

# Testing the Reliability of Contingent Valuation in the Real Estate Marketplace

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**F**or more than 50 years, the real estate appraisal community has used three commonly accepted approaches to value: the sales comparison approach, the cost approach, and the income capitalization approach.<sup>1</sup> However, during the same 50 years a number of commentators have asked the following questions: “Why limit ourselves to only three approaches? Are there other approaches that might work as well or better for some types of property valuation assignments?”<sup>2</sup>

As a result, over the years various additional approaches or variants on existing approaches have been suggested as an official fourth approach to value.<sup>3</sup> Some of these proposals have actually worked their way into the appraisal body of knowledge as accepted variations on one of the three standard approaches rather than as a newly crowned fourth approach. For example, discounted cash flow analysis (DCF analysis) is now an accepted variant of the income capitalization approach to value for many types of income-

1. In the first edition of *The Appraisal of Real Estate*, authored by Frederick Babcock and published in 1924, there were eight “methods of appraising” (also called “processes”) rather than three “approaches to value.” It was not until 1932 in Babcock’s second book, *The Valuation of Real Estate*, that he organized his slightly shorter list of seven methods into three approaches to value. For a good discussion of the origin of the three approaches see Norman G. Miller and Sergey Markosyan, “The Academic Roots and Evolution of Real Estate Appraisal,” *The Appraisal Journal* (April 2003): 172–184. Miller and Markosyan characterize the period between 1900 and the 1940s as “the three approaches period” in the development of appraisal theory and practice.
2. To a considerable extent, the acceptance of three approaches as the central focus of real estate appraising has been the result of a series of judicial decisions, legislative enactments, and administrative regulation; see McCloud B. Hodges, Jr., “Three Approaches?” *The Appraisal Journal* (October 1993): 553–564 for a discussion of the evolution of the acceptance of the three traditional approaches.
3. For example, in October of 1989 it was suggested that a new approach to value based upon the way in which worldwide institutional buyers value property was in order; see Howard C. Gelbtuch, “The World of Commercial Real Estate: A Look at the Past 15 Years,” *The Appraisal Journal* (October 1989): 466–472, 472. The same article mentions the use of a gross rent multiplier as another method posited as a fourth approach. An article in March 2004 mentions at least five approaches to residential valuation used in Europe; see Tom Kauko, “Towards the 4th Generation—An Essay on Innovations in Residential Property Value Modelling Expertise,” *Journal of Property Research* 21, no. 1 (March 2004): 75–97.

## abstract

In recent years, contingent valuation has been suggested as an appropriate fourth approach to value. This article reports on results of market-based testing of the reliability of contingent valuation in actual situations in which it has been used to predict prices that would be paid for residential real estate. The testing reveals that contingent valuation did not accurately predict real-world prices paid by actual willing and informed buyers and sellers. Therefore, the reliability of contingent valuation as a technique to develop an opinion of the market value, especially in courtroom situations invoking the *Daubert* test for admissibility of expert testimony, must be carefully considered by appraisers, attorneys, and judges.

producing properties. When first used to value land suitable for subdivision in the 1960s, however, DCF analysis was seen by some as an alternative fourth approach to value.<sup>4</sup>

Similarly, in the 1970s multiple regression analysis,<sup>5</sup> a statistical tool that had been used to a limited extent for the valuation of rural land,<sup>6</sup> began to be seriously considered as a tool to directly predict market prices (and therefore values) and to determine adjustment factors when analyzing comparable sales. It too has been variously labeled a fourth approach to value or an alternative to the traditional three approaches.<sup>7</sup> Regression analysis (hedonic modeling) has not yet become widely accepted in everyday property-by-property appraisal practice, although it is often used in mass appraisal assignments.<sup>8</sup>

In the late 1990s, another technique, contingent valuation (CV), began to be suggested by some as a fourth approach to value. As in the case of regression analysis/hedonic modeling, the first advocates of the use of this technique in the valuation of real estate often were in the academic real estate community.<sup>9</sup> A recent article by Wilson<sup>10</sup> summarizes the report on contingent valuation published by the blue-ribbon panel of the National Oceanic and Atmospheric Administration (NOAA), and analyzes its findings in the context of contingent valuation in real estate valuation assignments. Wilson concludes that the panel's findings mean contingent valuation is inapplicable to the typical real estate valuation assignment.<sup>11</sup>

Contingent valuation has now been applied in enough real-world situations since the 1990s that

its reliability can be tested in the marketplace, and this article presents such an analysis. First, contingent valuation is defined and its originally intended purpose is discussed. Then, some of the articles that discuss attempts to use contingent valuation to predict market prices or market trends are summarized. Next, the ways in which the accuracy and reliability of contingent valuation methods can be tested in the marketplace are summarized, and the results of the testing techniques are presented. These results indicate that contingent valuation was neither an accurate nor reliable indicator of market prices or trends in the market situations in which it was applied. Finally, the article explores some of the fundamental reasons why the predictions of contingent valuation surveys have not matched up with the actual prices paid in the marketplace.

As a result of the demonstrated inability of the contingent valuation methodology to accurately predict market prices, the study concludes that contingent valuation is not an appropriate fourth approach to value of real estate because it does not incorporate the many factors that go into real estate purchase and sale decisions. The technique may continue to be useful in a few unique situations involving non-market goods or real estate situations where few, if any, actual sales can be analyzed.

## Contingent Valuation: Origin and Intended Purpose

The contingent valuation method has been in use for more than 40 years, typically as a technique for measuring the value of noneconomic goods (goods that do not trade in an active marketplace).<sup>12</sup> The

4. For example, see Paul Fullerton, "Development Analysis for the Valuation of Vacant Land," *The Appraisal Journal* (April 1965): 211–225.

5. *The Dictionary of Real Estate Appraisal* defines *multiple regression analysis* as a particular statistical technique, similar to correlation, used to analyze data in order to predict the value of one variable (the dependent variable), such as market value, from the known values of other variables (called *independent variables*), such as lot size, number of rooms, and so on. . . . When two or more variables are used, the procedure is called *multiple regression analysis*." Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 4th ed. (Chicago: Appraisal Institute, 2002), 190. Multiple regression analysis is sometimes called hedonic modeling.

6. For a brief history of the early days of the appraisal profession's use of regression analysis, see Richard W. Bruce and Darrell J. Sundell, "Multiple Regression Analysis: History and Applications in the Appraisal Profession," *The Real Estate Appraiser* (January-February 1977): 37–44.

7. For example, see Gene Dillmore, *The New Approach to Real Estate Appraising* (Englewood Cliffs, NJ: Prentice Hall, Inc., 1971); and Gene Dillmore, "Notes and Comments: Multiple Regression Analysis as an Approach to Value," *The Appraisal Journal* (July 1972): 459–461.

8. For example, see Jonathan Mark and Michael A. Goldberg, "Multiple Regression Analysis and Mass Assessment: A Review of the Issues," *The Appraisal Journal* (January 1988): 89–109; and Hans R. Isakson, "Using Multiple Regression Analysis in Real Estate Appraisal," *The Appraisal Journal* (October 2001): 424–430.

9. For example, see Gary H. McClelland, William D. Schulze, and Brian Hurd, "The Effect of Risk Beliefs on Property Values: A Case Study of a Hazardous Waste Site," *Risk Analysis* 10, no. 4 (1990): 485–497. The authors were associated with the University of Colorado, Boulder, and the University of California, Davis.

10. Albert R. Wilson, "Contingent Valuation: Not an Appropriate Valuation Tool," *The Appraisal Journal* (Winter 2006): 53–61.

