Expert witness testimony in complex environmental litigation

C. M. Denton
Varnum, Riddering, Schmidt and Howlett LLP, Grand Rapids, MI, USA

Abstract

Modeling of emissions and contamination can result in significant cost-savings as compared with additional sampling and analysis, and is frequently utilized by potentially responsible parties as well as governmental agencies for air permitting, remedial investigations, corrective measures studies, and engineering design. The science of modeling has been challenged in federal and state courtrooms across the country. Questions have been raised as to the reliability, predictability and specificity of contaminant fate and transport modeling by various adversaries. This paper will review and discuss recent court rulings and evidentiary issues regarding contaminant fate and transport modeling in litigation and related expert witness testimony.

Keywords: groundwater models, Daubert, expert witness, rules of evidence, CERCLA, limitations of modeling, fate and transport, MODFLOW, case studies.

1 Introduction

This paper is a review of expert witness testimony utilizing computer modeling of the fate and transport of environmental contamination. Models provide an approximation of field situations, and are commonly used to simulate the movement of groundwater, surface water, air, and sediments, as well as the distribution of chemicals in these media. Models can be used to explain current conditions, predict future conditions, and recreate past conditions.

There are two conditions that distinguish modeling for the courtroom from modeling used for typical consulting or research. First, because of the financial stakes typically associated with court cases, modeling for the courtroom often attracts more intense scrutiny than models created for other purposes. Second,
although the modeling process for the courtroom must be fully documented with all attendant technical support, what is actually presented in the courtroom must be skillfully distilled and simply explained so that the non-technical adjudicators can readily understand the modeling implications relative to the dispute.

In this paper, the focus is on modeling contaminant fate and transport in groundwater, although the principles are generally applicable to movement of chemicals in other media as well. Groundwater contamination modeling has been more widely conducted and is the subject of more litigation than other media. The court rules that apply to expert witness testimony are summarized, and selected case studies are presented.

2 Why model contaminant fate and transport?

The reasons for creating a model of chemical movement in the environmental field can be grouped as follows:

1. Prospective modeling is used to predict the outcome of an engineering modification of the field situation. This could include simulating the effectiveness of active remediation (e.g., determining the capture zone of a pump and treat groundwater remediation system), pollution control (e.g., defining a wellhead protection zone), or permitting (e.g., predicting the outcome of in situ remediation or air emissions control technology).

2. Retrospective modeling is used to look back at the cause of an environmental impairment. For example, retrospective modeling could be used to determine which industrial site is responsible for a groundwater plume when operations on many adjacent properties used the same chemicals, or to determine which operation(s) was (were) responsible at a known release source when there have been multiple facility operators over time.

3. Cost-savings modeling is used to minimize monitoring and sampling costs. Once the model for a site is operational and the processes that are occurring are well understood, regulators are more likely to allow cost-saving measures, such as a reduced monitoring frequency and/or a lesser number of monitoring wells. This may be useful, for example, in determining a mixing zone for direct or indirect discharges to surface water. Also, the model could be used to pinpoint and limit areas where more data are required, reducing the need for a “wall-of-information” approach.

Of these three classifications of modeling, prospective and retrospective modeling are more likely to be used by expert witnesses in court cases.

3 Limitations of models

Groundwater models do not precisely and absolutely predict the behavior of an actual groundwater flow system or the actual movement of chemicals in the environment; however, well-prepared models can reasonably approximate contaminant fate and transport. There are many reasons for this degree of
uncertainty. For example, the field hydrogeologic conditions are not known everywhere; in fact, only a small percentage of the actual field situation is observed and measured, and the remainder is inferred. Furthermore, except for measurements of hydraulic head and thicknesses of geologic units, field parameter measurements, such as hydraulic conductivity, are not exact.

