# NIMBY IN RAMONA: CASE STUDY OF A HAZARDOUS WASTE SITING CONTROVERSY

By

ROBIN HOOD LACY, JR.

Bachelor of Science

Oklahoma State University

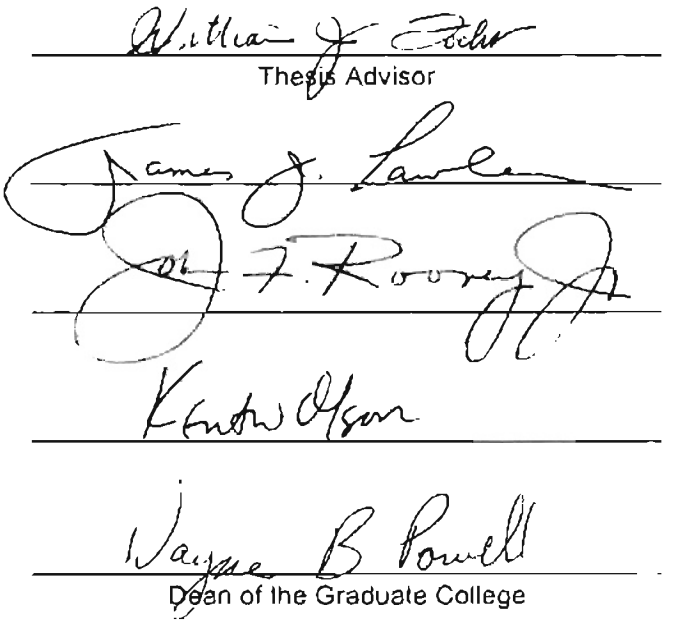
1985

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 1998

NIMBY IN RAMONA: CASE STUDY OF A

HAZARDOUS WASTE SITING CONTROVERSY

Thesis Approved:



Thesis Advisor

Dean of the Graduate College

## ACKNOWLEDGMENTS

There are many contributors to this paper to whom I owe a great deal of gratitude. Foremost, there is Dr. Will Focht, a friend and mentor. Will provided support, focus, and guidance to an Environmental Sciences graduate student in need of all the above, and without whom completion would have been, at best, uncertain.

To Tony Linville, I give thanks for his original inspiration. In discussing future options and careers, he asked me, "have you checked out the Environmental Sciences graduate program at Oklahoma State University?" and it was then and there that the decision was made.

To Dr. Kent Olson, Dr. James Lawler, and Dr. John Rooney, I thank you all for your guidance and suggestions during my graduate school course work and for serving on my committee Your expertise concerning the intricacies of graduate school, and suggestions on coursework and career paths was a tremendous help.

To two of the three original environmental musketeers, Ken Bosma and Andrea Lawrence, "can you believe we all three made it?" I thank them both, and also Jeff Looney for their friendship throughout graduate school and the beginning of our careers in the environmental field.

To David Jones and Michael Hirst, I give thanks for giving me an opportunity and taking a chance on a fellow Oklahoma State graduate with little experience but a lot of "scrapple".

To John Henry Deutschendorf (Denver), I give thanks for your all-too-short life, and wonderful music. You were an inspiration to me growing up, and you will be missed.

To the people of Ramona, thank you for your time and contribution to this paper.

To my wonderful wife Sheryl, and precious son Hudson Arthur, you are the reason for this paper. If ever I lacked for motivation and direction, I need look no further than you both to remember the importance of home, family, and love.

Finally, to my Mom and Dad, I love you both, and it is to you that I dedicate this paper. To Mom, for her unselfish devotion in raising three children, and to Dad, who more than any other person knew the value of education, and would not let me forget it. I did it Dad.

# TABLE OF CONTENTS

## LIST OF TABLES

# LIST OF FIGURES

# CHAPTER I

# INTRODUCTION

## Statement of the Problem

"No Waste, No Well, No Way." This quote, taken from a newsletter published by an environmental activist organization, sums up the feelings of that organization regarding the siting of a Class I hazardous waste injection well in the community of Ramona, in northeastern Oklahoma. The Toxic Waste Impact Group (TWIG) was formed by a group of citizens living in and around Ramona to fight against the construction of the Environmental Solutions, Inc. (ESI)-owned hazardous waste injection well on a privately-owned ranch near Ramona.

