

# Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

BY RICHARD J. RODDEWIG, CRE, MAI, FRICS; CHARLES T. BRIGDEN, CRE, ASA, FRICS; AND GARY R. PAPKE, CRE, MAI, AICP

## INTRODUCTION: HURRICANE KATRINA AND THE 'LEVEE CASE' CLASS ACTION

*The most important thing to remember about the drowning of New Orleans is that it wasn't a natural disaster. It was a man-made disaster, created by lousy engineering, misplaced priorities and pork-barrel politics. . . . The city's defenses should have withstood its surges, and if they had we never would have seen the squalor in the Superdome, the desperation on the rooftops, the shocking tableau of the Mardi Gras city underwater for weeks. . . . The Federal Emergency Management Agency (FEMA) was the scapegoat, but the real culprit was the U.S. Army Corps of Engineers, which bungled the levees that formed the city's man-made defenses and ravaged the wetlands that once formed its natural defenses. . . . one Corps project actually intensified Katrina's surge. After Katrina, a series of investigations ripped the Corps for building flimsy floodwalls in soggy soils, based on wildly flawed analyses—and shoddy engineering was only one way the Corps betrayed New Orleans. . . . By the time [Corps commander Carl] Strock admitted his agency's 'catastrophic failure' eight months after the storm, the U.S. had moved on.*

—Michael Grunwald, "The Threatening Storm"  
*TIME Magazine*, Wednesday, Aug. 1, 2007.

ALTHOUGH THE NATION AS A WHOLE MAY HAVE "MOVED ON" emotionally by mid-2006, eight months after the storm, the residents of New Orleans had not. In the wake of Hurricane Katrina, hundreds of lawsuits (including two major class actions in federal district court) were filed against the U.S. Army Corps of Engineers and others,

## About the Authors



**Richard J. Roddewig, CRE**, is president of Clarion Associates, Inc., Chicago. Roddewig has more than 30 years of experience as a real estate counselor and works on counseling assignments across the United States. Much of his work is focused on expert testimony in large real estate related litigation assignments. He has authored, co-authored, edited or contributed to 11 books and more than 50 articles in professional journals. A past chair of the Midwest Chapter of The Counselors of Real Estate, Roddewig has an undergraduate degree from the University of Notre Dame and both a juris doctor and a master of arts degree from the University of Chicago.



**Gary R. Papke, CRE**, is senior vice president of Clarion Associates, Inc., Chicago. Papke has more than 25 years experience as a real estate and planning counselor, following a ten year career as a public sector planner. In recent years, he has focused much of his work on analysis of the impact of environmental contamination on real estate. He has published articles in *The Appraisal Journal* and *Planning magazine*, and has been an adjunct lecturer at the University of Illinois at Chicago and at DePaul University. Papke holds a bachelor of arts degree in history from Gustavus Adolphus University and a master of urban planning degree from the University of Illinois.



**Charles T. Brigden, CRE**, is vice president of Clarion Associates, Inc., Chicago, and has nearly 20 years experience in real estate counseling and development economics, including major real estate valuation and consulting assignments in more than 25 states. Brigden directs Clarion Associates' valuation and analytical efforts involving large-scale environmental contamination assignments. He holds a bachelor of science degree in architecture and a master of science degree in real estate, both from the University of Wisconsin.

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

asserting that the negligence of the defendants in designing and building the dike system protecting New Orleans (as alleged in the *TIME Magazine* piece above) had resulted in “extensive harm and loss of life, and destroying or rendering uninhabitable approximately 160,000 residences and buildings.”<sup>1</sup>

The largest of the class action lawsuits, the so-called “Levee Case”<sup>2</sup> involved somewhere between 140,000 and 180,000 properties in New Orleans proper and parts of Jefferson Parish immediately west of the city itself. The defendants, in addition to the Corps, included two local levee districts, the city, the state, the Port Authority and even the CSX railroad.<sup>3</sup> Taken literally, the proposed Levee Case class included all property, residential as well as commercial/industrial and institutional/governmental, vacant as well as improved, owner-occupied as well as rented, within the geographic boundary of the purported class area encompassing much of the city of New Orleans, as well as parts of Jefferson Parish. This included not only

all of the historic residential neighborhoods of New Orleans, such as the Garden District and the Vieux Carré, but also all of the downtown office buildings, French Quarter restaurants, jazz clubs and hotels, hospitals, schools and even universities, such as Tulane, that suffered damage from flooding.

One of the very first issues that had to be decided in the Case was the question of whether a formal “class” should even be “certified” under federal class action standards at the time<sup>4</sup> as embodied in Rules 23(a) and 23(b) of the Federal Rules of Civil Procedure. Under Rule 23(b) there are two essential inquiries federal courts must undertake in cases involving real estate damages. First, the court must determine whether common questions of law or fact predominate over questions and issues affecting only individual members of the proposed class. Second, the court must determine whether certifying a class will result in a more fair and efficient process for handling damage claims than will a property by property analysis.

Figure 1



## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

### THE ROLE OF REAL ESTATE COUNSELING IN CLASS ACTION CERTIFICATION HEARINGS

Real estate counseling plays a critical role in class action determinations under Federal Rule of Civil Procedure 23(b). Among the key counseling questions to be answered in the Levee Case were the following:

- What are the types of “real property damages” that Hurricane Katrina caused?
- Is there a common method for distinguishing between the various types of damages caused by Hurricane Katrina? The Levee Case involved only claims for damages due to flooding (not wind or rain). Thus, in order to answer this question, a real estate analyst must be able to distinguish damages due to wind or rain from damages due to inundation/flooding.
- From a real estate counseling perspective, do the variations between properties both before and after Hurricane Katrina make it necessary to consider damages on a property-by-property rather than class-wide basis?
- Is there a uniform, consistent and common method for measuring the impairment to real property caused by Hurricane Katrina? Or can such assessment be made only by rigorous property-by-property analysis in individual damage hearings and determinations?
- What are the appropriate and accepted methods to determine the actual and potential impairment to properties due to inundation/flooding from a hurricane? Can these methods be fairly and efficiently applied by class area-wide or subclass area-wide treatment (as opposed to property-by-property treatment)?
- Are damages due to inundation/flooding from Hurricane Katrina, that may later be determined to be

present at one or more specific properties, likely to be typical of all homes or other properties in the proposed class area, or all homes or properties in any particular subclass or neighborhood, or all homes or properties on a particular block (square) in New Orleans or Jefferson Parish?<sup>5</sup>

- If there are variations in the damages from one property to the next, what are the causes?
- Would the effect of the hurricane on prices and real estate markets be only temporary? If so, how long would the temporary effects last, and how can property owners be fairly compensated for temporary rather than permanent damages?
- Is there any type of “statistical technique,” such as hedonic regression modeling (sometimes called “mass appraisal”), that can fairly and efficiently measure real property damages better than a rigorous property-by-property, block-by-block, and neighborhood-by-neighborhood analysis of the damage to New Orleans?

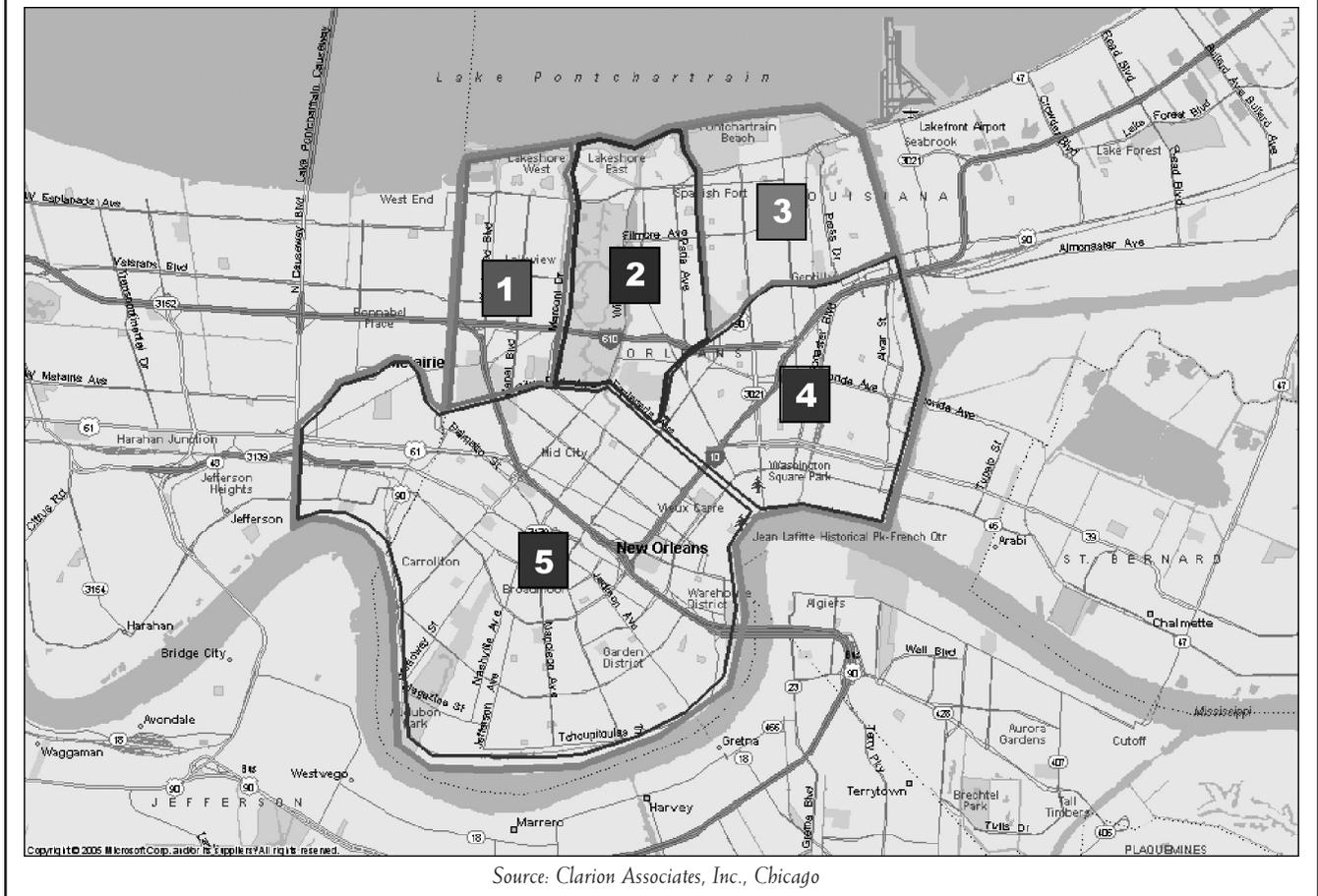
We were retained by the various law firms and the U.S. Department of Justice representing the Corps and the other public entities (and the CSX railroad) to answer those and other questions related to the appropriateness of class certification.

### NEW ORLEANS, ITS NEIGHBORHOODS, AND THE FIVE PROPOSED SUBCLASS AREAS

Attorneys for the plaintiffs in the Levee Case class action proposed<sup>6</sup> a “Greater New Orleans Metro Class” (GNOM) and five subclasses. As shown in Figure 2, the class and subclasses comprised a very large area, including all of Orleans Parish west of the Industrial Canal and on the East Bank of the Mississippi River, as well as a portion of Jefferson Parish.

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

Figure 2  
The Proposed Levee Case Class and Subclass Areas



The geographic boundaries defined by the plaintiffs’ attorneys’ five subclasses correspond to the topography of the class geography—topography being a major factor in determining the source of water and that water’s ultimate location.

Figure 2 raised a number of other important real estate counseling questions for us including the following:

- Do the proposed boundaries make any sense from the point of view of generally accepted real estate analytical methods?
- More important, did all properties in each subclass area suffer similar damages due to flooding and similar loss of property values and use and enjoyment?

