

The Impact of Detrimental Conditions on Property Values

Detrimental conditions that affect property values range from temporary conditions and market perceptions to construction defects, environmental contamination, and geotechnical issues. Quantifying the impact of DCs is significantly more complex and challenging than working through the three approaches to value. The author has discovered distinctive graphic patterns in his study of DCs and grouped them into 10 general categories, each with unique characteristics. The article urges appraisers to address the costs associated with assessment, remediation, ongoing costs, and the effects of any market resistance.

There are over 200 detrimental conditions (DCs) that can affect real estate values. They include temporary easements, airport noise, construction defects, serious toxic waste, geotechnical issues, and natural disasters. Determining the diminution in property value brought about by a DC requires the application of specialized methods, procedures, and formulas. In fact, contamination and geotechnical issues present some of the most involved problems in real estate valuation.

All DCs can be classified into 10 categories, each having unique patterns and attributes that can be illustrated on a graph. Further, a DC's impact on value can vary from case to case. A DC could even be completely benign. Therefore,

each situation must be independently and competently analyzed. The Bell Chart¹ defines each classification and graphs the relationship between property values and typical events (see figure 1).

DETRIMENTAL CONDITIONS MODEL

All DCs involve some or all of six basic elements that lead to an understanding of: the costs or losses associated with the assessment of the condition, the repair or remediation costs, any ongoing conditions, and any residual market resistance to the condition. The DC Model² illustrates the costs before, during, and after the actual remediation (see figure 2). These costs are shown as A or the value as if unaffected by

1. Randall Bell, "The Ten Standard Categories of Detrimental Conditions," *Right of Way* (July 1996): 14-16.

2. Randall Bell, "Quantifying Diminution in Value Due to Detrimental Conditions: An Application to Environmentally Contaminated Properties," *Environmental Claims Journal* (October 1996): 135.

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Figure 1 The Bell Chart: The 10 Classifications of Detrimental Conditions

Class	Detrimental Conditions	Analysis	Result
I	No Detrimental Condition (DC) or Benign Condition Any DC If No Impact Sales Arrangement at Market <i>(If Over Market: II or If Under: IV)</i> Sale-Leaseback/Land Contract Build-to-Suit/Tenant Purchase Threat of Condemnation/Auction First Right-of-Refusal/Double Escrow	There are hundreds of Detrimental Conditions (DCs) that may impact property values. The analysis of property damages starts with the DC Model, which illustrates the array of related issues. All six elements of the DC Model should be considered in every analysis. This can yield a variety of valuation patterns based upon the inclusion, exclusion and timing of each element.	DCs have a variety of impacts which, upon analysis, vary on a case-by-case basis.
II	Non-Market Premium Special Buyer Motivation Assemblage/Expansion Redevelopment Project Feng Shui Short-Term Windfall	<p>Detrimental Condition Model</p> <p>Key to Graphs - - - - - Unimpaired Value _____ Value With DC</p> <p>A: Unimpaired Value B: DC Occurs or Discovered C: Assessment Stage Cost & Responsibility Use Uncertainty Factor (Risk) D: Repair Stage Cost & Responsibility Use Project Incentive (Risk) E: On-Going Stage Cost & Responsibility Use F: Market Resistance (Risk)</p> <p>Damages are benchmarked against the <i>Unimpaired Value</i>. In determining the impact on value, it is critical that a distinction be made between the DC and unrelated issues. For example, market conditions may be responsible for a change in value that is unrelated to the condition being studied.</p> <p>The impact of DCs on property values is ultimately an empirical question that requires the application of one or more of the three traditional approaches to value:</p> <ol style="list-style-type: none"> 1. The Sales Comparison Approach utilizing market data with and without the DC. 2. The Income Capitalization Approach utilizing income and risk factors with and without the DC. 3. The Cost Approach utilizing data with and without the costs and losses associated with a DC. <p>The DC Model, coupled with the three approaches to value, provides the fundamental framework for the analysis of DCs.</p>	<p>No DC or Benign</p> <p>Premium</p> <p>One-Time Premium</p> <p>Increasing Market</p> <p>Market Cycles</p> <p>Decreasing Market</p> <p>Recovering</p> <p>Temporary Issue</p> <p>Permanent</p> <p>Declining Value</p> <p>One-Stage Repaired</p> <p>One-Stage Residual</p> <p>Two-Stage Repaired</p> <p>Two-Stage Residual</p> <p>Three-Stage Repaired</p> <p>Three-Stage Residual</p> <p>Full DC Model</p> <p>No Value</p> <p>Liability</p>
III	Market Condition Economy/Supply & Demand Recession/Depression Lease Option/Rolling Option Exercise of Option/Takedown		
IV	Temporary Condition Distress Sale*/Tragedy** Bulk-Portfolio Sale/Business Inc. High Vacancy/Temp. Easement Deferred Maintenance/Legal * Bankruptcy/Probate-Estate-Short Sale US Marshall/REO/Private REO/FDIC/RTC ** Crime Scene/Accident/Disease/Rio/Fire		
V	Imposed Condition Neighboring Issue* Eminent Domain/Bond/Tax Deed Restriction/Ground Lease Leasehold/Leased Fee Physical Depreciation/Historical * Sewage-Power-Nuclear Plant/Blight Illegal Use/Jail/EMF/Traffic-Airport Noise		
VI	Building Construction Condition Construction Defect Building Code Violations Poor Workmanship/Leaks ADA Non-Compliance Functional Depreciation		
VII	Soil or Geotechnical Construction Condition Soil Construction Drainage/Tunneling Foundation/Cut & Fill Retaining Wall or Slope Grading/Soil Compaction		
VIII	Environmental Condition Soil Contamination Building Contamination Hydrocarbons/Metals/Solvents Asbestos/Radioactive Ground Water/Landfill/LUST		
IX	Natural Condition Natural Disasters Natural Habitat Flood/Earthquake/Volcano Tornado/Landslide/Soil Types Infestation/Sulfates/Wetlands		
X	Incurable Condition Applicable to many DCs in severe situations where a complete loss or net liability exists		

