

significant amount of research has been published in professional literature over the last decade addressing environmental contamination. This article discusses environmental contamination and much of the more recent body of work within the context of the Detrimental Conditions (DC) Matrix.¹ The Matrix illustrates where accepted valuation methods fall into the overall picture. This is particularly important in evaluating the distinctions and valuation characteristics of source, nonsource and adjacent-proximal properties (SNAP). In 2003 USPAP incorporated this basic framework within AO-9. The DC Matrix and AO-9 frame the three stages of analysis and related cost, use and risk issues that may warrant consideration for matters involving any environmental or detrimental conditions.

environmental contamination

AN ANALYSIS IN THE CONTEXT OF THE DC MATRIX

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Many appraisers, real estate economists, real estate analysts, and attorneys are familiar with the Detrimental Conditions (DC) Matrix, which outlines the assessment, repair, and ongoing stages of environmental contamination with the cost, use, and risk issues involved. The DC Matrix frames the three stages of analysis and related issues that may warrant consideration for matters involving any environmental or detrimental condition.

The DC Matrix can be very useful in exposing “junk science” appraisals. Some appraisers simply assume that a certain situation has caused a diminution in property value, and then guess the amount of damage. When a prospective buyer is asked, “How would you like to live next to a landfill, power line, contaminated lake, freeway interchange, or some other externality?” the answer is inevitably negative. Nonetheless, the relevant question is how much weight the condition is given by the market, relative to all the other issues considered in a decision to purchase or lease a property. With this approach, it becomes clear that many situations may not have any material impact in the market or that a significant portion of the market

would give the situation little weight when considered in relation to all the positive attributes of the property.

In Dr. Mark Dotzour’s article “Groundwater Contamination and Residential Property Values,”² he states that it is important to do specific market research: This research offers empirical evidence that not all properties within a contaminated site may suffer diminished value, but this research also measures only one market’s reaction at one



period of time to the specific event in one local community. The market reaction in other areas could be different.³

John Dorchester, Jr. recently asked the question, “Can the ultimate reliability of the valuer’s results be demonstrated and supported by credible market evidence?”⁴ Richard Roddewig noted that:

Appraisers must look to the marketplace for answers and analyze what the marketplace itself is actually saying. Scientific conclusions about persistence of contaminants do not necessarily correlate with the marketplace’s conclusion about the duration of economic impact on real estate.⁵

One could say that a property is innocent until proven guilty. For a property to be “guilty” of any diminution in value, there must be clear, relevant and objective market data that meets the test of market value. It must also demonstrate that the market does indeed give the condition enough weight to diminish its value. The DC Matrix not only assists in organizing and completing this research, but it sheds light on the possible reasons for any diminution in value.

Table 1 The DC MATRIX

	Assessment	Repair	Ongoing
Cost	<ul style="list-style-type: none"> Cost to assess and responsibility Engineering Phase I, II, III studies 	<ul style="list-style-type: none"> Repair costs and responsibility Repairs Remediation Contingencies 	<ul style="list-style-type: none"> Ongoing costs and responsibility Operations and maintenance (OGM) Monitoring
Use	<ul style="list-style-type: none"> All loss of utility while assessed Disruptions Safety concerns Use restrictions 	<ul style="list-style-type: none"> All loss of utility while assessed Income loss Expense increase Use restrictions 	<ul style="list-style-type: none"> Ongoing disruptions Material alterations to highest and best use
Risk	<ul style="list-style-type: none"> Uncertainty factor Discount, if any, where extent of damage 	<ul style="list-style-type: none"> Project incentives Financial incentives or risk, if any, during repairs 	<ul style="list-style-type: none"> Market resistance Residual discount, if any, due to a historical situation



SNAP: Source, Nonsource, and Adjacent-Proximal Properties

One of the basic facts relating to contamination and liability under the law is whether a property is a source of a release that poses a risk or merely a nonsource or adjacent property onto or into which the contamination has migrated or is merely proximate to.⁶ This is a fundamental distinction for contaminated properties, and one that is especially important to liability under CERCLA. It is also an area that confuses many appraisers.

They may use, for instance, conclusions based on source property case studies and apply their observations to an adjacent subject property. Without making weighty and overly subjective adjustments to these observations, they are likely to reach egregious conclusions. These properties, therefore, should be considered within the context of a similar DC Matrix format and a specific market data set. The distinction between source and nonsource properties has been the basis for claims in many civil matters and is also important for assigning legal liability under other statutes, regulations and remedial cost options.