To understand the passions involved and differing perceptions on the merits of the well held by the opposing sides, one need look no further than a sampling of quotes and headlines from newspapers in the area and newsletters circulated at the time of the conflict, reflecting the attitudes and feelings of the stakeholders involved in the conflict.

> *A toxic chemical is toxic forever.*
>
> *TWIG is defending the rights of citizens for a safe and healthy environment, TWIG is fighting for the survival of our agricultural community, TWIG is fighting for safe and clean drinking water, TWIG is fighting for the safety of school children against the accidental spills of toxic waste, and TWIG is fighting against the decline of our land values.*
>
> *The members and contributors to TWIG are to be congratulated for their continuation of the fight to stop the Ramona Toxic Waste Well. This is NOT the time to slacken in our determination to rid our area of this menace. You have shown great tenacity for the long haul, and we do have a long, hard road to go.*
>
> *The State Health Department does not seem, to us, to be able to deal adequately with the enormity of the problems, both technically and administratively, involved with the permitting of a mixed waste injection well.*
>
> *As for the NIMBY Syndrome, should not the citizens of a community have some voice as to what is put in their back yard?*

*The siting of the well would be of tremendous benefit to local employers.*

*Those folks opposed to the well are just a bunch of NIMBYs.*

*This is a classic case of big city, big money with the underdog being the determined band of small-town people, ranchers and farmers - truly the salt of the earth.*

*ESI has asked the committee to vote down the bill to ban commercial hazardous waste disposal sites in Oklahoma, saying there is a need for deep injection wells.*

*ESI said deep injection wells have proven safe and inexpensive and Oklahoma's stable geologic formations make the state a suitable site for the wells.*

*ESI testified that if the well issue remained in litigation for a year, the company would face losses of a minimum of $1,840,920.*

*Project opponents, called the Toxic Waste Impact Group, claim the Health Department violated state law when it issued the initial construction permit and that disposal of chemicals in the well would contaminate groundwater and cause property values to drop.*

*The Associate District Judge issued an order Thursday temporarily stopping the drilling of test wells for a toxic waste injection site near Ramona.*

*Employees of a reputable engineering firm told me it was to be controlled, regulated, and inspected by the Oklahoma State Department of Health.*

*Under the law, it can't harm the environment, the ground water, the surface water, or the atmosphere. It has to be done safely and monitored. If it does cause harm, they will close it down; I gave the lease in good faith. I think the Department of Health will act in good faith. I think ESI has followed the rules.*

*I am sure industrial waste has to be stored and disposed of someway and somewhere. I have been told this is a good place to do it. "It's going to be safe," they told me.*

These quotes, taken in context from stakeholders in the Ramona dispute, illustrate the differing viewpoints toward the siting of the well.

From the beginning of the controversy, citizens felt that they were not involved, were misinformed, misled, and generally ignored by both ESI and the State Health Department. From the standpoint of degree of intrusion into stakeholders' lives, with the exception of perhaps radioactive waste, nothing aroused the passions of affected stakeholders more than the proposed Class I hazardous waste injection well. Interviewed stakeholders felt that ESI was proposing to inject something "sinister" into the ground that would migrate, unseen and unchecked, and spoil the land and groundwater for generations to come. The intrusion into the earth, coupled with the injection of hazardous waste, seemed to join TWIG members in such a way as to lead to heated debate, threats, violence, lawsuits and countersuits, the bankruptcy of ESI, and ultimately, gridlock.

This pattern of local opposition is commonly referred to as the NIMBY (not in my backyard) syndrome. Cases of local opposition have been steadily increasing over the past twenty-five years. Beginning with the environmental movement in the late 1960's and early 1970's, communities began to reject facilities on a more regular basis (Armour 1991). People were rapidly learning that they possessed the power to block unwanted facilities. By the late 1970's, local opposition had become so pervasive and widespread that it was "officially" given status as a syndrome. Since that time, NIMBY has gained even more momentum (Heiman 1990), affecting more types of facilities and experiencing greater success. Community resistance occurs with such regularity that it is considered by many observers to be one of the most significant obstacles to facility siting (Duffy 1984; Mitchell and Carson 1986; Lake 1987).