### SCOPE OF THE COUNSELING RESEARCH AND INVESTIGATION

The scope of the assignment included the following counseling activities:

- Conversations and meetings with attorneys for the defendants and review of the complaints and other pleadings and documents produced in the litigation;
- Review of documents, data and expert reports produced by attorneys for both plaintiffs and defendants;
- Review of books, publications and seminars of the real estate appraisal profession that deal with the valuation of properties potentially damaged by various types of impairments and detrimental conditions;
- Research into past studies of the impacts of flooding events on real estate markets;
- Research on the real estate market in New Orleans “before and after” Hurricane Katrina, including review of newspaper and other press accounts about how various neighborhoods in New Orleans and Jefferson Parish did—or did not—recover during the first two years following the hurricane;

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

- Review of maps and data related to flood levels in various parts of the New Orleans metropolitan area as a result of Hurricane Katrina;
- Inspection of the various Orleans and Jefferson Parish neighborhoods proposed to be included in each of the five proposed subclass areas;
- Exterior inspections of the improvements on the properties specifically identified by plaintiffs as “representative” of the entire class, and interior inspections of those properties made available by plaintiffs;
- Review of census data and other demographic information related to the New Orleans metropolitan area, the five proposed subclass areas, and representative neighborhoods selected for purposes of additional market analysis;
- Review and analysis of real estate transaction data in the New Orleans area before and after Hurricane Katrina;
- Review of data and information produced by other demographic and real estate market experts retained by the defendants;<sup>7</sup> and
- Review and comment on real-estate-damages-related expert reports produced by the plaintiffs.

### TYPES OF REAL ESTATE-RELATED HURRICANE KATRINA DAMAGES

Our preliminary review of all that data indicated that Hurricane Katrina caused damage in a variety of ways that included wind damage, rain damage, and damage from windblown objects and toppled trees in addition to damage from flooding. This created issues in the counseling assignment because actual dollar losses due to flooding (the basis for the claims against the Levee Case defendants)<sup>8</sup> had to be separately quantified and differentiated from dollar losses due to wind, rain and other factors. Consider the difficulty, for example, of determining whether the post-hurricane mold infestation in thousands of homes that experienced both wind damage to windows and roofs, as well as flooding, was caused by the floodwaters from breached levees or by the 12-plus inches of rain that fell.<sup>9</sup> Further damage to real property was caused by the subsequent loss of electricity, and to some properties as a result of looting and arson. Our on-site inspections of homes and neighborhoods indicated that the damage varied from neighborhood to neighborhood and even from property to property within the

same neighborhood or on the same block, depending upon the interplay between these various hurricane-related impacts.

From the point of view of the real estate marketplace, we advised our clients that these damage claims could be separated into three broad groups:<sup>10</sup>

- Damages due to the impact of Hurricane Katrina on real estate prices, values, use or marketing time;
- Damages due to increased operating expenses or lost real estate-related income; and
- In certain instances, damages due to property repair or restoration costs that exceed any resulting increases in prices or values over pre-flood levels.

In addition we advised our clients that the damages due to “loss of use and enjoyment” would also vary from property to property, depending on answers to the following additional questions:

- Has the property already been sold to a “post-Katrina” buyer or is it still being held by the “pre-Katrina” owner?
- Is the property an owner-occupied property or is it rented to a tenant?
- Has the property already been repaired/rehabilitated post-Katrina, or is it still awaiting repair?

### ACTUAL IMPACTS ON POST-KATRINA PURCHASE PRICES VERSUS POTENTIAL IMPACT ON FUTURE PRICES/VALUES

Our research indicated that in the first two years following the hurricane there had been more than 6,900 real estate transactions in those portions of New Orleans and Jefferson Parish in the proposed Levee Case class area. Therefore, of the thousands upon thousands of properties in the proposed Levee Case class area, real estate damages to at least 6,900—and likely many hundreds or thousands of additional properties<sup>11</sup> sold post-Katrina—had to be measured in terms of a comparison between: (1) the actual price received in a completed post-Katrina real estate transaction; and (2) the expected price had Katrina not hit the city.

Among the questions related to real estate-related damages with respect to each property in the Levee Case class that sold post-Katrina were the following:

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

- Was the purchase price lower than it would have been in the absence of Hurricane Katrina?
- Was the marketing time longer than it would have been if the hurricane had never happened?<sup>12</sup>
- Was the cost of sale higher than it would have been in the absence of Hurricane Katrina?
- Did the sale occur before or after post-Katrina repair/rehabilitation, and did the owner recoup some or all of the repair/rehabilitation costs in the sale price?

For properties that had not yet sold post-Katrina, the damages inquiries and calculations were substantially different. To determine damages that may be incurred by future sellers of properties, the following questions, among others, needed answers:

- What is the current market value of each of the properties in the proposed Levee Case class area?
- How will the current market value of each property change in the future as the New Orleans real estate marketplace continues to recover from Hurricane Katrina?
- How long will it take for prices, marketing times, and costs of sales in the New Orleans real estate marketplace to recover from Hurricane Katrina?
- Which, and how many, properties would likely sell during the period of time when the New Orleans marketplace is still recovering?
- If the property has been repaired/rehabilitated post-Katrina, will the future sale recoup some or all of the repair or rehabilitation expenditure?
- When is the appropriate specific date in time to measure all of the potential types of damages to as-yet-unsold properties?

### IMPACTS ON OWNER-OCCUPIED VERSUS RENTED PROPERTIES

The damage calculations (and real estate price/value issues) were also quite different for rental properties than for owner-occupied properties. According to the 2000 census, only about 46.5 percent of the 188,251 occupied housing units in the area were owner-occupied. The remaining 53.5 percent were occupied by tenants.<sup>13</sup> That meant there were about 100,000 rented homes and apartments potentially impacted by Hurricane Katrina.

In addition there were tens of thousands of non-residential structures including office buildings, retail stores, restaurants, gas stations, hotels, industrial buildings, warehouses, etc., in the proposed Levee Case class area. Many, if not most, of these income-producing properties were rented to tenants pre-Katrina. The damage calculations for each of these types of rental properties would be quite different (and possibly more complex) than those for owner-occupied single-family residences.

The damage calculations for a non-residential property would depend upon its pre-Katrina status as owner-occupied or tenant-occupied. Among the additional damage issues/questions for rented, income-producing properties, were the following:

- What was/were the market rental rate(s) for the property pre-Katrina compared to post-Katrina?
- What was/were the actual contract rent(s) for the property pre-Katrina compared to post-Katrina?
- Is/are the post-Katrina contract rent rate(s) higher or lower than the market rent pre-Katrina?
- What was/were the remaining term(s) of the lease(s) pre-Katrina and what is/are the remaining term(s) of any post-Katrina lease(s)?
- What was the vacancy rate and collection loss factor pre-Katrina and what is it post-Katrina?
- What were the operating expenses pre-Katrina and what are the post-Katrina operating expenses?
- What was the net operating income pre-Katrina and what is it post-Katrina?
- For properties not yet sold post-Katrina: What are the likely future rental rates, operating expenses, vacancy rates, and net annual incomes between current date and date of sale?
- What is the investment risk profile change, if any, comparing pre-Katrina and post-Katrina market and property circumstances?

We advised the clients that answering all of those questions required property-by-property analysis, including analysis of actual lease terms and rents both pre-Katrina and post-Katrina. As indicated by “is/are,” etc., in the above questions, properties with multiple tenants at various rents added to the amount of data needing collection and analysis.

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

The residential rental market presented its own special challenges for our research. Complicating the analysis for determining damages for residential rental properties was the fact that “fair market rents rose an astounding 39 percent from 2005–2006 as renters and displaced homeowners scrambled for the little available habitable rental housing in the New Orleans area.”<sup>14</sup> According to a University of New Orleans study, there had been “an immediate post-storm average rent increase of 42 percent” in Orleans Parish, followed by a “more moderate 5.5 percent” rise through the fall of 2006.<sup>15</sup> And a Brookings Institution study of the New Orleans rental market concluded that rents in 2007 “began to stabilize at these higher levels.”<sup>16</sup> As a result, for residential rental properties in neighborhoods where flood levels were very low and damage could be quickly repaired, the hurricane may actually have increased income and property values.

Once again, we advised the clients that neighborhood-by-neighborhood and property-by-property analysis was the only way to identify those owners of rental housing in the proposed Levee Case class area who had been (temporarily) realizing higher rents during some or all of the post-Katrina period. The net impact of these higher rents might be somewhat mitigated by higher rental property operating expenses post-Katrina;<sup>17</sup> but only a property-by-property comparison of pre- and post-Katrina net operating incomes could fairly and accurately determine the appropriate damage payments to owners of residential rental properties.

Rental increases were also a factor in analysis of the rental market for other types of properties, such as offices and retail stores. In some submarkets, minimally damaged office or retail structures had been able to command higher net rents (after considering any additional operating expenses) for some or all of the post-Katrina period. Neighborhood-by-neighborhood and, in many if not most cases, building-by-building analysis was necessary.

For example, a University of New Orleans study<sup>18</sup> of rents in 14 downtown New Orleans Class A high-rise office buildings found that pre-Katrina rents between January and August of 2005 averaged \$15.42 per square foot compared to fall 2006 rents averaging \$16.60 per square foot, a 7.65 percent increase. Some downtown buildings damaged only slightly by wind, rain or flooding benefited from tenants’ leaving more heavily damaged buildings. Other downtown office buildings remained unoccupied

for a year or more after Katrina.<sup>19</sup> By comparison, in other neighborhoods, or for other types of office buildings, rents increased only modestly, if at all. Once again, as for apartments and rental housing, expenses had typically increased, requiring careful property-by-property comparison of income and expenses pre- and post-Katrina.

The retail sector also would have to be analyzed on a property-by-property basis. Some retail properties were devastated by Katrina, while others were repaired quickly and reopened. A University of New Orleans study reported in March of 2007 that “large amounts of retail space remain unavailable for occupancy” and “some of this space has been or is scheduled for demolition, while the future of other space remains unclear.”<sup>20</sup> In some neighborhoods, Walgreen’s stores, for example, reopened quickly, while competing Rite-Aid stores, sometimes at the same intersection, had not yet reopened even two years after the storm. Gas stations, convenience stores and fast-food restaurants exhibited the same pattern in many New Orleans neighborhoods—some reopened quickly after Hurricane Katrina while others were still closed. Since rent for retail stores is a function of their ability to generate sales, individual analysis of most retail stores would also be necessary.<sup>21</sup>

Hotels were another real estate category in which a wide variety of potential damage scenarios were likely. Some high-rise hotels in downtown New Orleans were heavily damaged by wind and rain, and were closed for repairs for many months following the storm. Others, either not damaged or only lightly damaged, reopened quickly. Some hotels that were able to reopen quickly were able to sign agreements with businesses, corporations, federal agencies or others to provide temporary housing or accommodations for displaced employees, contractors working on recovery efforts, or FEMA and other state/federal agency staffs during their stays in New Orleans. Such contracts, and the resulting impact upon the income stream, needed to be analyzed relative to pre-Katrina circumstances, with room rates, occupancies, etc., likely to vary substantially on a property-by-property basis.

Similarly, some parcels of vacant land, or parking lots, had been rented as temporary FEMA trailer parks, as temporary demolition debris landfills, or as construction material and equipment staging and storage sites. The temporary income from those uses had to be taken into

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

account when calculating the overall impact of Katrina on land values in many neighborhoods. Once again, this would require property-by-property analysis.

