 17.8 million cubic yards, of remaining wreckage in Orleans, St. Bernard, St. Tammany, Washington, and Plaquemines parishes.

The Army Corps of Engineers estimated it would complete its debris mission, including demolitions, by the end of September 2006 (Army Corps of Engineers 2006). Debris clean-up continued three years after the storm. Soon after Katrina, officials from the EPA and the Louisiana Department of Environmental Quality (LDEQ) estimated that 140,000 to 160,000 homes in Louisiana might need to be demolished and disposed (U.S. Environmental Protection Agency 2005). More than 110,000 of New Orleans' 180,000 homes were flooded, and half sat for days or weeks in more than six feet of water (Nossiter 2005).

Government officials estimate that as many as 30,000 to 50,000 homes citywide may have to be demolished, while many others could be saved with extensive repairs. Getting permission to demolish private homes has been drawn out because people are coming back slowly to some heavily damaged areas. Demolishing damaged homes in the hard-hit Lower Ninth Ward proved to be a controversial political issue (Filosa 2006).

After Katrina, 350,000 automobiles had to be drained of oil and gasoline and then recycled; 60,000 boats were destroyed; and 300,000 underground fuel tanks and 42,000 tons of hazardous waste had to be cleaned up and properly disposed of at licensed facilities (Varney and Moller 2005). Government officials peg the numbers of cars lost in New Orleans alone at 145,000 (Dart 2006).

What has been cleaned up, what gets left behind, and where the waste is disposed of appear to be linked more to political science and sociology than to toxicology, epidemiology, and hydrology. Weeks after Katrina struck, the LDEQ allowed New Orleans to open the 200-acre Old Gentilly Landfill to dump construction and demolition waste from the storm (Burdeau 2005). In the 1980s, federal regulators had ordered the unlined landfill closed. The 200-acre dump was being readied for reopening just before Katrina hit in August 2005. By December, after it reopened, more than 2,000 truckloads of hurricane debris were entering the landfill in New Orleans East every day (O'Driscoll 2005).

Just four months after the storm, the Old Gentilly Landfill grew to about 100 feet high (Martin 2006). LDEQ officials insist that the old landfill, which is still operating, meets all proper standards, but residents and environmentalists have disagreed. Even some high-ranking elected officials have expressed fear that reopening the Old Gentilly Landfill could create an ecological nightmare (Russell 2005). In November 2005, four days after environmentalists filed a lawsuit to block the dumping, the landfill caught fire.

In April 2006, the U.S. Army Corps of Engineers and the Louisiana Department of Environmental Quality issued permits that would allow Waste Management Inc. to open and operate a construction- and demolition-related material (C&D) landfill in New Orleans East. The new landfill is located on Chef Menteur Highway, which runs through much of New Orleans East, where the majority of the population is African American. Waste Management pledged to give the city 22 percent of all revenue derived from the site. Every week, Waste Management picks up an average of 45 pounds of trash from each home, 20 more pounds per home than pre-Katrina. The new landfill could accept as much as 6.5 million cubic yards of vegetation and other debris generated by Katrina—including roofing materials, Sheetrock, and demolition debris, which are considered less harmful than other types of waste.

After Katrina, the LDEQ expanded its definition of what is considered "construction debris" to include potentially contaminated material (Luther 2007), but regulators acknowledge the potential toxic contamination threat from storm-related wastes. Much of the disaster debris from flooded neighborhoods in New Orleans has been mixed to the point that separation is difficult or impossible (Luther 2007). David Romero of the EPA says it would be "lucky" if even 30 percent of the hazardous waste was removed from the waste stream. In an October interview on CNN, LDEQ assistant secretary Chuck Carr Brown said hazardous materials were hidden "like toxic needles in a haystack" in the hurricane debris (Pardo 2006).

Nevertheless, government officials assert that the risk of hazardous materials being dumped at the Chef Menteur site is insignificant and that current sorting practices are adequate to keep hazardous waste out of the landfill. They also insist that protective liners are not needed for C&D landfills because demolition debris is cleaner than other rubbish (Eaton 2006). C&D landfills are not required under federal law to have protective liners, but municipal landfills, which are expected to receive a certain amount of hazardous household waste, must. LDEQ's Brown told the *New York Times* in May 2006 that "there's nothing toxic, nothing hazardous" going to the landfill (Eaton 2006).

Landfill opponents think otherwise. Many fear the government's willingness to waive regulations will mean motor oil, batteries, electronics, ink toner, chlorine bleach, drain cleaners, and other noxious material will almost certainly wind up at the unlined landfills (Russell 2006). Government at all levels has done a poor job of policing what goes into landfills—especially after hurricanes where contents from gutted homes get mixed together. Community leaders in New Orleans East beat back two other efforts, in 1990 and 1997, to locate landfills along U.S. 90 near their homes. The Chef Highway Landfill is about four miles west of the Old Gentilly Landfill in a mostly African-American and Vietnamese community (Dunn 2006). More than a thousand Vietnamese-American families live less than two miles from the edge of the new landfill. African-American and Vietnamese-American homeowners see the landfill as a direct assault on their health, their property values, and their efforts to rebuild their lives shattered by the storm.

DESTRUCTION OF LOW-INCOME AND WORKING-CLASS HOUSING

All eyes are watching New Orleans' rebuilding efforts, especially how it addresses the repopulation of its historically African-American neighborhoods and its strategically sited public housing. The Housing Authority of New Orleans was dismantling traditional public housing for nearly a decade before Katrina through Hope VI, a Clinton-era program that favors vouchers and mixed-income developments. Dramatic population shifts occurred in New Orleans as a result of the Hope VI project, which displaced thousands of public housing residents. Gentrification of historically black areas was becoming a problem for many citizens.