The unwillingness of persons and/or communities to allow the siting of hazardous waste disposal sites is a problem that has far reaching consequences. All types of facility siting proposals, including those for prisons, power plants, schools, hazardous waste management facilities, landfills, hospitals, and even daycare centers, are being delayed or completely blocked by public opposition (O'Hare 1977; Popper 1981; O'Hare, Bacow and Sanderson 1983; and Inhaber 1992). If it poses a health or environmental threat, or even only an aesthetic threat, it is subject to resistance. People no longer want facilities sited near them that they believe will have an adverse impact on them or their communities (Kraft and Clary 1991).

## Purpose of the Study

At Oklahoma State University, a team of researchers made up of faculty and students have conducted a study aimed at exploring solutions to the NIMBY problem. The study, which involved the investigation of seven cases in Oklahoma where local opposition occurred or threatened to occur, specifically targeted hazardous waste management disputes (Focht 1995). These disputes were selected because they are most common and, as such, solutions found for them could likely be applied to other NIMBY disputes.

This paper documents the investigation of one of the case studies, a class I hazardous waste injection well siting that occurred in the town of Ramona, in northeastern Oklahoma. This dispute mirrored classic NIMBY features. The developers, in compliance with the State of Oklahoma siting requirements, did not notify the surrounding stakeholders until they filed their application for a construction permit. The necessary land was obtained, the facility was permitted, and construction had begun. Citizens responded with uncompromising opposition. The conflict ultimately reached the halls of the Oklahoma State Supreme Court, where the case still resides today, unresolved.

The Ramona siting controversy was chosen for study because it exhibited the traits of a classic NIMBY opposition to the siting of an unwanted facility. ESI and the State Health Department were unable to allay citizens' fears about the facility, and intractable gridlock resulted.

The purpose of this case study is to examine the underlying reasons for the Ramona controversy by examining the views of TWIG members active in the controversy, neutral citizens who lived in or near Ramona at the time of the controversy, government officials who were active in the permit process and siting decision, and pro-industry persons seen as sensitive to the plight of ESI. NIMBY as occurred in Ramona will be examined from the perspectives of trust, (the lack thereof) and risk (the unacceptability thereof). It is hoped that by examining this NIMBY controversy so fraught with extreme passions from stakeholders on all sides that a bridge can be built between stakeholders in future siting controversies based on understanding the concerns and motives underlying their actions.

## CHAPTER II

## REVIEW OF THE LITERATURE

### Introduction

This chapter will first examine the issue of NIMBY, define NIMBY, and explain why NIMBY opposition is so important in hazardous waste siting controversies. Recent literature will then be examined to account for two of the decision criteria that figure prominently as factors in NIMBY opposition to hazardous waste siting controversies: high risk perception, and institutional distrust of government and industry by the general public.

### The NIMBY Syndrome: What Is It and Why Is It So Important in Siting Controversies

The so-called "NIMBY" (not in my backyard) grassroots political activism is defined as a pattern of protracted and intense public hostility and political-legal opposition to the local siting of environmentally risky technologies (Marks and von Winterfeldt 1984; Syme and Eaton 1989; Mazmanian and Morell 1990; Wells 1982). Kraft and Clary (1991:300) define NIMBY as an "intense, sometimes emotional, and often adamant local opposition to siting proposals that residents believe will result in adverse impacts." Morell and Magorian (1982:75), define NIMBY as "state coercion strongly resisted locally."

It is not clear who precisely originated the acronym "NIMBY." It is most often attributed to O'Hare (1977), but he did not use the acronym in his article. Nevertheless, the acronym is now well known as a referent to locational conflict (Lake 1987).