### PAST STUDIES OF HURRICANE AND FLOOD EVENTS INDICATE THEY HAVE TEMPORARY IMPACTS

We researched the published literature to learn how other real estate markets had responded to serious flooding events. We discovered that past flooding events (some related to hurricanes) had been studied in a number of situations in the United States, Australia and the United Kingdom. Some of the studies found that real estate markets recovered quite quickly while others found longer periods of recovery. Virtually all of the studies agreed, however, that flooding events produced temporary rather than permanent impacts on prices and values. A number of the studies found that impacts were highly variable, with some properties, property types and neighborhoods recovering faster than others.

Among the conclusions in these studies were the following:

- A survey of the published literature on the impacts of flooding events on real estate markets concluded that “findings from these researches vary greatly.”<sup>22</sup> The survey of the literature concluded, however, that “the impacts of flood events on property values tend to reduce with time elapsed from the event.”<sup>23</sup>
- A study of the real estate impact of the 2000–2002 floods in Great Britain, based on interviews with real estate appraisers, concluded that there is a “progressive, though highly variable, recovery of value over several years provided there is no recurrence.” The study found a median duration of three to four years but “no consensus on how long it takes a flooded property to recover its pre-flood value.”<sup>24</sup>
- A study of the real estate market in an Australian town that was completely flooded in 1990 found that the market recovered within 18 months.<sup>25</sup> The study also found that “trading in property never stopped and there was evidence of entrepreneur activity with houses bought at a discount just after the flood appearing again on the market within four years at a greatly increased price.”<sup>26</sup>
- A study of the real estate market reaction to flooding in two California towns found that properties “did eventually recover to near pre-flood levels, but the length of time that this recovery took varied with depth of flooding.”<sup>27</sup> Houses with lower flood levels recovered quickly and sold at higher prices. In neighborhoods with the greatest flood depths, houses took more than ten years to recover, due in part to the number of abandoned houses in those neighborhoods even many years after the flooding event.
- A study of the housing market in two Houston subdivisions in the wake of widespread 1979 flooding found no decline in housing prices immediately following the flood. Instead, a decline occurred “about one year later when federal flood insurance rates increased substantially.”<sup>28</sup>
- A study of the published literature on flooding impacts found that the impacts varied from one event and location to another. The literature reviewer concluded that “variables other than flooding,” such as variations in neighborhood and property characteristics, were the most important reasons for different impacts: “The factors influencing residential property values are numerous (and to an extent, culturally dependent): lot size; building size; construction type; building age; state of deterioration; number of bedrooms; built-in wardrobes; en-suite bathrooms; carpets; standard of kitchen; garages; swimming pool; constraints on the owners’ ability to develop their home; proximity to shops, transport, schools and work; exposure to air or vehicular traffic noise; local supply and demand; mortgage interest rates; etc.” The author warned that “failure to consider submarkets could lead to incorrect interpretations.”<sup>29</sup>

In the Gulf Coast region of the U.S. there were two clear examples supporting the notion that property value impacts from flood events reduce with the passage of time. The first was Hurricane Betsy, which struck the greater New Orleans area in 1965 and caused extensive flooding in much of the city, including some of the proposed class area. This event was eventually forgotten entirely and/or ignored in the real estate marketplace (residential, commercial, etc.), as particularly evidenced by new development projects in areas that had been seriously flooded and continued to be generally exposed to the same (or possibly even greater) flood risks. In similar fashion, the Gulf Coast of Mississippi was devastated by a 30-foot storm surge associated with Hurricane Camille in 1969. Yet the areas destroyed were virtually entirely redeveloped and even more dynamically so (i.e., multiple casino projects introduced with costs in the

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

hundreds of millions of dollars), though the risk of hurricane/flood damage remained unchanged.

The reaction of those real estate markets in the wake of past flooding events generally confirmed the existence of a “detrimental condition life cycle,” a concept generally recognized by the professional real estate appraisal community. The consensus is that the effect of a detrimental condition, such as may be caused by a hurricane

was no “one size fits all” damage calculation or formula for a particular block, thus no uniform and consistent method for determining damages to all 140,000 to 180,000 properties in the proposed Levee Case on a class basis.

Some key characteristics of the case study areas are summarized in Figure 3.

We began by establishing a boundary for a study area

Figure 3

### Clarion Analysis: Selection of the Five Subclass Case Study Areas

Study Area	Properties in Study Area	Proposed Representative Property	Proposed Subclass	City Planning District
“Belfort”	130	3221 Belfort Avenue	Subclass 2	Mid-City
“Catina”	170	6574 Catina Street	Subclass 1	Lakeview
“Edinburgh”	138	7726 Edinburgh Street	Subclass 5	Mid-City
“Gaines”	90	4656 Gaines Street	Subclass 3	Gentilly
“Stutz”	82	4024 Stutz Street	Subclass 4	Bywater

Source: Clarion Associates, Inc., Chicago

on real estate prices and values, can change over time and, when an impact does occur, is typically temporary rather than permanent.<sup>30</sup>

#### MAKING THE CASE FOR PROPERTY-BY-PROPERTY VERSUS CLASS-WIDE DAMAGES ANALYSIS— IDENTIFICATION OF CASE STUDY AREAS

While all of our research confirmed the need for a rigorous property-by-property analysis as the only way to fairly and accurately assess the damage caused by Katrina flooding, the lawyers with whom the authors were working were concerned that we needed a graphic way to express all of this in a simple and convincing fashion to the federal district court judge.

We recommended that our clients present to the judge some examples of the complexity of the needed analysis. We suggested choosing a representative block or neighborhood in each of the five proposed subclasses and showing graphically how varied these smaller areas were in terms of the factors needing analysis. Each of these study areas was centered on one of the 42 named properties identified by the plaintiffs in each of the five proposed subclass areas.

The purpose of the exercise was to demonstrate that, on a block-by-block basis, there were a variety of factors affecting the actual damage calculation. We believed there

surrounding each of the representative properties, using the following criteria:

- All properties within the city block or square that included the subject property;
- All properties in blocks or squares adjacent to the block that included the subject property.

Boundaries were adjusted for block configuration factors and important neighborhood dividing features (e.g., major arterial streets, railroad corridors, etc.).

From public records, private data services, and data collection in the field, we obtained the following information for each property in each of the five study areas:

#### PROPERTY RELATED DATA

- Address and zip code
- Parcel area
- General property use category and detailed use description (as observed)
- Legal description
- Owner of record
- Construction type
- Stories
- Elevation of first habitable floor

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

### STORM RELATED DATA

- Reported flood elevations
- FEMA damage assessment information
- Photos post-storm

### POST-STORM DATA

- Demolition permits and field observation
- City permits issued
- FEMA trailer status
- Road Home program recordings
- Observations of repair and reconstruction
- Observations of re-occupancy
- Base and post-storm utility utilization
- Blight adjudication status

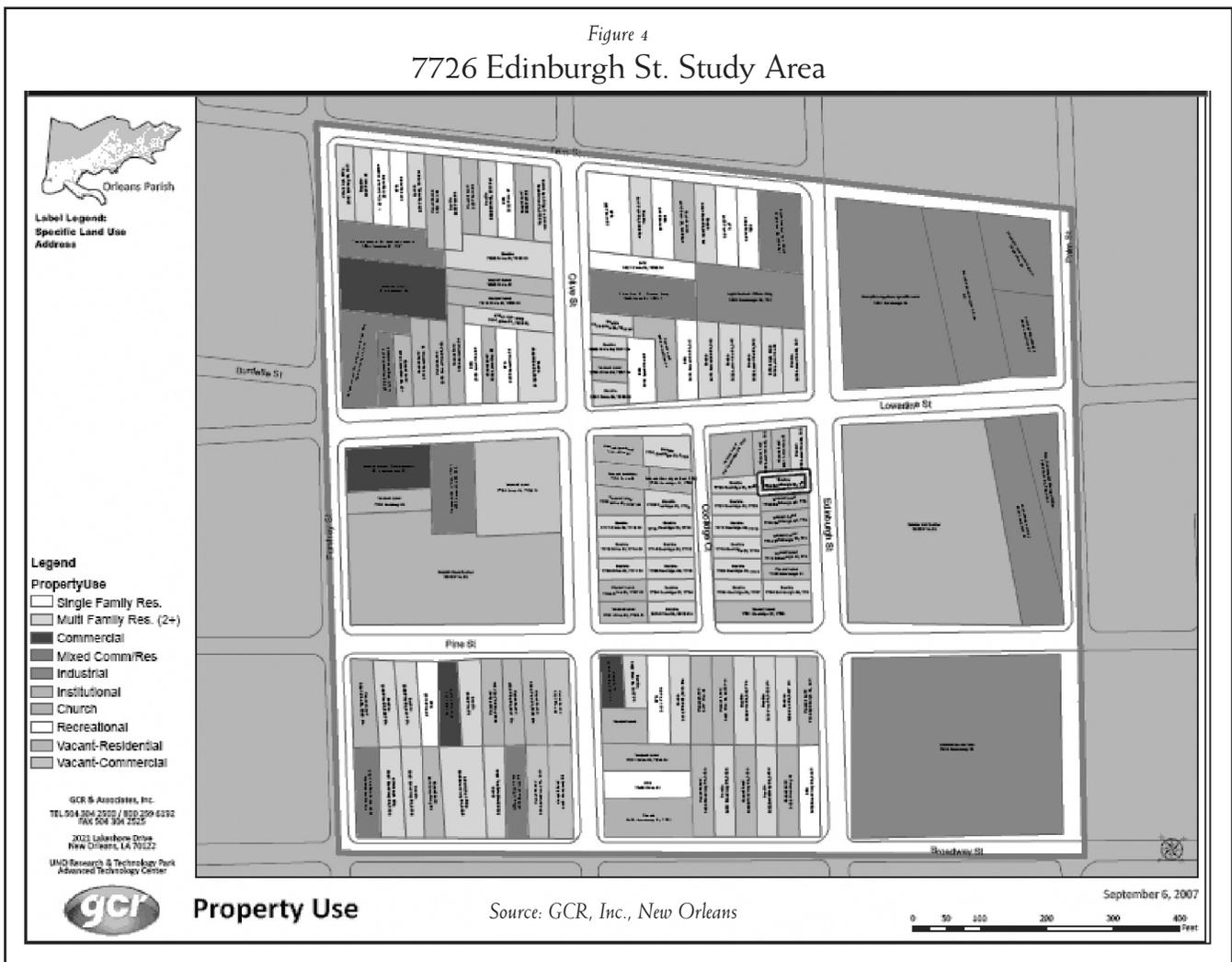
### REAL ESTATE TRANSACTION DATA

- Pre-storm real estate transactions
- Post-storm real estate transactions

We then prepared study area maps focused on three key factors: (1) the variety and pattern of property uses found in each area; (2) variations in the elevation and likely degree of flooding suffered by the various properties in each area; and (3) variations in the patterns of post-Katrina repair and reoccupancy of structures in each area.<sup>31</sup>

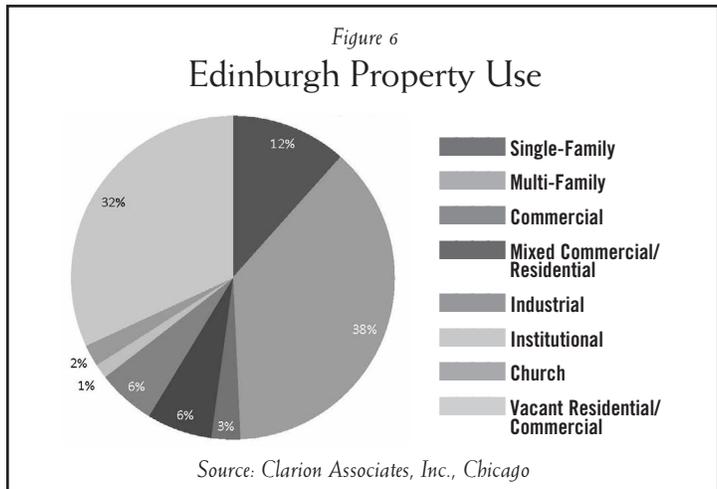
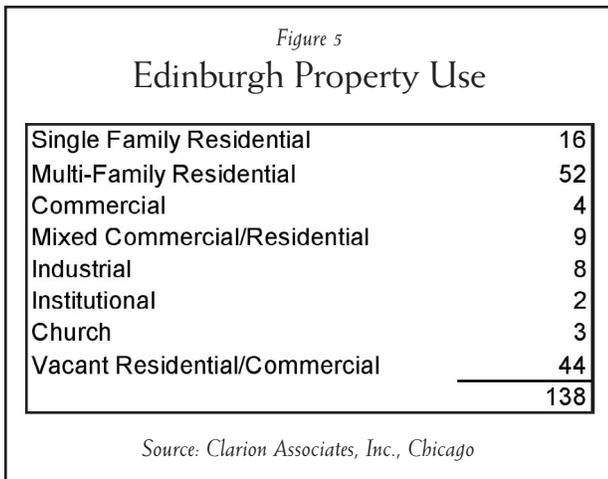
### VARIATIONS IN PROPERTY USE IN THE STUDY AREAS

Figures 4, 5 and 6 show the Edinburgh study area, the most diverse of the study areas in terms of land uses. Only 12 percent of the properties were in single-family use while about 37 percent were in multi-family use. Significant numbers of properties were in various other categories of commercial, industrial and institutional use.

