BROWNFIELDS INITIATIVE IN OKLAHOMA

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Introduction

In 1996, the Oklahoma State Legislature passed legislation instructing the Oklahoma Department of Environmental Quality (ODEQ) to create a new program to encourage the cleanup and redevelopment of idled or abandoned industrial properties, often referred to as "brownfields." Oklahoma law defines a brownfield as "an abandoned, idled, or underused industrial or commercial facility or other real property at which expansion or redevelopment of the real property is complicated by environmental contamination caused by regulated substances" (OS 27A §2-15-101 – 110). In general, brownfields can be thought of as properties that have lost commercial value due to the perception that they might be contaminated with hazardous chemicals. Examples of brownfields include former heavy industrial properties such as smelters and refineries, as well as smaller facilities like gasoline stations and dry cleaners.

It is important to understand why brownfields exist. Brownfields are byproducts of the environmental legislation passed in the 1970s and 1980s, especially the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA, also known as Superfund, 42 USC 9601 *et seq.*). Superfund and its amendments attach strongly binding liability to historical environmental contamination of soil, sediment, air, surface water, and ground water from hazardous substances. This liability for remediation is strict, retroactive, extended, joint and several. In accordance with the "polluter pays" principle, anyone who is in any way responsible for pollution, including those who held title to, leased, or deposited hazardous substances at a property, is potentially responsible for the entire cost of cleanup.

Many states also created state Superfund programs to deal with sites that did not qualify for federal CERCLA intervention. Though Oklahoma does not have a state Superfund law, it does rely on the state's nuisance law (OS Supp. 1991, 50 § 2–1) to force landowners to clean up hazardous wastes on their property. The Oklahoma Environmental Quality Act defines hazardous waste that is not being managed properly as a nuisance (OS Supp. 1996, 27A § 1-3-101 *et seq.*).

These Superfund remediation programs have had unpleasant side effects, however. In the rush to find sites that most threatened public health and the environment, thousands were investigated throughout the United States; few qualified for inclusion on the National Priorities List (NPL). Though 836 sites have been investigated under Superfund in Oklahoma, only 13 have been added to the NPL (40 CFR 300 Appendix B).

The apprehension caused by the assumption of environmental liability associated with the acquisition of contaminated property created a brownfields policy dilemma. Financial lending institutions and title companies, worried about liability should they foreclose on contaminated property, began to require that "due diligence" be performed on all property transactions. Environmental site assessments became common as buyers and lenders investigated whether industrial or commercial activities may have produced contamination. These assessment data were added to the US EPA's CERCLIS (CERCLA Information System) database, which lists all sites that have been investigated under Superfund. A property's inclusion on CERCLIS, however, raises a red flag to lenders, buyers, developers, and insurers that could halt economic transactions and redevelopment. In response, many companies mothballed their

industrial facilities, preferring not to expose them to assessment and therefore not cause their listing in CERCLIS and subject them to stigmatization that could block economic investment. A dilemma is created by such stigmatization however because unremediated properties cause both a public health hazard to and an economic hardship on host communities.

Abandoned, vandalized industrial properties in urban cores attract vagrants and criminals and are attractive nuisances to local children. They present safety hazards as well as chemical hazards to trespassers. Over time, the facilities come to represent a visible symbol of hopelessness. Other social costs associated with brownfields may include loss of employment opportunities; erosion of the community's tax base; under-utilization of community infrastructure (e.g., roads and sewers) built by the community to serve the industry; costs associated with the construction of new infrastructure to the suburban locations of new industry; and costs associated with urban sprawl.

In addition to the economic problems presented by brownfields, environmental problems may lay undiscovered. Contaminants may slowly leach into the soil and water, or volatilize into the air, and containers and tanks may fail allowing their contents to escape. Though brownfields that currently are lightly to moderately contaminated sites and do not warrant NPL listing, long-term inattention and deterioration could cause risks to increase and threaten surrounding communities – eventually causing them to qualify for NPL status.

The inability of communities to redevelop former industrial properties presents a special problem for large metropolitan areas located in the "rust belt" that already face chronic economic problems from the migration of business to "Sunbelt" states. In many cases, the only impediment to redevelopment of industrial sites was CERCLA liability for site remediation.

With encouragement of Northeastern states, EPA began to examine what could be done within the confines of CERCLA to ease the problem of brownfields. EPA responded with a clarification of its policies concerning environmental liability and the provision of assistance to states, tribes, and cities to empower these governments to establish brownfields programs that would meet the needs of the local community. One of these grants was made to the Oklahoma Department of Environmental Quality to fund its efforts to establish a brownfields program for the State.

Oklahoma Brownfields Program

Oklahoma is not a typical brownfield state. Unlike many heavily industrialized states, Oklahoma is geographically large with an excess of undeveloped land that is attractive to developers. Although much of Oklahoma's historical industrial development occurred in the two large metropolitan areas (Oklahoma City and Tulsa), many other industries were located in small towns across the state. Their growth was fueled and sustained by these industries; thus, they suffered serious economic damage when the industries closed. Therefore, the need to find a way to redevelop brownfields properties while at the same time protect the health and safety of her citizens, is particularly acute in Oklahoma.

In June 1996, the Oklahoma Brownfields Voluntary Redevelopment Act (OS Supp. 1997, 27A § 2-15-101 – 110) was enacted, directing ODEQ to develop a brownfields program for the state. In its brownfields grant and cooperative agreement with Oklahoma, EPA stressed the need to incorporate meaningful public input into the brownfields decision-making process. This position was echoed in the requirements for an EPA-State Brownfields Memorandum of Agreement (MOA).

To ensure that the public was provided meaningful opportunities for input into program development, the ODEQ Site Remediation Section conducted a study that incorporated participatory policy analytical methods. The major objectives of the study were to incorporate a broader method of public participation into the evolution of the program; gain information that would help concentrate ODEQ's program activities in an efficient manner; ensure that ODEQ addressed the actual issues faced by stakeholders; and ensure that tax dollars, as well as future private investments, were spent wisely.