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the DC; B, the value upon the realization that a DC exists; C, the value upon assessment of the situation; D, the value upon repair or otherwise resolved; E, the value upon the consideration of any ongoing costs; and F, the impact of any market resistance.

The value patterns of any DC will involve some or all of these six basic elements. For example, Classes III through VI generally utilize only components of this model,

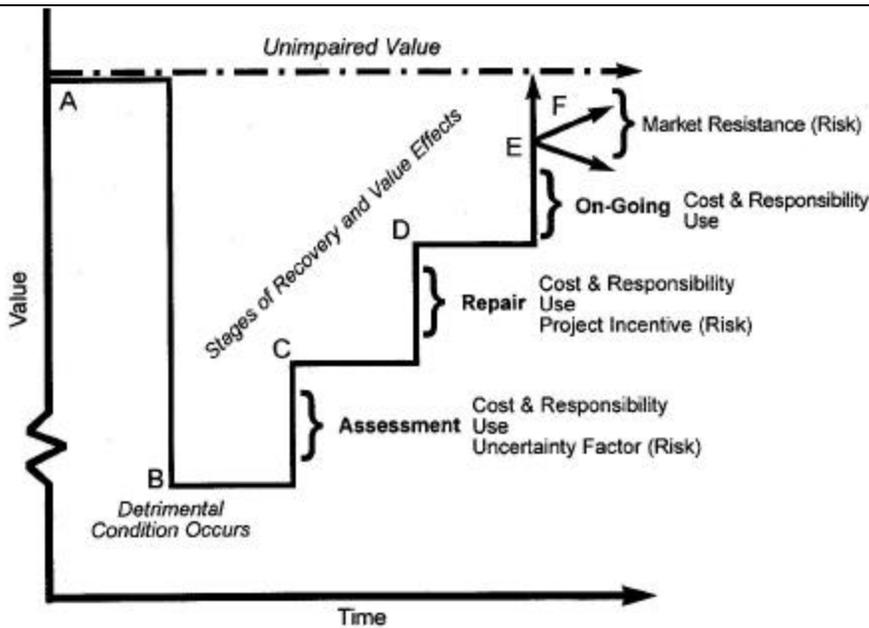
as may Classes VI and IX although they may have all the elements of the model. The point is that all elements must be considered in any DC assignment.

SIX BASIC ELEMENTS

Valuation as if no detrimental condition.

The first step of a DC assignment is to value the property as if there were no DC.

Figure 2 Detrimental Conditions Model



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This establishes a benchmark for the following studies.

Assessment costs. These encompass all the costs associated with monitoring and assessing the DC before any repairs or remediation, including the Phase I and II studies, soils and geotechnical studies, and other monitoring costs. These costs are provided by the engineering firms that do such monitoring, and because requests for this work are commonplace, the cost estimates are generally well established.

Remediation costs. The remediation costs represent all costs associated with the actual repairs, cleanup, and correction of the condition. A vast spectrum of costs could be included, depending on the remediation method chosen. The costs would also include any agency oversight, engineering, legal review, permits, sampling, improvement demolition, improvement reconstruction, additional scientific analysis, and backfill. Again, these costs are often provided by the engineers of the firm contracted to conduct the remediation. However, special care should be taken in reviewing the completeness of such estimates because the original cost estimates are often exceeded. The firm providing the estimates should clearly set forth whether the costs are *best case*, *expected case*, or *worst case* scenarios—an important point for implementing the next step.

As stated, remediation costs can exceed their original estimates. For this reason, a

contingency factor may be required to adjust remediation costs to reflect a complete and reasonable cost estimate, so that the real estate market is reasonably assured that all reasonable remediation costs are accounted for in the estimates provided. It is important to note that the contingency factor applied to the remediation costs relate to the hard costs of remediation and should not be confused with intangible losses, such as onus or stigma. Because informed potential buyers must be reasonably assured that they have a clear indication of their potential cash liability, it is essential that the total remediation costs accurately reflect the total reasonable repair costs, not just a cursory and optimistic estimate.