11. Wilson states that among the "compelling" reasons given by the blue-ribbon panel for its findings was that testing of the predictions of contingent valuation studies in non-real estate situations had found that actual willingness to pay was quite different from, and quite lower than, the reported willingness to pay of survey participants.

12. Contingent valuation is one of the 10 approaches to ecosystem valuation identified by Dennis M. King and Marissa Mazzota on a Web site sponsored by the U.S. Department of Agriculture Natural Resources Conservation Service and the National Oceanographic and Atmospheric Administration, <http://www.ecosystemvaluation.org> (last accessed October 24, 2005). Other identified approaches to ecosystem valuation include market pricing, productivity, hedonic pricing, travel cost, damage cost avoided, replacement cost, substitute cost, contingent choice, and benefit transfer.

value conclusions that result from application of the CV method are collectively called non-use values since they exist but relate to items that are not regularly traded (used) in normal commerce.

As early as 1947, contingent valuation was used as a theoretical way to measure the benefits of preventing soil erosion.<sup>13</sup> Practical application of contingent valuation seems to have occurred first in 1958 when the National Park Service used the method to calculate the recreational value of the Delaware River basin.<sup>14</sup> One of the first academic applications of contingent valuation occurred in the early 1960s when it was used in published research to measure the value of a particular recreational area to hunters and wilderness lovers.<sup>15</sup>

The CV technique involves a formal survey process. Participants in the survey are typically asked how much they would be willing to pay for a specific benefit, good, or service. The valuation result is contingent because those surveyed are asked to state their willingness to pay contingent upon the survey's specific hypothetical case or set of conditions. The technique is sometimes called a stated preference method since it is based on what people say they would do given a set of facts. This differentiates contingent valuation from a study of actual sales transactions in the marketplace, sometimes called a revealed preference method, since sales transactions reflect what people actually do in the marketplace rather than what they say they would do. The sales comparison, income capitalization, and cost approaches are revealed preference methods since they are based on actions of actual market participants rather than opinions about hypothetical future actions.

### **Contingent Valuation and Real Estate: Published Studies**

The most frequent uses of contingent valuation in the past few decades have involved natural resources issues, such as air and water quality, outdoor recreation opportunities, wetlands, wilderness areas, en-

dangered species habitat, and scenic views. In these contingent valuation applications, survey participants are often asked what they would be willing to pay to preserve, protect, or improve the quality of the natural resource. This application of the CV method to natural resource valuation issues has gained limited acceptance by the federal government in some situations requiring cost/benefit studies.<sup>16</sup>

Although contingent valuation has traditionally focused on noneconomic goods or goods that do not trade in active marketplaces, a number of real estate economists, appraisers, and analysts have attempted to apply contingent valuation survey methodologies to active real estate markets. Attempts to extend the CV concept to these markets have involved surveys of either prospective buyers (willingness-to-pay surveys) and/or potential sellers (willingness-to-sell surveys). The results of some of these attempts have now been published, and some of these articles have appeared in *The Appraisal Journal*.

There are relatively few published studies, however, examining a specific real estate impact (expressed either in a dollar or percentage effect on actual prices) using contingent valuation methods. Most of these studies involve work done in the context of litigation, especially litigation to determine the impact of contamination on property values. For example, an *Appraisal Journal* article published in 1998 reported the results of a contingent valuation study submitted in class action litigation to determine the impact of alleged airborne emissions from a smelter on neighboring residential property values in North Tacoma, Washington.<sup>17</sup> A 2002 article reporting on a smelter-related litigation study in Corpus Christi, Texas, used contingent valuation to predict the prices that would be paid by homebuyers in affected neighborhoods following the discovery of the contamination and enactment of new Texas requirements for seller disclosure of contamination in residential sales transactions.<sup>18</sup> Another 2002 article summarized results of a contingent valuation study to determine the impact of PCB contamina-

13. Paul R. Portney, "The Contingent Valuation Debate: Why Economists Should Care," *Journal of Economic Perspectives* 8, no. 4 (Fall 1994): 3-18.

14. Keita Kawagoe and Nao Fukunaga, "Identifying the Value of Public Services by the Contingent Valuation Method (CVM)," *Nomura Research Institute Papers* no. 39 (December 1, 2001): 3.

15. Robert Davis, "The Value of Outdoor Recreation: An Economic Study of the Maine Woods" (doctoral dissertation in economics, Harvard University, 1963); Davis's paper is discussed in Portney, 3.

16. Although it has been criticized as being unreliable and prone to bias, the natural resource damage application of the concept has been upheld by a United States District Court of Appeals, see *State of Ohio v. United States Department of Interior*, 880 F.2d 423 (D.C. Cir 1989). For a discussion of the concept as applied by federal agencies, see "Report of the NOAA Panel on Contingent Valuation," 58 Fed Reg 4601 et seq. (1993); and United States Water Resources Council, *Economic and Environmental Principles for Water and Related Land Implementation Studies* (Washington, DC, 1983).

17. Bill Mundy and David McLean, "Using the Contingent Value Approach for Natural Resource and Environmental Damage Applications," *The Appraisal Journal* (July 1998): 290-297.

18. Hank C. Jenkins-Smith et al., "Information Disclosure Requirements and the Effect of Soil Contamination on Property Values," *Journal of Environmental Planning and Management* 45, no. 3 (2002): 323-339.

tion on residential neighborhoods in Aniston, Alabama (once again, in a litigation setting).<sup>19</sup> A 2003 article reported the results of a contingent valuation study of the effect of environmental information disclosure requirements on future real estate transactions in a residential neighborhood near a concrete products and quarrying facility in El Paso, Texas.<sup>20</sup> A 2005 *Journal of Real Estate Research* article detailed the results of a study of various contingent valuation studies done in eight states to determine the impact of leaking underground storage tanks (LUST) on nearby property values.<sup>21</sup> A 2005 *Appraisal Journal* article summarized the use of a contingent valuation survey to estimate the discount to value for toxic mold.<sup>22</sup>

### Methods for Testing the Reliability of Contingent Valuation

There have now been enough attempts to use contingent valuation, and other survey-based techniques to measure economic damages to real estate, that the reliability of these nontraditional and nontransactional methods can be tested in the actual, real-world marketplace.

Among the methods that can be used to test the validity and reliability of the contingent valuation predictions are the following:

- Comparison of the prices actually paid in an entire, “fully informed” marketplace to the prices predicted for that marketplace by contingent valuation surveys done before the market became fully informed. This can be done in situations in which the marketplace has become fully informed with the same information that was used in the survey process.<sup>23</sup>

- Comparison of the prices actually set or paid for individual properties by fully informed survey participants. This can be done by analyzing the real world decisions made by actual respondents to the surveys. Some of the buyers or sellers<sup>24</sup> in the survey process may have actually indicated that they were already fully informed about the survey information before they answered the survey questionnaire. If so, the prices they set as sellers or paid as buyers should reflect the actual prices that fully informed sellers and buyers were willing to accept or pay. Other survey participants, although not fully informed before they completed the survey process, became fully informed as a result of participating in the survey. The prices they subsequently actually set as sellers, or paid as buyers, would therefore provide a test of the accuracy of the contingent valuation survey predictions.

- Comparison of the prices actually set or paid by other sellers or buyers who, in one manner or another, can be determined to have possessed the same (or more) information at the date of sale or purchase as the survey participants, and therefore to have been as fully informed as (if not more informed than) survey participants.

In litigation assignments, testing the reliability of contingent valuation is especially critical in the wake of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>25</sup> and related cases requiring the courts to prescreen expert testimony to assure its reliability and relevancy.