“Groundwater flow” models simulate the distribution of groundwater elevations (called “hydraulic head” or “head”) in a field situation. The output from these models can be used to determine groundwater flow directions, groundwater velocity, and temporal changes in head due to groundwater withdrawals or additions. “Solute transport” models are also commonly used for environmental contamination lawsuits to predict or recreate chemical concentration distributions in groundwater. These models are more complex than flow models because they rely on a groundwater flow model plus characterization of the chemical source and chemical fate and transport factors (advection and dispersion, retardation, and chemical reactions).

If the purpose of the contaminant fate and transport model is only to assess whether a groundwater plume has impacted or will affect a location, it is preferable to use a simple advective transport model which simulates chemical transport using only advection and retardation. “Particle tracking” simulates groundwater flow paths and estimates groundwater velocity by combining a groundwater flow model with a particle tracking code. More complex “full transport” models with many variables are sometimes necessary, but are subject to more scientific and legal challenges as to their accuracy and acceptability.

A groundwater model is not reality, it is a reasonable approximation. The uncertainty in a model should be reflected in the information that is presented with the model, including a sensitivity analysis. A model can be further constrained by calibrating the model to other types of field data and observations. In United States Aviation, et al. v. Tucson Airport Authority, et al. [1], the defense expert’s groundwater flow model was criticized since no groundwater contamination was detected at a monitoring well location that was encompassed by the simulated plume; therefore, either the groundwater flow model (flow direction) or the contaminant transport model was faulty. In In re Water Rights of Park County Sportsmen’s Ranch [2], the Colorado Supreme Court addressed modeling of impacts from a public water project on the South Platte River and its tributaries, including MODFLOW for the groundwater system. The applicants’ experts committed errors including failure to conduct a sensitivity analysis, failure to properly calibrate the model, and failure to explain anomalous results; neither the groundwater or surface water models produced sufficiently reliable results, therefore, and the case was dismissed.

The road to the best use of models is by following the modeling practices and steps outlined in the relevant literature and agency guidance, such as United States Geological Survey (“USGS”). (See also, References attached hereto [3–17].) Also, use field data and other evidence to further constrain the model. Finally, ask a simple question of the model and its components: “Does this make sense in light of all of the observed conditions at the site?”
4 Expert environmental testimony

In virtually every environmental case, expert testimony will be required, whether it is used to prosecute or defend against a claim. This section details the procedural and evidentiary rules applicable to expert witnesses in federal court. (Note: State court rules and requirements can vary, but are often based on the federal precedent discussed below; nevertheless, local practice in the relevant jurisdiction should be consulted.)

4.1 Federal Rule of Evidence 702/Daubert

Federal Rule of Evidence 702 governs the ultimate admissibility of an expert’s proposed testimony at trial. That Rule provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Under the seminal United States Supreme Court case of Daubert v. Merrell Dow Pharmaceuticals, Inc. [18], judges ensure that expert testimony is “not only relevant, but reliable.” Id. at 589. This “gate-keeping” function applies not only to scientific or technical knowledge, but to all types of expert testimony. See Kumho Tire Co., Ltd. v. Carmichael [19].

The Daubert Court expressly declined to set forth a bright line test for the admission of expert testimony, but rather identified a number of factors to be considered when making this determination:

- Whether the theory or technique employed by the expert is generally accepted in the scientific community;
- Whether the theory or technique has been subjected to peer review and publication;
- Whether the theory or technique can be or has been tested;
- Whether there are standards controlling the technique’s operation; and
- Whether the known or potential rate of error is acceptable.

The Supreme Court has repeatedly emphasized the flexibility available to judges in determining the reliability of proffered expert testimony: “[T]he trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable.” Kumho Tire, 526 U.S. at 152.

The reliability prong of the Daubert test resulted in the exclusion of expert testimony in Dunn v. Sandoz Pharmaceuticals Corp. [20]. Plaintiff’s expert offered the opinion that a prescription drug causes strokes; however, there was
no epidemiological study to demonstrate such an association, and this causation testimony was therefore not reliable and was not admitted.