Brownfields redevelopment presents a challenge for ODEQ, whose historical task was to protect human health and the environment. Because environmental decision-making is characterized by scientific and technical complexity, agency decision-makers' training and education had focused on the natural and

applied sciences. However, the issues associated with brownfields redevelopment involve much more than health and environmental protection. At their core, brownfields involve primarily real estate transactions that have environmental and community acceptance issues attached to them. Although the environmental problems represent only a portion of the problems interfering with the reuse of a property, the decisions made during the assessment and cleanup of the property determine the future use of the site. It is important that the environmental decision-maker understand all of the ramifications of cleanup and reuse of the site to ensure that all contingencies are addressed. This expanded agenda, was a primary trigger for stakeholder involvement in the development of Oklahoma's program for the cleanup and redevelopment of brownfields.

Methodology

ODEQ recognized that it needed to understand stakeholders' views on a plethora of issues surrounding the reuse of contaminated sites. A formal research project was launched that incorporated naturalistic inquiry, Q methodology, and the "synoptic normative theoretic framework for legitimated environmental decision-making" (Focht 1995a) to inquire into stakeholder concerns and preferences regarding brownfields redevelopment.

ODEQ drew from previous stakeholder research to design and implement a process that would encourage communication and understanding among the stakeholders and that would help ensure that agency decisions involving brownfields would be viewed as legitimate and trustworthy by the public. Public trust is integral to the redevelopment of brownfield sites because the public is relying on the ODEQ to ensure that hazards are removed and that the redeveloped site is safe, and because the redevelopment will fail without the support of the community.

Focht's (1995) dissertation, *A Heuristic Political Inquiry into NIMBY Conflict: Exploring Solutions To Gridlock,* provides an outline for incorporating stakeholder input into environmental decision making, it also introduces his framework for legitimated environmental decision-making that provides a guide to interpreting stakeholder input as it relates to future agency actions. It prescribes solutions and strategies to improve decision acceptance that fits the context of the policy problem. The framework posits three elements of the decision problem that must be identified before defining a decision-making strategy: the substantive criteria that should be considered in decision-making, the role of government in policy formulation, and the implementation processes that should be used to carry out a program.

To help frame the context of brownfields redevelopment in Oklahoma, stakeholders were interviewed using naturalistic inquiry methods and Q Methodology. Using these methods, ODEQ endeavored to develop a holistic view of the brownfield issue in Oklahoma. ODEQ reviewed various position papers issued by interested organizations and conducted extensive interviews with interested stakeholders across the state. To identify stakeholders, ODEQ issued an announcement of the opportunity to participate in the study and allowed interested parties to identify themselves; this was done to avoid ODEQ-selection bias in the identification of participants. Participants represented environmental groups, industries, city governments, county governments, state regulators, the public, economic development organizations, the legal profession, small business, educators, neighborhood associations, environmental consultants, financial institutions, church groups, and Native American tribes. The interviews were conducted using an open-ended format designed to facilitate an unbiased, conversational elicitation of stakeholders' knowledge, views, concerns, experiences, and preferences surrounding brownfields issues. Although stakeholder interviews indicated substantial agreement on many issues associate with redevelopment of contaminated property, their relative importance varied (Kottke 1998).

Stakeholder perspectives on brownfields were revealed using Q methodology. Q methodology supplies a "quantitative means for examining human subjectivity" (McKeown and Thomas 1988:7). The open-ended interviews were audiotaped and later transcribed. A concourse ("the flow of communicability surrounding any topic" (Brown 1993:94)) of statements reflecting the full range of brownfield issues and positions were extracted from the interview transcripts and prior position papers.

A subset of statements (the Q sample) was drawn from the concourse to "provide a miniature which, in major respects, contains the comprehensiveness of the larger process being modeled" (Brown 1993:99).

The Q sample was selected using a 5 x 6 factorial design (policy issues x stakeholder interest). Issue categories were (1) environmental/health issues; (2) economic development; (3) oversight/control; (4) trust; and (5) justice. Interest categories were (1) economic development; (2) community/ public welfare; (3) regulatory; (4) technical; (5) environment protection and justice; and (6) financial. Two statements per cell in the factorial design were selected using the principle of heterogeneity, i.e., statements that were most different from one another within the same cell were selected to ensure comprehensiveness among the sample statements. Two additional statements were added later to the Q sample to maximize its comprehensiveness (Kottke 1998). The 62 statements and their associated factor scores are presented in the results section of this paper (see Table 3).

The Q sort allows a person to model his or her view of an issue (McKeown and Thomas 1988; Stephenson 1953) by rank ordering the Q sample statements relative to their preferences and based on a specific condition of instruction (McKeown and Thomas 1988). A P sample (set of respondent participants) was selected from the original interviewees and additional stakeholders that were identified during the study. Participants were purposively selected to reflect the full range of representative perspectives (Focht 1995a) – a "set of persons who are theoretically relevant to the problem under construction" (Brown 1980:192). Table 1 outlines the demographic characteristics of the P sample.