The St. Thomas redevelopment in New Orleans in the late 1990s became the prototype for elite visions of the city's future. Strategically sited public housing projects like the St. Thomas homes were demolished to make way for neo-traditionalist townhouses and stores (in the St. Thomas case, a Wal-Mart) in the New Urbanist spirit. These "mixed-use, mixed-income" developments were typically advertised as little utopias of diversity, but—as in St. Thomas in New Orleans, Olympic Village (formerly Techwood Homes) in Atlanta, and similar places around the country—the real dynamic is exclusionary rather than inclusionary, with only a few project residents being rehoused on the development site.

After Katrina, HUD announced it would invest \$154 million in rebuilding public housing in New Orleans and assist the city to bring displaced residents home, but critics fear that government officials and business leaders are quietly planning to demolish the old projects and privatize public housing. Ten months after Katrina, 80 percent of public housing in New Orleans remained closed. Six of ten of the largest public housing developments in the city were boarded up, with the other four in various states of repair.

Over 49,000 people lived in public housing before Katrina, 20,000 in older, large-scale developments such as St. Bernard and 29,000 in Section 8 rental housing (a federal housing program that provides housing assistance to low-income renters and homeowners in the form of rental subsidies), and these were also devastated by the storm. The number of public housing units in New Orleans has been on a steady decline since the mid-1990s. In 1996, the city had 13,694 units of conventional public housing. In 2005, shortly before Katrina, the number had fallen to 7,379.

New Orleans' homeless population has skyrocketed since Katrina—reaching an unprecedented 4 percent of the total population in 2008—12,000 homeless people, nearly double the pre-Katrina count. New Orleans' homeless rate is more than four times that of most U.S. cities. The cities with homeless rates closest to that of New Orleans are Atlanta (1.4 percent) and Washington (0.95 percent), both majority-black cities (Jervis 2008a).

New Orleans faces a severe housing crunch and a growing homeless problem. Plans to rebuild the city's 77,000 rental units lost to Katrina have largely failed (Dewan 2007). There is little money for families who are ineligible for FEMA rental

payments. Of the \$121.5 billion Louisiana received in the federal community development block grants, \$25 million has been spent on homelessness prevention and \$72 million for the housing voucher program. The state received a \$220 million block grant for social services, of which \$100 million went to the Louisiana Department of Health and Hospitals for medical and mental health care. For those families who are eligible for FEMA-financed housing but have been unable to find it, FEMA has agreed to pay for a new case-management program but not direct assistance like furniture, utilities, or deposits (Dewan 2008).

In June 2006, federal housing officials announced that more than 5,000 public housing apartments for the poor would be razed and replaced by developments for residents from a wider range of incomes. The demolition plan would eliminate 4,500 public housing units in the city while building only about 800 units of traditional public housing (Kromm and Sturgis 2008). This move has heightened the anxiety of many low-income black Katrina survivors who fear they will be pushed out in favor of higher-income families (Walsh 2007).

Powerful forces have been trying to demolish public housing in New Orleans for decades. When Katrina emptied New Orleans of public housing residents, the *Wall Street Journal* reported U.S. Congressman Richard Baker, a ten-term Republican from Baton Rouge, telling lobbyists: "We finally cleaned up public housing in New Orleans. We couldn't do it, but God did" (Babington 2005, A04). The demolition of four sprawling public housing projects—the St. Bernard, C. J. Peete, B. W. Cooper, and Lafitte housing developments—represents more than half of all of the conventional public housing in the city, where only 1,097 units were occupied ten months after the storm.

HUD raised by about 35 percent the value of disaster vouchers for displaced residents because the city's housing shortage caused rents to skyrocket. However, Katrina has driven housing prices up as individuals compete for a limited supply that survived the storm and for newly constructed units. The average two-bedroom apartment that would have cost \$676 a month before Katrina in 2005 now rents for \$990. Housing discrimination becomes rampant when the supply is scarce—hitting African-American renters and home buyers especially hard (National Fair Housing Alliance 2005). A Greater New Orleans Fair Housing Action Center study of the New Orleans metro area after Katrina found discrimination in nearly six out of ten transactions, with African Americans encountering less favorable treatment based on race (Berry 2007). Housing providers often simply didn't return phone calls from African Americans, didn't provide applications to them, or didn't show available rental units to them. With results like these, it is no wonder that African-American Katrina survivors have had difficulty recovering from the storm. Many African-American households began their road to recovery by not returning to work and home but looking for jobs and housing.

Although Katrina did not discriminate, a May 2008 progress report from the Louisiana Family Recovery Corps found a wide disparity in adaptation and recovery between black and white storm victims: "There is great disparity in the progress

towards recovery, disruption from the storms and levels of progress between black and white households, even for those with similar incomes. On nearly every indicator, the storm impact and recovery experience for black households is significantly different than for whites, even after examining these issues by income levels" (Alfred 2008, 12).

A June 6, 2008, CNN *Money Magazine* report indicates that the price of the average single-family home in the New Orleans metropolitan area rose to \$215,179, up from \$195,377 immediately before Katrina. Rents in Mid-City and Lakefronts sections of New Orleans, both of which were flooded, rose to a post-storm average of \$1,584 a month from \$986 before the storm. As of July 2008, nearly 4,000 displaced New Orleans residents lived in trailers. Some one-fourth of the trailer residents are renters, and 16 percent have special needs. Most of the people still living in trailers three years after the storm are families who have the most challenges in a tight housing market (Jervis 2008b, 4A). In May 2008, black storm victims were more than twice as likely as white storm victims to be still living in trailers (Alfred 2008).