Carrying costs must also be considered. During the remediation process, there may be disruptions to the property's use, resulting in a loss of rental revenues or the utility of the property. In addition, operating expenses, which may be paid by the tenant under the terms of a net lease, would also be considered.

The final element of the repair process is the project incentive. This is the entrepreneurial profit required for a buyer to purchase damaged property and make the repairs.

Ongoing costs. Some damaged properties incur ongoing costs even after repairs or remediation is completed. For example, a contaminated property may undergo continued monitoring. Formally damaged or contaminated properties may have difficulty in

obtaining financing. Lenders may not consider financing an unremediated site and may also be reluctant to finance a property that has been remediated, usually due to concerns that government agencies do not permanently certify a site as clean. The result could be an environmental review of the property, additional loan points, a higher interest rate, or a lower loan-to-value ratio. In the end, the property owner could pay additional financing costs.

A damaged property may also incur restrictions in use. For example, a formally contaminated site may be limited to industrial uses, even if it had previously been a commercial or residential use. This issue must be individually studied for any damaged property.

Market resistance. At this point, the total costs and losses are subtotaled, and an adjustment is made for the overall market resistance to the property, if any. This adjustment reflects the market's post-repair resistance to purchase the property when similar properties without a history of defectiveness are available.

Valuation as is. To derive the value, as is, all the above issues must be addressed, quantified, and deducted from the value as if no DC exists. The total losses attributable to a DC can range from being nominal to exceeding the Class I value. Additionally, the costs of remediation may actually be minor compared with all the associated costs.

DC CLASSIFICATIONS

Class I—No Detrimental Conditions or Benign Condition. Class I is the most straightforward because it involves an absence of DCs. Many DC assignments include the initial step of determining the market value as if no DC exists. The formulas relating to the concepts of Classes I through X are summarized in figure 3.

This class also involves situations in which an act or event occurs, but the issue has no effect on value. Such cases can involve any one of the DC Classes II through IX. This concept is straightforward, but it can be the grounds for litigation.

For example, a plaintiff may contend that some condition affected his or her property

value, while the defendant claims that the event had no impact on value. One way to determine if an issue is, in fact, a DC is with a paired-sales analysis. In this process, market data that is clearly unaffected by the issue is collected and then compared with similar market data that is affected. If a legitimate DC exists, there will likely be a measurable and consistent difference between the two sets of market data; if not, there will likely be no significant difference between the two sets of data. When a published study about a neighborhood adjacent to a well-designed landfill in the Los Angeles area was compared with comparable neighborhoods some distance from the landfill, the results indicated no significant difference between the two neighborhoods in either current prices or appreciation rates.³

Class II—Non-market Premium. Class II includes assemblage, redevelopment zones, and other situations where the buyer paid a premium. This is a detrimental condition in terms of the higher price being paid by the buyer.

Class III—Market Condition. Class III includes the normal cycle of the real estate market when values increase, decrease, or remain level over a specific period of time. These patterns of value are simply the effects of the general economy coupled with real estate supply and demand. This is a significant classification because a certain condition might be suspected to have affected the value when, in fact, the DC was benign, and the market conditions caused the loss or gain in value.

In addition, each of the other graphs depicting the common characteristics of the impact of various DCs on value is based on level market conditions. In reality, market conditions may have an added impact in and of themselves, thereby requiring adjustments for market conditions with any one of the various classifications of DCs.

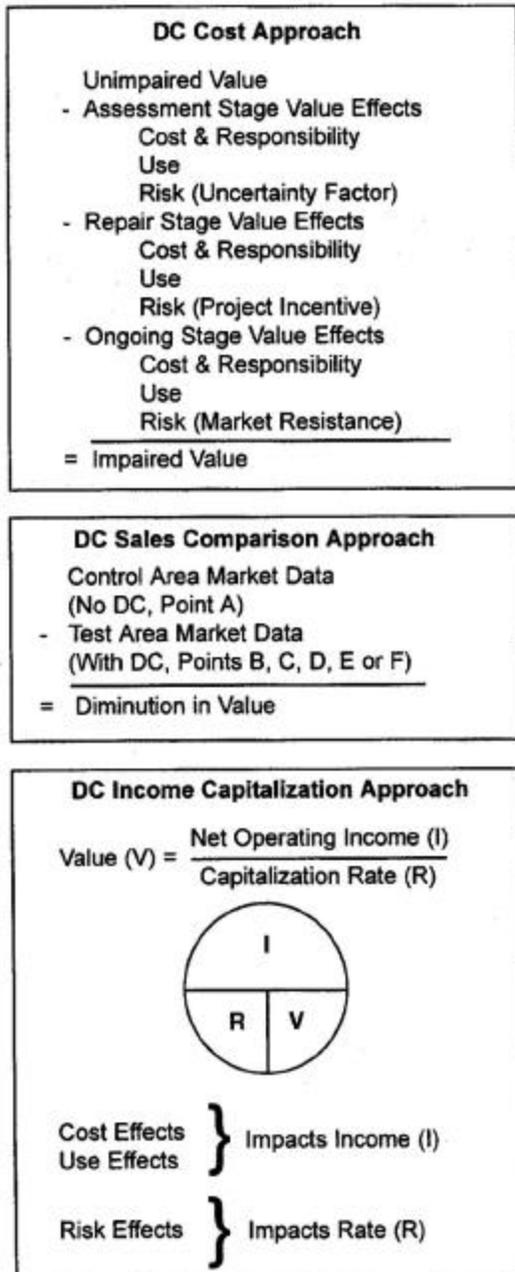
One way of measuring Class III conditions may be to study several comparable sales that resold at a later date. By comparing the initial and subsequent sales dates and values, a determination can be made about the market trends. Graphically, Class III simply reflects increased, decreased, or level market conditions over time.