A series of interesting acronyms representing various modes of thinking have been added since the introduction of NIMBY. One of these is TIMBY or "threat in my backyard Focht (1989)." TIMBY controversies involve mitigation or remediation of LULUs that are already present. TIMBY

controversies can thus be contrasted with NIMBY controversies, the latter limited to the siting of previously non-existing LULUs and thus pose *de novo* threats.

The acronym, LULUs, is used to describe controversial locally-unwanted land uses (Popper 1981). It is the intrusion of these unwarranted, unwanted, uninvited entries into one's community that is a primary motive behind NIMBY (Gerrard 1994:100; see also Edelstein 1988; Briffault 1992).

LULUs that have been resisted by communities include nuclear power plants, nuclear waste repositories, uranium mines, hazardous waste treatment and disposal facilities, high power electric transmission lines, liquid natural gas operations, oil and gas pipelines, refineries, low income public housing, energy plants, highways, drug research and treatment centers, halfway houses, airports, mass transit routes, elementary schools, prisons, skyscrapers, hospitals, satellite tracking stations, dams, municipal solid waste management facilities, large industrial plants, incinerators, mental health centers, sewage treatment plants, strip mines, military installations, junkyards, cemeteries, amusement parks, taverns, rail lines, gas stations, car dealerships, repair shops, parking lots, garages, motels, car washes, rental outlets, drive-in restaurants, hotels, marinas, stadiums, public parks, apartment buildings, trailer parks, homes for unwed mothers, homes for the handicapped, group homes, commuter train stations, weather stations, homeless shelters, sanitation truck garages, adult bookstores, red light districts, shopping malls, livestock operations, AIDS treatment clinics, food processors, alcohol treatment centers, released sex offenders, Wal-Marts, and even retirement homes, day care centers, and entire downtowns (O'Hare 1977; Wolf 1980; Popper 1981; O'Hare, Bacow and Sanderson 1983; Popper 1985; Collins et al. 1985; Brion 1988; Marshall 1989; Heiman 1990a; Binder 1991; Kasperson, Golding and Tuler 1992; Kraft 1992; Inhaber 1992; Opaluch et al. 1993; Focht 1995)."

From these indications siting anything anywhere is a minor miracle in itself. NIMBY resistance is so successful, according to Popper (1981:15), that the only locally wanted land uses remaining are open spaces and research parks.

Why is NIMBY so pervasive, especially as related to the siting of hazardous waste management facilities? Hazardous waste facilities, by their very nature, pose a number of adverse impacts to human health and the environment. Even facilities operating in absolute compliance with the letter of local, state, and federal law, face opposition at every turn.

What is most salient to citizens, at least in part, is determined by the characteristics of the facility (e.g., *noisy* airports, *ugly* power plants). Health concerns, particularly for children are the primary public concern associated with noxious facilities (Matheny and Williams 1985; Kraft and Clary 1991). Portney (1991) has found this to be especially true with hazardous waste facilities.

How people perceive these adverse impacts has been shown to play a significant role in NIMBY disputes (Portney 1986;and 1991). This research will show that the two most important factors in triggering NIMBY opposition are risk perception and institutional distrust.

**Risk Perception**

There is strong evidence in the published literature to suggest that laypersons do not perceive risk the same as experts (Tversky and Kahneman 1981; Slovic, Fischhoff and Lichtenstein 1984; Covello 1983; Slovic 1987; Armour 1991). While both groups perceive risk as a combination of probability and consequences, they use substantially different criteria and analytical methods for estimating "riskiness" (Covello 1983). Where experts tend to use mathematical methods of calculating risk, laypersons tend simply to use culturally defined heuristics to judge risk based on its qualitative attributes and their experience with it (Slovic 1987). It is this difference in perception that causes gridlock.

For many risk managers, risk is acceptable if the benefits offset the costs. Through the use of scientific risk assessments, they estimate risk based on the likelihood of occurrence and the degree of the resulting hazard (Armour 1991). They produce a quantifiable risk value (e.g. $10^{-6}$, or one in a million) that they consider acceptable. This value is then made the point of departure from which decisions are made. Sites are selected, and facilities designed and constructed, oftentimes based solely on these calculations. Little or no consideration is given to community concerns about the

imposing threat. In fact, most experts disregard the public's perception of risk, claiming that citizens are not adequately informed (Slovic, Fischhoff and Lichtenstein 1984; Slovic 1986; Wynne 1983; Otway 1987). Citizens not subscribing to risk assessment results have even been labeled by some observers as irrational (DuPont 1981).