Table 1

Demographic Characteristics of the P Sample

ID#	COUNTY RESIDENCE	AGE	RACE	SEX	OCCUPATION	STAKEHOLDER GROUP (SELF ID)
01	Tulsa	27	Cauc.	M	Community Developer	Business Association
06	Cleveland	28	Cauc.	F	Civil Engineer	Prospective Purchaser
07	Garfield	45	Cauc.	M	Economic Developer	Property Owner, Municipal
10	Canadian	46	Cauc.	M	Environmental Manager	Environmental Consultant
13	Lincoln	59	Cauc.	M	Economic Developer	Municipal
18	Oklahoma	42	Cauc.	F	Toxicologist	Property Owner
19	Kay	48	Nat.Am.	F	Community Developer	Municipal
21	Cleveland	43	Cauc.	M	Waste Management	Property Owner
22	Tulsa	66	Cauc.	M	Dry Cleaner	Property Owner, Environmental Group
23	Stephens	54	Afr.Am.	M	Sales, City Council	Municipal, General Public
26	Kay	39	Cauc.	F	Video Producer/Farmer	Environmental Justice, Property Owner
31	Oklahoma	53	Cauc.	F	Epidemiologist	State, Property Owner
32	Cleveland	57	Nat.Am.	F	Public Health	State, Property Owner
33	Canadian	28	Cauc.	M	Environmental Specialist	State, Property Owner
34	Canadian	60	Cauc.	M	Hydrologist	State, Property Owner
35	Oklahoma	40	Cauc.	M	Environmental Specialist	State
36	Cleveland	42	Cauc.	M	Environmental Manager	State
37	Oklahoma	46	Cauc.	F	Hydrologist	State
38	Oklahoma	53	Cauc.	F	Environmental Attorney	State
39	Oklahoma	45	Cauc.	M	Public Information Officer	General Public
40	Jackson	56	Cauc.	M	City Official (retired)	Property Owner, Municipal
41	Oklahoma	42	Cauc.	F	Psychologist	General Public, Potential Purchaser
42	Kay	62.	Cauc.	F	Registered Nurse	Environmental Group, Property Owner
43	Oklahoma	39	Cauc.	M	Geologist	Municipal
44	Kay	46	Cauc.	F	Homemaker	Environmental Group, Property Owner
45	Pittsburg	61	Cauc.	M	School Superintendent	Developing a Brownfield Site
46	Oklahoma	43	Nat.Am.	M	Transportation Planner	State

47	Oklahoma	33	Cauc.	F	Environmental Specialist	State
48	Logan	48	Cauc.	M	Environmental Engineer	Property Adjacent to Brownfield
49	Tulsa	56	Cauc.	F	Land Investor	Environmental Group, Property Owner
50	Tulsa	47	Cauc.	F	Financial Advisor	Environmental Group, Property Owner
51	Logan	40	Cauc.	F	Environmental Specialist	State
52	Tulsa	62	Cauc.	M	Real Estate	Broker, Property Owner
53	Oklahoma	45	Cauc.	M	Banker	Lending Institution
54	Oklahoma	43	Cauc.	F	Environmental Consultant	Utility Industry
55	Jackson	48	Nat.Am.	F	Housewife	Property Adjacent to Brownfield
56	Jackson	65	Cauc.	F	Retired	Property Adjacent to Brownfield
57	Oklahoma	59	Cauc.	M	Real Estate	Property Owner

Participants were asked to sort the 62 statements in the Q sample with this condition of instruction "Considering the issues involved in the redevelopment of contaminated properties, also referred to as brownfields, what are your views on the following statements?" ranking the statements as to "most representative of my view" to "least representative of my view" (Kottke 1998). The sorting was performed on a form board containing 62 cells in the shape of a quasi-normal distribution. Each statement was printed on a card and the cards were placed onto the cells on the form board. The use of the quasi-normal distribution is designed to force participants to identify which of the statements are most salient to them (either positively or negatively) and which are least important, assuming that most statements generate less meaning or ambivalence to the participant.

Results

The Q sorts were recorded, coded, and factor analyzed. "Factor analysis is fundamental to Q methodology since it comprises the statistical means by which subjects are grouped – or, more accurately, group themselves – through the process of a Q sorting" (McKeown and Thomas 1988:49). What is accomplished by factor analysis is that it readily discloses patterns in the data; this is especially important when the correlation coefficient matrix is large and the patterns are not readily apparent. The data were factor analyzed (principal components method) and varimax rotated to maximize the explained variance on each factor, ensuring that each factor is most easily distinguishable from the others (Focht 1995a). A five-factor solution was initially selected with a minimum eigenvalue of 0.9 and bipolar splitting criterion of 30%. One factor proved to be bipolar; therefore, six factors were retained for interpretation. These six factors represent separate and divergent views of the varying issues associated with brownfields redevelopment. Table 2 presents the re-ordered factor score matrix for the five-factor solution, which resulted in six factors after splitting and varimax rotation, as well as the communalities and purities of the loadings. The interpretation of the data was accomplished through a comparison of the individual Q item factor scores (z-scores) and factor structure. Table 3 presents the factor z-score array for the statements, which is used to interpret the perspectives represented by each of the factors.

Factor Interpretation

In examining stakeholders' views, it is important to identify their judgments of the degree of controversy and the relative importance of issues associated with brownfields cleanup and redevelopment. The absolute magnitude of the z-scores indicates the saliency of the item to those individuals whose sorts loaded highly on that factor. In contrast, the items with a score near zero have little saliency for the respondent (Focht 1995a). "By examining the structure of each common factor alone and in comparison with other common factors, and relying on other information obtained during the research...the investigator can propose explanations of the Q sorts" (Focht 1995:139). Brief interpretations and descriptive labels of these perspectives are provided below. The author validated these interpretations by re-interviewing the highest and purest loaders on each factor to confirm the validity of the interpretations and their agreement with perspective labels.

Table 2

Re-Ordered Factor Matrix

STAKE-HOLDER ID #	FACTORS					COMMUNALITY	PURITY
	A	B	C	D	E		
Factor A							
31	.649	.007	.085	.061	.056	.436	.968
38	.678	.090	-.014	-.001	.197	.507	.907
21	.675	-.166	-.058	-.055	-.133	.508	.898
36	.581	.071	.221	-.040	.026	.393	.858
01	.657	-.149	.200	.210	.150	.561	.770
18	.728	-.337	-.021	.141	-.193	.701	.756
39	.456	.004	.277	-.015	.198	.324	.642
54	.539	-.340	.245	-.039	-.070	.473	.614
07	.629	.132	.412	.110	-.295	.682	.580
37	.318	.235	.055	.074	-.128	.182	.558
06	.495	-.353	.134	.000	.292	.473	.518
52	.331	-.307	.249	-.073	.039	.273	.402
33	.431	-.076	.403	.067	.342	.475	.390
Factor B							
26	-.070	.682	-.080	.040	.055	.482	.967
44	-.164	.766	.033	-.007	.036	.616	.952
50	.057	.777	-.070	.080	.168	.647	.934
42	-.196	.739	-.112	.131	-.171	.644	.849
49	-.120	.681	-.202	.091	.257	.594	.782
41	-.042	.549	.100	.324	-.301	.508	.593
Factor C							
19	-.120	-.063	.645	.159	.018	.460	.905
47	.165	-.064	.454	.057	-.100	.250	.822
53	.104	-.121	.522	.085	.216	.352	.774
10	-.013	-.176	.405	.139	.106	.226	.727
57	.176	-.296	.559	-.044	-.083	.440	.710
43	.383	-.018	.617	.058	-.153	.555	.686
22	.219	-.195	.406	.115	.032	.265	.622
35	.234	.018	.534	.352	-.237	.520	.548
13	.142	.393	.503	.085	-.191	.471	.537
32	.235	.428	.442	.021	.051	.437	.448
48	.071	.301	.328	-.221	.038	.254	.423
Factor D							
55	.001	.070	.105	.947	.083	.919	.975
56	-.007	.112	.140	.924	.047	.888	.961
23	.126	.095	.029	.318	-.137	.145	.694
40	.154	.050	.187	.347	-.239	.239	.504
Factor E							
51	.083	.046	-.095	-.036	.609	.390	.951
45	.201	-.128	.006	.171	-.437	.277	.690
34	.229	.128	.110	.354	.519	.475	.567
46	-.092	.388	-.067	.272	-.431	.424	.439