Class IV—Temporary Condition. Because this class describes DCs that are only

During the remediation process, there may be disruptions to the property's use, resulting in a loss of rental revenues or the utility of the property.

3. Donald H. Bleich, M. Chapman Findlay, III, and G. Michael Phillips, "An Evaluation of the Impact of a Well-Designed Landfill on Surrounding Property Values," *The Appraisal Journal* (April 1991): 247.

Figure 3 Detrimental Conditions Valuation Formulas



temporary in nature, the loss in value is limited to the disruption caused by the temporary condition. The most common Class IV situation involves temporary construction easements in which a portion of a property is used by another party while adjoining construction is underway. Upon the completion of construction, the full use of the property is returned to its original state.

This temporary disruption can affect value. For example, if temporary construction disrupts the traffic patterns of a shopping center, the diminution in value may be extracted from the lost revenues, higher vacancy rates, and other related losses. The diminution in value would be in addition to the rental rate of the land being used during the temporary construction. Further, while the effects of bankruptcy are often a benign Class I DC, this situation may be a Class IV DC if there is substantial deferred maintenance or there are other temporary conditions that affect the value.

Another type of Class IV DC involves absorption losses. For example, if a particular condition causes a major tenant to vacate the building abruptly, the property value would drop upon the tenant's departure and then increase over time as the vacant space is absorbed. Absorption losses specifically include lost rents, leasing commissions, and tenant improvements.

Class IV conditions may also be the result of a crime scene or other tragic event. Media coverage of the incident might negatively influence the market's perception. Interviews with brokers and agents indicate that, when disclosed, a violent crime committed within a residence adversely affects value⁴. As depicted by the graphs, these types of conditions may either have a brief effect only or have a long-lasting effect that could diminish with time. In some extreme situations, the memories caused by the tragedy may be so unpleasant that the improvements are eventually demolished; however, the stigma tends to impact the site continuously.

Measuring Class IV DCs often involve comparing the subject property to other properties in similar Class IV situations and subsequently sold to buyers informed of the tragic event. (A lower sales price is often required to entice buyers to purchase these properties.)

The Class IV graphs may reflect only a short and temporary drop in value if the condition is minor and forgotten by market participants quickly. It may also reflect a sudden drop with a gradual increase in value as the market eventually becomes more accepting of the situation.

Class V—Imposed Condition Adverse external factors, eminent domain, undesirable acts, or forced events by another person or entity constitute Class V conditions.

4. Sheila A. Little, "Effects of Violent Crimes on Residential Property Values," *The Appraisal Journal* (July 1988): 342.

Specifically, the DCs can be imposed governmental conditions such as down-zoning, special bond assessments, or the designation of a property as a historic site. Examples of adverse external factors are dumps, landfills, factories that produce noise and bad odors, neighbors that allow their property to deteriorate, and transmission lines.⁵ They may also include the discovery that improvements were illegally constructed, or the development of surrounding nuisances (or perceived nuisances) such as a sewer treatment plant, airport noise, or a prison. For example, published studies illustrate that there is a measurable impact on values due to international airport noise.⁶ In addition, Class VI DCs apply to eminent domain situations, especially a partial taking, and to willful acts of the property owner, such as entering into a ground lease.

In some situations, the effects of an imposed condition may be relatively easy to assess. In other cases, the imposed condition may be unclear and require special studies to predict how the market will change. Upon full investigation and assessment, the uncertainties are eliminated and the value of the property generally increases.

Graphically, Class V often reflects a sudden drop in value upon the occurrence of the DC and a permanent loss in value as a result of the imposed condition. In a situation involving diminishing effects, such as a ground lease, the leasehold value gradually decreases over time.

Class VI—Building Construction Condition

The basic premise of both Class VI and VII DCs is that they are manmade, which means that they can often be repaired. Class VI DCs involve construction issues above grade. As such, they are relatively easy to assess, and often result in the restoration of the property's full value upon completion of the repairs. Typically, the problems are self-evident, and no special studies are required to determine the scope of the problem; however, all potential losses should be addressed.

To quantify these types of DCs, the appraiser must study the cost of repairs, engineering, related services such as relocating the tenant, free rent for the tenant while repairs are being

made, post-repair cleanup, and so forth. Some tenant relocation costs can partially, if not entirely, be mitigated simply by waiting until the property is vacant to make the repairs.