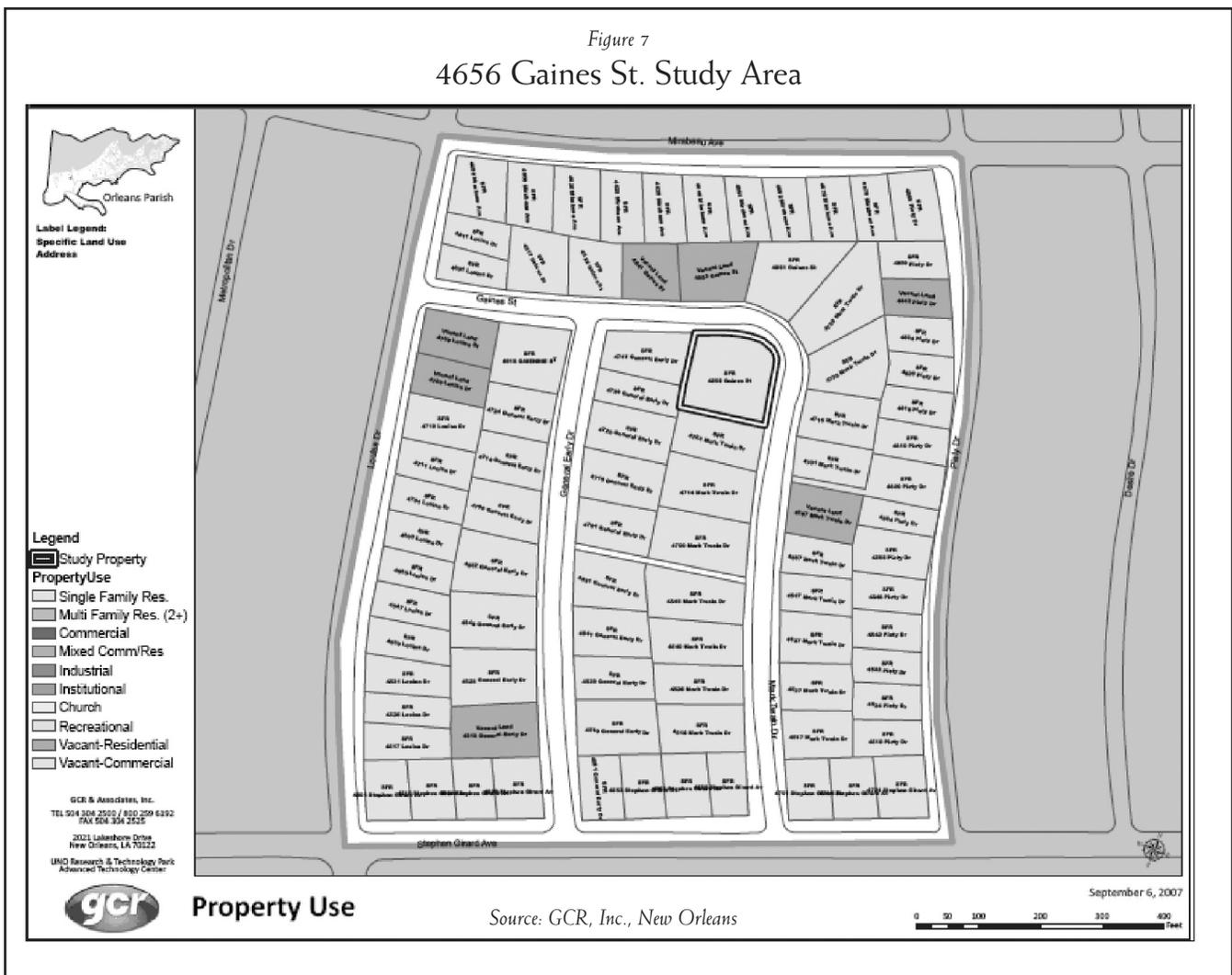


CASE STUDY

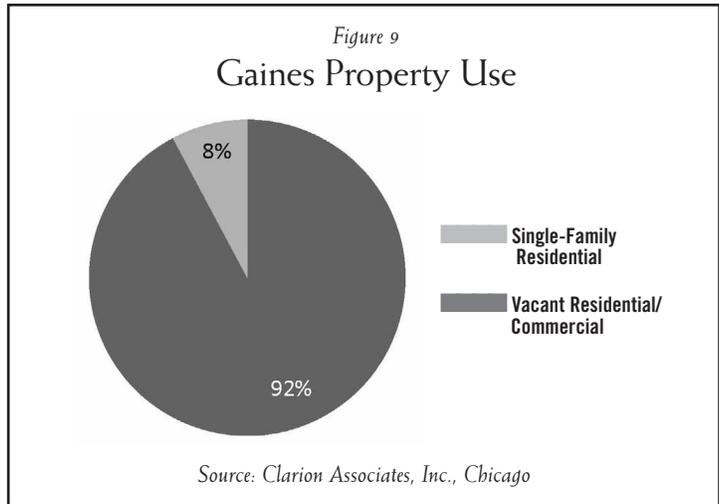
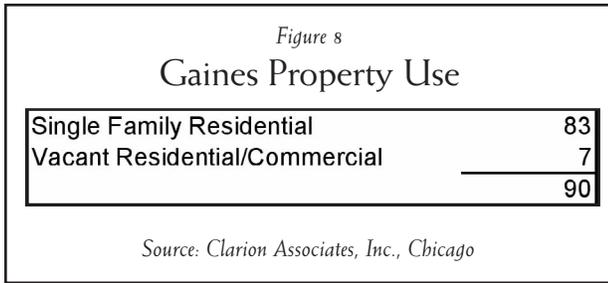
# Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters



By contrast, the Gaines study area was almost exclusively in single-family use as shown in figures 7, 8 and 9 below:



## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

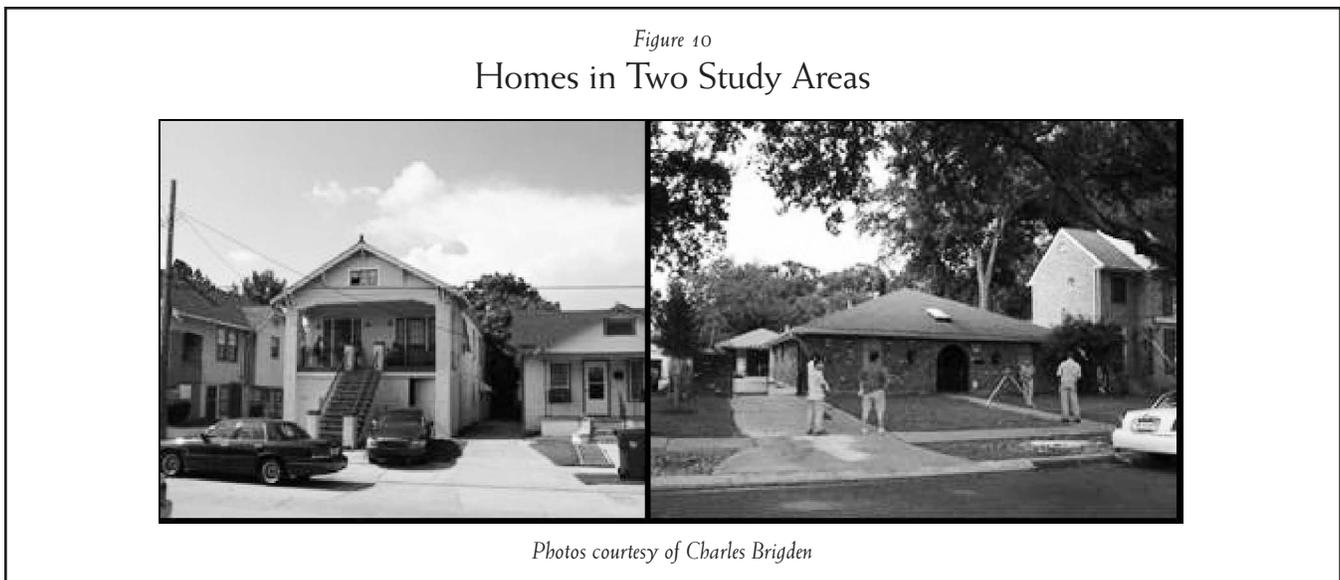


### VARIATIONS IN FLOOD LEVELS IN THE STUDY AREAS

Flood levels in the proposed Levee Case class areas ranged from as little as zero in the Belfort and Stutz neighborhoods to as much as ten feet or greater in the Catina Street neighborhood.

That variation in flood levels was also represented in our study areas. More significant was that within the same neighborhood and even the same block, there could be considerable variation in the effects of flooding. Many houses in New Orleans were built with elevated first floors, some elevated substantially. As a result one house on a block might have suffered little or no interior flooding, while all of the neighboring houses were flooded to a depth of one to four feet.