Table 3

Brownfields Q Sample and Associated Factor Scores

#	STATEMENT	A	B	C	D	E	F
1	I think there is a distrust of policy. There's the sense that policy can change from one administration to another.	.0	.4	.6	1.6	1.8	.4
2	My concern is that many chemicals have not been fully tested for their effect on human health – so how can you set standards that are protective of human health?	-.7	.8	.1	1.6	1.2	.9
3	Offering incentives for cleaning up brownfields isn't fair to companies who have already come forward and cleaned up their mess.	-.9	-.4	-1.3	-1.0	-1.4	-1.8
4	My fear is that the property will not be properly taken care of for the foreseeable future.	-1.3	.3	.4	-.3	-.5	1.1
5	In looking at brownfields redevelopment you need to consider whether the new venture will be accepted by the community.	.7	-.5	1.3	-.6	1.0	.0
6	You can have a public meeting, but most people won't pay any attention until the dirt is being moved.	.5	.2	-.2	.6	.2	.7
7	It is better to clean up part of it than none of it.	1.5	.1	.6	-2.0	-.1	-.7
8	My gut instinct is that once a site has been contaminated, it will never be totally clean.	-.8	1.1	-.7	-1.7	-1.6	.7
9	I don't think you can go in and clean up a part of a site and use it—all the contamination problems at the site should be fixed.	-1.9	.0	.1	.9	-1.7	.7
10	Certificates of Completions should be legally binding agreements. I would not enter into an agreement if the government reserves the right to "change" its mind and reopen the site.	-1.3	-1.2	2.3	-1.0	.7	-.9
11	If you start creating too much oversight of these cleanups, you are going to provide disincentives for redevelopment.	-.3	-.8	.1	1.0	.3	-1.8
12	In a state like Oklahoma where people think there is more land to use up, anytime you want to reclaim an area that has already been used, you are not on a level playing field.	.3	.1	-1.2	-.4	.6	-2.5
13	At some point in time, there may be a need to consider economic issues or redevelopment of these sites, but I don't think that is DEQ's function.	-1.4	-.7	-.8	.0	1.1	-.9
14	We tend to overdo things in the environmental area. We might have a site that is presenting relatively minimal danger to people and the environment and yet spend millions of dollars cleaning it up.	.7	-1.1	-.7	.9	1.5	-1.1
15	Contamination is only a minor part of the problem — there are a whole host of reasons for the reluctance to invest in older urban areas.	1.9	-.3	.8	.6	1.2	-.2
16	I don't thing that the public's opinion about what we do with our site is relevant unless they want to pay some of the costs.	-1.0	-1.8	-2.5	-1.7	.0	.4
17	Real estate transactions, irrespective of the Brownfield issues, must make sense from a business perspective. Developers won't participate just to be good citizens.	.9	.2	1.7	-.1	1.0	-.9
18	I think that public comments are often just recorded and added to a document rather than evaluated an responded to.	-1.2	.9	-.7	-1.0	.8	-1.1
19	I don't trust business anymore than I trust government, to be real honest with you.	-1.5	1.5	-1.7	.1	.5	-.2
20	I feel that ODEQ will look out for the interests of the community and the people whose lives, on a daily basis, are affected by a site and its cleanup.	1.6	-1.7	.5	1.7	-1.6	1.8
21	I don't have a problem with public participation — as long as the public is not from someplace else.	.2	-1.4	.2	.0	-.2	.0
22	These sites need to be handled with some degree of finality, so that so that the next generation does not have to worry about them.	1.2	1.1	1.6	.4	.3	1.8
23	Providing economic incentives for the cleanup of these sites gets political— there's not enough money to do it for everybody, so then how do you justify doing it for some?	-.5	-.4	.3	-.1	-.2	-.5
24	Most risk-based assessments are very conservative, and so if you get an answer that's safe, then it is probably safe.	1.2	-2.2	.4	-.4	-1.4	1.1
25	Usually, the State is so tickled to attract new industry that it pays for all the new infrastructure needed to develop greenfields.	.3	.2	-.3	-1.3	.0	.0