Depicted on a graph, a Class VI situation may show a drop in value upon the discovery of the condition and a return to full value upon the repair of the condition. In unusual circumstances, there may be an ongoing condition that remains because it is not physically or economically possible to cure, thereby resulting in a permanent loss in the value of the improvements. For example, if a construction defect cannot be economically repaired, it may be a situation similar to inadequate insulation or asbestos abatement. The most noteworthy example of this situation is asbestos containing materials, which because they may be impractical to remove from a building, are an ongoing condition. Air monitoring may be required throughout the life of the improvements and special handling and disposal costs would be incurred if the building is eventually demolished.⁷ Under this condition, the graphic illustration reflects a permanent loss of value because the condition remains, or is perceived to remain, unchanged over time.

Class VII—Soil or Geotechnical Construction Condition These DCs, which involve construction issues below grade, are more difficult to assess and repair than Class VI conditions because of the challenges of assessing conditions below grade and the associated drilling, coring, and excavation. This category of DCs could include site grading; soil cut, fill, and compacting; slopes; drainage; tunneling; or retaining walls.

Often, Class VII DCs can be assessed and repaired even if the foundation must be reinforced or the improvements underpinned. Like Class VI DCs, calculating the diminution in value would involve the review of the functional utility of the property, repairs that are necessary to prevent a loss to life or property, repair costs, engineering costs, disruption to the property, etc. These conditions are manmade and can usually be corrected although in some extreme conditions, they cannot be repaired and an ongoing condition may remain, affecting the value if the functional utility of the property is diminished or the market

Class VI DCs are relatively easy to assess, and often result in the restoration of the property's full value upon completion of the repairs.

5. Hsiang-te Kung and Charles F. Seagle, "Impact of Transmission Lines on Property Values: A Case Study," *The Appraisal Journal* (July 1992): 413.

6. Marvin Frankel, "Airport Noise and Residential Property Values: Results of a Survey Study," *The Appraisal Journal* (January 1991): 96-110.

7. Randall Bell, "The Impact of Asbestos on Real Estate Values," *Right of Way* (October 1994): 10-21.

or the market perceives the ongoing issue to impact the value. Thus, the functional use of the property and the necessary repairs must be carefully reviewed.

For example, if a site has fill soil that is up to 100 feet deep and differential settlement occurs, it may not be economically or physically possible to install piles and extra building foundations to the bedrock to support the improvements and fully mitigate the situation. As a result, it may be reasonable to expect that the property will be more prone to earthquake damage and continued settlement damage. In this type of condition, the value of the property may be permanently impaired and beyond the other Class VI and VII categories.

On the other hand, some Class VI and VII DCs do not have any effect on the rental rates paid by tenants, or the property's liability or utility and may, therefore, be questionable as Class VI or VII DCs at all, if the capitalization rate is also unaffected.

For example, if improperly compacted shallow soils cause some minor settlement cracks on the floor of a warehouse building, and similar settlement cracks are commonly found in comparable properties with no known soils problems, the issue may not have any impact on value. This is particularly true if the tenants' use of the property is unaffected by the condition and the marketability of the space is comparable to that of similar properties.

The Class VII graph indicates a loss in value when the condition is discovered and a return to the non-impacted value upon the assessment and repair of the condition. As stated, in some unusual conditions, there may be a residual market resistance remaining even after repairs are made.

Class VIII—Environmental Condition. Class VIII involves environmental contamination such as hydrocarbons, asbestos, radioactive waste, solvents, and metals. In these situations, remediation costs must be analyzed carefully. There may be a variance between estimated and actual remediation costs.⁸

However, in recent years, this concern has subsided somewhat due to the introduction of cost cap insurance and increased use of indemnifications by responsible parties. In addition, if the property is contaminated, there may be continued and justified concerns about problems and issues resurfacing in the future. The Environmental Protection Agency maintains a list of problem sites, including those yet to be investigated. These lists are available on request, and if a problem arises, a Freedom of Information Act officer can be contacted.⁹ No government agency will irrevocably certify a site as clean even if the site has undergone remediation and has *site closure* status.¹⁰ In fact, once contaminated, a site is always on a list and, as a result, may be reexamined in the future. Further, it is difficult to prove that all contaminants were removed and no longer exist. In other words, it is logically and scientifically impossible to prove a negative hypothesis and regardless of how much time, energy, or resources are expended, absolute assurance is impossible.¹¹ Figure 4 shows the general flow of activity related to a contaminated site and the possible circular nature of this process:¹² In recent years, "letters of nonresponsibility" and other mitigation techniques have elevated many of these concerns.

As shown on the chart, even with *site closure*, the sale, refinancing, or new use of a property may trigger a Phase I survey, which in turn could lead to a Phase II study. This, of course, could result in another review of the property by the government regulatory agency, with possible new political agendas or other factors altered since the previous site closure was issued. This means that, in rare instances, a formerly contaminated site could be subjected through the site assessment and remediation process again.