The study presented here tests the reliability of survey-based contingent valuation determinations

19. Robert A. Simons, “Estimating Proximate Property Damage from PCB Contamination in a Rural Market: A Multiple Techniques Approach,” *The Appraisal Journal* (October 2002): 388–400.

20. Robert P. Berrens et al., “The Effect of Environmental Disclosure Requirements on Willingness to Pay for Residential Properties in Borderlands Community,” *Social Science Quarterly* 84, no. 2 (June 2003): 359–378.

21. Robert A. Simons and Kimberly Winson-Geideman, “Determining Market Perceptions on Contamination of Residential Property Buyers Using Contingent Valuation Surveys,” *Journal of Real Estate Research* 27, no. 2 (April–June 2005): 193–220.

22. Robert A. Simons and Ron Throupe, “An Exploratory Review of the Effects of Toxic Mold on Real Estate Values,” *The Appraisal Journal* (Spring 2005): 156–166.

23. Proponents of the CV process sometimes claim that the information provided in the survey process makes the survey participants more informed than typical actual buyers in the marketplace. For example, Mundy and McLean (296–297) state that the participants in the survey became fully informed about the contamination situation through the survey process. Simons (398–399), and Simons and Throupe (161) indicate that the survey gave participants full information about the contamination situation addressed in their studies. However, Appraisal Standards Board Advisory Opinion 22 (AO-22) in discussing the definition of market value states that a market value appraisal is “based on whatever the ‘normal’ or ‘typical’ conditions are in the marketplace,” including typical knowledge and information. As Wilson (56) notes, the CV survey process places “arbitrary conditions on what the market ‘should have known’,” resulting in a hypothetical value estimate not in accordance with the accepted definition of market value that is based upon buyers being well informed or well advised rather than fully informed.

24. In contingent valuation surveys, prospective sellers are surveyed in order to determine the price that the marketplace presumably would be “willing to accept” and prospective buyers are surveyed to determine the price that the marketplace presumably would be “willing to bid” or pay.

25. *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 469 (1993). The *Daubert* test was extended to technical but non-scientific experts, such as real estate appraisers, by *Kumho Tire Company, Ltd. v. Carmichael*, 526 U.S. 137, 119 S. Ct. 116, 7143 L. Ed. 2d 238 (1999). The implication of these cases for expert appraisal witnesses has been discussed in a number of *Appraisal Journal* articles, including Richard W. Hoyt and Robert J. Aalberts, “New Requirements for the Appraisal Expert Witness,” *The Appraisal Journal* (October 1997): 342–349; and Richard J. Roddewig, “Junk Science, Environmental Stigma, Market Surveys, and Proper Appraisal Methodology: Recent Lessons from the Litigation Trenches,” *The Appraisal Journal* (October 1999): 447–453.

in four marketplace situations in which surveys were used to predict damages. The four situations where the reliability of the methodology is tested are North Tacoma, Washington; Corpus Christi, Texas; Crystal Springs, Mississippi; and Columbus, Mississippi. In each case, the survey-based methodology led the real estate expert to predict substantial decreases in residential home prices as a result of the contamination, but the predicted decrease in prices failed to actually occur.

## **Testing the Reliability of Contingent Valuation: Analyzing Actions in a Fully Informed Marketplace**

### **The North Tacoma, Washington, Testing Process**

The 1998 contingent valuation article by Mundy and McLean summarizes the authors' survey-based analysis of the impact of contaminated soil containing arsenic, lead, and other heavy metals on property values in neighborhoods around an ASARCO smelter in North Tacoma, Washington.<sup>26</sup>

The ASARCO class action litigation involved more than 6,000 properties. A key issue was how the publicity generated by the litigation and the newly enacted State of Washington disclosure requirements would impact prices or values of residential property in the affected neighborhoods.

**Survey Approach and Results.** In the North Tacoma study, Mundy and McLean formed the hypothesis that the substantial additional information that would be provided to prospective buyers in the marketplace as a result of the litigation and the disclosure requirements "would substantially alter the nature of the real estate market in proximity to the . . . site."<sup>27</sup> To test this hypothesis, Mundy and McLean used both property-by-property appraisal techniques using historical sales data as well as statistical methods such as survey research (perceived diminution), contingent valuation, and conjoint measurement to quantify value impacts.<sup>28</sup>

In the study, eleven properties were appraised using standard Fannie Mae/Freddie Mac appraisal techniques to estimate market value. The sample

properties were taken from a cross section of housing in the class area. The homes were appraised twice: first using comparable sales data from the class area (contaminated neighborhoods) and then using comparable sales data from control areas (similar uncontaminated neighborhoods).<sup>29</sup>

The result of the individualized standard Fannie Mae/Freddie Mac property-by-property appraisals was a finding of "a loss in market value for the class neighborhood of \$5,085 per standard \$116,000 home,"<sup>30</sup> equivalent to an average loss of 4.4%, based upon actual sales data in the North Tacoma marketplace as of fall 1994.

Mundy and McLean also concluded that based on the survey research techniques, each house in the affected North Tacoma neighborhood would decline in value by between \$11,000 and \$24,000 on a standard \$116,000 home, or an average decline of between 9.5% and 20.7%.<sup>31</sup> At a deposition in the North Tacoma litigation, one of the authors stated that he expected a sudden sharp decline in property values to occur on January 1, 1995, and expected the full decline to quite possibly occur by June of 1995, although he acknowledged that the decline might not occur for years, and he could not identify any particular date by which the decline would in all probability actually occur.<sup>32</sup>

**Test of the Survey Results.** In order to test the accuracy of the North Tacoma survey-based methodology, data was collected on actual sales transactions that occurred in the North Tacoma marketplace between 1991 and May 2004, including the months immediately before and after January 1, 1995, identified in the article as the critical date when the marketplace became fully informed about the contamination situation.

Sales transactions were researched for both the North Tacoma neighborhoods in the affected class action litigation area and in the North Tacoma control area delineated by Mundy and McLean. Table 1 and Figure 1 show that in 1995, following the litigation<sup>33</sup> and the new public disclosure requirements, the average sale price in the class area in North Tacoma declined approxi-

26. Mundy and McLean, 290.

27. *Ibid.*, 295.

28. *Ibid.*

29. *Ibid.*, 296.

30. *Ibid.*

31. *Ibid.*

32. Deposition of Wilbur H. Mundy, November 17, 1994, in *Donald Branin, et al. v. ASARCO, Inc.*, vol. 5, page 10, line 22 through page 11, line 13.

33. The North Tacoma litigation reportedly settled on the eve of trial.

**Table 1 Comparison of Annual Appreciation in Average Sale Price of Single-Family Residences, North Tacoma, WA**

Year	Class Area	Control Area
1991		
1992	3.5%	17.1%
1993	7.7%	1.4%
1994	2.4%	-1.0%
<b>1995</b>	<b>-3.6%</b>	<b>5.3%</b>
1996	6.9%	3.9%
1997	6.4%	4.7%
1998	10.5%	6.2%
1999	9.1%	6.3%
2000	-1.0%	10.5%
2001	9.7%	10.2%
2002	12.5%	3.5%
2003	4.3%	6.0%
2004*	2.3%	2.8%
1991 to 1994	14.2%	17.6%
1994 to 1995	-3.6%	5.3%
1994 to 2003	68.5%	72.7%
<b>Average Annual Appreciation 1994 to 2003</b>	<b>6.1%</b>	<b>6.3%</b>

Includes only single-family residences for the period January 1, 1991 through May 11, 2004.

\* Partial year, through May 11, 2004.