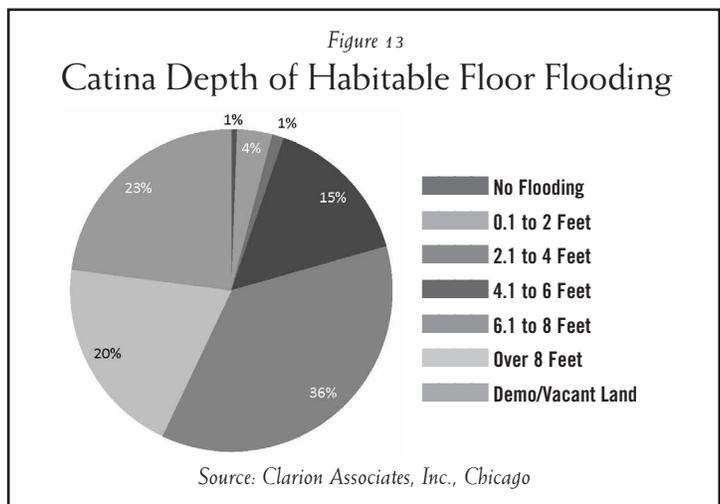
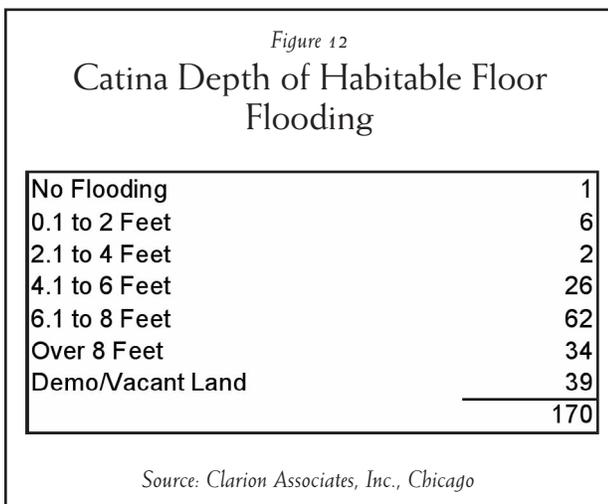
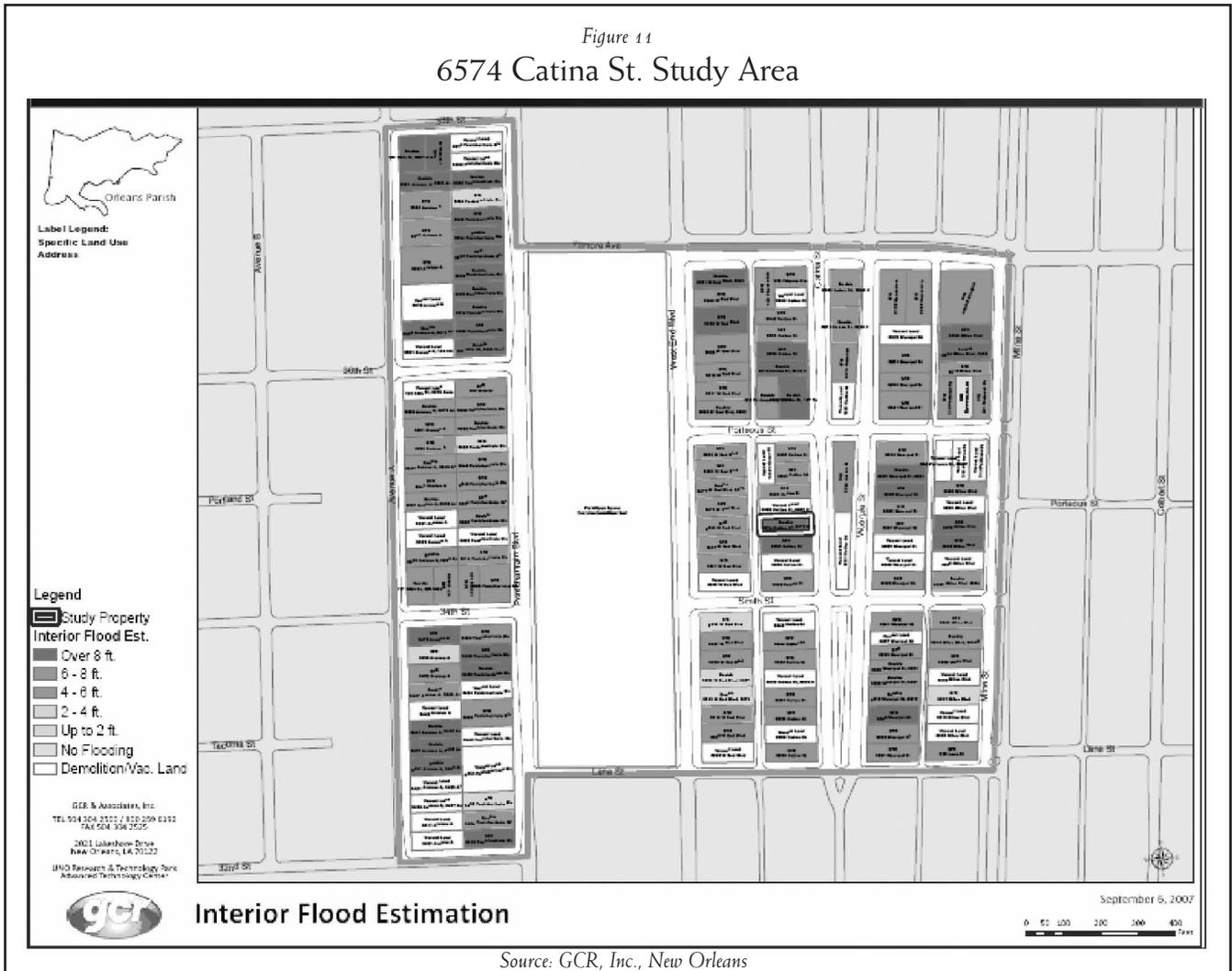
Representative properties in two study areas are shown in Figure 10 below. In the left photo, the house in the middle has its main living area built above a front entrance garage. The house next door (to the right) has a slightly elevated first floor. The estimated high water mark from flooding in this neighborhood ranged from 1.5 to 2.0 feet. In the photo on the right, the single-story home would have been completely inundated by the estimated 6.5 feet of floodwater in this neighborhood; the neighboring two-story home would have had only its first floor (that was largely unimproved and unoccupied) flooded.



## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

Figures 11, 12 and 13 show the wide range of flooding in the Catina Street study area. One house suffered no reported interior flooding while 34 of the 170 properties

in the study area had interior flooding in excess of eight feet, with some exceeding 10 feet or more.



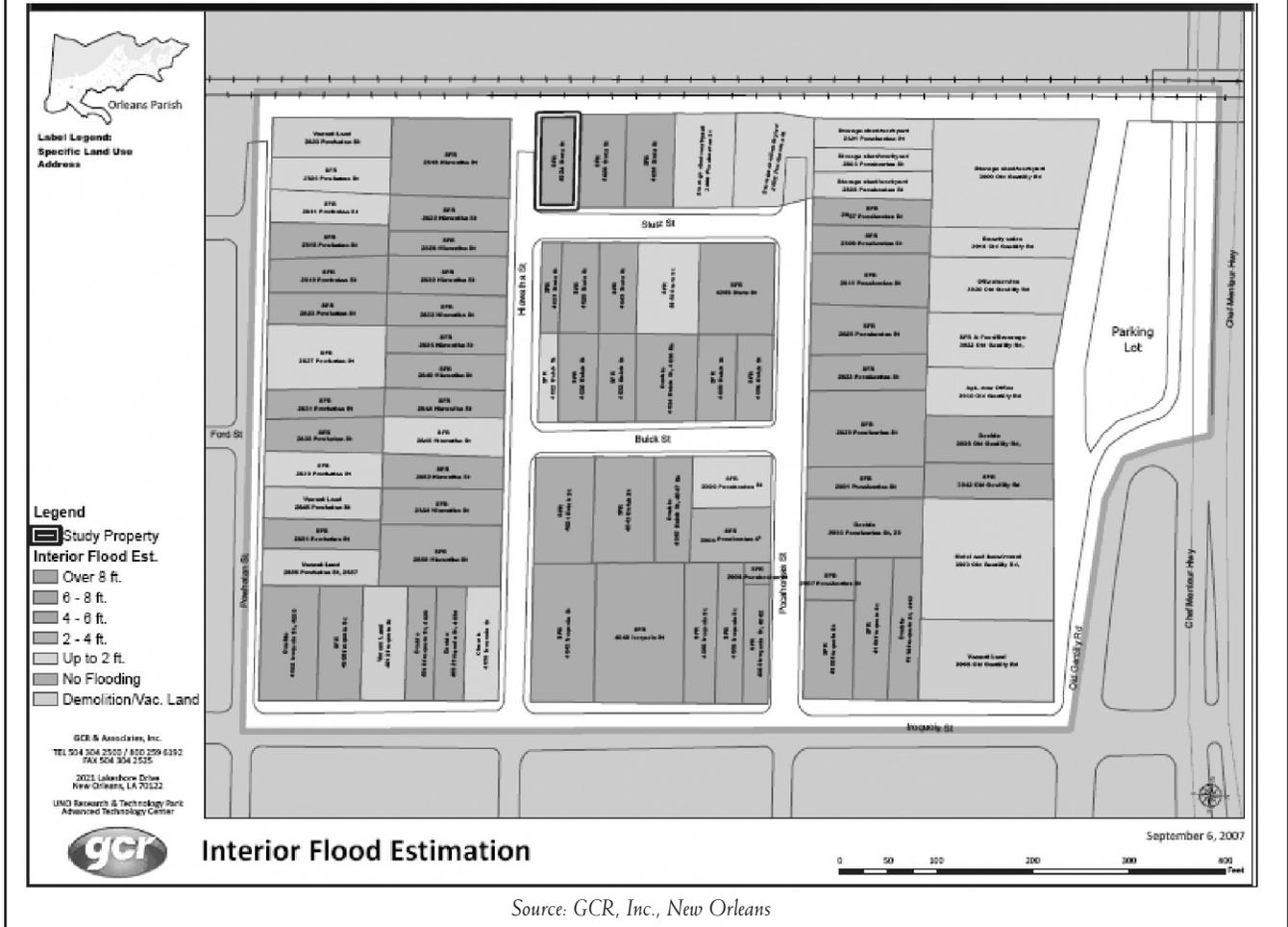
CASE STUDY

# Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

Contrast the wide variation in flooding in the Catina study area with the flooding in the Stutz study area. About 56 of the 82 properties in the Stutz study area, as

shown in Figure 14 below, suffered no interior flooding. But even in that neighborhood, one house was flooded to a depth between two and four feet.

Figure 14  
4024 Stutz St. Study Area



Source: GCR, Inc., New Orleans

Figure 15

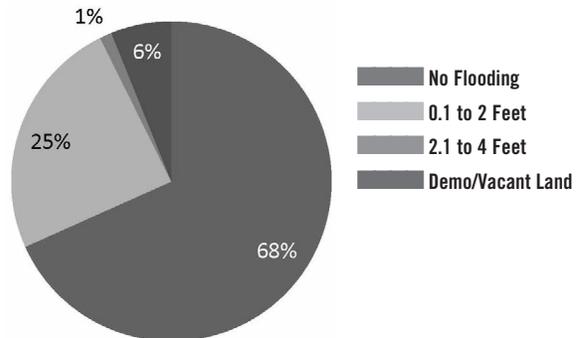
## Stutz Depth of Habitable Floor Flooding

No Flooding	56
0.1 to 2 Feet	20
2.1 to 4 Feet	1
Demo/Vacant Land	5
	<hr/> 82

Source: Clarion Associates, Inc., Chicago

Figure 16

## Stutz Depth of Habitable Floor Flooding

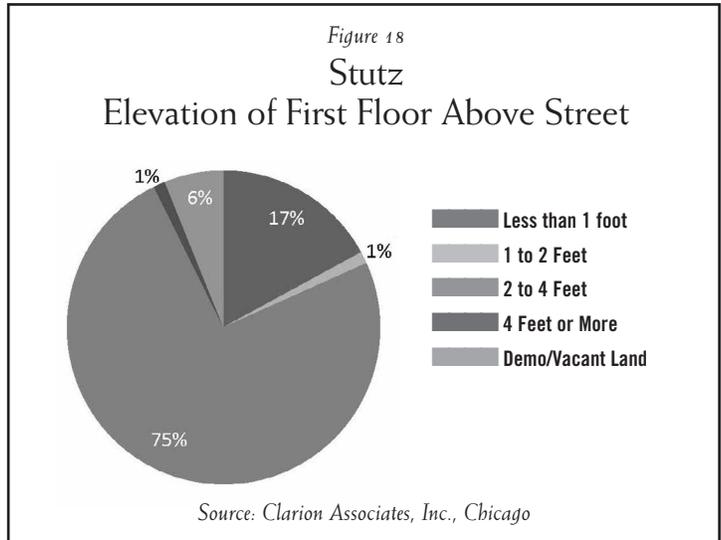
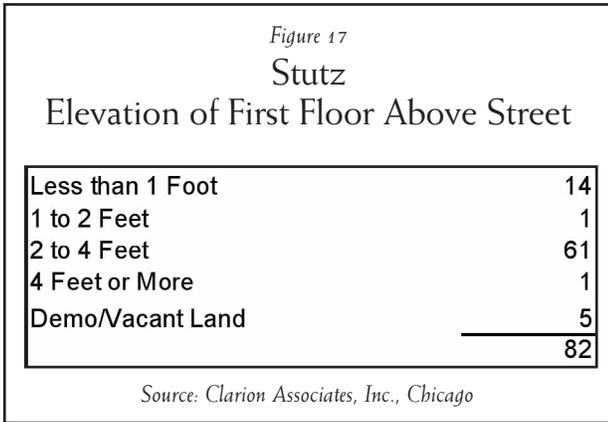