A "SAFE" ROAD HOME

Katrina and the failures of the federal levee system displaced more than 378,000 people from New Orleans, creating "one of the largest disaster diasporas in U.S. history" (Jervis 2008c, 1A). Three years after Katrina, population estimates vary on how many people have actually made it back. Some demographers place the total population of the city between 315,000 and 320,000 residents, estimated by utility and water hookups, mail delivery, and other public service accounts. In August 2008, the Brookings Institution estimated that New Orleans had reached 72 percent of its 453,726 pre-Katrina level (Liu and Plyer 2008). The storm cut deeper for African-American households than for white households as 47 percent of African-American households live someplace different, compared to only 19 percent of white households (Alfred 2008, 16).

Since Katrina, the New Orleans African-American population has plummeted by 57 percent, while the white population has fallen less, by only 36 percent. African Americans now make up 58 percent of New Orleans compared to 67 percent before the storm. New Orleans has been a predominately black city for three decades, but now some well-known African-American communities are a fraction of what they were, and others see their very existence threatened. For example, the Lower Ninth Ward has seen only 9.9 percent of its population return. A traditionally mixed-race neighborhood within the Lower Ninth, Holy Cross, has fared better with a 37 percent return, benefiting from the work of preservationists who seek to restore the federally declared historic district.

The sprawling New Orleans East area, which includes the black upper-middle-class enclave of Eastover and several other communities on man-made lakes, has seen nearly 60 percent of its residents back home—compared with 65–70 percent of the city's total population return. Affluent and mostly white areas are not only back, but

they are growing. The population of the Garden District is at 107 percent of its pre-Katrina level, the French Quarter at 103 percent, and an adjacent neighborhood called Faubourg Marigny at 100.3 percent (Gonzales 2008).

Whereas local advocates have focused largely on the demolition of New Orleans public housing, the loss of working-class rental units to Katrina is just as significant. Katrina and Rita, which hit four weeks after Katrina, destroyed more than 41,000 apartments affordable to people earning less than the area's median income, and only 43 percent will be rebuilt under federal programs. Prospects are bleakest for households earning less than \$26,150—with only 16 percent of housing affordable to them scheduled for federally funded redevelopment. Working-class families' rents have increased 46 percent and utility rates have risen 33 percent while wages have lagged.

Katrina hit New Orleans' mostly African-American blue-collar workers, individuals who never lived in public housing and who often made ends meet by working two jobs, especially hard. With limited plans to replace rental units lost in the storm, the city is at risk of losing an entire tier of workers. It is no surprise that such a large share of the African-American working-class population is still stranded three years after the storm. This trend can be observed in job vacancy rates in the cleaning and maintenance sector that are up from 4.1 percent before Katrina to 13.1 percent now, in the restaurant sector from 3.6 percent to 13.4 percent, and in other service jobs from 6.3 percent to 16.7 percent (Gonzales 2008b).

The government has been slow to invest in bricks-and-mortar housing for working-class families. By March 2008, FEMA had paid to Louisiana 93 percent of the \$6.6 billion infrastructure allocation, but only 47 percent had actually reached localities. Overall, Katrina relief and rebuilding funds have only trickled down to local governments and residents. Given the enormity and urgency of the need, one would think much more would have been done after three years.

FEMA even withheld disaster relief supplies from Katrina victims. In June 2008, nearly three years after the storm, the first truckload of \$85 million in federal relief supplies, lost in a bureaucratic hole, arrived in Louisiana and were distributed to those still displaced by Katrina and Rita. The supplies had been stored in Fort Worth for two years, and FEMA finally deemed them surplus goods early in 2008 after the building's owner decided to demolish the structure.

The road home for many Katrina survivors has been bumpy, largely due to slow government actions to distribute the \$116 billion in federal aid to residents to rebuild. Only about \$35 billion has been appropriated for long-term rebuilding. Most of the Katrina money coming from Washington hasn't gotten to those most in need—and the funding squeeze is stopping much of the Gulf Coast from coming back (Kromm and Sturgis 2007).

Eighteen months after the storm, only 630 homeowners had received checks from Louisiana's The Road Home program, which provides eligible homeowners up to \$150,000 in compensation for their losses to get back into their homes. In July 2008, The Road Home program had issued checks to 74 percent of eligible homeowners. It made 114,679 awards totaling \$6.7 billion, making it the largest home-rebuilding

program in U.S. history. The Road Home is closing an average 3,972 applications per month, down from a monthly average of 9,450 in the latter half of 2007 (Liu and Plyer 2008; Jervis 2008c). The average Road Home award in Louisiana was \$58,688 compared to \$73,090 in Mississippi.

Although government officials insist that the dirt in residents' yards is safe, Churchill Downs, Inc., the owners of New Orleans' Fair Grounds, felt it was not safe for its million-dollar thoroughbred horses to race on. The Fair Grounds is the nation's third-oldest track. Only Saratoga and Pimlico have been racing longer. The owners hauled off soil tainted by Katrina's floodwaters and rebuilt a grandstand roof ripped off by the storm's wind (Martell 2006). The Fair Grounds opened on Thanksgiving Day 2006. If tainted soil is not safe for horses, surely it is not safe for people—especially children who play and dig in the dirt.

Families who chose to return to rebuild their communities shouldn't have to worry about their children playing in yards, parks, and schoolyards contaminated with cancer-causing chemicals left by Katrina floodwaters. In March 2006, seven months after the storm slammed ashore, organizers of A Safe Way Back Home initiative, the Deep South Center for Environmental Justice at Dillard University (DSCEJ), and the United Steelworkers (USW) undertook a proactive pilot neighborhood clean-up project—the first of its kind in New Orleans (Deep South Center for Environmental Justice 2006). The clean-up project, located in the 8100 block of Aberdeen Road in New Orleans East, removed several inches of tainted soil from the front and back yards, replacing the soil with new sod, and safely disposed of the contaminated dirt.