The focus of this flexible inquiry under Daubert as to admissibility of expert testimony, however, must always be the methods employed by the expert rather than the results of the expert’s work: “The inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity and thus the evidentiary relevance and reliability of the principles that underlie a proposed submission. The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.” Daubert, 508 U.S. at 594-95. Any attack on the expert’s conclusions will almost always be for the jury to decide—a judge may only examine the principles and methods employed by the expert to determine their scientific validity and admissibility. If those principles and methods pass such scrutiny, then the expert’s testimony is admissible and available for the jury to evaluate.

Although much of the Daubert litigation relates to qualifications of expert witnesses and their methodologies in formulating opinions, relevance is always a basic consideration under the Federal Rules of Evidence. Fundamentally, Rule 702 allows expert testimony only if it will assist the trier-of-fact (judge or jury) to understand the factual evidence or determine disputed facts. In the Natural Resources Damages (NRD) case for groundwater contamination, New Mexico v. General Electric Co. [21], defendants’ motions to exclude the State’s expert testimony were generally granted, although the witnesses were qualified as experts and the modeling estimates of the nature, extent and location of contamination were sufficiently reliable; however, the court found the opinions did not “fit” the relevant issues in the case and therefore would not assist the trier-of-fact. This recent decision is a reminder that expert testimony is only a piece of the overall puzzle in the strategic litigation planning.

4.2 Federal Rule of Evidence 703

The other principal evidentiary issue to be analyzed with respect to expert testimony is what exactly an expert is allowed to use as the basis for his or her opinion. According to Federal Rule of Evidence 703:

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence in order for the opinion or inference to be admitted. Facts or data that are otherwise inadmissible shall not be disclosed to the jury by the proponent of the opinion or inference unless the court determines that their probative value in assisting the jury to evaluate the expert’s opinion substantially outweighs their prejudicial effect.

Consequently, an expert’s opinion may be based on a wide range of sources, including otherwise inadmissible hearsay, if others in the field reasonably rely on such materials. This Rule gives expert witnesses a good deal of leeway in
forming their opinions, including, for example, reliance on other consultants’ field sampling if found to be reliable. Note, however, that some states have adopted evidentiary rules which require that all information on which an expert’s opinion is based be in evidence. See, e.g., Michigan Rule of Evidence 703.

4.3 Procedural rules governing expert witnesses

In federal court, the identification and disclosure of expert witnesses is governed by Federal Rule of Civil Procedure 26. Each expert witness who has been retained by a party to the lawsuit to give testimony must produce a signed, written report. (Non-testifying consultants are not subject to this requirement.) Rule 26 also sets forth a laundry list of items that must be included in an expert’s written report, including the following:

- A complete statement of all opinions to be expressed by the expert and the bases and reasons therefor;
- A list of all data or other information considered by the expert in forming his or her opinion;
- Any exhibits to be used as a summary of or support for the expert’s opinion;
- A list of all publications authored by the witness in the preceding ten years;
- The compensation to be paid to the expert; and
- A list of any other cases in which the expert has testified as an expert witness, either at trial or in deposition, in the preceding four years.

This Rule 26 information is useful not only to critique the proffered opinions, but also the testifying expert’s qualifications. The witness must be “sufficiently qualified [as an expert] by education, knowledge, training, and experience in the specific field of science.” Clark v. Safety-Kleen Corp. [22]. Whether exposure to a solvent had caused personal injury was properly the subject of expert opinion by a research chemist, according to the New Jersey Supreme Court, because of his knowledge of the chemical properties of the cleaner (even though he was not a medical doctor).

5 Case studies

As noted above, the key inquiry when determining the admissibility of a proposed expert’s testimony is whether the methodology is adequate—the expert’s ultimate conclusions typically should not bear on the threshold issue of admissibility. The following cases illustrate the application of these rules in the context of environmental litigation, an area of the law in which expert testimony is often a focal point to explain relative responsibilities for contamination.