Source: Clarion Associates, Inc., Chicago

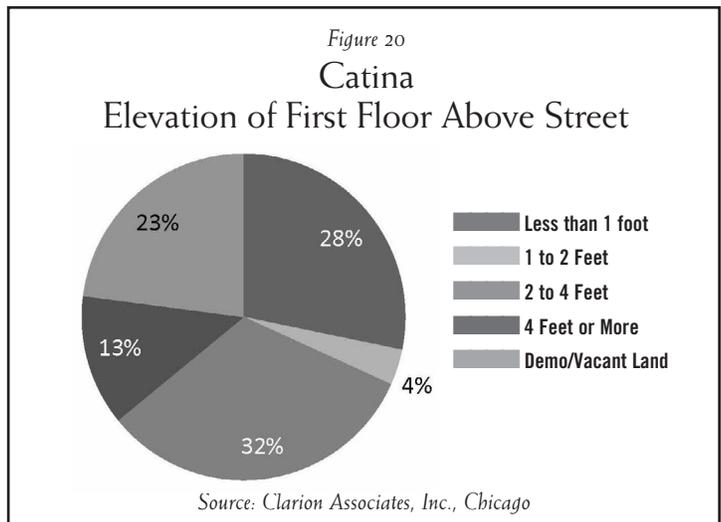
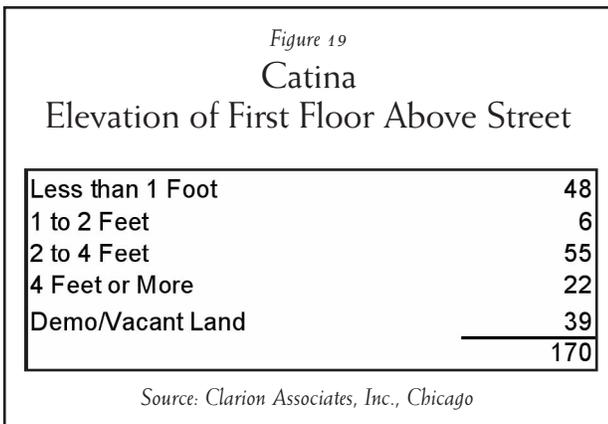
## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

The reason for the relative lack of interior flood damage in the Stutz study area was quite clear—more than 74 percent of the structures had a first floor that was

elevated between two and four feet above grade, as shown in figures 17 and 18 below.



By contrast, in the Catina study area there was a much greater variation in first floor elevations, as shown in figures 19 and 20 below, accounting for the wider variation in interior flooding.



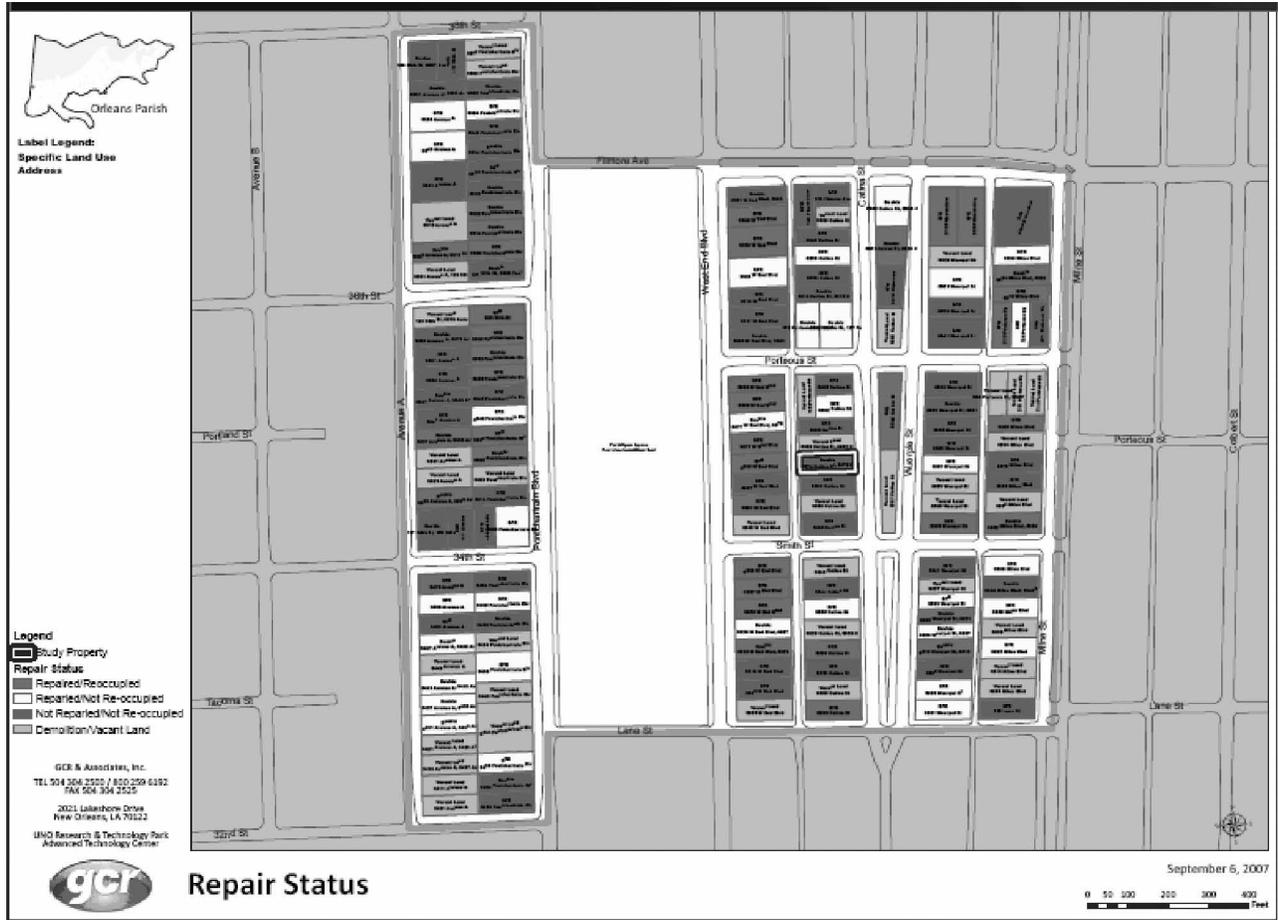
### PROPERTY REPAIR/NEIGHBORHOOD RECOVERY STATUS IN THE STUDY AREAS

Some neighborhoods in New Orleans recovered faster than others. The neighborhoods where residents returned quickly had less chance of suffering from extended vacancy, mold damage, vandalism and other post-Katrina

problems. Figures 21, 22 and 23 show the status of the Catina study area about two years after the hurricane. About 22 percent of the properties in the neighborhood had been repaired and reoccupied, another 20 percent repaired but not reoccupied, and 35 percent still unrepaired and unoccupied.

Real Estate Counseling in Class Action Litigation:  
Determining Real Estate Damages from Natural Disasters

Figure 21  
6574 Catina St. Study Area



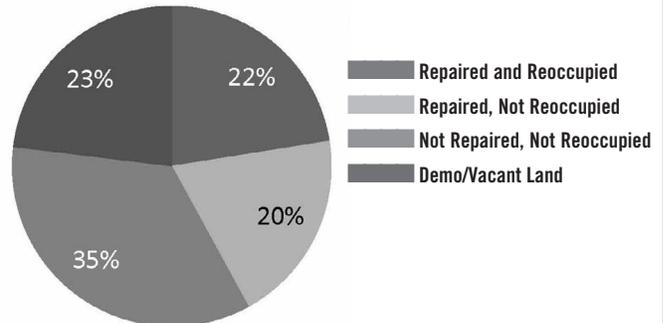
Source: GCR, Inc., New Orleans

Figure 22  
Catina  
Repaired/Reoccupied Status

Repaired and Reoccupied	38
Repaired, Not Reoccupied	33
Not Repaired, Not Reoccupied	59
Demo/Vacant Land	39
	<hr/>
	169

Source: Clarion Associates, Inc., Chicago

Figure 23  
Catina  
Repaired/Reoccupied Status



Source: Clarion Associates, Inc., Chicago

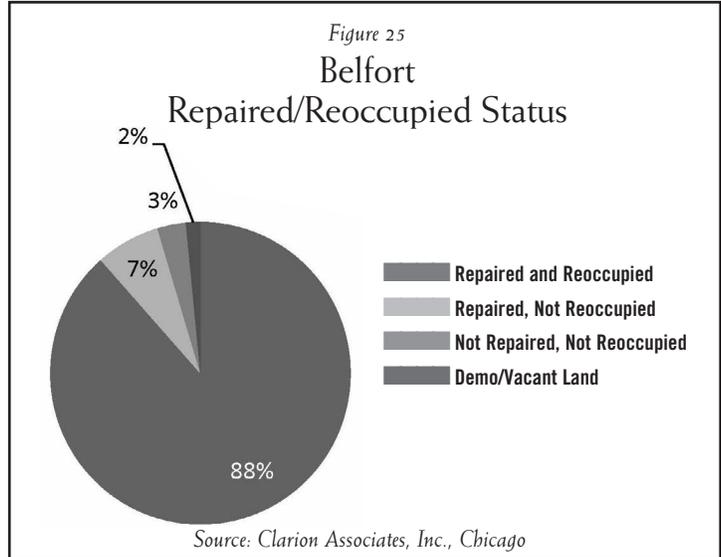
## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

Contrast the Catina study area repair/reoccupy situation with the Belfort study area, where two years after the hurricane 88 percent of the structures had been repaired and reoccupied, as shown below.<sup>32</sup>

*Figure 24*  
**Belfort**  
Repaired/Reoccupied Status

Repaired and Reoccupied	115
Repaired, Not Reoccupied	9
Not Repaired, Not Reoccupied	4
Demo/Vacant Land	2
	130

*Source: Clarion Associates, Inc., Chicago*



### COULD A STATISTICAL METHOD SUCH AS HEDONIC REGRESSION MODELING HAVE DEALT WITH ALL THESE ISSUES AND ACCURATELY DETERMINED DAMAGES?

Attorneys for the plaintiffs claimed that a statistical model such as hedonic regression modeling could have fairly and accurately determined damages on a class-wide basis.

In theory, perhaps. In reality, no. Many in New Orleans did try to determine values in the wake of Hurricane Katrina using automated valuation models and other forms of computerized statistical analysis, including regression modeling. Newspaper reports and analysis of the results by Louisiana state agencies demonstrated the inaccuracies of the attempts.

For example, the Road Home program<sup>33</sup> considered but ultimately rejected the use of local parish tax assessment mass appraisal techniques to establish pre-storm home values. The program managers concluded that such computerized statistical values were highly inaccurate and prone to error when used to establish pre-storm market values. So the program managers then developed their own Automated Valuation Model (AVM).