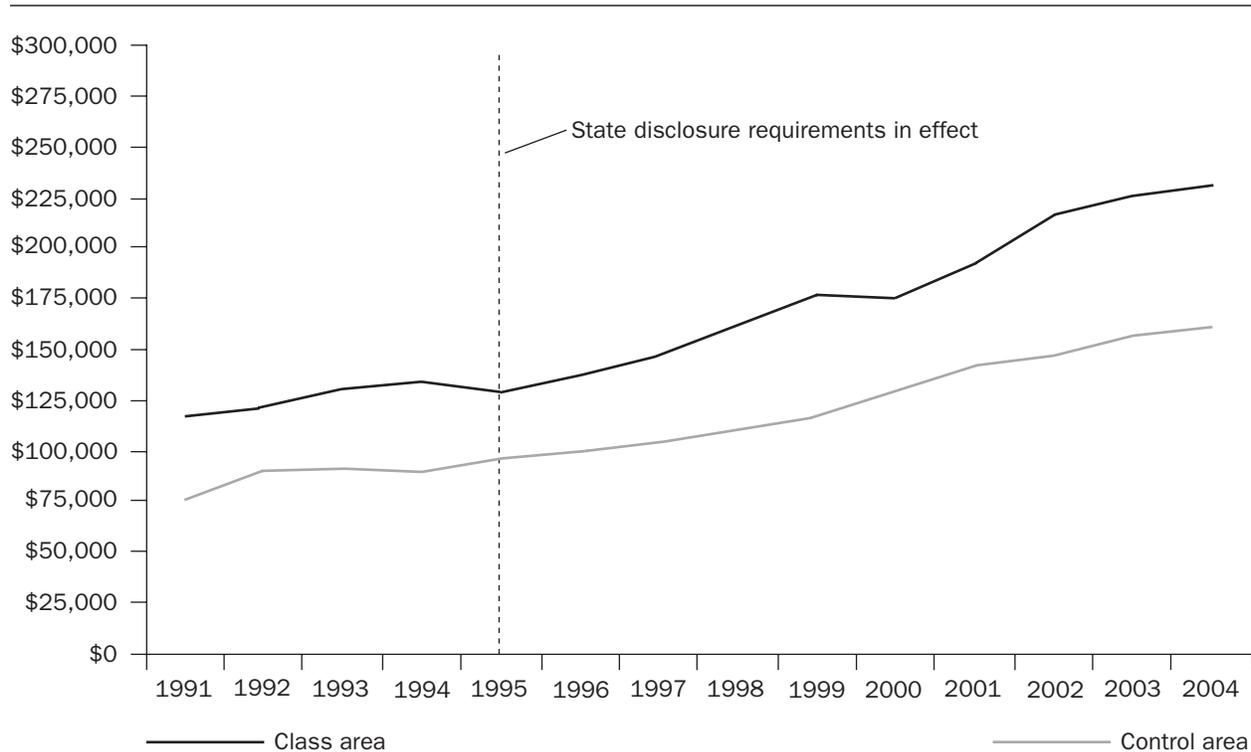
Source: Metroscan electronic database.

mately 3.6%,<sup>34</sup> while increasing approximately 5.3% in the control area. In 1996, however, prices in the affected class area rebounded upward by 6.9%, almost twice the rate of increase in the control area. The data also shows that since January of 1995, the average annual rate of increase in the class area has been approximately 6.1% compared to 6.3% in the control area.

The actual temporary 3.6% decline in prices in the class area of North Tacoma in 1995 was quite close to the 4.4% decline in value estimated by Mundy and McLean in the property-by-property appraisals using actual sales transactions and Fannie Mae/Freddie Mac appraisal procedures.

The actual temporary 3.6% decline in prices is dramatically less, however, than the decline predicted by Mundy and McLean using a contingent valuation method. The data shows that average annual prices never declined more than 3.6%, and rebounded quickly once the marketplace assimilated the actual risks, realities and extent of the contamination situation. At no time after January 1995 was there a decline between 9.5% and 20.7%, and, in fact, prices increased as fast in the allegedly affected class area as in the control area after January 1, 1995. By

**Figure 1 Average Sale Price by Year for Single-Family Residences North Tacoma, WA, January 1991–May 2004**



34. On a property-by-property basis there was wide variation. Some areas and properties declined, while others increased in value or showed no change.

contrast, prior to January 1, 1995, prices were increasing slightly faster in the control area (5.8% per year on average) compared to the class area (4.5% per year).

### **The Corpus Christi, Texas, Testing Process**

A 2002 article by Jenkins-Smith et al. summarizes use of contingent valuation to estimate impacts of state-mandated disclosure requirements on future real estate transactions in three relatively low-income neighborhoods in Corpus Christi, Texas, affected by contamination.<sup>35</sup> Approximately 400 homes are in these neighborhoods near a number of heavy-industrial plants and refineries. In 1994, contamination from lead, cadmium, and zinc was discovered in the soil of properties in the Dona Park, Manchester Place, and Academy Heights residential neighborhoods adjacent to an ASARCO smelter. The state environmental commission distributed flyers to residents of the subject neighborhoods in March 1994; a Texas statute required future sales to include a disclosure regarding the contamination. The contingent valuation process was used to test if known contamination would have a net effect on the value of homes in the three neighborhoods.<sup>36</sup>

**Survey Approach and Results.** Jenkins-Smith et al. conducted telephone surveys of over 1,000 residents in Nueces County (Corpus Christi) and three surrounding counties in May and June 2000.<sup>37</sup> About half of those surveyed by telephone were given a description of the typical house near a refinery and a smelter and questioned about their willingness to pay. The other half were given additional information about contamination and cleanup information stating that (1) the soil at nearby homes had been contaminated; (2) the contamination had been cleaned to satisfaction of state environmental agencies; (3) some neighbors were suing the smelter owners; and (4) no record of unsafe levels of contamination existed for the property being described in the telephone survey. Jenkins-Smith et al. compared the two groups and concluded that the average loss in willingness to pay for a typical house due to the information disclosure

requirement was approximately \$11,000 or about 30.5% of the value of a typical home in the area. The research was limited to the contingent valuation study conducted by telephone, and actual market transactions in the affected subdivisions were not analyzed.

Jenkins-Smith et al. reported that the contamination was discovered in 1994 and remediation was undertaken in 1996 and 1997. Research for the present study found that state testing of soil samples from the Dona Park area occurred in early 1994. Two of six random samples showed lead levels above EPA-recommended levels for residential soils. The Texas Commission on Environmental Quality distributed flyers to Dona Park residents shortly thereafter. The flyers provided residents with notice regarding the outcome of the soil tests, a blood-screening session to be held to check for lead content, and a public meeting to be held May 17, 1994. Local press coverage reported these events and the results of subsequent tests finding that 15 properties in the subdivisions required soil remediation. Cleanup was completed by January 1997 to the satisfaction of ASARCO and the State of Texas. Subsequent testing for additional contamination in 1998 proved inconclusive and the state's investigation of neighborhood contamination was concluded with a final Agreed Order on March 29, 1999. A \$40,000 fine was imposed against ASARCO. This closed the environmental action against ASARCO related to contamination of the subdivisions.

Residents of three nearby neighborhoods (Dona Park, Manchester Place, and Academy Heights) filed a lawsuit on June 17, 1994 seeking damages for impact to property values, among other claims. An out-of-court settlement was reached on September 14, 2000,<sup>38</sup> 90 days after the Jenkins-Smith et al. telephone surveys had been conducted.