Stigma-related losses can be nonexistent, nominal or, in extreme situations, virtually destroy a property's value.¹³ When environmental features are viewed as repulsive, upsetting, or disruptive, they are stigmatized as undesirable.¹⁴ While engineering experts may possess the expertise to judge that a specific

No government agency will irrevocably certify a site as clean even if the site has undergone remediation and has site closure status.

8. Albert R. Wilson, "Emerging Approaches to Impaired Property Valuation," *The Appraisal Journal* (April 1996): 156. 9. Ralph K. Olsen, "Hazardous Waste Sites," *The Appraisal Journal* (April 1989): 234.

10. Wilson, 158.

11. Albert R. Wilson, "The Environmental Opinion: Basis for an Impaired Value Opinion," *The Appraisal Journal* (July 1994): 441. 12. Randall Bell, "Quantifying Diminution in Value Due to Detrimental Conditions: An Application to Environmentally Contaminated Properties," *Environmental Claims Journal* (October 1996): 135.

13. Peter J. Patchin, "Contaminated Properties and the Sales Comparison Approach," *The Appraisal Journal* (July 1994): 408. 14. Bill Mundy, "Stigma and Value," *The Appraisal Journal* (January 1992): 10.

situation is not a cause for concern, the non-engineer, who is also often the potential buyer and lender, may view a formerly damaged property with skepticism. In contamination cases, the reduction in value results from the increased risk associated with the contaminated property.¹⁵ Such ongoing concerns may create market resistance-sometimes referred to as stigma, onus, taint, or impairment against properties that have a history of problems and have potentially incurred future liabilities or hidden cleanup costs, as well as against the general hassle involved with owning the property. With source contamination properties, all elements of the DC Model should be considered.

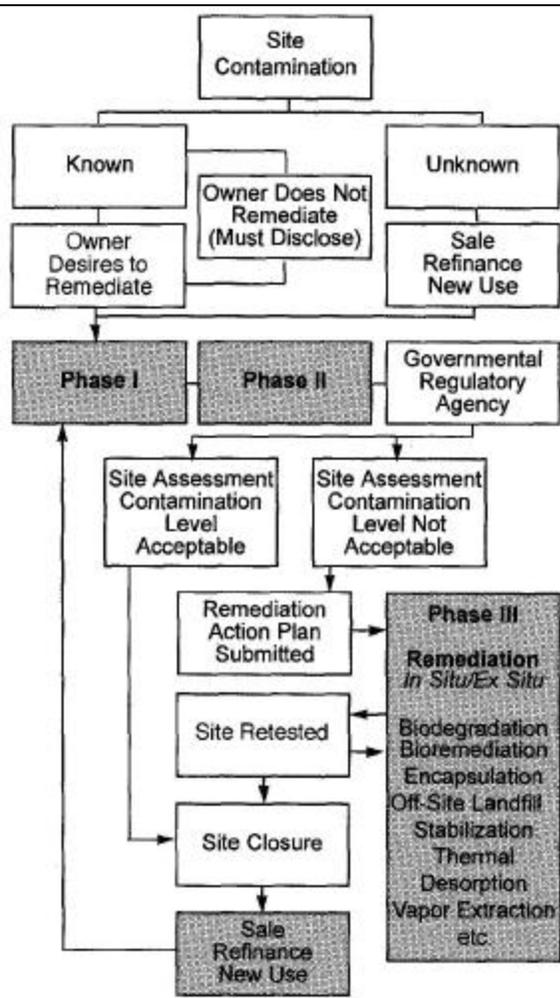
Class IX—Natural Condition Class IX involves curable natural conditions that may be economically and physically repaired. These would include earthquakes, tornadoes,

floods, landslides, endangered species, and other natural conditions.

These DCs may involve a significant safety issue to the occupants of the property. If the DC can be fully assessed and repaired, the property value may return to the previous level before the condition existed. However, if there is still a question about the effectiveness of the repair or remediation, there may be a residual loss of value. Again, the impact on value involves the costs to clean up or fortify the site, incidental costs, and any residual conditions. All the elements of the DC Model should be considered.

Class X—Incurable Condition This class represents the most serious cases, for the property may not be economically or physically remedied, resulting in considerable or total loss in property value. The property may be a liability if the condition creates a

Figure 4 Environmental Contamination: Flow of Events



15. James A. Chalmers and Scott A. Roehr, "Issues in the Valuation of Contaminated Property," *The Appraisal Journal* (January 1993): 33.

serious hazard or the cost to repair exceeds the property value.

Examples of Class X DCs would include extreme toxic or hazardous waste issues and major landslides-situations that pose a risk to life, health, and property, and cannot be economically and physically repaired. Even if the DC is curable, it would still be considered Class X because the problem cannot be cured by the property owner. For example, if a landslide originates in an adjoining canyon, the property owner cannot make repairs to the affected property because it belongs to another person or entity.

Class X conditions bring about a total or an overwhelming loss in value upon the discovery of the condition and are so severe that property becomes worthless or even a liability if the costs to correct the DC exceeds the property's Class I value.