However, by December 2006, it became clear that the AVMs being used were also subject to a high error rate: “The problems [with AVMs] seem most acute in Orleans Parish, where neighborhoods with checkerboard

demographics and home values aren’t well-suited to ‘average’ calculations of value used in the automatic assessments.”<sup>34</sup> By mid December 2006, the Louisiana Office of Community Development had also acknowledged “serious problems with use of the Automated Valuation Method.” By January 2007, the Road Home program had decided to commission individual property appraisals using local New Orleans appraisers “for as many properties as necessary to get the values right.”<sup>35</sup> In June of 2007, *The Times-Picayune* was still reporting that “the preponderance of erroneous computer-generated values remains one of the biggest bottlenecks in the troubled [Road Home] homeowner aid program.”<sup>36</sup>

Nationally, at the time of Hurricane Katrina, the principal realm in which AVMs were being used regularly was in the packaging of home loans in the secondary mortgage market, where the inaccuracies of AVM value determinations on a property-by-property basis could be balanced against the relatively low loan-to-value ratios and large number of properties in the portfolios. Yet even in the secondary markets, AVMs had been “unable to capture more than the 20 percent share of the greater collateral valuation market that it has taken five years to attain because regulators and lenders are concerned about the accuracy and appropriateness of AVM values without the involvement of an appraiser.” [Emphasis added.]<sup>37</sup> Because of their inaccuracies, the home lending industry had not

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

been widely utilizing AVM products to determine the value of individual properties for mortgage origination: “The reluctance to use this product [AVMs] for first mortgages is due to uncertainty concerning the reliability of the product in high loan-to-value situations.”<sup>38</sup>

Given the unusual character of so many New Orleans neighborhoods even before Katrina, and the additional peculiar circumstances affecting so many New Orleans neighborhoods in the wake of Katrina, AVMs would have been particularly inaccurate at comparing values “before and after” the hurricane hit the city. AVMs have been found to be particularly inaccurate in the valuation of a widely disparate group of properties, or in neighborhoods with a wide variety of unusual property characteristics, as evidenced by the following:

- “AVMs’ accuracy tends to suffer in areas where local housing is highly heterogeneous or where there is a lack of sufficient long-term data . . .”<sup>39</sup>
- “AVMs cannot observe the subject, its condition, safety hazards, lot utility, view, traffic conditions, adjacent negative land uses. They cannot tell if it is really a house (a highest-and-best-use issue). They work poorly for unique properties and for mixed neighborhoods. They can err greatly in either direction.”<sup>40</sup>
- “They [AVMs] must somehow try to adjust for every possible unusual condition, atypical property or different circumstance—an almost impossible challenge.”<sup>41</sup>

But what about formal hedonic regression modeling? Could a model have been developed that would account for every conceivable pre-Katrina independent variable affecting prices in all of the city’s neighborhoods and then determine and distinguish between the effect of Katrina’s wind damage and flooding damage on a neighborhood-by-neighborhood basis?

Courts and judges are increasingly tempted to believe that such statistical studies of real estate markets can be crafted in a way that the damage determinations are fairer and more accurate than property-by-property appraisals.<sup>42</sup>

However, many in the academic community disagree with that assessment. Even some of the strongest advocates of the use of statistical models—used to measure various types of real estate “attributes” and “detriments”—acknowledge the fundamental proposition that hedonic modeling must be applied to a homogeneous market for

the results to have any validity.<sup>43</sup> This makes regression analysis particularly difficult to apply to New Orleans, a city widely recognized to have a multitude of smaller neighborhood submarkets, each with particular market characteristics.<sup>44</sup>

Even if the number of submarkets could be carefully identified and delineated on a map, the number of sales within each submarket might not be sufficient to support the use of hedonic modeling.<sup>45</sup> And given the wide variation in neighborhood and property characteristics before and especially after Katrina hit New Orleans, application of even the most rigorous hedonic modeling post-Katrina would have resulted in widely variable and inaccurate results.<sup>46</sup>

And then there is the additional problem of properly accounting for all of the pre-Katrina and post-Katrina variables in any such model. As pointed out in a Summer 2006 *Real Estate Issues* article by Albert Wilson: “By definition, the hedonic regression modeling ‘analyst chooses a set of independent variables from—in the case of real estate—a very large set of possible variables.’”<sup>47</sup>

That points to the fundamental problem affecting the reliability of hedonic regression modeling: No model can properly account for all of the independent variables that affect prices paid for real property.<sup>48</sup> George Lentz and Ko Wang summarize this fundamental problem as follows:

*Unlike the capital asset pricing model, but similar to the arbitrage pricing theory, hedonic price theory indicates neither the optimal number nor the kinds of variables that should be included in a valuation model (hedonic equation). Furthermore, the problem cannot be resolved empirically. A review of papers that utilize hedonic pricing techniques provides ample evidence that diverse views on correct model specification exist.*<sup>49</sup>

There is no agreement among economists about which factors affecting prices should be included as independent variables in such a model. Scott Atkinson and Thomas Crocker reviewed 15 hedonic property value studies conducted by others. There was little agreement among the studies as to which independent variables should be included—the 15 studies recognized approximately 110 different potential independent variables. However, Atkinson and Crocker found that the number of independent variables used in the models typically ranged between 15 and 18, with one study using 29 and another study only 11.<sup>50</sup>

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

As a result, any model designed to determine the effect on property values of Hurricane Katrina flooding would be subject to the “omitted variable problem.”<sup>51</sup> Another Albert Wilson article summarized his comprehensive review of 90 published and peer-reviewed studies that used hedonic regression modeling to determine the impact of various “detrimental conditions” on real estate prices and values.<sup>52</sup> Wilson found a central methodological flaw<sup>53</sup> endemic to the use of statistical methods to quantify damages: The analysts failed to acknowledge that the result of the statistical testing never isolates the impact due to the factor studied (dependent variable) from the impact due to all other factors not specifically accounted for in the model. Wilson summarized the implications of this flaw in the method as follows:

*Which omitted variables are contributing and how much are they contributing? The included predictor variable no longer represents just itself .... but also some portion of all of the contributing omitted variables. This question is virtually unanswerable.*<sup>54</sup>

Wilson points to that failure to account for all variables as the critical flaw that makes such statistical methods unreliable in measuring actual damages in the real world: “These conditions [inclusion of every possible variable in the model] may be obtainable in a carefully designed laboratory experiment, but the probability of their occurrence for real world observational data is vanishingly small.”<sup>55</sup>

### CONCLUSIONS

In litigation alleging some type of negligence contributed to the damage to real property caused by a natural disaster such as Hurricane Katrina, courts often are faced with the need to determine if “class action” treatment is appropriate. In real estate markets similar to New Orleans in the wake of Hurricane Katrina, the damages analysis is particularly complex.

Given the wide array of types and sources of damages caused by Hurricane Katrina (e.g., wind, rain, flying debris, flooding, looting, power outages, etc.), there was no uniform, consistent and common method to measure the impairment to real property. Only rigorous block-by-block and property-by-property analysis considering the factual characteristics of each property could fairly and accurately measure the damages.

So-called “mass appraisal” techniques such as AVMs are prone to high rates of error and typically cannot fairly,

efficiently and accurately measure real property damages in areas as diverse as the New Orleans marketplace. Other statistical techniques, such as hedonic regression analysis, also present fundamental difficulties in identifying and handling all of the independent variables affecting prices both before and after an event like Hurricane Katrina in the absence of rigorous property-by-property analysis.

The variations between properties, both before and after Hurricane Katrina, made it necessary to consider damages on a property-by-property rather than class-wide basis.<sup>56</sup>

**Authors’ Note:** To date, in the Levee Case, the federal district court judge has not certified class action treatment. A tentative settlement reached before trial is under appeal. ■

### ENDNOTES

1. “In Re: Katrina Canal Breaches Consolidated Litigation, Superseding Master Consolidated Class Action,” Case No. 05-4182 K2, United States District Court, Eastern District of Louisiana, p. 1.
2. The Levee Case refers to Re: Katrina Canal Breaches Consolidated Litigation, Superseding Master Consolidated Class Action, op. cit. at 1, and states: “The Levee Class encompasses all of Orleans Parish north of the Mississippi River and west of the Industrial Canal as well as parts of Jefferson Parish on its east bank. It is comprised of five subclasses that correspond to the topography of the class geography, topography being a major factor in determining the source of water and that water’s ultimate location. (Doc. 9772, Memorandum in Support of Plaintiffs’ Motion for Class Cert. Ex. A, Area & SubClass maps).” The other class action was commonly known as “MRGO,” which is the acronym for the Mississippi River Gulf Outlet. “The MRGO case encompasses the portion of Orleans Parish east of the Industrial Canal, all of St. Bernard Parish and all of New Orleans East. It is comprised of two subclasses: the Lower Ninth Ward and St. Bernard SubClass and the New Orleans East SubClass.”
3. The railroad was named because allegedly one of its gates allowing trains to pass through the flood barriers along the Industrial Canal did not close properly, creating the first breach in the defense system and enabling the floodwaters to invade the city.
4. Since the date the Levee Case was filed in 2005, the U.S. Supreme Court has issued its important decision in *Wal-Mart Stores, Inc. v. Dukes*, Case No. 10-277, the most recent interpretation of the meaning of Federal Rules of Civil Procedure 23(a) and 23(b).
5. There are other counseling questions relevant to the typical class action certification assignment. Plaintiffs in such cases are required to identify specific “representative” plaintiffs, and in class actions seeking compensation for real property damages, this includes identification of representative “properties.” The Levee Case also involved important real estate counseling questions related to whether the 42 properties owned by the 25 plaintiffs, specifically

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

identified by the attorneys for the plaintiffs, were truly “representative” of the tens of thousands and potentially 180,000 residential, commercial, industrial, institutional, governmental, and other types of properties in the purported class area covering most of the city of New Orleans and parts of Jefferson Parish. That issue is not addressed in this case study.