The danger of failing to comply with Federal Rule of Evidence 702 and Daubert is demonstrated by Freeport-McMoran Resource Partners Ltd. Partnership v. B-
B Paint Corp. [23]. This case involved a CERCLA contribution claim between potentially responsible parties (“PRPs”) for environmental clean-up costs incurred at a former co-disposal landfill site. Each defendant allegedly shipped drums of waste to an incineration facility, which then sent the drums on to the final waste disposal landfill site. The plaintiff alleged that, after the liquids were drained at the incineration facility, the drums still contained hazardous sludges or residues, which caused contamination at the landfill site.

“Trans-shipper” PRP liability was the crux of the dispute; however, the plaintiff had no direct evidence that any of the defendants’ wastes were hazardous and actually disposed at the landfill site. The plaintiff therefore relied on an expert witness who based his proffered opinions “on [his] review of records and information, including deposition testimony, relating to the drummed wastes of each Defendant...as well as [his] personal knowledge and expertise relating to hazardous substances.” Id. at 831. Defendants filed a motion to exclude that expert testimony, citing the expert’s deposition testimony which indicated that he had “no personal knowledge” about any of the defendants’ alleged waste shipments and that “he conducted no studies, experiments, or literature searches upon which to rest his opinions.” Id. at 833.

Significantly, the plaintiff’s expert admitted that he “did not follow any published professional standards in reaching his opinions, that there are no peer reviewed standards for the work he performed, and ... he did not perform any scientific tests to confirm his conclusions and that he did not evaluate any margin of error.” Id.

The court determined that the plaintiff’s expert testimony was inadmissible for failure to meet the Daubert reliability threshold:

The proposed expert’s testimony does not reflect a “theory or technique” that can and has been tested. . . . [The expert] can point to no peer review standards for the work he performed. He has not computed a “known or potential rate of error,” nor has he identified “standards controlling the technique’s operation.” Most importantly, plaintiff has not demonstrated that [the expert’s] theory or technique enjoys “general acceptance” within a “relevant scientific community.” The record is utterly lacking in any indicia that would establish any of the Daubert factors.

* * *

[T]his Court finds that proposed expert [witness’s] testimony does not meet the Daubert requirement of scientific reliability. [The expert] is unable to substantiate his conclusions with any source other than his own “experience.” Plaintiff has failed to meet its burden of establishing that [the expert’s] conclusions are “based on sound science” by the “objective, independent validation of the expert’s methodology.” [citation omitted] [The expert] has utterly failed to point to any “objective source—a learned treatise, the policy statement of a professional association, a published article in a reputable scientific journal or the like -- to show that [he] has followed the scientific method. . . .”

Id. at 833-834.
After excluding the proffered testimony of the plaintiff’s proposed expert, the court went on to grant defendants’ motions for summary judgment because the plaintiff had been left with no evidence that they had arranged for disposal of hazardous wastes at the landfill site.

5.2 United States v. Dico, Inc.

_Dico, Inc._ [24] is an example of establishing the proper foundation for expert testimony and thereby overcoming challenges to admissibility. U.S. EPA brought this action under CERCLA to recover response costs incurred in connection with the cleanup of contaminated groundwater allegedly impacting the Des Moines, Iowa public water supply. The EPA claimed that the defendant was responsible for the release of certain contaminants from its property, while the defendant attempted to show that the contamination had come from other sources. The defendant moved to exclude the testimony of the government’s expert witness, citing _Daubert_ and claiming that “his methodology was unreliable.” _Id._ at 869. The court held the challenges to admission of the expert’s testimony to be without merit.