26	Business interests should be able to clean up sites voluntarily with guidance rather than under consent orders.	.8	-.4	-.4	-1.6	-2.3	-.7
27	I think it needs to be real clear to companies that the state regulatory agency has the ultimate authority to say what is going to happen at the site.	.6	.9	.1	1.4	1.1	.9
28	They (the government) are going to have to give a company some kind of incentive to come in and set up a business on contaminated land over non-contaminated land.	1.0	-1.0	1.5	.3	-.6	-.9
29	I'd say that the program doesn't work if you have to add financial incentives.	-1.4	.0	-1.0	-.7	-.8	.9
30	I think some people see brownfields as a way to skirt or get around some of the cleanup requirements that are currently in existence.	-.5	.4	-1.8	-.7	1.2	.9
31	For the purpose of environmental cleanups, DEQ should establish criteria to define whether an aquifer is usable or not.	.9	-.4	1.1	-.3	-.3	1.3
32	During traditional public participation, I worry about the vocal few getting their way over the rational group.	.6	-1.0	.8	.7	.3	.9
33	I would say that the state needs to cross check the information businesses submit. Self-monitoring reports can be fiction.	.3	1.7	.4	1.0	.1	-.2
34	The state of the art solutions that we put in place today, we will find inadequate in 10 to 20 years.	-.4	1.4	-.5	-.7	1.0	.7
35	It would seem like a fine thing if, after a site was remediated to some standard, we forget that it was a bad place. Isn't that the idea — to do something so that we don't have to worry about it anymore?	.2	-1.4	-.3	1.3	.1	-.4
36	Often, regulatory agencies are not sensitive to the various costs of their decisions.	1.1	-1.3	.9	-1.6	.7	-.9
37	The big picture is that the reason we need a Brownfields program is that the previous approach didn't work. The brownfields program is just another governmental program put in place to deal with issues caused by another governmental program.	-.8	.3	-1.4	1.1	-.3	-.2
38	Risk Assessments are at best biased and imprecise estimates of actual risk.	-1.6	1.6	-1.0	.3	-.5	-.2
39	I think there's two reasons people attend public meetings: one, some people are legitimately concerned; and the other one is greed—people looking for opportunities for third party lawsuits.	-1.1	-1.2	-1.2	-1.0	.9	.9
40	It's my feeling that we don't always do a good job protecting property rights in this country.	-.8	.3	-.5	-.7	-.1	-.2
41	If we now say that some degradation is acceptable for certain sites, the incentive to prevent pollution could be drastically undermined.	-1.3	-.3	.0	-1.4	-2.2	1.6
42	DEQ's job is to protect human health and the environment, not to protect property values.	.3	1.8	.4	1.8	1.4	1.1
43	In a brownfields program, I think that the best benefit would be reaped from using industrial properties for industrial purposes, and nothing else.	.8	1.6	-.7	-1.3	-.5	.2
44	I don't like the idea of leaving on site wastes that still have the ability to contaminate. If a company is going to be allowed to leave something on site, then I think they should not be relieved of any liability.	-1.9	1.1	1.5	2.0	-.9	.9
45	My feeling is that if you clean up the surface and ignore the ground water, the public perception is that the site is clean, when in reality, there is still contamination.	.5	1.5	1.0	1.0	-1.1	2.0
46	DEQ has a problem with never seeming to be able to fine anybody or punish anybody. It makes me wonder, if a business violates its Certificate of Completion, is anything going to happen to them? Will DEQ enforce?	-.9	.8	-1.0	.0	1.7	-1.3
47	Superficial cleanups transfer risks and costs to future generations in order to suite the convenience of today's political constituencies.	-1.1	1.8	-1.1	.6	-.3	.7
48	There is a perception that environmental groups are supposed to watch out for the public interest—I thought that was the State's function.	-.7	-.4	.5	-.4	.1	-2.0
49	Native people cannot just sell out and move away from contamination. Their homeplace, their lands are not something you can give away, get rid of, or exchange. Ancestral lands are forever.	.0	1.3	.8	.3	.2	-1.4
50	Brownfields transactions are not environmental actions. They are real estate deals, which have environmental concerns. If the brownfield is in a good location from a realty viewpoint, it will be redeveloped – with or without a State environmental agency's program.	.0	-.3	-.2	-1.4	.7	-.5

51	The general public needs to start understanding that they are going to have to accept some risks if they want to live in a society that's the industrial level that we are at – people are going to have to start accepting risks.	1.3	-1.7	-.5	.2	.8	.9
52	My view on property rights is that there is a social responsibility tied to it.	.7	1.2	.4	.7	-.7	1.1
53	I think the city needs to be involved with the entire process of a brownfields redevelopment since they have to live with the outcome.	1.9	.1	1.8	.4	-.1	.2
54	A small town's ability to set zoning, enforce zoning, is extremely limited. I would have to faith in their ability to do it properly.	-.7	-.1	-2.3	-.6	-1.6	.4
55	Brownfields certificates should have some contingency so that DEQ could have a way, if need be, to do something about any problem that might occur later on. I think you've got to have the right to go back in and look at the situation.	-.2	.6	.9	-.6	-.8	.2
56	There should be legislation where the State holds the adjacent property owners liable for any contamination on their property if they refuse access to a company that is trying to clean up a problem.	.5	-.8	1.0	1.6	-1.1	-.2
57	Financial institutions have often been blamed for not providing capital for brownfields transactions; however, people need to understand banks must adhere to the dictates of federal and state banking regulations regarding their lending practices and credit risk appetite.	1.1	-.3	.5	.0	.9	-1.1
58	The big pressure to continue through on a project will come from the lending institutions…you're going to find that they're the ones that have far more effect on the situation than the state agency does.	.1	-.7	.5	-1.0	-1.5	-1.6
59	Always requiring closure to go back to a background level is unrealistic, and there simply is not enough money to do that. We need to start getting realistic about this.	1.4	-.8	-.7	-.4	.6	-.9
60	A participant ought to be able to change his mind because he may find that after investigating the site that his redevelopment plan is unfeasible.	.8	-.2	.1	1.0	1.4	.2
61	I would not like to be in the position of having to defend some of the risk assessments to the public because I think there is a real potential for misunderstanding and misuse of some of the information.	-.7	-.3	-.5	.3	-1.2	.0
62	No lender is obligated to or should be pressured to make a brownfields loan that does not meet normal credit quality standards for similar non-brownfields loans.	1.3	-.3	.3	.1	.2	-.5

Technical Optimists. These stakeholders feel strongly that the contamination issue is not the only reason brownfield sites are not being redeveloped and that communities, to a great extent, control which areas in their jurisdiction are developed. Therefore, they believe that communities should be involved throughout the brownfield redevelopment process, both as a consultant and as an equal partner with local government. Technical Optimists do not question the motives of people/groups with whom they interact; they trust the actions and motives of ODEQ, business interests, and the public. They believe that brownfield sites can be cleaned for reuse without having to remediate the site to background levels and they believe that the participating company should receive a release from liability as long as the remedy functions properly and is maintained. They believe that ODEQ must reserve the right to reexamine brownfield sites in the future; however, sites should be fully addressed so that closure has a degree of finality. They further believe that risk assessments are effective tools for estimating actual risk and that risk assessors use professional judgment appropriately throughout the risk assessment process. They believe that economic issues are central to the brownfield problem and ODEQ should be sensitive to how its actions affect both cleanup and redevelopment. Technical Optimists can be characterized by their optimism that science and technology can solve the problems attending brownfield sites.