**Test of the Survey Results.** In order to test the accuracy of the Jenkins-Smith et al. conclusion that home prices would decrease by 30.5% after information was disclosed to the market, Corpus Christi sales data was collected and analyzed for the periods before and after two critical dates. The first

35. Jenkins-Smith et al.

36. The authors state that the contingent valuation study was necessary because "it is difficult to make inferences from prior sales (i.e., hedonic analysis) on whether a requirement that future sales include a disclosure regarding contamination would have a net effect on the value of homes in the three neighborhoods. For these reasons, a focus group and contingent valuation telephone survey were conducted to see if the value of a 'typical' home located in the area would be affected by the disclosure of information about the discovery and remediation of the contamination." *Ibid.*, 326.

37. These surveys were apparently done in support of the litigation against ASARCO by neighboring residents. The case settled out-of-court prior to trial in September 2000.

38. John Tedesco, "Pollution Suit Settled," *San Antonio Express-News*, September 15, 2000, Metro/South Texas.

date is January 1, 1994, the date on which Texas sellers of single-family homes were first required to disclose to potential buyers the presence of hazards or contamination on their property.<sup>39</sup> The second date is September 2000, the date on which litigation between the nearby residents and ASARCO was finally settled.

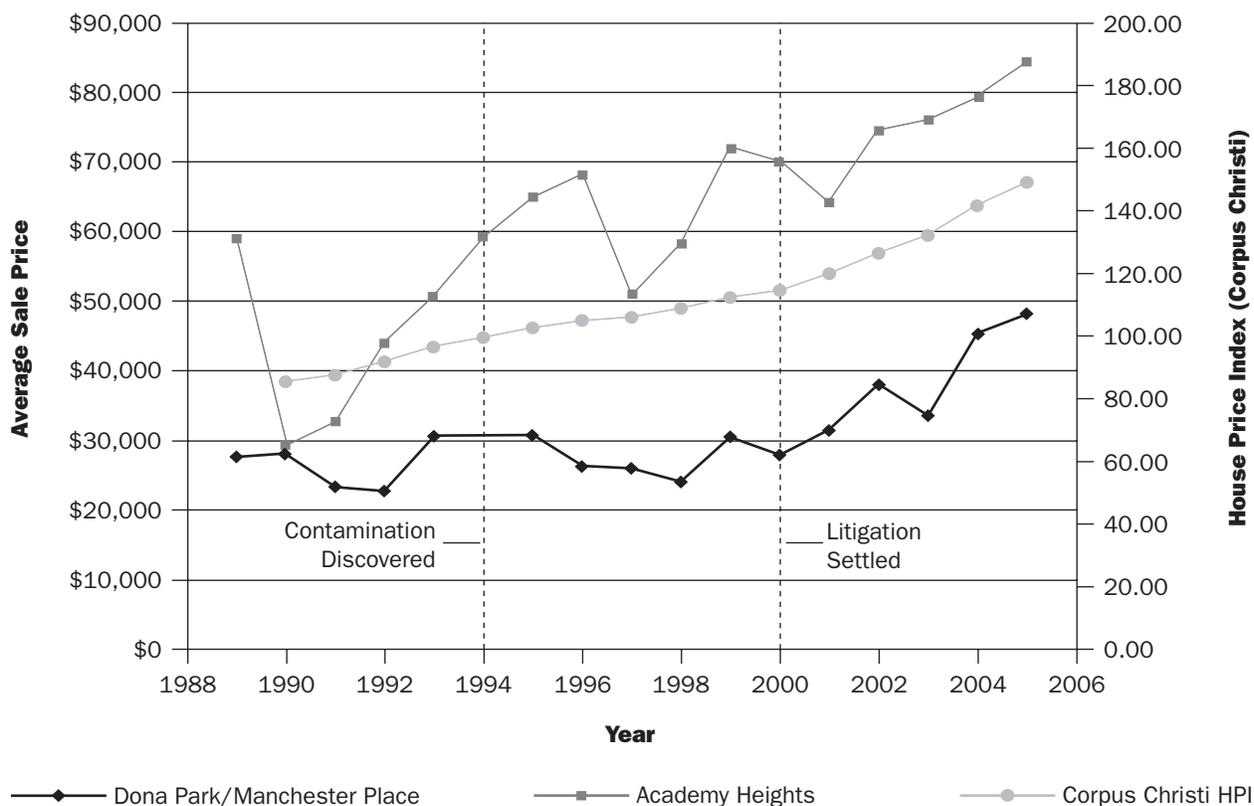
Dona Park and Manchester Place are contiguous and have similar wood-frame homes in a similar price range. Because of these similarities between the neighborhoods, they could be analyzed together. Based on historical sales information from the Corpus Christi multiple listing service (MLS) database, homes in the Dona Park/Manchester Place area showed an average sale price of \$30,550 in 1993, the year before the new state disclosure law went into

effect and the contamination was discovered. Academy Heights is not contiguous to Dona Park/Manchester Place, and is located about one-half mile away. Its homes are mostly all brick and are much larger than those in the Dona Park/Manchester Place area. Homes in Academy Heights showed an average sale price of \$50,676 in 1993 according to MLS sales data.<sup>40</sup>

Figure 2 compares the average sale price each year in Dona Park/Manchester Place and Academy Heights to the Corpus Christi MSA House Price Index (HPI) published by the Office of Federal Housing Enterprise Oversight.<sup>41</sup>

As Figure 2 indicates, in Academy Heights, prices actually went up during the first three years following the January 1, 1994 effective date of the Texas

**Figure 2 Comparison of Average Sale Price and House Price Index, Corpus Christi, TX, Study Area**



39. According to the General Counsel of the Texas Real Estate Commission (TREC), the state agency that licenses real estate brokers and sales representatives, Section 5.008 of the Texas Property Code, creating seller obligations to disclose on-site hazards or contamination when selling single-family homes, was enacted in 1993 and went into effect late that year. TREC issued a minimal statutory notice disclosure form for sellers pursuant to Section 5.008 on October 25, 1993. The TREC General Counsel confirmed that seller obligations to disclose have not changed since 1993, and the TREC disclosure form itself has not changed since issuance. Loretta DeHay, General Counsel, Texas Real Estate Commission, phone conversation with author, October 21, 2005.

40. Jenkins-Smith et al. indicate an overall average assessed market value (in 1997 dollars) of \$35,870 for the approximately 400 homes in the three neighborhoods. Assessed market values reported for individual subdivisions were \$56,000 in Academy Heights, \$33,000 in Dona Park, and \$25,000 in Manchester Place.

41. The HPI is a measure designed to capture changes in the value of single-family homes in the United States as a whole, in various regions of the country, and in the individual states and the District of Columbia. It measures average price changes in repeat sales or refinancings on the same properties. This information is obtained by reviewing repeat mortgage transactions on single-family properties whose mortgages have been purchased or securitized by Fannie Mae or Freddie Mac since January 1975.

seller disclosure law. The average price went up 16.4% in 1994 and continued to go up in 1995 and 1996 as well. From 1993 to 1996, the average price increased from \$50,676 to \$68,138 in Academy Heights, a 34.5% total increase during a time when the Corpus Christi HPI went up by only 8.6%.

In the Dona Park/Manchester Place area, prices were almost exactly the same in 1995 (\$30,700 on average) as they were in 1993 (\$30,550 on average) before the effective date of the Texas seller disclosure requirement.<sup>42</sup>

Both Academy Heights and Donna Park/Manchester Place experienced a temporary decline in average price during the period when remediation of the contamination was underway. In Academy Heights, the average price dropped sharply by almost 25% in 1997, the second year during which remediation was underway. In Dona Park/Manchester Place, the decline was slightly lower. The average price dropped from \$30,700 in 1995 to \$24,000 in 1998, a decline of about 22%.