The court found that the defendant’s objection to the expert’s proffered testimony on the grounds that the expert had ignored other possible sources of contamination was not supported by the record. The court ruled that the computer model used by the expert, MODFLOW, was “sanctioned by the EPA and is considered a standard model that is acceptable and commonly used by hydrologists.” _Id._ at 870. The court also concluded that the expert had properly considered all of the evidence that the defendant had accused him of ignoring. The challenge that the expert’s testimony was based on insufficient data was also rejected by the court “because ‘the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination,’ the District Court properly refused [the defendant’s] invitation to exclude [the expert’s] testimony on this ground.” _Id._ at 872. In other words, this objection would be for the fact-finder to weigh the significance of the testimony, but would not exclude the evidence.

_Dico, Inc._ is an excellent reminder of the basic principle that, if the expert’s methodology is sound, it is highly unlikely that a court will preclude that witness from testifying. Conversely, if the expert’s methodology is suspect, as it was in _Freeport-McMoran_, a party runs the risk of being left without any expert testimony whatsoever on critical issues.

5.3 Dura Automotive Systems of Indiana, Inc. v. CTS Corp.

The City of Elkhart, Indiana’s water supply became contaminated by TCE. The EPA, after remediating the contamination, sued several entities including Dura Automotive Systems to recover the costs of the cleanup. Dura, in turn, claimed that CTS was responsible for some of the pollution and should therefore be required to share Dura’s cleanup liability [25]. At a _Daubert_ hearing, the District
Judge disqualified Dura’s sole expert witness, and then found that the remaining evidence was insufficient and granted summary judgment for CTS.

At issue was whether groundwater contamination beneath CTS’s plastic plant had seeped into the City well field in the late 1970s or early 1980s, contributing to the pollution. This could only be the case, however, if CTS’s plant was within the well field’s “capture zone,” meaning the area within which groundwater, if present, could be expected to flow to the well field. An environmental consultant for EPA in the original lawsuit placed CTS’s plant outside the well field capture zone. Thus, in its contribution action against CTS, Dura designated a hydrogeologist as its only expert witness to contradict EPA’s conclusion. At his deposition, however, Dura’s expert witness admitted that he was not an expert in mathematical models of groundwater flow and that the modeling on which he relied for his conclusion that CTS’s plastics plant was indeed within the well field’s capture zone had been done by other employees of his consulting firm, using two models, QuickFlow (a 2-dimensional steady-state and transient groundwater flow interactive analytical element model) and SLAEM (single-layer analytic element model). Id. at 612. When CTS moved that Dura’s expert be barred from testifying, Dura responded by producing affidavits from four professional groundwater-flow modelers who attested that the models they had used were reliable and appropriate for determining the well field’s capture zone. The District Judge granted CTS’s motion to strike the affidavits as untimely; without the affidavits, there was insufficient evidence of the reliability of the models, such that Dura’s expert could not testify.

On appeal, Dura argued that the reports were merely attestations showing that its expert was competent to report the results of the modeling exercises undertaken by employees of his consulting firm. The court noted that an expert witness is permitted under Federal Rule of Evidence 703 to use assistants in formulating his expert opinion; however, this analysis becomes more complicated if the assistants are not merely “gophers” or “data gathers” but exercise professional judgment that is beyond the testifying expert’s expertise. Id. at 613. A scientist, however well credentialed, is not permitted to be the mouthpiece of a scientist in a different specialty. Id. at 614.

… [the expert’s] assistants did not merely collect data for him to massage or apply concededly appropriate techniques in a concededly appropriate manner, or otherwise perform routine procedures, and that he himself lacks the necessary expertise to determine whether the techniques were appropriately chosen and applied.

Id. at 615.

