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Citation Information

Brown, David M., "The Klein Water Treatment Facility: Model for the New Superfund Management Strategy – or- The Importance of Being in the Wrong Place at the Right Time???" (1992). *Uncovering the Hidden Resource: Groundwater Law, Hydrology, and Policy in the 1990s (Summer Conference, June 15-17)*. <https://scholar.law.colorado.edu/groundwater-law-hydrology-policy/37>

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David M. Brown, *The Klein Water Treatment Facility: Model for the New Superfund Management Strategy – or- The Importance of Being in the Wrong Place at the Right Time???*, in UNCOVERING THE HIDDEN RESOURCE: GROUNDWATER LAW, HYDROLOGY, AND POLICY IN THE 1990s (Natural Res. Law Ctr., Univ. of Colo. Sch. of Law 1992).

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THE KLEIN WATER TREATMENT FACILITY:

MODEL FOR THE NEW SUPERFUND MANAGEMENT STRATEGY

-OR-

**THE IMPORTANCE OF BEING IN THE WRONG PLACE
AT THE RIGHT TIME ???**

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**Uncovering the Hidden Resource: Groundwater Law,
Hydrology and Policy in the 1990's**

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I. Introduction.

The Superfund program is quickly becoming a teenager. Not unlike many parents, American taxpayers -- both individual and industrial -- are expressing increasing misgivings about the fruits of their enormous investments of money and attention. This rising crescendo of criticism has two basic themes (which are not necessarily shared by all critics): (1) that a grossly disproportionate amount of resources have been, and will continue indefinitely to be, consumed by a problem (ground water contamination from the dumping of toxic waste) whose actual importance (as gaged by measures of risk to human health) was significantly overestimated at the time (1980) of CERCLA's enactment, and (2) that given the desirability or inevitability of cleaning up certain sites, the program has operated extremely slowly and expensively (by any yardstick of project management).

Once viewed as "politically incorrect" (or at least an unacceptable risk to job security and empire building) and relegated to the journals of academic economists, the call for allocating scarce environmental remediation resources in accordance with a universal scale of health and environmental risk has lately been gaining the support of more and more respected scientific, governmental and legal leaders. Bruce Ames, a toxicologist at the University of California at Berkeley who is widely credited with establishing standardized protocols for extrapolating human health risk from controlled animal-model exposures, has notably proposed a quantitative scale of relative risk utilizing published toxicological data showing, for example, that the risk of death resulting from the lifetime daily consumption of one 12-ounce beer is 700 times that from drinking untreated water from the most contaminated well in Silicon Valley (with a TCE concentration of 2800 $\mu\text{g}/\text{l}$). (Bruce Ames, "Ranking Possible Carcinogenic Hazards", 236 Science 271 (1989).) Ames has since written a series of articles attempting to overcome popular journalism's "threat du jour" approach by educating the public on the large but

controllable (and commonly underestimated) risks of smoking, improper diet and drinking. (An excellent bibliography of Ames's writings and comprehensive overview of the whole risk assessment/risk management debate appears in a paper by Howard Holme, Esq., "Environmental Risk Assessment and Cost Benefit Analysis: Nothing is Certain Except Death, Taxes and Environmental Risks", presented at a symposium on April 24-25, 1991 at Denver entitled "Colorado Environmental Regulation -- Where is the Pendulum Now?" (hereafter "Pendulum Seminar")).

Indeed, EPA's own Science Advisory Board has recently concluded that ground water pollution generally presents a relatively low risk to human health and the environment, as contrasted with atmospheric ozone depletion and air toxics, for example. ("EPA Ground Water Protection Strategy: Where Does it Take Us", U.S. Water News, March 1992, p. 13.)

Within the context of the national ground water remediation effort, it is likewise asserted that the allocation of resources is grossly distorted by the sheer availability of funding to low-risk problems that fall under CERCLA rather than to higher risk concerns, such as nonpoint sources, that don't. One commentator states that "[n]onpoint sources pay 2% of the cost of water quality control, yet they are responsible for 65% of the problem." (Jerry W. Raisch, Esq., "How Clean is Clean? A Cost Effectiveness Policy", p. 3., also presented at the Pendulum Seminar).

Among the most prominent of these nonpoint sources are pesticides and fertilizers. Ground water contamination resulting from farming practices is an economic "externality", not unlike toxic residues from dumps, for which Congress has typically fashioned some rigorous regulatory or quasi-market (e.g., air emissions trading under the Clean Air Act) "solution." Yet, due primarily to the politics of agriculture, 1.5 million rural dwellers, including 22,500 infants less than a year old, remain exposed to nitrate concentrations in their drinking water in excess of the mandatory standard (10 mg/l) which has been on the books for

nearly 50 years. ("Aside from Pesticides, EPA Sees National Nitrate Problem", U.S. Water News, March 1992, p.6.)