But residents who choose to remove the topsoil from their yards—which contains sediments left by flooding—find themselves in a Catch-22 situation with the LDEQ and EPA insisting that the soil in their yards is not contaminated and the local landfill operators refusing to dispose of the soil because they suspect it is contaminated. This bottleneck of what to do with the topsoil remains unresolved more than three years after the flood.

The Safe Way Back Home demonstration project serves as a catalyst for a series of activities that will attempt to reclaim New Orleans East after Katrina. It is the government's responsibility to provide the resources required to address areas of environmental concern and to ensure that the workforce is protected. However, residents are not waiting for the government to ride in on a white horse to rescue them and clean up their neighborhoods.

The DSCEJ/USW coalition received dozens of requests and inquiries from New Orleans East homeowners associations to help clean up their neighborhoods block by block. State and federal officials called these voluntary clean-up efforts "scaremongering" (Simmons 2006). EPA and LDEQ officials said that they tested soil samples from the neighborhood in December 2006 and that there was no immediate cause for concern.

According to Tom Harris, administrator of LDEQ's environmental technology division and the state toxicologist, the government originally sampled 800 locations in New Orleans and found cause for concern in only 46 samples. Generally, the soil

in New Orleans is consistent with "what we saw before Katrina," says Harris. He called the Safe Way Back Home program "completely unnecessary" (Williams 2006). A week after the voluntary clean-up project began, an LDEQ staffer ate a spoonful of dirt scraped from the Aberdeen Road pilot project. The dirt-eating publicity stunt was clearly an attempt to disparage the proactive neighborhood clean-up initiative. LDEQ officials later apologized.

Despite barriers and red tape, Katrina evacuees are moving back into their damaged homes or travel trailers in their yards. Homeowners are gutting their houses, treating the mold, fixing roofs and siding, and slowly getting their lives back in order. One of the main questions returning residents have is: Is this place safe? They're getting mixed signals from government agencies. In December 2005, the Louisiana Department of Environmental Quality (LDEQ) announced that "there is no unacceptable long-term health risk directly attributable to environmental contamination resulting from the storm." Yet contamination was found all across the city's flooded neighborhoods.

Two months later, in February, the results of tests by the Natural Resources Defense Council (NRDC) came out with different conclusions (Solomon and Rotkin-Ellman 2006). NRDC's analyses of soil and air quality after Hurricane Katrina revealed dangerously high levels of diesel fuel, lead, and other contaminants in Gentilly, Bywater, Orleans Parish, and other New Orleans neighborhoods.

Although many government scientists insisted the soil is safe, an April 2006 multi-agency task force press release distributed by the EPA raised some questions (U.S. EPA 2006). Though it claimed that the levels of lead and other contaminants in New Orleans soil were "similar" to soil-contaminant levels in other cities, it also cautioned residents to "keep children from playing in bare dirt. Cover bare dirt with grass, bushes, or 4–6 inches of lead-free wood chips, mulch, soil, or sand."

Surely, if the federal government can pay for debris removal, blue tarp roofs, and temporary trailer housing (which have already cost an estimated \$4.5 billion), it can make funds available to address the "silent killer" of childhood lead poisoning. Making government grants of \$2,000 to \$3,000 available to homeowners to test and clean up contamination in their yards would be a bargain given the millions of hurricane relief dollars wasted on profiteering, no-bid contracts, and material markups (Varney 2006). The band-aid approach of, for example, covering bare dirt with grass and wood chips stops short of addressing the root problem—environmental hazards found inside and outside of homes.

Now, instead of cleaning up the mess that existed before the storm, government officials are allowing dirty neighborhoods to stay dirty forever. Just because lead and other heavy metals existed in some New Orleans neighborhoods before Katrina doesn't mean that there isn't a moral or legal obligation to remediate any contamination uncovered. Government scientists have assured New Orleanians, including gardeners, that they do not need to worry about soil salinity and heavy metal content. They also say residents need not worry about digging or planting in the soil. But given the uncertainties built into quantitative risk assessments, how certain are these government officials that all of New Orleans' neighborhoods are safe?

In August 2006, nearly a year after Katrina struck, the EPA gave New Orleans and surrounding communities a clean bill of health, while pledging to monitor a handful of toxic hot spots (Brown 2006). EPA and LDEQ officials concluded that Katrina did not cause any appreciable contamination that was not already there. Although EPA tests confirmed widespread lead in the soil—a pre-storm problem in 40 percent of New Orleans—EPA dismissed residents' calls to address this problem as outside the agency's mission.

And in June 2007, the U.S. Government Accountability Office (GAO) issued a report, *Hurricane Katrina: EPA's Current and Future Environmental Protection Efforts Could Be Enhanced by Addressing Issues and Challenges Faced on the Gulf Coast*, criticizing EPA's handling of contamination in post-Katrina New Orleans and the Gulf Coast (U.S. Government Accountability Office 2007). The GAO found inadequate monitoring for asbestos around demolition and renovation sites. Additionally, the GAO investigation revealed that "key information released to the public about environmental contamination was neither timely nor adequate, and in some cases, easily misinterpreted to the public's detriment."

The GAO also found that EPA did not make clear until eight months later, in August 2006, that a major finding in its 2005 report—that the great majority of the data showed that adverse health effects would not be expected from exposure to sediments from previously flooded areas—applied only to short-term visits, such as to view damage to homes (U.S. Government Accountability Office 2007).

In March 2007, a coalition of community and environmental groups collected over 130 soil samples in Orleans Parish. Testing was conducted by the Natural Resources Defense Council (Fields, Huang, Solomon, Rotkin-Ellman, and Simms 2007). Sampling was done at 65 sites in residential neighborhoods where post-Katrina EPA testing had previously shown elevated concentrations of arsenic in soils. Sampling was also done at 15 playgrounds and 19 schools. Six school sites had arsenic levels in excess of the LDEQ's soil screening value for arsenic. The LDEQ soil screening value of 12 milligrams per kilogram normally requires additional sampling, further investigation, and a site-specific risk assessment. It is clear that the levels of arsenic in the sediment are unacceptably high for residential neighborhoods.