Wary Environmental Stewards. These stakeholders do not believe that they or future generations should have to accept health and environmental risks from industrial contamination; current generations, as responsible caretakers, should minimize risk exposure to future generations. They see themselves as speaking for those who do not have a voice, i.e., future generations, non-human species affected by the actions of man, and people with extenuating circumstances who cannot speak for themselves. Wary Environmental Stewards believe that ODEQ's function is to protect human health and the environment rather than the costs of meeting that objective. They are skeptical of ODEQ's motives and question its willingness to act in the public's interest. They object to government's and businesses' denigration of public apprehensions as irrational and emotional. They have little faith in risk assessments as effective

tools for estimating actual risk and believe that there is great potential for abuse of risk assessment by decision-makers. They oppose allowing unlimited use of brownfield sites and believe that these sites should remain industrial. Moreover, they believe that these sites should be tracked to ensure that they are not rezoned for any use other than industrial.

Economic Realists. These stakeholders believe that business and economic issues should constitute the main focus of brownfield redevelopment since, in their opinion, brownfields are actually local real estate issues and not environmental issues. Once a site has been remediated with State oversight, it should be released from any future environmental liability for historical contamination. They do not believe that the State should reserve a right to reexamine the site in the future because this is a major disincentive to any business willing to redevelop the property. They strongly believe that communities should be involved in decision-making for brownfield projects because the community "has to live with it" and will be ultimately responsible for the success or failure of the economic redevelopment. A community's private sector has a great interest in ensuring that local properties are remediated, reused, and maintained, and that this interest should be recognized by the State and Federal government as well as the public. Economic Realists can be characterized by what they feel is a realistic approach to the brownfield problem. They believe that if the environmental liability problems associated with a brownfield site are removed through a State supervised cleanup, economic forces will be allowed to function properly and the property will again be productive – though they voice concern about third party lawsuits and a legal system that is "out of control." They also predict that only sites of economic importance will be "voluntarily" cleaned.

Concerned Neighbors. These stakeholders believe that the major brownfields issues are human health and how these sites affect their families. They have faith that the State government will safeguard their welfare, although they are wary of EPA and sometimes of their own local governments because of the latter's predominant interest in economic development. They believe that the State is responsive to their concerns and fairly addresses them. However, business and industry does not disclose information about the heath effects of their operations and these might adversely affect the health of employees and the public. This distrust extends to businesses' motivation to properly remediate brownfield sites. They have faith in technology but are concerned that science does not have all the answers; therefore, they do not support partial cleanups or State's signing away its right to reopen a site for further cleanup in the future. They prefer that sites be fully remediated so that unrestricted use of the property is permissible and the community can then "move on."

Realistic Reformers. These stakeholders believe that ODEQ has an obligation to protect human health and the environment and that it often fails to fulfill this obligation. They believe that the legislative politics involved in keeping an agency afloat are behind many of ODEQ's decisions and that its desire to keep that fact hidden is responsible for much of the public's distrust. They are concerned about risk assessment and its ability to estimate actual risk and are equally concerned about the ignorance by many regulators of the inherent problems associated with risk assessment. This does not mean that risk assessments have no role in decision-making; rather decision-makers should not place too much faith in them and instead use them as simply another analytic tool. They also believe that too much money is spent on environmental cleanups; it is unlikely that brownfields could ever be restored to pristine condition. Instead, such sites should be reused without full remediation. Realistic Reformers believe that communities should be involved in the decision-making concerning brownfield cleanup and redevelopment since it is the community, and not the State, that will be most directly affected by the success or failure of the redeveloped property. Finally, Realistic Reformers believe that there is a need for fundamental reform in ODEQ's policies, but bureaucratic constraints will limit the reforms that are possible.

Environmentally Concerned Citizens. These stakeholders are not concerned with the economic issues involved in cleaning up brownfield sites and they do not feel that ODEQ should consider the costs of cleaning up brownfield sites; they should be cleaned at any cost. They believe that "we can't help what our ancestors did; if it needs to be cleaned up, we should do it"; there should be no argument about who is responsible and who should pay. They believe that since technology is available to remediate contaminated sites, it the duty of the current generation to do so. They also believe that some risks are inevitable and that risk assessments are valuable tools for determining acceptable cleanup levels; in a modern world, the public has to accept some environmental risks.

Discussion

Implications for the Brownfield Program

The factor interpretations presented above reveal specific issues concerning the Brownfields Program that ODEQ should address to ensure that its program develops in a manner that responds to the needs of all stakeholders and is acceptable to them.

Environmental Risk.   The Oklahoma Brownfields Voluntary Redevelopment Act requires a risk-based system for all brownfield cleanups, in which site-specific cleanup levels are determined by risk assessment and are based on proposed future land uses. However, stakeholders' perspectives reveal a great disparity in their judgments of the value of risk assessments. Participants who oppose the use of risk assessments believe that too much uncertainty relating to human-ecosystem-pollutant interactions exist to justify reliance on risk assessment models. They also believe that too much room exists for manipulation of assessment results by risk managers. Those favoring the use of risk assessments believe that they provide a tool that accurately estimates risks associated with contaminated sites and that if models are conservatively designed, the probability unreasonable risk is present is low.