The court pointed out that there were two crucial issues in the case: the map of the capture zone and whether, if CTS’s plant was within it, how much if any of the contamination of the well field was due to the groundwater from beneath that plant. (These disputes were of course highlighted by EPA’s conclusion contrary to Dura’s expert.) The court held that the expert was not competent to testify on the first issue and, without the expert, Dura could not get to the second issue and could not prevail in the case; therefore, Dura’s contribution claim was dismissed.
See also, LeClercq v. Lockformer Co. [26], a class action lawsuit for VOC groundwater contamination in which proposed testimony by four experts was addressed by the Judge under Daubert: two of the experts were found qualified and offered relevant and reliable testimony; however, another expert, although a qualified hydrogeologist, was not qualified to testify as to computer modeling of groundwater flow (as in the Dura Automotive case above); and finally, the last expert was also qualified to testify on hydrogeology, but failing to address material facts (e.g., non-detect samples) made his opinion unreliable and inadmissible (which should be compared with the Dico case above).


The Nestle case [27] involved an action by local citizens to enjoin the defendant’s pumping operations for a water bottling plant. Nestle Waters North America, Inc. (“Nestle”) developed a well field known as “Sanctuary Springs” as a source for spring water. Slip Op. (Feb. 13, 2004) at 5. Nestle was initially approved by the State DEQ for four wells at the site and began commercial pumping. The plaintiff citizens’ group contended that Nestle’s use of water from the aquifer was prohibited under both common law theories and Michigan environmental statutes, including the Michigan Environmental Protection Act. The central issues in the case were the projected effect of the pumping operations on the water levels in the aquifer and surface waters, as well as the projected impact of those reduced levels on the environment and natural resources. The court noted that a major problem in analyzing the effects of Nestle’s pumping operation was that the pumping operation was largely underground and thus hidden from view. Id. at 12. (This, of course, is a challenge in most if not all groundwater contamination cases, as well.) Therefore, the effects of Nestle’s pumping had to be determined largely by observing changes in the surface waters over time. The analysis was further complicated by limited data and complex environment, and computer modeling was used by both parties’ experts to show the projected effect of the defendant’s pumping operations.

As a preliminary matter, relying on state court rules, the court found that both experts were qualified in the field of hydrology and related computer modeling. Further, the court found the experts’ computer modeling methodologies were generally reliable. However, the court noted the experts varied significantly in their use of computer modeling. For example, the court noted (approvingly) that the plaintiff’s expert never undertook to model the entire ecosystem hydrologically, but only used modeling to analyze components of the system rather than to “balance” the entire system. In contrast, the court found that the defendant’s expert attempted to model the hydrologic environment to “balance” multiple factors, an effort that the court found caused unreasonable variables in the system. (The lesson here may be that more complicated modeling creates more opportunities for confusion and challenges.)

Considering the experts’ testimony, including both the factual evidence they relied upon and their respective methodologies, the Judge as fact-finder determined the plaintiff’s expert testimony was more credible than the
defendant’s expert. The Judge held that data and observation should carry more weight than modeling when sufficient evidence is available. This is important guidance for other modeling projects. See also, In re Park County Sportsmen’s Ranch, above. To the extent actual field data can be utilized rather than modelled results, fact-finders may be more receptive. Because the Judge found the plaintiff’s expert testimony to be more credible and supportable, the court based its findings regarding the projected impact of Nestle’s pumping operations largely on the plaintiff’s expert testimony, and ruled that Nestle’s pumping operation should be permanently enjoined. Id. at 67. The court’s injunction is being appealed in the Michigan Court of Appeals.

5.5 Aero-Motive Co. v. Beckers

In Aero-Motive [28], the plaintiff current site owner brought CERCLA and other legal claims against the former site operator defendants to recover response costs for the cleanup of historical soil and groundwater contaminants at a manufacturing facility near Kalamazoo, Michigan. The plaintiff was the purchaser of defendants’ business in 1972. A few years after the purchase, the plaintiff installed an underground storage tank (“UST”) used to hold waste oil. When the plaintiff removed the UST several years later (1991), it discovered that contaminants had leaked, and the State DEQ required the plaintiff to take corrective action. While the plaintiff was remediating the UST release, it discovered that soils and groundwater elsewhere at the manufacturing Site were contaminated with TCE and other solvents. Subsequent hydrogeological investigations conducted by the plaintiff revealed that the TCE contamination had affected groundwater in an area one mile downgradient from the Site.