DYING FOR A HOME—TOXIC FEMA TRAILERS

Right after Katrina, FEMA purchased about 102,000 travel trailers for \$2.6 billion, or roughly \$15,000 each (Spake 2007). Soon there were reports of residents becoming ill in these trailers due to the release of potentially dangerous levels of formaldehyde, a known carcinogen (Hampton 2006). In fact, formaldehyde was omnipresent in the glues, plastics, building materials, composite wood, plywood panels, and particle board used to manufacture the trailers.

In Mississippi, FEMA received 46 complaints by individuals who had symptoms of formaldehyde exposure, including eye, nose, and throat irritation, nausea, skin rashes, sinus infections, depression, inflamed mucus membranes, asthma attacks, headaches,

insomnia, intestinal problems, memory impairment, and breathing difficulties (Schwartz 2007; Spake 2007; Hampton 2006; Johnson 2007). The Sierra Club conducted tests of 31 trailers and found that 29 had unsafe levels of formaldehyde (Hampton 2006; Damon 2007; Brunker 2006). According to the Sierra Club, 83 percent of the trailers tested in Alabama, Louisiana, and Mississippi had formaldehyde levels above the EPA limit of 0.10 parts per million (Schwartz 2007; Brunker 2006).

Even though FEMA received numerous complaints about toxic trailers, the agency only tested one occupied trailer to determine the levels of formaldehyde in it (Committee on Oversight and Government Reform 2007). The test confirmed that the levels of formaldehyde were extraordinarily high and presented an immediate health risk to the occupants (Committee on Oversight and Government Reform 2007). Unfortunately, FEMA did not test any more occupied trailers and released a public statement discounting any risk associated with formaldehyde exposure.

According to findings from a congressional committee hearing, FEMA deliberately neglected to investigate any reports of high levels of formaldehyde in trailers so as to bolster FEMA's litigation position in case individuals affected by their negligence decided to sue them (Damon 2007; Babington 2007). In fact, more than 500 hurricane survivors and evacuees in Louisiana are pursuing legal action against the trailer manufacturers for formaldehyde exposure. Two years after Katrina, more than 65,000 Gulf Coast families, an estimated 195,000 people, were living in FEMA trailers. The vast majority of the trailers, about 45,000, were in Louisiana (Alberts 2007; Damon 2007; Babington 2007).

In July 2007, FEMA stop buying and selling disaster relief trailers because of the formaldehyde contamination (Johnson 2007). FEMA administrator R. David Paulison admitted that the trailers used by displaced Katrina residents were toxic and concluded that the agency should have moved faster in addressing the health concerns of residents (Cruz 2007). In August 2007, FEMA began moving families out of the toxic trailers and finding them new rental housing. Testing of FEMA travel trailers for formaldehyde and other hazards began in September 2007 (Treadway 2007). The Centers for Disease Control and Prevention was tasked with developing parameters for testing the travel trailers.

In February 2008, more than two and a half years after residents of FEMA trailers began complaining of breathing difficulties, nosebleeds, and persistent headaches, CDC officials announced that long-awaited government tests had found potentially hazardous levels of toxic formaldehyde gas in travel trailers and mobile homes provided by FEMA. CDC tests found that levels of formaldehyde gas in 519 trailers and mobile homes tested in Louisiana and Mississippi were—on average—about five times what people are exposed to in most modern homes (Maugh and Jervis 2008). More than 38,000 families, or roughly 114,000 individuals, were living in FEMA-provided travel trailers or mobile homes along the Gulf Coast at the time of the CDC tests—down from a high of about 144,000 families.

In some trailers, the levels were nearly 40 times customary exposure levels, raising fears that residents could suffer respiratory problems and potentially other long-term

health effects. CDC tests showed an average formaldehyde level of 77 parts per billion (ppb), with a low of 3 ppb and a high of 590 ppb. The average level in new homes is 10 to 20 ppb. Long-term exposure to levels of 77 ppb could have serious effects. Exposure to the higher levels can cause eye irritation and coughing and other respiratory problems. These findings come 23 months after FEMA first received reports of health problems and test results showing formaldehyde levels at 75 times the U.S.-recommended workplace safety threshold.

The federal government has approved \$400 million to build Katrina Cottages, alternative affordable housing designed to survive a storm (Alberts 2007), but nothing has happened because of internal political fights between the state government and private contractors over what kind of homes should be built.