While experts give equal weight to probability and consequence, Rubin (1986) has found that laypersons are most concerned with consequences. Scientific risk estimates are but one criterion that laypersons consider important in evaluating risk. Psychometric studies have revealed that they also are concerned with the qualitative attributes of risk (Tversky and Kahneman 1981; Otway and von Winterfeldt 1982; Slovic, Fischhoff and Lichtenstein 1984; and Armour 1991). Slovic (1986) specifically identified voluntariness, dreadfulness, catastrophic potential, controllability, familiarity, likeliness to cause injury or death, and newness as important factors.

Other issues affecting risk perception are the characteristics of the perceiver. Social and cultural studies on risk indicate that individual values influence perceptions (Douglas and Wildavsky 1982, Rayner and Cantor 1987). Vlek and Stallen (1980) have found that risk acceptance depends more on value orientation and less on factual information. Experts and laypersons thus do not share the same values when it comes to deciding on risk acceptability (Ashford 1988; Folk 1991). People highly value their health, property rights and individual freedom and, therefore, generally reject risk assessments that conflict with, or threaten, these values (Bord and O'Connor 1992). Also important in influencing perceptions is how much experience a person has with risk (Fessenden-Raden et al. 1987), how much the media has shaped their beliefs (Slovic 1987), and what their attitudes towards risk are (Weinstein 1984).

### Institutional Distrust

Adding to the risk perception problem is the apparent lack of trust in government and industry (Kasperson 1986; Kunreuther et al. 1990; Pijawka and Mushkatel 1991; Kraft and Clary 1991). Distrust, as Kraft and Clary (1991:322) argue, is what "fuels emotion, which heightens fear of the perceived risks." Distrust directly affects the public's ability and willingness to evaluate siting

proposals on their own merits (Kasperson 1986; Armour 1991). After all, it is difficult to believe the message when you do not believe the messenger.

Trust is considered by many to be a significant dimension in siting controversies (Kasperson et al. 1992; Slovic 1993; Kraft and Clary 1991; Kraft 1994). In fact, Hodges-Coppel (1987) argues that government and industry's low credibility is the main cause of siting gridlock. It propels people towards uncompromising opposition (Kraft and Clary 1991). Wildavsky and Dake (1990:56) add "...the great struggles over perceived dangers of technology in our time are essentially about trust and distrust of societal institutions."

Focht (1995:39) concisely explains why institutions are distrusted: "Government is distrusted due to its past failures to protect citizens from threats to human health, safety, welfare and the environment. Business and industry are distrusted because of their legacy of irresponsibility, absence of care, and liability shifting." Thus, distrust is not unwarranted: these institutions, with the help of the media, contributed to their own demise. Debacles such as Watergate, Three-Mile Island, Love Canal and the Iran-Contra affair all serve as benchmarks on the trail of diminishing public trust.

If the individual actions of each institution were not enough to cause distrust, there is now evidence that they all share similar views towards siting facilities. In particular, government, whom the public relies on to protect them, is believed to side with industry in facility permit decisions (Fischhoff, Slovic and Lichtenstein 1983; Lawler and Focht 1989; Lawler, Focht and Hatley 1992). Citizens also perceive this to be true: Wynne (1992) found that citizens think siting procedures are biased towards project developers. This perception leads citizens to question the government's ability to evaluate the fallibility of technical analyses objectively (Armour 1991).

### Summary

Perceived risk and institutional distrust are believed to be the primary motives triggering NIMBY. When a NIMBY dispute reaches an apex, decision gridlock can result based on the host community's judgement that the risk is too great and sponsoring institutions are not to be trusted.