6. As indicated in the Levee Master Consolidated Complaint dated Aug. 10, 2007.
7. Other experts retained by the defendants included GCR & Associates, Inc., a New Orleans based economic analysis firm, and Truax, Robles & Baldwin Appraisers, LLC.
8. The plaintiffs’ Levee Case complaint sought to recover “damages as a result of the inundation/flooding in this area which occurred during and immediately following the landfall of Hurricane Katrina on or about Aug. 29, 2005.”
9. Conditions report from “Hurricane Katrina,” National Oceanic and Atmospheric Administration, National Climatic Data Center, <http://www.ncdc.noaa.gov/special-reports/katrina.html>, updated Dec. 29, 2005.
10. Other types of potential non-real estate damages not considered by us included, for example, damages due to loss of business income, damages due to loss of personal property, damages due to loss of personal income, damages due to the need to rent/buy alternative housing while repairs were undertaken to primary residence, etc. All of these types of potential additional damages may indirectly affect real estate prices and values because of their impact on particular neighborhoods as well as the entire local and regional economy, again emphasizing the need to look at damages on a neighborhood-by-neighborhood, block-by-block, and even property-by-property basis.
11. The 6,900 transactions are as reported by the local multiple listing service. Many thousands of additional properties likely sold without the use of a multiple listing service real estate agent.
12. Damages due to extended marketing time may be measured in terms of the lost opportunity to reinvest the net proceeds of sale at a risk-free rate during the additional marketing period.
13. There were about 215,091 housing units in Orleans Parish pre-Katrina, but only 87.5 percent were occupied. Source: U.S. Census Bureau 2000 Census, as reported by the Greater New Orleans Community Data Center, <http://www.gnocdc.org>.
14. Liu, Amy and Allison Plyer, *The New Orleans Index: Second Anniversary Special Edition*, The Brookings Institution Metropolitan Policy Program and Greater New Orleans Community Data Center, p. 6.
15. University of New Orleans Real Estate Market Data Center & Center for Economic Development, “Metropolitan New Orleans Real Estate Market Analysis,” Volume 39, March 2007, p. 65.
16. Liu and Plyer, op. cit., p. 6.
17. University of New Orleans, op. cit. at 15, p. 57. The study found significantly higher operating costs for apartment complexes.
18. Ibid.
19. Ibid., p. 101. The study reported that the Dominion Tower at 1450 Poydras Street, containing 486,692 square feet, and the 225 Baronne Building remained unavailable for occupancy as of December 2006.
20. Ibid., p. 77.
21. The University of New Orleans study reported that “reoccupancy of some previously damaged properties has been encouraged with incentive rents or modest concessions.” Once again, understanding the effect of such concessions would require careful property-by-property analysis in order to fairly and accurately compensate retail owners for Katrina flood damages.
22. Lamond, Jessica and David Proverbs, “Does the Price Impact of Flooding Fade Away?” *Structural Survey*, Vol. 24, No. 5, 2006, p. 365. The review of the literature found that the largest impact found was 30 percent in a California study of “property flooded to a depth of greater than 10 feet” but “the majority of studies found average impacts below 15 per cent” and in some cases “prices were observed to increase after flooding, perhaps due to betterment on reinstatement.”
23. Ibid., p. 375.
24. “The Impact of Flooding on Residential Property Values: A Report for the RICS Foundation by Liverpool John Moores University and University of Wolverhampton,” September 2004.
25. Labley, D. and L. Cordery, “The Effects of Catastrophic Flooding at Nyngan and Some Implications for Emergency Management,” *Australian Journal of Emergency Management*, Vol. 12, No. 2, pp. 5–9.
26. Lamond and Proverbs, op. cit., p. 366.
27. Tobin, Graham A. and Burrell E. Montz, “The Impacts of a Second Catastrophic Flood on Property Values in Linda and Olivehurst, California,” available at <http://www.colorado.edu/hazards/research/qr/qr95/qr95.html>.
28. Skantz, Terrance R. and Thomas H. Strickland, “House Prices and a Flood Event: An Empirical Investigation of Market Efficiency,” *Journal of Real Estate Research*, Vol. 2, No. 2, Winter 1987, p. 79.
29. Yeo, Stephen, “Effects of Disclosure of Flood-Liability on Residential Property Values,” <http://hdl.handle.net/1959.14/41822>.
30. See, for example, Randall Bell, Orell C. Anderson and Michael A. Sanders, *Real Estate Damages: Applied Economics and Detrimental Conditions, Second Edition*, The Appraisal Institute, 2008.
31. The information represented conditions in the study areas as of our dates of inspection in June, July, August and September 2007.
32. The first floor elevation of about 70 percent of the properties in the Belfort study area were built with first floors from two to four feet or more above street level. This meant that about half the structures in the neighborhood had no interior flooding from Katrina.
33. This program established in the wake of Hurricane Katrina provided grants to homeowners for reconstruction.

## Real Estate Counseling in Class Action Litigation: Determining Real Estate Damages from Natural Disasters

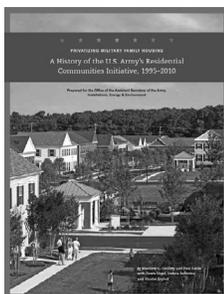
34. [http://www.nola.com/weblogs/pring.ssf?mtlogs/nola\\_tupdates/archives/print217834.html](http://www.nola.com/weblogs/pring.ssf?mtlogs/nola_tupdates/archives/print217834.html)  
<http://www.nola.com/frontpage/t-p/index.ssf?/base/news-7/1166687735146230.xml&coll=1>.
35. *The Times-Picayune*, May 1, 2007.
36. *Ibid.*, June 7, 2007.
37. Linne, Mark R., "A Vision for Valuation: Automated Valuation Models and Appraisal Practice," paper presented at the 23rd Pan Pacific Congress of Appraisers, Valuers and Counselors, San Francisco, Calif., Sept. 16–19, 2006.
38. *Ibid.* AVMs have also begun to be used by some lenders "for internal purposes, either in a quality control environment as an appraisal review tool or for funding on high-quality loans that were kept within the institution such as home equity loans." Victoria Cassens Zillioux, "Automated Valuation Models: Automation vs. Hybrid," paper presented at the 23rd Pan Pacific Congress of Appraisers, Valuers and Counselors, San Francisco, Calif., Sept. 16–19, 2006.
39. White, Brenda B., "Evaluating AVMs," *Mortgage Banking*, September 2006, p. 17, referencing the March 2006 issue of *Mortgage Technology*.
40. Dell, George, "AVMs: The Myth and the Reality; the Problem and the Solution," *Valuation Insights & Perspectives*, The Appraisal Institute, Third Quarter, 2004, p. 13.
41. *Ibid.*, p. 50.
42. See, for example, *Guardian Pipeline, L.L.C. v. 950.80 Acres of Land, et al.*, U.S. Court of Appeals, Seventh Circuit, 525 F.3d 554. 2008.
43. See, for example, George H. Lentz and Ko Wang, "Residential Appraisal and the Lending Process: A Survey of Issues," *Journal of Real Estate Research*, Vol. 15, Numbers 1/2, 1998, p. 16: "Other problems encountered in estimating hedonic pricing equations include the delineation of homogeneous submarkets and the selection of an estimation period." See also V. Bajic, "Housing-Market Segmentation and Demand for Housing Attributes: Some Empirical Findings," *AREUA Journal*, Vol. 13, No. 1, 1985, p. 59: "The assumption of the unified housing market has been challenged by a number of authors....The alternative hypothesis is the absence of short-run equilibrium and market segmentation along structural and neighborhood lines. In this case, one would find significant differences in attribute prices across different market segments. This implies that hedonic price regressions should be fitted separately for each submarket."
44. As already discussed, it was the great number and wide variety of neighborhood submarkets that was found to be the principal reason for the failure of AVMs to accurately predict New Orleans' prices and values as part of the Road Home program.
45. "For a typical appraisal assignment, however, this method (multiple regression/hedonic modeling) has been criticized because it requires far more observations ( i.e., recent sales), than can generally be found in the relevant market area...." Lentz and Wang, *op. cit.*, p. 13.
46. "Neighborhood variables are much more difficult to measure (in a regression model). There does not seem to be widespread agreement in the literature as to what variables constitute appropriate measures of neighborhood quality." Robin A. Dubin, "Estimating of Regression Coefficients in the Presence of Spatially Autocorrelated Error Terms," *The Review of Economics and Statistics*, 1988, p. 468.
47. Wilson, Albert R., "Real Property Damages and Rubber Rulers," *Real Estate Issues*, Summer 2006, p. 26.
48. Halvorsen and Pollakowski describe this fundamental problem as a basic lack of a commonly accepted model for hedonic analysis: "...the appropriate functional form for the hedonic equation cannot in general be specified on theoretical grounds." Robert Halvorsen and Henry O. Pollakowski, "Choice of Functional Form for Hedonic Price Equations," *Journal of Urban Economics*, Vol. 10, 1981, p. 37.
49. Lentz and Wang, *op. cit.*, p. 16.
50. Atkinson, Scott E. and Thomas D. Crocker, "A Bayesian Approach to Assessing the Robustness of Hedonic Property Value Studies," *Journal of Applied Econometrics*, Vol. 2, 1987, p. 28.
51. "Pure regression prediction suffers from an omitted variable problem ..." Peter F. Colwell, Roger E. Cannaday and Chunchi Wu, "The Analytical Foundations of Adjustment Grid Methods," *AREUEA Journal*, Vol. 11, No. 1, 1983, p. 26. See also Kerry D. Vandell, "Optimal Comparable Selection and Weighting in Real Property Valuation," *AREUEA Journal*, Vol. 19, No. 2, 1991, p. 236.
52. Wilson, Albert R., "The Questionable Reliability of 'Peer Reviewed' Real Estate Literature," *Bureau of National Affairs: Expert Evidence Report*, Jan. 5, 2004.
53. The study also found a number of other errors in the studies including the following: failure to properly validate sales data and failure to eliminate inappropriate data (i.e., failure to undertake quality control), apparently because of a belief that sound statistical theory believes gross volume of data is preferable to an appropriately selected set of data.
54. In more scientific terms, he explains this fundamental flaw as follows: "With respect to the quantitative meaning of the predictor variable coefficients, and the related interpretation of those coefficients as the marginal contributor of that predictor variable to the response, these assumptions are true if—and only if—all of the predictor variables have been included in the regression and the predictor variables are absolutely independent of each other....Any relationship between the included and/or omitted predictor variables or any overall relationship not specifically addressed by the regression (e. g., 'location' in its many real estate-related facets), compromise the assumption of independence."
55. Wilson, *op. cit.*, p. 23.
56. Ultimately, in the Levee Case, the federal district court judge did not need to rule on the appropriateness of class action treatment because the case settled before that issue needed to be resolved.

RECOMMENDED READING

# A History of the U.S. Army's Residential Communities Initiative, 1995–2010

by Matthew Godfrey and Paul Sadin, with Dawn Vogel, Joshua Pollarine and Nicolai Kryloff  
(©2012, U.S. Government Printing Office. 349 pages)

REVIEWED BY PETER L. HOLLAND, CRE



THE ABILITY OF CENTRALIZED BUREAUCRACIES and governments to implement change and undertake major initiatives effectively and efficiently is being widely questioned in this presidential election cycle. From time to time, however, there is contrary evidence that a business-like and

structured approach, when applied to the public sector, can deliver dramatic and remarkable results. Many doubted, and continue to doubt, that a free market model for military housing could work. However, extracting the best work that the private development community can deliver and applying that capability and creativity to a public service imperative has proven the viability of a free market response to an intractable problem. Public-private partnerships merely result from the conclusion that the collaboration of the private sector and the public sector can deliver improved results if each focuses on what it does best. And the successful story told in this work is in no small measure due to **the dedication and focus of a fellow Counselor of Real Estate, Mahlon “Sandy” Apgar, IV.** Armed with lessons learned as a senior executive at McKinsey and Co., he played a pivotal role in taking what became known as the Residential Communities Initiative program from concept to reality. According to Apgar, “The supreme test for all parties has been whether soldiers and taxpayers benefit. They have and they will.” ULI also played a role in the strategic concept and Jones Lang LaSalle capably assisted with execution.

This book, prepared earlier this year for the Assistant Secretary of the Army responsible for housing, describes a sometimes arcane and always complex effort to improve, or in fact transform, military housing. With a volunteer army, inadequacy (an understatement on my part) of existing military housing, and a variety of organizational, mission and structural changes within the military such as BRAC, military leaders identified the need for this

## About the Reviewer



**Peter L. Holland, CRE**, is a principal at the Hartford, Connecticut-based consulting firm of Bartram & Cochran, a business that undertakes advisory and brokerage assignments for clients worldwide. Holland has more 25 years of consulting with Fortune 100 companies, and has not-for-profit experience in real estate and shared services including site selection, procurement and sourcing, global outsourcing, business continuity and facilities. He is skilled aligning real estate strategies in support of an organization's key mission and financial operational objectives.

For more than 20 years, Holland was associated with The Hartford Financial Services Group, Inc., one of the nation's largest insurance and investment companies. At The Hartford, he was senior vice president and chief procurement officer responsible for real estate and facilities, procurement, global sourcing, business resiliency, and corporate services. Holland also was COO and CFO of CoreNet Global, the premier organization for corporate real estate professionals and related advisory, service provider and economic development professionals.

Active in The Counselors of Real Estate® since 2006, Holland currently serves as Chair of the Connecticut Chapter.