LET THEM FIND FOOD

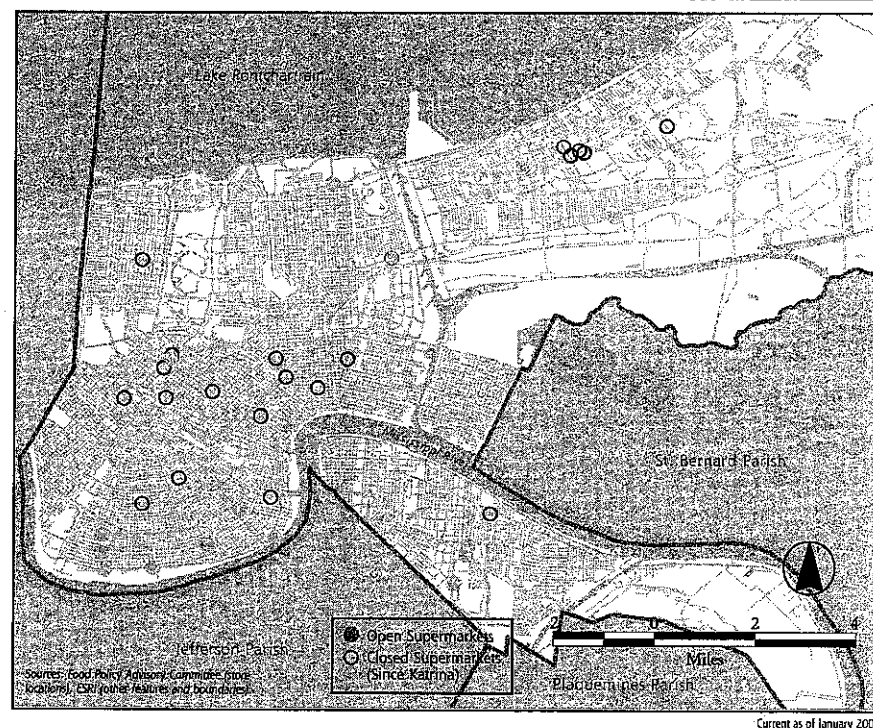
Before Katrina, predominantly African-American communities in New Orleans were struggling with the mass closings of shopping centers and grocery stores. Many watched in horror at the explosion of chain-store fast-food restaurants, liquor stores, dollar stores, pawn shops, and check-cashing shops in their neighborhoods. Having to travel great distances for the ordinary amenities of life made life more and more difficult. After Katrina, middle- and upper-middle-class black neighborhoods have fallen victim to the same fate. All must drive long distances to white neighborhoods for supermarkets, shopping centers, and quality restaurants.

In a 2007 survey of low-income Orleans Parish residents, nearly 60 percent were more than three miles from a supermarket while only 50 percent owned cars. Additionally, of those surveyed, 70 percent reported that they "would buy" or "might buy" fresh produce items if they were available in their neighborhoods. Moreover, the study showed that low-income people "like" to eat fruit and vegetables as much as or more than unhealthy foods (The New Orleans Food Policy Advisory Committee 2007).

Access to fresh, nutritious food was inadequate in New Orleans even before Katrina. At that time, there were about 12,000 residents per supermarket while the nation's average was 8,800 residents (New Orleans Food Policy Advisory Committee 2007). Now, nearly three years after Katrina, the availability of these types of foods has only gotten worse. Today, there are nearly 18,000 residents per supermarket (Figure 1.1). There are presently only 18 supermarkets open in New Orleans. Adding to this woeful lack of stores is the fact that the smaller stores that have reopened are not meeting the demand for fresh produce.

In predominantly black New Orleans East, with a current population of 60,000, there is only one supermarket, a Winn-Dixie. In September 2007, news of its reopening created such excitement in the neighborhood that opening day felt like the local jazz festival. People gathered and greeted friends they had not seen since before the storm.

FIGURE 1.1—Supermarkets in New Orleans Before and After Hurricane Katrina



Source: Map created by the Louisiana Public Health Institute for the New Orleans Food Policy Advisory Committee (January 2008). Originally published in *Building Healthy Communities: Expanding Access to Fresh Food Retail. A Report by the New Orleans Food Policy Advisory Committee*. New Orleans: The Prevention Research Center at Tulane University and The Food Trust, March 2008.

The supermarket opening also excited elected officials and business leaders. On opening day, Thursday September 27, 2007, the NASDAQ market's opening bell was rung from that Winn-Dixie. Winn-Dixie CEO Peter Lynch and New Orleans Mayor Ray Nagin rang the bell from the supermarket at 9701 Chef Menteur Highway. The opening bell ceremony was broadcast live on the seven-story NASDAQ MarketSite Tower in Times Square and via satellite to national and international media. This was the first NASDAQ remote opening ceremony from a grocery store and the first ever in Louisiana, which has 18 NASDAQ-listed companies.

Who would have thought that one supermarket could bring such joy? Everyone was chatting with someone they had not seen in a long time. It was time to catch up on stories of loved ones and harrowing tales of survival. This excitement is not uncommon

to African-American urban neighborhoods that have become food deserts, without full-service supermarkets, grocery stores, and farmers markets. New Orleans East residents are forced to accept extremely long checkout lines in exchange for access to a full-service supermarket.

Access to fresh healthy foods, like fruits and vegetables, high in nutrients and low in salt, fat, and calories, is vital to the good health of the people in our communities. Research in New Orleans' Central City neighborhood revealed that greater access to fresh vegetables has led to increased consumption of these foods by residents of the neighborhood (New Orleans Food Policy Advisory Committee 2008). Improving access to healthy foods would lead to better dietary practices and the resultant better health of individuals and families in underserved communities. In the rebuilding of New Orleans, we must reverse this trend of poor access to healthy foods leading to poor dietary health.

UNEQUAL LEVEE PROTECTION

The Army Corps of Engineers is working to fix or replace 220 miles of levees and floodwalls, build new flood gates and pump stations at the mouths of three outfall canals, and strengthen existing walls and levees at important points. By May 2008, the Corps had spent \$4 billion of the \$14 billion set aside by Congress to repair and upgrade the metropolitan area's hundreds of miles of levees by 2011. Some outside experts say that there are leaks in the new levees, that some of the work already completed may need to be redone, and that billions more will be needed (Burdeau 2008).

The latest report including flood maps produced by the Army Corps of Engineers shows no increase in levee protection to New Orleans East residents since Katrina (Army Corps of Engineers Interagency Performance Evaluation Task Force 2007). (See Table 1.1)

A disproportionately large swath of black New Orleans once again is left vulnerable to future flooding. After nearly two years and billions spent on levee repairs, the Army Corps of Engineers has estimated that there is a 1-in-100 annual chance that about a third of the city will be flooded with as much as six feet of water (Schwartz 2007).