Partial Cleanups. The controversy over partial cleanups at brownfield sites is related to the controversy over risk assessments.   Partial cleanups can make a site more economically feasible to redevelop, especially if the redeveloped portion is a small part of a larger site and the remediation addresses only surface soil and water, leaving contamination in the subsurface soil and ground water. Otherwise, sites with cleanup costs exceeding the value of the property will not be voluntarily remediated. However, stakeholders opposed to partial cleanups question the validity of risk assessments as guides to justify partial cleanups and believe that partial cleanups are not justified on either pragmatic or moral grounds.

Who should be involved?   There is also disagreement on who should be involved in cleanup and redevelopment decisions. Local stakeholders (the local government and community stakeholders) believe that they should be involved in the decision process because they "have to live with the results." Business interests perceive the existence of additional "players" in their business decisions as unwelcome and public participation requirements as an unnecessary hurdle.

Trust.   Perhaps the largest obstacle to redeveloping brownfields is distrust: should the public trust government? should government trust business? should business trust the public? Distrust is fueled by others' "hidden agendas." For the Brownfields Program to function efficiently, ODEQ must not only build trust in the agency, but also foster an atmosphere of trust among stakeholders. If stakeholders come to trust government decision-making processes, policy legitimacy is enhanced.

Application of the Synoptic Normative Theoretic Framework for Legitimated Environmental Decision Making

The knowledge derived from the stakeholders during the initial interviews and Q study allows an assessment of the existing legitimacy context surrounding the brownfields issue and ODEQ's current method of environmental decision-making.

The following discussion applies the synoptic normative theoretic framework for legitimated environmental decision making (Focht 1995a) to the current legitimacy context for brownfields redevelopment in Oklahoma. The framework was designed to build the legitimacy of environmental decision-making.

Focht (1996) suggests that there are three components of decision-making context that define decision-making strategies that will enhance policy legitimacy: the relative dominance of facts and values that are germane to the decision (which dictates the appropriate role of experts and expertise), the level of social consensus on a preferred policy outcome (which dictates whether coercive or persuasive policies are more appropriate), and the level of trust that stakeholders have in the policymaking institutions (which dictates the role of government in decision-making). In his model, these components are represented in three-dimensional space.   Each spatial dimension corresponds to a legitimacy component and is represented as a continuum from high to low. Orthogonal intersection of the substantive legitimacy and process legitimacy dimensions produces four quadrants that correspond to four ideal types of decision legitimacy contexts.

The Reformative Context is characterized by facts dominating values and high social consensus in which the realms of facts and coercion overlap. If the existing state of affairs is inconsistent with the consensually desired state, action designed to reform the status quo is appropriate. The Informative Context is characterized by facts dominating values but social dissensus on a preferred outcome. "If the existing state of affairs is inconsistent with the consensus scientifically-defensible and justifiable criteria, action designed to inform society in the effort to induce a particular action is appropriate. The Transformative Context is characterized by values dominating facts with low social consensus on a desired outcome. The decision-making strategies in this quadrant should be process-oriented, encourage dialogue, and be designed to transform disparate interests and preferences into more encompassing stakeholder interests compatible with all points of view. The Conformative Context is characterized by values dominating facts and social concordance on a desired outcome. Decision making in this context should maintain unity of purpose, political cohesion, and social order...to ensure that behaviors and decisions conform to social norms and widely held preferences (Focht 1995b:9).

When the dimension of stakeholder trust of government is added to the model, the resulting eight octants correspond to high and low trust versions each of the four ideal types of legitimacy contexts. The issue of trust in institutional decision-making can also be separated into two dimensions. In fact-dominated contexts, trust refers to judgments of the technical competence of the agency, whereas in value-dominated contexts, trust refers to judgments of the agency's willingness to honor its fiduciary responsibility (referring to the motives of the government to act in the public's interests). If trust is high, then government can legitimately assume the lead in the policy formulation process (it is seen as competent and responsive) and therefore both its expertise and discretion are trusted. However, if distrusted, the government cannot easily assume the lead role in policy formulation, but rather should participate as another stakeholder party – especially in value-dominated contexts (since its values are presumably not shared by stakeholders). In this case, a trusted third party must assume the lead role. Figure 1 depicts Focht's proportionally adjusted diagram of idealized legitimacy contexts.
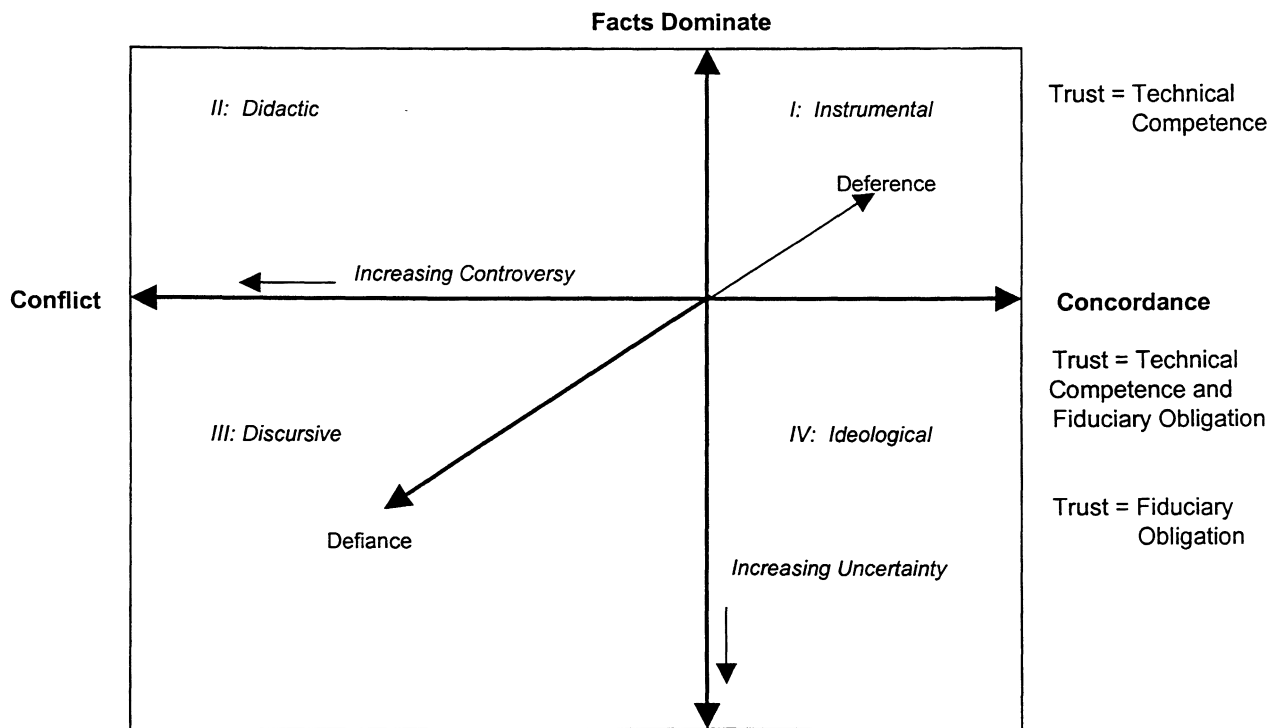