Thus, the key issues in the case involved disputes over the source(s) of the TCE contamination and when the contamination began (i.e., before or after the 1972 business sale). Both the plaintiff and defendants used expert testimony to support their claims on these issues. Plaintiff’s expert witness used Site investigation data and computer modeling to demonstrate when and where the contamination began, whereas defendants’ experts offered rebuttal critiques without any independent modeling. Using observed groundwater flow directions and chemical signatures, the plaintiff’s expert witness concluded in his expert report that four releases were responsible for the contamination: The main TCE plume originated from beneath a 1974 warehouse addition; a former disposal pit was another source of chemicals; a third source of chemicals was discovered beneath a 1967 factory addition; and the fourth source of chemicals was the distinct plume originating from the waste oil UST.

The expert used the computer programs MODFLOW and MODPATH to create a model of groundwater flow and to calculate the rate at which chemicals in the plume would move through the groundwater. After creating this model, the plaintiff’s expert witness compared the results with the actual field data, and found that the model water levels and flow patterns were consistent with actual water levels and groundwater flow at the Site. In addition, the rate of advance of the modelled plume was consistent with the observed rate of advance of the plume. Based on this modeling, the expert concluded that the primary source of
TCE contamination was the area beneath the 1974 warehouse addition. The expert concluded in his report that these sources (other than the UST) originated prior to the 1972 sale of the property.

Defendants filed a motion at the conclusion of discovery to exclude plaintiff’s expert witness on the grounds that his expert testimony was unreliable. The court held a Daubert evidentiary hearing to examine plaintiff’s expert qualifications and methodologies, and review his proposed testimony. Aero-Motive v. Beckers [29]. At the Daubert hearing, plaintiff’s expert witness reviewed the methodology he employed in reaching his conclusions regarding the sources and timing of the contamination at the Site. The plaintiff’s expert explained that he examined historical information on the soil and groundwater around the plant in order to develop a conceptual model of the Site.

In considering the factors set out in Daubert, the court found that the plaintiff’s proposed expert testimony met the standards for expert testimony set out in Federal Rule of Evidence 702. The court noted that the computer programs used by the expert are widely-used and well-tested groundwater flow and particle-tracking models that have been subjected to peer review and are commonly accepted in the hydrogeologic community. Further, the court found that the data relied on by the expert, including geologic history, maps of the area, and surveys of the water and soil qualities at the Site, were the types of information regularly and reasonably relied on by scientists in the field and deemed generally reliable.

Following the Daubert hearing, the parties filed cross-motions for summary judgment on their claims. The court essentially found that sufficient facts and evidence existed to support contamination arising during Defendants’ ownership and operation prior to 1972, so that summary judgment was not appropriate for either party and the case would proceed to trial [28]. Following the summary judgment rulings, a month before trial the parties reached a settlement pursuant to an Alternative Dispute Resolution (“ADR”) process.

6 Conclusion

Modeling of environmental impacts can be a tremendously useful and efficient tool for compliance, remediation, permitting, and other predictive purposes. It seems safe to conclude that environmental modeling, in general, has been accepted by the regulators and relevant scientific community. This methodology, however, relies on various assumptions and interpretations, which account for its efficiencies and potential cost-savings, but also may generate objections when used in courtroom proceedings. Litigation has also challenged modeling used retrospectively to recreate or explain historical occurrences.

The relevant court rules and case precedent do not so much support challenges to modeling per se (assuming accepted computer software is properly utilized), but rather are based on the reliability of the inputs, data limitations, and other assumptions made in the modeling process for the particular project. Challenges to the qualifications of the expert witness to conduct modeling can...
also be submitted. These challenges to the application of modeling methodologies are highly project-specific, and cannot be generalized.

References