However, prices rebounded following completion of the remediation. In Academy Heights, the average price increased 13.1% in 1998 and 24.1% in 1999, compared to the Corpus Christi HPI, which only increased 3.12% and 3.04%. In Dona Park/Manchester Place, the average price increased from \$24,000 in 1998 to \$27,769 in 2000, a 15.7% increase during a two-year period when the overall Corpus Christi HPI increased only 5.1%. These increases in prices following completion of the remediation are contrary to the results of the contingent valuation study, which had predicted a 30.5% decrease.

Since the September 2000 settlement of the property damage litigation, prices have continued to go up in both neighborhoods. In Academy Heights, the average price increased from \$64,100 in 2001 to \$79,100 in 2004, a 23.4% increase during a time when the Corpus Christi HPI increased 21.8%. In the Dona Park/Manchester Place area, average prices increased by 44.5% during the same three-year period. Once again, these increases in

prices contradict the predictions in the contingent valuation study.

Testing of the Jenkins-Smith et al. contingent valuation study indicates that the study was not a reliable predictor of the actual prices that were paid following completion of the remediation. The combination of the Texas disclosure requirements, the publicity about the contamination and the litigation, the large number of property owners named as plaintiffs in the litigation, and the information provided to individual property owners as a result of the litigation did not result in the 30.5% decrease in price predicted by the contingent valuation study. Instead, between 1998 (the year after completion of the remediation) and 2004, prices actually increased 36.4% in Academy Heights and 88.9% in Dona Park/Manchester Place.<sup>43</sup>

### **Testing the Reliability of Contingent Valuation: Analyzing Actions of Fully Informed Survey Participants, Sellers, and Buyers**

#### **The Crystal Springs, Mississippi, Testing Process**

The accuracy and reliability of a contingent valuation survey in Crystal Springs, Mississippi, was also tested. Here again, a survey had been used to attempt to measure the possible impact of contamination on values in nearby residential neighborhoods.<sup>44</sup> Based upon the contingent valuation survey-based research, experts for the property owners claimed that prices established by fully informed buyers and sellers in Crystal Springs single-family neighborhoods impacted by contamination would be substantially less than actual market prices paid in transactions between buyers and sellers not fully informed.

**Survey Approach and Results.** In Crystal Springs, PCBs from a manufacturing facility had migrated off-site and been found in a creek and the soil at some single-family homes in the neighborhood adjacent to the plant. The Mississippi Department of Environmental Quality (MDEQ) had approved an

42. The MLS database indicates there were no sales in 1994 in Dona Park or Manchester Place.

43. The Jenkins-Smith et al. study also predicted that a portion of the market would drop out because of the notice of contamination, however, the size of the market sales rate decline was not estimated. In the current study, actual market data in the three neighborhoods has been analyzed to determine the accuracy of this prediction. In Academy Heights, there were 2.2 sales per year prior to the discovery of the contamination in 1994; 2.43 sales per year during the 1994–2000 period when discovery, remediation, and litigation were proceeding; and 2.6 sales per year between 2001 and 2004, after the settlement. In the Dona Park/Manchester Place area, there was a drop from 2.8 sales per year in 1989–1993 to 2.57 sales per year in 1994–2000 and a substantial increase to 4.6 sales per year in 2001–2005. This is similar to sales in other communities affected by contamination and the related property value litigation, where sales activity sometimes has dropped during the time that the litigation is ongoing. The sharp rise in the number of sales in Dona Park/Manchester Place after the settlement of the litigation, and the fact that the contamination and remediation situation was no different in the three years immediately after the settlement than it had been the three years immediately before the settlement, indicates that the litigation itself, rather than the contamination and remediation situation, may have caused the decline in marketability, if any.

44. *Kellum v. Kuhlman Electric Corporation*, Circuit Court of Copiah County, Mississippi, Case No. 2001-0313.

on-site and off-site remediation plan. On the date of the contingent valuation study, only some of the properties had been remediated. Four different types of survey-based research studies were conducted. The median predicted negative impacts ranged from 25% to 100%.<sup>45</sup>

**Test of the Survey Results.** To test the contingent valuation results, the asking prices set by admittedly knowledgeable sellers, and the prices offered or paid by actual fully informed buyers, were examined.<sup>46</sup> The results of the analysis indicate that the survey was highly inaccurate in predicting the prices that would be set and paid by fully informed knowledgeable sellers and buyers. Three examples of actual transactions in the marketplace demonstrate the inaccuracy of the negative price effects predicted by the survey.

The first example looks at the actual sale of the home of one of the named plaintiffs. The selling owner meets the contingent valuation study measurement of being fully informed because she was a plaintiff in the litigation and had access to all of the contamination information generated by plaintiff attorneys in the litigation. Also, she actually had her property tested and had a written report concerning the PCB levels on her property.

The contingent valuation appraiser determined that the unimpaired value for the seller's house was \$138,000 and predicted, based on the contingent valuation technique, that the impaired price that would be set by a fully informed seller and paid by a fully informed buyer would be only \$56,580, a decrease of 59%. However, the fully informed seller actually set her asking price, as impaired, at \$150,000, about \$12,000 more than even the unimpaired value, and more than \$93,420 higher than the prediction of what a fully informed seller would ask.

Subsequently, the seller received two offers, both from fully informed buyers.<sup>47</sup> The first offer was rejected, but the second offer was accepted, resulting in a sale. Both offers (and the eventual sale price) were significantly higher than the contingent valuation survey predicted. The first offer received was for \$130,000—more than double the price predicted by the contingent valuation survey. The offer to purchase as impaired was only 5.8% less than the unimpaired value—not 60% lower as predicted based on the contingent valuation survey. The seller rejected the \$130,000 offer, and countered at \$145,000. The prospective buyers could not afford the house at that price and did not increase their offer.

When no additional offers were received for a considerable period, the owner switched brokers, reduced the asking price, and accepted an offer for \$112,500, more than \$55,900 higher than the price predicted by the contingent valuation survey. The final sale price was only 13.5% less than the appraised unimpaired value—not 60% less as the survey had predicted.<sup>48</sup>

A second example of the inaccuracy of the price effects predicted by the survey involves the sale of another house in the neighborhood of Crystal Springs, also allegedly affected by PCB contamination. It too was put on the market following the completion of the contingent valuation survey process. The owners of the house (the persons listing it for sale) had previously participated in the contingent valuation survey of past home purchasers. The sellers had purchased the house for \$150,000 in June 2001 before participating in the survey process. In the course of completing the survey, they indicated to the surveyor that they did not investigate the contamination situation in the neighborhood before buying the house in June 2001, and stated that they were only somewhat informed

45. Surveys of 37 buyers in the affected area were conducted. The median opinion of respondents regarding "the impact of the contamination on property values (in general) within the Subject Area over a specified period" was 25.0%. The median opinion of respondents regarding "how much less they would have paid for their home if they had known the facts" as described by the survey form was 27.5%. The median opinion expressed in 74 interviews of nonstakeholders living in a control area was that property values had been diminished by 100%. Mundy Associates, LLC, "Appraisal of Twelve Properties Located in Crystal Springs, Mississippi, *Kellum, et al. vs. Kuhlman Electric Corporation, et al.*" (April 4, 2003), 97, 110.

46. Another method, used by Clarion Associates in Crystal Springs, was to compare sales prices and market trends before and after the date of announcement of the contamination situation in the Crystal Springs marketplace. This method also showed that the contingent valuation method had overestimated the damages to plaintiffs' property values.