# CHAPTER III

# CASE STUDY HISTORY

## Introduction

Ramona (1990 population of 508) is a small rural town located in Washington County in northeastern Oklahoma about 30 miles north of Tulsa. The surrounding land use is predominantly agricultural, cattle ranching, and oil extraction. In 1982, Environmental Solutions, Incorporated (ESI) was incorporated for the purpose of building and operating hazardous waste injection wells. The principals of ESI were experienced in the construction and operation of oil and gas drilling fluid injection wells and in waste disposal. ESI identified a rancher who owned a 10,000-acre ranch five miles southwest of Ramona who agreed to lease to ESI a 2.7-acre tract located in the center of the ranch. This location meant that no other landowners would be located within one mile of the site boundary (thus there would be no "affected property owners" other than the lessor). After an extensive feasibility study and initial permitting efforts, ESI had invested approximately $2 million dollars in the project. ESI submitted its initial construction permit application to OSDH on March 9, 1984, and issued public notices in local newspapers which announced the filing of the application and the commencement of a 45-day comment period during which a public meeting or hearing could be requested. Since there were no "affected property owners" other than the lessor, individual letters were not mailed. By April 23, 1984, the expiration date for the comment period, no requests for meetings or hearings were received by OSDH.

OSDH reviewed the application and returned it to ESI for revision on May 25, 1984. ESI submitted a revised application on August 27, 1984. On November 28, 1984, OSDH prepared a draft

construction permit for the wells and published in local newspapers a public notice of the draft permit with a 30-day comment period and another opportunity to request a public meeting.

In December, citizens of Ramona concerned about the ESI proposal sponsored a meeting with local State legislators and ESI representatives. Later that month, ESI conducted a seminar open to Ramona citizens designed to provide assurances of safety. Both meetings were punctuated by fearful and angry remarks from several of the attendees.

A request for a public meeting was made by the Chair of the Environmental Committee of the Bartlesville Chapter of the League of Women Voters (LOWV). News of the upcoming OSDH meeting spurred the formation of a Ramona citizens' group known as the Toxic Waste Impact Group, or TWIG on March 5, 1985. On April 2, 1985, the meeting was held with representatives of TWIG, ESI, LOWV, and OSDH in attendance. During the six-hour debate, several technical objections were lodged, including whether ESI and OSDH had adequately assessed groundwater contamination.

On August 29, 1985, OSDH, in conjunction with its response to comments, opined that no new issues of substance that could be addressed under OSDH rules and regulations were raised in the April meeting. OSDH issued a construction permit for both injection wells the next day.

On September 12, 1985, TWIG filed a petition in district court for an injunction against OSDH and ESI for failing to notify affected property owners of ESI's application and for failing to consider evidence on potential problems with the well. TWIG also obtained an "Order of Stay Pending Review" of the permit by the court that prevented ESI from conducting any construction activity until the court's review of the permit decision was completed.

On October 15, 1985, the district court held that the construction permit was void *ab initio* because OSDH did not properly follow the Oklahoma Administrative Procedure Act requiring notice of the opportunity for a hearing to all owners of property within one mile of ESI's mineral rights, and because OSDH should have held a hearing, regardless of whether any requests were made before the deadline. On appeal, the Oklahoma Supreme Court, on March 1, 1988, reversed the district court findings and remanded the issue back to the district court for "disposition of unresolved issues."

In November 1988, the District Court held that OSDH had failed to make a finding of fact that the site was physically and technically suitable for a hazardous waste injection well. OSDH again appealed the ruling to the Oklahoma Supreme Court.

To date, the District Court's stay remains in effect. The construction permit expired on September 1, 1990. However, a request was made by ESI (March 22, 1991), for an extension of the construction permit period on the grounds that the Oklahoma Controlled Industrial Waste Disposal Act was amended by the Oklahoma State Legislature with language that has been codified into the Oklahoma State Statutes at Title 63 OS Section 1-2012.4. The amendment read in part,

> *The filing of a proceeding appealing the issuance of a permit issued prior to or after the effective date of this act authorizing the construction or operation of a controlled industrial waste facility shall stay any time restraints specified in the permit relating to the term or expiration of the permit.*