Methodologies to Quantify Diminution in Value

General research sources. Regardless of the method used in quantifying the impact of a DC, market data must be collected and analyzed. The challenge is that comparable information on DCs is often not provided in typical appraisal reports. For this reason, specialized research methods must be employed. For example, if the DC is soils subsidence, a search may be conducted for all articles published on the topic. From this information, property owners and brokers may be contacted and interviewed. Also, government agencies, environmental engineers, and soils engineers often have logs of completed remediation projects from which specific projects may be identified and studied. Of course, brokers and sales agents often provide excellent leads on properties affected by DCs. Comps Infosystems, Inc., based in San Diego, California, now publishes market data nationwide that is categorized by the Bell Chart.

Paired-sales analysis. This process involves comparing sales affected by a DC with similar sales not affected by a DC. For example, a group of properties under the flight path of an airport can be compared with similar properties not located under the flight path.

Resale analysis. To conduct this analysis, the appraiser would study sales comparables and the

subsequent resales of the same properties, usually to determine the increase, decrease, or level conditions of market values, or to determine the impact of a DC by comparing values before and after the DC is discovered. For example, if there is a discernible pattern to the selling prices of a specific property type, the effects and direction of the market can be determined.

Cost-to-remediate analysis. Conducting this analysis means studying the costs to remediate : DC, including engineering, tenant relocation, lost rents, demolition, repair, cleanup, new tenant improvement buildout, leasing commissions, carrying costs, etc. Market data analysis. This analysis consists of studying the effects of DCs on other properties. Although the unique characteristics of every DC makes direct comparison difficult, market data can help support the appraiser's conclusions. A study designed to cross-reference remediation and stigma costs and losses illustrates the wide range of effects of DCs and provides market data on conditions of sales comparables (see table 1).

Direct capitalization analysis. This process capitalizes permanent lost rents brought about by a DC. For example, if a property leases for a certain rate before the construction of an adjoining sewage treatment plant and then leases for less upon the completion of the plant, the difference in the net operating income may be capitalized to determine the permanent impact of the DC. If the income and risks (capitalization or discount rates) are affected, the situation must be addressed, using specific methods.¹⁶

Discounted cash flow analysis. This analysis involves the calculation of the net present value of a stream of income that reflects an affected property's various costs and fluctuating revenues. If a property is undergoing asbestos abatement or soils remediation, the cash flow study would incorporate all the costs cited in the cost-to-repair approach. In addition, the cash flow would include air or ground water monitoring costs and, if some contaminants remain, any future demolition, disposal, or cleanup costs. Further, the discount rate may be increased to account for the perceived risks of property ownership, if supported by the market.

Modified cash flow studies are also required to measure the impact of a ground lease on leasehold estates. These leasehold

16. Richard A. Neustein, "Estimating Value Diminution by the Income Approach," *The Appraisal Journal* (April 1992): 283-287.

advantage studies involve the calculation of market and contract ground rents and the computation of the net present value of any difference.

ANALYZING DETRIMENTAL CONDITIONS

The basic guidelines for analyzing DCs are summarized in the following:

1. Always use market data when quantifying the impact of DCs on value. Quantifying damages based solely on experience and professional judgment is reckless and probably unethical, particularly when market data exists for virtually all DCs. In the absence of direct market data, surveys may be used.

Failing to research and apply relevant market data is the single most common flaw in DC analysis. Some individuals tend to lump all DCs together when discussing or writing about various conditions. Be careful to understand the limitations of such information, as there are distinct traits for each classification of DCs.

2. Be cautious in using market data from one DC classification when attempting to quantify the diminution in value of another DC category. This is the basic concept of comparing apples to apples. The common characteristics of each class of DCs are graphically distinct. Some DCs involve repairs and some do not; some involve permanent residual conditions while others diminish over time; some involve engineering studies and others do not, and so forth.
3. An appraiser should never go beyond his or her area of expertise. It is unethical for appraisers to go beyond their area of expertise, such as assessing soils conditions, making engineering calculations, identifying contaminants, estimating the extent of damages or contamination, or estimating the time to remediate.¹⁷
4. Consider the reliability of remediation estimates. It is not uncommon for remediation projects to incur cost overruns.

Many issues and questions should be considered, such as: Does the contractor have a contract clause that allows for additional costs? Is the property indemnified against cost overruns? Are the estimates best case, most likely, or worst case scenarios? Do bonds, cost capitalization insurance, or indemnifications exist that shift the liability overruns to the contractor, insurance company, or other party? Are the estimates itemized to reveal any additional incidental costs? Is the site assessment comprehensive enough to yield a realistic cost estimate?¹⁸

5. Always review the remediation costs and related engineering costs for "reasonableness". While real estate appraisers and analysts are generally not also engineers, it is not only possible but appropriate that these costs be reviewed for basic reasonableness.¹⁹
6. Consider all the associated repair costs. The actual cost of repair can often be relatively minor compared with all the associated costs, such as engineering costs, tenant relocation, lost rents, demolition, repair, clean-up, tenant improvement buildout, leasing commissions, and absorption. All costs should be itemized, categorized, and analyzed.
7. Never attempt to quantify damages based solely on the Bell Chart. The chart is in no way intended to quantify any loss in value. This can be accomplished only by a comprehensive study by a qualified expert. However, the Bell Chart does show the general issues, typical value patterns, and relative impact on values for various classifications.
8. Exceptions do exist, but usually only in more extreme circumstances. These charts reflect the common characteristics of DCs, but exceptions do exist. For example, a construction defect may be so major that it takes many years to repair. This situation may involve considerable disruptions to the tenants and even create media attention. In these types of conditions, the property value may be impacted by negative market reactions to the problems even after the repairs are fully completed.