47. Prior to making the offer, the prospective buyer had been given a disclosure statement by the seller indicating that the soil and the house had been tested for PCBs but the levels found did not require any remediation. The broker representing the buyer was also fully knowledgeable about the PCB situation and insisted on adding a contract addendum acknowledging the PCB contamination in the neighborhood. The broker's disclosure to the buyer stated "Buyer understands and agrees that subject property is located in the vicinity of the location . . . where PCB contamination has been found" and Buyer acknowledges being informed that several properties" located adjacent to the source of the contamination "have been found to have PCB contamination." The seller on the contract addenda indicated in writing her willingness to make available the PCB testing report. The buyer was even given the phone number of the MDEQ to get more information, if needed. The prospective buyer signed the form, acknowledging its accuracy.

48. The ultimate buyer was also a knowledgeable purchaser since the second realtor routinely notified each one of its Crystal Springs clients about the PCB contamination situation and had every prospective purchaser sign a form acknowledging disclosure of the contamination situation.

about the situation before participating in the survey process. They also indicated on the survey form that they believed that the source, location, type, levels, and health effects of the PCB contamination situation are extremely important to prospective buyers.

In 2004, after becoming fully informed owners as a result of participating in the survey process, they put the house back on the market. The asking price they set was \$159,000, or \$9,000 higher than the price they paid three years earlier in 2001 before they became fully informed about the contamination situation. They set this higher asking price even though they believed the contamination situation in the neighborhood was extremely important to potential purchasers.

A third example of the difference between the survey results and actual behavior in the marketplace can be found by looking at the transactions involving other fully informed buyers who participated in the contingent valuation survey. The owners of three other houses in the affected neighborhood indicated in answering the contingent valuation survey that when they bought their houses, they were already fully aware of all of the information in the survey form. All agreed that the source, location, type, levels, and health effects of the PCB contamination situation are extremely important to prospective buyers. Yet, all three indicated that they would not change the market price they actually paid for their homes—they all indicated in the survey form that despite the PCB contamination situation in the neighborhood, they would have paid about the same price as they actually did.

Each of these examples of Crystal Springs situations indicate that some fully informed sellers actually set asking prices dramatically higher than the asking prices predicted by contingent valuation surveys.

### **The Columbus, Mississippi, Testing Process**

The accuracy and reliability of contingent valuation in a litigation-related assignment in Columbus, Mississippi, was also tested. Here again, contingent valuation survey techniques were used to

predict actual prices that would be paid by knowledgeable buyers. In Columbus, the environmental situation involved allegations that creosote emissions from a wood-treating facility had adversely affected residential property values in surrounding neighborhoods.

**Survey Approach and Results.** The survey-based contingent valuation methodology used by the expert for the homeowners predicted “a loss in value of 73%.”<sup>49</sup>

Before the case went to trial, a comprehensive settlement was reached in the state court litigation as well as in a more extensive class action case in federal court involving approximately 6,000 plaintiffs and many thousands of single-family residences. Under the terms of the settlement order entered on November 4, 2002, individual written notices were provided to all class members by December 6, 2002. In addition, the order required that summaries of the settlement be printed in both *The Commercial Dispatch* (the local Columbus paper) and *The Clarion Ledger* (published in Jackson, Mississippi) before December 13, 2002.

The terms of the settlement order also provided that property owners in the class area who owned property within 500 feet of the plant were eligible to receive \$750 for alleged property value diminution, and those living further than 500 feet were eligible to receive \$500. In addition, a Property Value Protection Program was established for those in the class area who sold their homes during the two years following final approval of the settlement by the court. The selling owner could receive up to an additional \$2,500 per residence for property value diminution by filing a claim form with the administrator of the Property Value Protection Program.<sup>50</sup>

The \$2,500 maximum compensation per house agreed to by the plaintiffs is dramatically less than the 73% diminution predicted by the survey-based contingent valuation method.<sup>51</sup> Depending upon the residential area of Columbus in which a plaintiff's home is located, the \$2,500 cap ranges from 1.5% to 6.5% of average 2003 home prices in Columbus neighborhoods.

49. Mundy Associates, LLC, “Appraisal of Plaintiff’s Properties Located in Columbus, Mississippi, *Major Andrews, et al v. Kerr-McGee Corporation, Inc. et al.*” (July 19, 2001), 61. A second survey-based technique, involving previous buyers of homes, led to the conclusion that previous buyers “after learning about the nature of the contamination problem, . . . would pay 49% to 50% less for their home.” A third technique, perceived diminution, involved a survey of nonstakeholders, i.e., those who lived in the unaffected control area selected by Mundy, and indicated a loss of 40.8% to 46.9% in value once the marketplace would become fully informed.

50. The litigants agreed not to divulge information about the number of property owners who may have applied for compensation from the Property Value Protection Program, so information about the number of filings for compensation, if any, is not available.

51. It is also significantly less than the 40% to 50% diminution predicted by the other survey-based techniques used by Mundy in the *Kerr-McGee* litigation.

**Test of the Survey Results.** Based upon the contingent valuation theory that once a market is fully informed about a contamination situation<sup>52</sup> prices will reflect fully informed value, the home prices in Columbus should have dropped by the 73% predicted by the contingent valuation survey after the individual notices went out concerning the contamination and settlement. However, the data shows that this did not happen in the years subsequent to the settlement, despite the public notice and mass individual mailings to 6,000 plaintiff property owners.

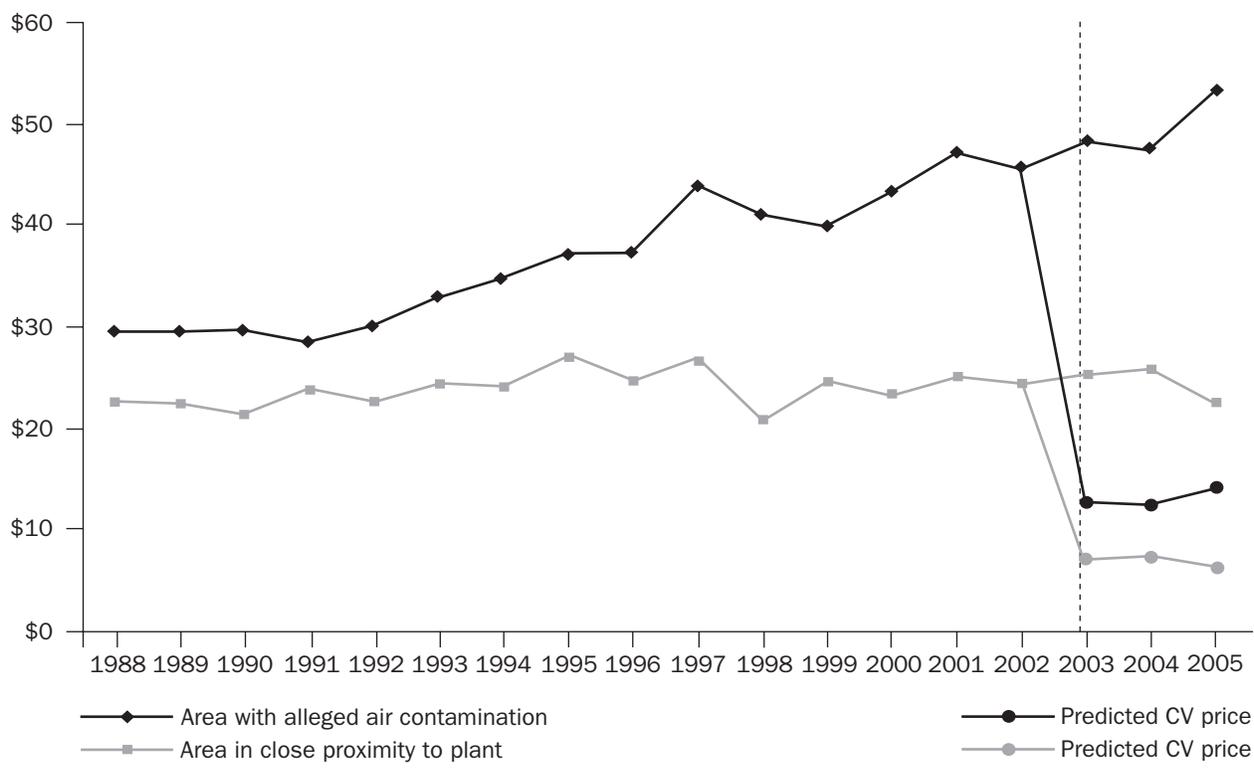
Residential sales data for 1988 through mid-July 2005 from the Columbus Multiple Listing Service were collected and analyzed for the two areas around the plant where the contingent valuation study had predicted a 73% decline in prices in 2003 and thereafter. The data shows that contrary to the predicted effects, prices went up, not down, after the market became fully informed in December 2002.