Figure 1. Proportionally Adjusted Diagram of Idealized Legitimacy Contexts

The information gained during the Q study indicates disagreement among the various stakeholders concerning the value of the science of risk assessments and their use in environmental cleanups. Disagreement also exists among experts as to the accuracy of estimated risks' representation of actual risks. According to Focht's legitimacy model, a disagreement on facts (concerning the use of risk assessments to determine cleanup levels) and the obvious salience of values (concerning welfare, equity, justice, democratic norms, sense of community, etc.) suggests that values should dominate facts along the substantive legitimacy dimension.

Though there exists widespread support for the continued development of a brownfields program in Oklahoma, there is substantial disagreement on the reuses of brownfield sites that should be allowed. Focht's model suggests that persuasion should be used to build consensus on residual risk levels and land use restrictions since dissensus on a preferred policy outcome does not yet exist.

The trust that stakeholders have of decision-making institutions (Focht's two dimensions of trust) demonstrates that stakeholders generally trust the technical competence of ODEQ but do not trust its motives. Therefore, an erosion of confidence that ODEQ will act in the public's interest is manifest and ODEQ should not expect widespread public support of its efforts to lead the policy formulation process. A neutral third party is recommended to facilitate policy formulation.

By combining the decision context findings, we conclude that values dominate because of factual uncertainty and high value salience; social consensus on a preferred course of action is mixed (consensus on the need for brownfields policy but no consensus on the form the policy should take); and trust of government is mixed (fiduciary responsibility judgments are low but technical competence judgments are high). Table 4 lists Focht's recommendations for legitimacy building under various contexts. Referring to Focht's model, the current context falls in the low-trust transformative octant, III-B (values dominate, social consensus is low to moderate, and distrust – as fiduciary responsibility – is low).

The recommended strategy for policy formulation for the brownfields program is therefore a policy dialogue facilitated by a neutral, non-ODEQ, party to encourage consensus-building on a course of action, reduce factual uncertainty, and build trust in ODEQ and among stakeholders (Focht 1995b). Only after trust is earned can ODEQ to move beyond providing technical assistance and resources to the policy dialogue to the role of decision authority to which stakeholders willingly defer.

Conclusion

The challenges in creating a brownfield program are multifaceted. Policy is not developed in a vacuum; many variables are beyond the control of the agency charged with its implementation. ODEQ implements programs assigned to it by the legislature and its actions are overseen by five advisory councils and the ODEQ Board. Great strides have been made since the passage of the original Brownfields Act. Implementing rules have been passed, legislation has been passed to create incentives to reuse brownfield sites, and a Brownfield Memorandum of Agreement (MOA) has been signed with EPA. The MOA contains EPA's assurance that sites in Oklahoma's program will not be pursued by EPA under Superfund authority.

At the program level, the information gained during this study has informed the still-evolving program. During the research process, contacts were made and rapport was established with stakeholders unknown to ODEQ before the implementation of the study. The study highlighted the difficulties in redeveloping contaminated property in Oklahoma as well as the concerns that residents have about the reuse of these properties. Information gained during the study has also aided ODEQ in the production of various program guidance documents. Most importantly, the study highlighted the need to form stakeholder partnerships in the redevelopment of brownfield sites. The economic reuse of contaminated property depends on local acceptance to ensure success. It is more effective to form partnerships with the local stakeholders at the beginning of the process than it is to try to "sell" decisions to the local community after they are made. Successful redevelopment of brownfield properties is not just a desirable goal of the program – it is a necessity. If redevelopment fails, sites may once again become a deteriorating blight on communities and everyone loses. If it succeeds, then everyone wins.

Table 4

Stakeholder Legitimacy Claims and Legitimated Decision Making and Communication Strategies

Octant No.	Context Name	Primary Actor	Legitimate Stakeholder Participation	Legitimate Decision Making Strategy	Legitimate Communication Strategy	Tactics
I-A	reformative	decision making Institution	institutional experts only	instrumental	one-way(to notify)	technocratic; gov't notice to public
I-B	reformative	independent technical organization	independent experts	instrumental	one-way (to explain)	technocratic; private and institution notices to public
II-A	informative	decision making Institution	experts; (others passively)	didactic; educational	two-way(to inform, feedback	communications media, schools
II-B	informative	independent educational organization	independent experts; (others passively)	didactic; educational	two-way (to inform, feedback)	communications media, symposia
III-A	transformative	decision making institution as mediator/facilitator	all	discursive (to build consensus)	multi-way with alternative conflict mgt. Techs & gov't support	SH advisory groups
III-B	transformative	neutral fourth party mediator/facilitator	all, including decision making institution as a stakeholder party	discursive (to build consensus)	multi-way argumentation techniques & ideal speech; perhaps with independent tech. Support	SH d-m; with
IV-A	conformative	government agency, as a trustee	government policy leaders and decision makers	ideologic	one-way (to explain rationale; propaganda)	public announcements, documents
IV-B	conformative	government agency, as a delegate	government decision elites; consultants in oversight	ideologic	two-way (to explain processes and seek feedback)	public hearing & community relations

Acknowledgement

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