Appraisers should always review the remediation costs and related engineering costs for reasonableness.

17. Appraisal Institute, "Guide Notes to The Standards of Professional Appraisal Practice, Guide Note 8 - The Consideration of Hazardous Substances in the Appraisal Process" (Chicago, Illinois: Appraisal Institute, 1991): D21.

18. Ibid., Guide Note 6-Reliance on Reports Prepared by Others, D14.

19. Ibid.

Table 1 Soils Contamination Survey

Number	Property	Value Uncontaminated	Value Pre-remediation	Estimated Remediation	Project Incentive and Market Resistance	Actual Remediation	Estimated Versus Actual
1	Industrial	\$1,100,000	\$700,000	\$100,000 (B)	30%	\$150,000	50%
2	Service station	\$550,000	\$390,000	\$500,000 (S)	29%	n/a	n/a
3	Subdivision	\$3,800,000	\$3,800,000	\$250,000 (S)	0%	\$100,000	-60%
4	Retail site	\$9,142,368	\$9,142,368	\$10,000,000 (S)	0%	\$20,000,000	100%
5	Industrial	\$1,000,000	\$400,000	\$175,000 (B)	51%	n/a	n/a
6	Industrial	\$700,000	\$580,000	\$100,000 (S)	n/a	n/a	n/a
7	Subdivision	\$2,000,000	\$1,268,000	\$150,000 (S)	n/a	n/a	n/a
8	Auto repair	\$655,000	\$500,000	\$100,000 (B)	10%	\$30,000	-70%
9	Service station	\$750,000	\$340,000	\$200,000 (B)	38%	\$700,000	250%
10	Industrial	\$500,000	\$330,000	\$30,000 (B)	30%	n/a	n/a

(S) = Seller paid remediation costs.

(B) = Buyer paid remediation costs.

Sigma losses computed on estimated remediation costs.

1 Project Incentive and market resistance losses computed by (value uncontaminated - projected remediation) / post-remediation value.

2 Remediation still in progress at the time of interview.

3 Remediation completed by seller without a contractor; reported a savings of \$150,000 on this basis.

4 The seller paid all remediation costs. The property had no value contaminated.

5 Remediation not started at time of interview.

6 Sold remediated, with \$150,000 in monitoring costs.

9 Buyer purchased property believing remediation costs would be low. In actuality, they were much higher than expected.

10 Remediation not started at time of interview.

Sources: COMPS InfoSystems, Inc., San Diego, California; Orell C., Anderson of PricewaterhouseCoopers, Costa Mesa, California; and Joseph B. Haeussler, MAI, Mason & Mason, Montrose, California.

9. Study the functional utility and mitigation issues carefully. The issues related to the DC's actual impact on the utility of a property must be addressed. For example, some DCs do not require immediate repair, and the costs may be significantly mitigated by merely waiting for a naturally occurring tenant vacancy before repairing the problem. Other DCs may affect the property, but the rents, occupancy, and resale value remain unaffected. In these cases, the DC may, in fact, be benign. How the DC has had a real or perceived impact on the day-to-day use of the property must be considered. For example, a few years ago asbestos abatement was considered a necessity by many. Today the perception that asbestos is a health risk has diminished.
10. Recognize the various dimensions of using the Bell Chart. The applications for using the standard Bell Chart classifications are far-reaching. In fact, it is possible that one property issue will involve the use of three or more classifications.

A property owner may contend that an adjoining development caused his or her property value to decline when market conditions are actually to blame. The property owner might inappropriately use the Class V criteria and presume an impact on value, but the proper analysis would involve a Class I analysis

to demonstrate that the condition is benign. Class III would be used to illustrate the real cause of the declining value. By properly classifying DCs, selecting the appropriate method, and following these basic rules, each individual situation may be more effectively and accurately studied. Relevant market data can then be researched and the proper methods applied.

CONCLUSION

Quantifying the value diminution of property affected by a detrimental condition can be a challenging appraisal assignment. The appraiser must recognize six basic issues: (1) the value as if the property is unaffected by the DC; (2) the value upon the DC's occurrence or its discovery; (3) the necessity for a proper and thorough assessment of the situation; (4) the determination of value upon completion of repairs-i.e., the condition is otherwise resolved; (5) the necessity for the value conclusion to take into account any ongoing costs; and (6) the need to examine the impact of any market resistance. In other words, the appraiser must examine the full spectrum of events-before remediation, the remediation process itself, post-remediation, and any post-repair market resistance caused by the situation. The result should be a meaningful and accurate assessment of how a detrimental condition has affected the value.