Mostly African-American parts of New Orleans are still likely to be flooded in a major storm. Increased levee protection maps closely correspond with race of neighborhoods, black neighborhoods such as the Ninth Ward, Gentilly, and New Orleans East receiving little, if any, increased flood protection. These disparities could lead insurers and investors to redline and think twice about supporting the rebuilding efforts in vulnerable black areas.

The Lakeview-area resident can expect 5.5 feet of increased levee protection. This translates into 5.5 feet less water than what they received from Katrina. Lakeview is mostly white and affluent, New Orleans East is mostly black and middle class. This same scenario holds true for the mostly black Lower Ninth Ward, Upper Ninth Ward, and Gentilly neighborhoods. There is a racial component to the post-Katrina

TABLE 1.1—Interagency Performance Evaluation Task Force Risk and Reliability Report, Army Corps of Engineers, June 20, 2007

| Neighborhoods | Average Depth of Flood Water Decrease | Fatalities Decreased | Property Loss Decreased |
|------------------------------|---------------------------------------|----------------------|-------------------------|
| Lake View | 5.5 ft | 70% | 32% |
| Upper Ninth | 0.5 ft | 31% | 11% |
| Lower Ninth | 2.0 ft | 29% | 4% |
| Gentilly | 0.5 ft | 19% | 5% |
| N.O. East (West Lake Forest) | NC | NC | NC |
| Michoud | NC | NC | NC |
| New Orleans East | 1.0 ft | 83% | 24% |

Source: Army Corps of Engineers Interagency Performance Evaluation Task Force (IPET), "Risk and Reliability Report" (June 20, 2007). Available at <http://nolarisk.usace.army.mil>.

levee protection. Whether you are rich, poor, or middle class, if you are a black resident of New Orleans, you are less protected and you have received less increased flood protection from the federal government than the more white and affluent community of Lakeview.

Racism has taken an unmeasured toll on the lives of minorities and the poor. We say unmeasured because institutionalized racism has influenced policy that discriminates in ways that better serve the white and more affluent populations and communities. Katrina and its impacts, in a very powerful and revealing way, showed the world how race and class are intrinsically tied to policy. Moreover, it pointedly displayed how government policy can actually be harmful to the health and well-being of vulnerable populations (racial minorities, the poor, the sick and elderly, and children).

The scenes of stranded New Orleanians trapped on the roof of the crumbling Superdome and people dying on the street outside the Superdome and the New Orleans Convention Center are visions tragically etched in our collective memory. What was obvious to all was that policies for responding to disasters were woefully inadequate and needed to change.

What the New Orleans recovery process is also showing is that policies intended to be race-neutral can accelerate rather than alleviate the destructiveness of a disaster for the most vulnerable populations if the policies are not also race-sensitive.

More recently, African-American citizens of New Orleans have discovered that another government initiative completely excludes them. FEMA has a Hazardous Mitigation Fund that provides millions of dollars to ease flooding in communities. Site selections are based on participation in the National Flood Insurance Program.

Most homeowners in the city of New Orleans have flood insurance through that program. In fact, the city of New Orleans has a participation rate higher than the national average.

The second part of the equation is where the discrimination kicks in: The number of claims submitted by neighborhoods for flooding is included in FEMA's analysis. Before Katrina, largely white uptown neighborhoods tended to flood every time there was a very hard rain. Before Katrina, largely black New Orleans East and the Lower Ninth Ward, which are much more vulnerable to hurricanes, seldom flooded when it rained.

Consequently, FEMA Hazardous Mitigation Funds that were intended to help the populations most vulnerable to hurricanes will not receive any of the hazardous mitigation monies. Once again, this benefits the more affluent and white populations. What is being experienced in New Orleans is a "policy surge" more powerful than the storm surge that could facilitate a permanent and systematic depopulation and displacement of New Orleans' African-American communities.

CONCLUSIONS

As the waters began to recede, and the light of day was cast on the enormous, unbelievable extent of the damage to New Orleans and the Gulf Coast, speculation on the city's recovery or its demise began to echo across the media. How extensive was the environmental contamination? Had New Orleans become a Superfund site? Was it safe to return? The inability of both federal and state agencies (FEMA, EPA, LDEQ, CDC, ATSDR) to effectively and accurately answer these questions created a quandary that both slowed the recovery and paralyzed the ability of citizens to make a decision on returning.

To date, the information on the environmental safety of residents in New Orleans is nothing short of double talk. The EPA tells citizens that the city is safe, but qualified environmental scientists disagree, as does the agency's own test sampling. The EPA gives the city a clean bill of health, then provides instructions for parents to follow in order to keep their children safe when they play outside. LDEQ attempted to discredit citizen actions to organize to work with labor unions, nonprofit organizations, and volunteers to clean up their own neighborhoods. This schizophrenic response by government bears some of the responsibility for the slow recovery of New Orleans.

We can only speculate on what progress could have been made toward rebuilding New Orleans and returning most of its citizens if the environmental clean-up that we deserved had been done. What if the same priority for clean-up and safety given to the French Quarter, the Central Business District, and the racetrack had been given to the Lower Ninth Ward, New Orleans East, and other hard-hit sections of the city?

Just after the storm, an article in the *Dallas Morning News* quoted the Army Corps of Engineers as saying that it would take the Corps three months to scrape the

city clean of all contaminated soil and sediment (Loftis 2005). This, of course, did not happen. What did occur was politics as usual, and the losers were the citizens of New Orleans, with African Americans taking the biggest hit.

Residents of devastated New Orleans neighborhoods do not need government agencies debating the "chicken or egg" contamination argument ("Which came first, the contamination or Katrina?"). They need the government to clean up the mess. All levels of government have a golden opportunity to get it right this time. Clean-up and reconstruction efforts in New Orleans have been shamefully sluggish and patchy, and environmental injustice may be compounded by rebuilding on poisoned ground.