Turning from the "macro" to the "micro" level of criticism, we start by recalling that EPA Administrator Bill Reilly began his tenure in 1989 by calling for a "90-day management review" of Superfund strategies and tactics and for the development of recommendations for quick programmatic improvement. Rightly or wrongly, this internal review tacitly accepted the frequently vague, conflicting and unrealistic mandates of CERCLA and SARA as "givens" not open to discussion, and focused its attention on "tweaking" program routines and lowering public expectations. (See "A Management Review of the Superfund Program", U.S. Environmental Protection Agency, June 1989.) EPA admits that little in its "new long-term strategy for Superfund" is "literally 'new', since most of the principles have begun to drive the program in recent years..." (Ibid., p. i.). Predictably, even agency veterans such as its previous General Counsel forecast a continuation -- if not an acceleration -- of the waste for which the program is notorious because nothing has been done to address the structural problems of undue complexity and "muddled" objectives. (E. Donald Elliott, "Superfund: EPA Success, National Debacle?", 6 Natural Resources & Environment 11, Winter 1992.) Says Barron's: "The evidence is piling up like trash: Superfund has generated vast quantities of paper and vast sums of legal fees, but not much improvement in the environment." Barron's cites recent studies showing "transaction costs" at Superfund sites running anywhere from 33% to 80% of total project costs, with total program costs exceeding \$10 billion to date. These costs are expected, by various forecasters, to reach anywhere from \$25 billion to \$700 billion before the Superfund program is deemed complete or (more likely) the public demands a reduction in scope or even its termination. ("Superfund or Superflop? The National Hazardous Waste Cleanup is a Dirty Mess," Barron's, May 4, 1992, p. 10.)

For the short term, at least, it is safest to project a continuation of the status quo: (1) increasing "consciousness-

raising", but little reform of the political/bureaucratic approach to allocating remediation resources based on the perceived ease of collecting those resources from certain sectors of the economy and in response to the public's misinformed views of the relative risks, and (2) increasing reallocation of available Superfund resources to enforcement and administration and away from direct fund-supported cleanup work under the banners of "making the polluters pay" and "preserving the integrity of the fund". (See, e.g., "Summary of the 1993 Budget," U.S. Environmental Protection Agency, January 1992; Elizabeth H. Temkin, Esq., "Cleaning Up ARARs: Reflections from the Field," 6 Natural Resources & Environment 18, Winter 1992.)

In view of this fairly bleak outlook for taxpayer satisfaction with Superfund, it might be interesting to take a look at a discrete project within the multi-billion dollar Rocky Mountain Arsenal cleanup that is complete, meeting or exceeding all of its treatment goals, and operating under budget. After describing the evolution of this project, I will attempt to identify the keys to its success and -- with the audience's indulgence -- speculate as to whether these critical success factors are likely to recur elsewhere and can be capitalized on to improve Superfund cost effectiveness.

II. History of Ground Water Contamination and Cleanup in South Adams County Water and Sanitation District.

- 1953 -- 1982 South Adams County Water and Sanitation District formed by existing residents and industries of Adams City, Dupont, Welby, Derby and surrounding areas, primarily to address then-known contamination problems (residues from unlined landfills, unregulated septic tanks, petrochemical and other heavy industries). Original plan was to eliminate septic tank contamination by building a central sewage treatment plant and laying sewers,

and to eliminate known risks to drinking water quality in the hundreds of private shallow (alluvial) wells by developing a central system of few large bedrock (Arapahoe) aquifer wells. Latter part of plan could not be fully realized due to lower-than-expected yields of deep wells; resulting shortage and continuing growth led (reluctantly) to a return to the alluvium for additional supplies. Major uncontaminated (by crude methods of analysis) alluvial supplies were found and tapped at the far east edge of the District, just across the street from the Rocky Mountain Arsenal's west boundary.

• 1983 --

DBCP (nematocide manufactured exclusively by Shell Chemical Co. at the Arsenal) discovered in trace quantities in one of the District's shallow wells. Facing vocal citizen pressure, threats of closure from Colorado Department of Health, and possible financial ruin, District encouraged State of Colorado to file §107 natural resource damage action against Army and Shell (Civil Action No. 83-C-2386, U.S. District Court for the District of Colorado; Colorado v. United States) just prior to lapse of original statute of limitation (December 11, 1983).

- 1984-1985 -- Politics and posturing reach full-boil as complex and overlapping patterns of offpost contamination are discovered. Liability in the classic sense becomes very difficult to sort out (due to the numerous potential sources of geographically-overlapping plumes, many of common industrial solvents) and even more difficult to enforce (due to the insulated status of military facilities under original CERCLA, the vagaries of

Congressional funding for military facility cleanup, and the disappearance or potential insolvency of many offpost contributors). Trace quantities of DBCP eventually disappear at the one affected well while trace quantities of several related common solvents (most notably TCE) are discovered at several of the District's other shallow wells.