For example, in the largest air-contamination area, as defined by the contingent valuation ap-

praiser, the average price per square foot increased by 5.95% in 2003, dropped slightly by about 1.7% in 2004, and then surged again in 2005, increasing by 12.5%.<sup>53</sup> In a smaller area in close proximity to the wood-treating facility, prices were found to have increased 3.5% in 2003, immediately after the market became fully informed, and increased another 2.5% in 2004. In the first seven months of 2005, prices were lower by about 13.7% compared to 2004. However, overall, since the market became fully informed, the drop in average prices in this smaller area in closer proximity to the wood-treating facility was about 8.4% since 2002, the year before the market became fully informed. That is quite comparable to the 8.8% drop in average prices between 1997 and 2002 in the same submarket before it became fully informed.

Figure 3 shows the trend in average prices paid per square foot in the two areas that the contingent valuation survey predicted would experience a 73% drop in prices. The actual average prices paid in 2003 through 2005 are shown, as are the dramatically lower prices predicted by the contingent valuation analysis.

**Figure 3 Actual Average Price Per Square Foot Compared to Predicted Price  
Columbus, MS, Study Area**



52. Similar to in the North Tacoma case, where the settlement notice and disclosure requirements that were provided to the property owners made them fully informed, the settlement notice and information provided the 6,000 plaintiffs in the Columbus, Mississippi, litigation resulted in fully informed parties.

53. Based on sales data between January 1, 2005, and July 21, 2005.

As shown in Figure 3, the trend lines since the end of 2002 for both the larger area of alleged air-contamination and the residential area in closer proximity to the contaminated site continue to follow trends apparent in the marketplace long before the settlement of the litigation and the mass distribution of information to the marketplace. There was no dramatic drop in the number of sales or in prices as predicted by the contingent valuation survey.

## Conclusions

This article examines sales data in four locations where contingent valuation methods were used to measure alleged adverse impacts from environmental contamination. The results of this analysis clearly show that survey-based valuation methods have been a highly inaccurate and unreliable predictor of actual prices and values. The testing involved buyers and sellers who were as informed—if not more informed—about the contamination situation than the survey participants.

Research into actual real estate sales data subsequent to the end of the North Tacoma litigation and the enactment of disclosure requirements by the State of Washington clearly shows that the survey-based contingent valuation method used there was a highly unreliable predictor of prices and values in the neighborhoods affected, while the individualized property-by-property appraisals more accurately estimated the brief temporary decline in property values that actually occurred following the litigation and disclosure requirements. Examination of sales in Corpus Christi, Texas; Crystal Springs, Mississippi; and Columbus, Mississippi provide further supporting evidence of the unreliability of contingent valuation in predicting price impacts.

There are many reasons why contingent valuation may continue to fail to accurately and reliably predict prices. Among the more significant reasons may be the following:

- The survey forms used in contingent valuation studies may not provide the range of information and opinions about the contamination situation that is typically available to actual buyers and sellers in the open marketplace.
- Buyers and sellers often rely on various intermediaries such as sales agents, lawyers, lenders,

friends, and relatives in making decisions related to sale/purchase offers and prices. These various intermediaries may hold a variety of opinions about the property involved, the neighborhood, the location, and the environmental situation, and the seller or buyer processes the information from these various sources in the course of setting an asking price or making an offer to purchase.

- The survey process may not address all of the factors that go into a buyer's decision-making process. The presence or absence of contamination in a neighborhood may be only one of a myriad of factors that may cause potential buyers to consider or disregard the neighborhood. Crime levels; school quality; proximity to places of employment, retailing, and public parks; nearness of friends or relatives; or simply the styles and condition of the houses are just some of the many factors that may be balanced and weighed against environmental issues.<sup>54</sup>
- CV surveys may establish values or value impacts from the point of view of only one side in a transaction, either a hypothetical buyer's willingness to pay or a hypothetical seller's willingness to accept an offered price. Each type of survey typically fails to consider the other side, and the fact that the seller or buyer may be competing with other sellers or buyers who perceive the risks differently.
- Survey-collected information often fails to reflect the dynamic of negotiations between real-world sellers and buyers that occurs over time. It is in negotiation that transaction prices are established in most U.S. real estate sales. Because none of their own money is at risk of changing hands, CV survey respondents incur no penalty in their responses for erring on either the high side or the low side. They also have little incentive, or perhaps even enough time, to fully consider their pricing opinions involving thousands of dollars. Actual negotiations conducted over time frequently establish agreed sale prices that compromise the well-intended initial positions of buyers and of sellers.

For contingent valuation surveys to be more accurate and reliable, they will have to address all of these factors that appear to account for their past failure to accurately predict prices.

54. This has been recognized by others who have critiqued the reliability of contingent valuation methods. For example, see Peter F. Colwell and Joseph F. Trefzger, "Supply-Side Effects and Contingent Valuation Analysis," *Journal of Real Estate Practice and Education* 8, no. 1 (2005): 45–59, in which the authors discuss market segmentation and clientele effects.

At best, the testing of reliability indicates that contingent valuation studies result in hypothetical value estimates. Unlike the sales comparison method that looks to actual prices paid in an open and competitive marketplace, the contingent valuation method looks to hypothetical prices in a world carefully constricted to consider only one set of facts detailed on a survey form. As a technique for measuring actual prices that will be paid, and therefore actual damages that may be suffered by those affected by environmental contamination, the research indicates that past applications of contingent valuation have little, if any, reliability, and therefore the method has a high failure rate.

The demonstrated unreliability of contingent valuation surveys is especially significant for appraisals submitted in litigation assignments. Federal courts, and many state courts, now require that the trial judge serve as a gatekeeper reviewing and approving or rejecting appraisal methodology before it is presented to a jury. One of the accepted methods for demonstrating the reliability of nontraditional appraisal methods, such as contingent valuation, is to show that the accuracy of the method has been tested in the marketplace. There may indeed be situations in which application of contingent valuation techniques may be useful, for example, when dealing with noneconomic goods or in real estate situations involving special-purpose or limited-market properties for which there are few, if any, actual sales transactions that can be analyzed. However, in the contingent valuation applications tested here, the methodology was found not to be reliable. The reliability of contingent valuation in the courtroom must therefore be carefully considered by appraisers, attorneys, and judges before it is used as an alternative to the generally accepted methods for determining economic damages to real estate.

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