SOURCE

The affected area or contamination origin, called a “facility” for Superfund purposes, includes all the air, soils, and waters contaminated by the risk source, and may include any number of legal parcels. In Table 2, the DC Matrix represents the general areas of study. The significance of the DC Matrix, as it relates to the source property, is the entire spectrum of liability. Under the Superfund Law, a source property has strict joint and separate liabilities for all costs to remediate the entire area affected by the problem. Thus, the appraiser needs to address and consider

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Table 2 The DC MATRIX: SOURCE PROPERTY

	Assessment	Repair	Ongoing
Cost	Possible	Possible	Possible
Use	Possible	Possible	Possible
Risk	Possible	Possible	Possible

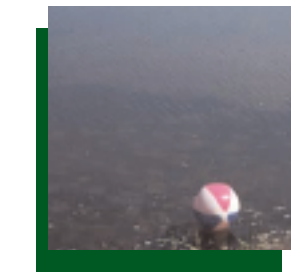
each of the nine cells for a thorough analysis. However, while each should be considered, not all may necessarily be applicable.

NONSOURCE

A nonsource property may be part of the facility created by the release on the source site. The owner of the nonsource property, however, does not generally have liability for the costs of remediation because the contamination comes from an outside source that has no relationship in terms of ownership of the nonsource site. There generally are no repair costs to the owner, particularly if the source property is identified and the owner is financially viable. The level of any value diminution at a nonsource site is typically less than an otherwise similar source site. Because the owner of a source property is usually responsible for the costs of cleanup and other issues related to environmental liability, the owner of a nonsource property is far less involved, and generally is not responsible at this level. There is a major distinction between these two circumstances. The DC Matrix in Table 3 represents possible areas of study.

The DC Matrix is useful in identifying areas requiring investigation by the appraiser. If the source property owner has been determined responsible for abatement, accepts such responsibility, and has the sufficient financial





resources, it becomes apparent that certain costs associated with the three stages are not applicable.

ADJACENT—PROXIMAL

An adjacent property is not a part of the facility, but adjoins either a source or nonsource property. It is not directly affected by the release at the facility and generally has no liability for any part of the remedial process. As with nonsource properties,

adjacent properties may or may not have a value loss pattern. Proximal properties are not directly adjacent to the source or nonsource properties, but are separated from them by other adjacent parcels or natural barriers. They are simply “in the area” but do not abut adjacent and proximal properties are not contaminated, which again refocuses the relevant study. The DC Matrix in Table 4 represents areas of research.

If the source property owner is responsible for the costs associated with the assessment, repair and ongoing stages, has accepted responsibility, and is financially sound, then these issues are most likely not applicable to adjacent or proximal sites. Generally, there are no use issues. However, there may be exceptions like use interruptions before and during remediation. Also, within the ongoing stage, there may be changes in highest and best use or land use restriction

Table 3 The DC MATRIX: NONSOURCE PROPERTY

	Assessment	Repair	Ongoing
Cost	Generally none	Generally none	Generally none
Use	Possible	Possible	Possible
Risk	Possible	Possible	Possible

Table 4 The DC MATRIX: ADJACENT-PROXIMAL

	Assessment	Repair	Ongoing
Cost	Generally none	Generally none	Generally none
Use	Generally none	Generally none	Generally none
Risk	Possible	Possible	Possible

of the adjacent subject. Typically the potential risk relates to negative publicity and asserted third-party fears, among others. It is possible that community outrage⁷ over the fears of possible illness, offsite migration of contaminants, and loss of property value may translate into risk.

Robert Simons found that in Fairfax County, Va., adjacent residential property, in proximity to a leaking historical pipeline right of way, might potentially reduce the value of the properties.⁸

While risk is possible in these adjacent-proximal situations, these properties are very distinct from source or nonsource properties in that they are not and have never been contaminated by the source property. Accordingly, there are generally no costs or losses of use, which often are components that drive risk.

With the applicability of the nine quadrants of the DC Matrix discussed in the SNAP context, it is useful to examine each of the nine quadrants of the matrix in more detail. In fact, all relevant and consequential issues will inevitably fall into one of these nine quadrants. ❖

An in-depth discussion of the nine quadrants will be featured in the next issue of right of way Magazine.

REFERENCES

¹ Randall Bell, Real Estate Damages: An Analysis of Detrimental Conditions (Chicago: Appraisal Institute, 1999): 8–15. Also see Randall Bell, “The Impact of Detrimental Conditions on Property Value,” *The Appraisal Journal* (October, 1998): 380–391.

² Mark Dotzour, “Groundwater Contamination and Residential Property Values,” *The Appraisal Journal* (July, 1997): 279–285.

³ *Ibid.*, 283.

⁴ John D. Dorchester, Jr., “The Federal Rules of Evidence and Daubert: Evaluating Real Property Valuation Witnesses,” *The Appraisal Journal* (July, 2000): 306.

⁵ Richard J. Roddewig, “Temporary Stigma: Lessons from the Exxon Valdez Litigation,” *The Appraisal Journal* (January, 1997): 100.

⁶ Bell, 128–129.

⁷ Peter M. Sandman, PhD, *Responding to Community Outrage: Strategies for Effective Risk Communication*, (Fairfax, VA: American Industrial Hygiene Association, 1993).

⁸ Robert A. Simons, “The Effect of Pipeline Ruptures on Noncontaminated Residential Easement-Holding Property in Fairfax County,” *The Appraisal Journal* (July, 1999): 255–263.