- 1986-1987 -- Enlightened mutual self-interest gradually replaces rhetoric and hard-line legal positions. Army steps forward and acknowledges a portion of responsibility for District's contamination; offers to fund temporary treatment (with rented granular-activated carbon ("GAC") contactors). District offers to assume responsibility for installation and operation of temporary treatment system; develops valuable treatment feasibility experience and restores operating credibility with public and regulators. District independently investigates and selects desired permanent remedy and presents overall plan to Army, EPA and State. EPA segments permanent treatment of District's water supply as a separate "operable unit" to expedite action and issues final record of decision approving District's proposed permanent remedy (one centralized GAC treatment plant, to be known as the Klein Water Treatment Facility). Army agrees to provide first \$6 million of capital cost and a 2-year-early lump-sum contribution of another \$6 million towards plant operations and maintenance ("O & M"). District assumes responsibility for detailed design, construction, long-term O & M and financial management, subject to state and federal oversight.

- 1988-1989 -- As committed funds for construction prove insufficient, EPA and Army make additional contributions. With many state-of-the-art features and with great community pride, District opens Klein Water Treatment Facility in November, 1989 at a total capital cost (including sophisticated laboratory, necessary pipeline extensions, computerized flow management, advanced plant safety equipment, environmental residue management, etc.) of approximately \$12 million.
- 1989-1992 -- Klein Water Treatment Facility continuously meets all applicable drinking water standards with an additional margin of safety, and operates each year at a total O & M cost below that originally projected and in each year's approved budget. Plant receives the 1991 National Grand Prize for design excellence from the American Academy of Environmental Engineers. Plant becomes a model for environmental engineers throughout the U.S. and receives professionals from Europe and Australia. District encourages citizen awareness by sponsoring frequent guided tours for customers and local schools. Nine years after contamination problem first discovered, District has never itself filed a single lawsuit nor participated actively in any of the complex of ongoing federal actions addressing myriad other features of the Arsenal cleanup. Some funding issues (connection of last 3 wells to plant, elimination of projected long-term O & M funding shortfall) remain, but are relatively small in comparison to problems already solved, and District is confident of eventual satisfactory negotiation based on strong working relationships developed since 1986.

III. The Overall Scorecard.

- All scientifically-established risk through drinking water exposure to 98-99% of the population potentially affected by Arsenal and offpost contamination has now been eliminated for over 6 years. Success should continue throughout anticipated 25-year project life with minor additional funding.
- Total capital cost of Klein Water Treatment Facility (\$12 million) would have added about \$1.30/1000 gal. to customers' water bills if not federally funded. O & M costs would have added another \$0.70/1000 gal., for a total burden of about \$2.00/1000 gal. to eliminate ground water contamination.
- District's basic water rate as of 1986 was \$1.15/1000 gal. Hence, refusal of Army and EPA to fund project would have resulted in near-tripling of customer bills (moving District's rates from among the most reasonable to among the most expensive of municipal water providers in the Denver Metro area). Burden would have fallen particularly hard on District's large population of elderly, underemployed, and otherwise-dependent customers.
- While total cleanup costs may appear high in comparison with District's pre-existing water rate structure, they are remarkably lower than costs experienced nearby (both onpost and offpost) and nationally for cleaning up ground water to drinking water standards.
- District's "transaction costs" (as measured by response costs reimbursed by Army) were exceedingly low by national standards: \$410,000 total covering a 6-year period, and not more than \$30,000 in any year since.

IV. Lessons Learned.

- Superfund cleanups will be most successful (as measured by timeliness and cost-effectiveness) when driven by the parties with the most at stake. These are typically the victims and often the major PRP's, but seldom the regulators, de minimis PRP's, or outside interest groups. To be successful, the major stakeholders must professionalize (objectify) and de-personalize the issues.
- No realistic amount of change in the governing statutes, regulations and administrative policies will materially improve the situation of the primary stakeholders within a useful time frame, so they are best advised to accept the status quo (however unpalatable) as a given, and attempt to make the best out of a bad situation.
- No remediation plan, no matter how expensive, complicated and time-consuming, will ever satisfy anything approaching all of the interested parties. In a democracy where the right to take extreme, "non-negotiable" positions is a cherished and commonly exercised right, it is a waste of time to attempt to build such super-majorities. Public relations and community outreach efforts are most valuable in communicating the facts accurately, consistently and clearly to the interested public, rather than trying to compete with fear-mongers and proselytizers. The parties driving the remedy should use public information resources to maintain adequate support throughout the course of the project, rather than to try to "win friends and influence people."
- Litigation is the result of a failure of practical leadership (from one or more parties) and can seldom, if ever, be justified by a need to receive guidance from the courts. (No NPL site has ever been cleaned up by the courts!) The sheer

cost and unproductiveness of CERCLA litigation opens up a tremendous opportunity for the parties to fashion their own negotiated remedies within the broad legal, financial and technical constraints. Any plan negotiated by the parties, no matter how ill-conceived, is bound to be better than the best plan a remote court can prescribe.

- Contamination victims and major PRP's interested in driving their own cleanup must, like it or not, assume a fair amount of political risk and accept the inherent ambiguity of the situation. Parties longing for greater security than is generally available in a proactive approach should question whether they really would prefer to trade-off delay and additional expense for reduced uncertainty and exposure.
- Pareto's Law holds: the first 80% of the desired level of progress will take 20% of the available resources, and vice-versa. Consequently, progress-oriented parties should concern themselves with optimizing, rather than maximizing, desired objectives.