The opportunities are only fading as Katrina slowly slips off the political radar. It is no accident that not one word about Katrina and the Gulf Coast reconstruction was mentioned in President Bush's State of the Union address in January 2007—seventeen months after the devastating storm. Displaced residents need a "road home" program that is not only fair but also safe. It is immoral—and should be illegal—to unnecessarily subject Katrina survivors to contamination—whether the pollution was there before or after the storm.

Clearly, prevention and precaution should be the driving force behind the environmental clean-up in post-Katrina New Orleans. Either we all pay now or we all pay later. It will cost more in terms of dollars and ill health if we wait. The nation cannot allow another immoral, unethical, and illegal "human experiment" to occur in New Orleans and the Gulf Coast. The solution is prevention. In July 2008, FEMA sought immunity from lawsuits over potentially dangerous fumes in government-issued trailers that have housed tens of thousands of Gulf Coast hurricane victims (Kunzelman 2008). Lawyers for the trailer home plaintiffs want the cases certified as a class action on behalf of tens of thousands of current and former trailer occupants in Alabama, Louisiana, Mississippi, and Texas. Such cases and legal wrangling often take years to resolve.

POLICY RECOMMENDATIONS

- Implement environmental justice. Ensure equal funding, equal clean-up standards, and equal protection of public health and environmental response in minority and low-income communities. The EPA, FEMA, and the Army Corps of Engineers need to enforce Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, regarding environmental justice in the clean-up and rebuilding in the hurricane-affected Gulf Coast region.
- Enforce existing environmental and health standards. Clean-up standards should not be weakened or compromised in low-income and minority neighborhoods. Allowing waivers of environmental standards could compound the harms already caused by Katrina and undermine health protection of the most vulnerable members of our society.

- Provide environmental guidance on comprehensive waste management. Provide more detailed guidance to state and local entities in developing a comprehensive waste management plan before and after disasters to better ensure protection of public health and the environment and prevent the creation of future Superfund sites. This guidance should address the selection of landfill sites for disaster debris, including advance selection of potential landfill sites, and practices to consider when making special accommodations for debris disposal in emergency situations. Guidance should be put in place so that public health risks are minimized during the demolition and renovation of buildings containing asbestos, activities that can release asbestos fibers into the air. Further, many thousands of homes being demolished and renovated by or for individual homeowners are generally not subject to EPA's asbestos emissions standards aimed at limiting releases of fibers into the air.
- Provide environmental assessment. Federal and state government agencies should include additional sampling, assessment, and clean-up of toxic sites, establishing an effective process for debris and waste management, and fully informing the public of health risks, including access to protective equipment and treatment, if necessary. The city should ensure that state and federal agencies continue to fully assess health risks for residents returning to contaminated areas before making any official declarations that it is safe for them to do so.
- Conduct independent environmental testing and monitoring. Because of the loss of trust in government, independent testing and monitoring of the water, soil, sediment, and air in the affected areas are needed using the best testing technology and methods available. This testing must provide an assessment of current contamination levels, as well as continuous monitoring.
- Remove contaminated sediments. The city should immediately request that FEMA and the EPA remove contaminated sediment from New Orleans' communities and conduct further investigation and remediation of toxic hot spots.
- Monitor the air and water. There is a need for ongoing monitoring of the air and water quality in New Orleans. In many cases, no data have been available since 2006, yet we know that there were documented problems with mold, endotoxin, heavy metals, particulate matter, and drinking water contamination. These findings need to be followed up to ensure that they have been resolved. EPA should develop a plan for additional air monitoring and evaluate the number and location of the air monitors to ensure sufficient coverage of areas with substantial demolition and renovation activities, both regulated and unregulated. If air monitors are not appropriately located in neighborhoods undergoing demolition and renovation, the monitoring network will not be adequate to ensure that public health is being protected. While the EPA took steps to monitor asbestos after the hurricane—for example, more than doubling the number of ambient (outdoor) air monitors and monitoring emissions at debris-reduction sites—monitors were not placed in areas undergoing substantial demolition and renovation, such as the Ninth Ward.

- Give residents access to treatment for exposure to toxins. The city should demand that the federal Public Health Service and Agency for Toxic Substances Disease Registry provide ongoing medical care and testing to residents exposed to toxins, as required by the Comprehensive Environmental Response, Compensation and Liability Act (section 104[i][1]).
- Ensure safe and healthy schools for returning children. Flood-damaged schools should be rebuilt in a manner that fully protects children's health. It is imperative that schools and the land on which they sit are safe, clean, and free from health-threatening contamination. Rebuilt schools should be LEED (Leadership in Energy and Environmental Design) certified and incorporate guidelines developed by the Collaborative for High Performance Schools for the design of energy-efficient, healthy, comfortable, well-lit schools. Care should be taken to make design, engineering, and materials choices that prevent mold from growing indoors. The city also should guarantee that soil on school grounds is clean and safe by making sure it is tested and cleaned to at least the level of the most protective clean-up guidelines in the country.
- Balance green building and social justice. Rebuilding efforts in the Gulf Coast region should adopt smart growth and green building principles to ensure that past environmental inequities are repaired along with the physical infrastructure. However, greenness and justice need to go together. Green building in New Orleans and the Gulf Coast could involve exorbitant fees for architects, materials, and construction—and greening that fails to address issues of affordability, access, and equity may open the floodgates for permanent displacement of low-income and minority homeowners and business owners.
- Implement an Environmental Training and Green Jobs Initiative. Implement a comprehensive environmental clean-up, restoration, and green jobs training program for local residents who live in environmental hot-spot areas.

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