It is ESI's position that this language effectively altered both the term and the expiration of the ESI permit. The appeal from ESI stated that

> *ESI particularly wishes to preserve its right to request modifications of its permit in order to keep the ESI facility in full compliance with all applicable rules and regulations and to incorporate any technological, operational, or material advancements that may benefit the future operation of the permitted facility, preserve the public health, an safeguard the environment. ESI recognizes that an immediate response to this request is unwarranted, as both the Department and ESI are awaiting the decision of the Oklahoma State Supreme Court. Please consider this correspondence, however, a formal request or petition, requiring a timely response by the Department.* (ODEQ 1995:13).

To date, no decision by the Department of Environmental Quality (formerly the State Health Department) has been rendered regarding the extension of the construction permit. As recent as February of 1995, an attorney for the ODEQ stated that, "I believe the matter has become moot. I'm not sure there still is an ESI company, nor am I sure what legal impact a permit issued back then has now." ESI no longer has a telephone listing and the company's attorney did not return telephone calls to the Oklahoma City office of the attorney for the ODEQ. Although the matter of the appeal is still before the Oklahoma State Supreme, it is apparent that ESI has abandoned its effort. TWIG continues to meet once a year to discuss issues of common concern to the community but has not undertaken any specific new projects.

# CHAPTER IV

# METHODOLOGY

## Introduction

This chapter provides a description of the methodology used to survey stakeholders' opinions and beliefs regarding the ESI siting controversy. Stakeholder sampling, instrument pretesting, final survey design, and data analysis are covered.

A multi-instrument methodology that combined qualitative and quantitative methods was used. Specifically, a structured questionnaire, an open-ended personal interview, two rank-order card sorting exercises, and Q methodology were all employed. The use of multiple instruments helps assure validity of research results.

## Stakeholder Sampling

Fifteen of the seventeen participants were actively involved in the siting controversy; the remaining two (both of whom were familiar with the controversy but did not play a direct role) were invited to increase low participation rates among industry and government stakeholders. Participants included citizens from Ramona, officials from the OSDH, and an industry insider familiar with the plight of ESI (ESI representatives refused to participate). Each stakeholder was contacted in person or by telephone and informed of the purpose of the study. Those stakeholders who were knowledgeable of the siting controversy, willing to recollect their experiences and feelings, and available to share their time were asked to take part in the research. Of the 17 stakeholders who participated, 10 were members of TWIG, three were government officials, three were neutral citizens, and one was an industry representative. Stakeholders were identified from membership rolls of TWIG and by word-of-mouth once the research was underway. Officials from ESI harbored deep

resentment of TWIG and the court's handling of the events surrounding the siting controversy and did not want to revisit the issues raised by the siting proposal.

## Survey Administration

Personal interviews were administered at the stakeholders' places of employment or residence. The interview began with the presentation of research credentials, personal introductions, an explanation of the research, and its goals (see Appendix A). The stakeholders were assured of confidentiality and were informed that they could end the interview at anytime. Stakeholders were then asked to sign a consent form (Appendix B) confirming that their participation was voluntary and ensuring anonymity outside the research team.

The interview began with the initial and final questionnaires, followed by an open-ended interview and two rank-ordering card sort exercises, and ended with a Q sort. Stakeholders were informed of the purpose of each instrument and given appropriate instructions. They were encouraged to take breaks at any time. At the conclusion of the interview, stakeholders were thanked for their participation, given a proposed date for completion of the compilation of data, and a business card to help them reach the researcher if they so chose.

### Initial Survey Design and Pretest

The generic survey design, developed by Will Focht as project director, was adapted by the individual members of the research team in a group setting with 16 citizen activists from Ponca City, Oklahoma. Two versions of the pretest were administered. The results were analyzed to determine whether the questions asked were understandable and unambiguous, and whether the responses were consistent. The results indicated the need for personal interviews instead of group interviews and for the refinement of several questions. In the revisions, the instruments were made flexible enough to apply to all types of hazardous waste management disputes to allow consistency in data collection and cross-community comparison. Site narratives, newspaper articles, OSDH permitting information, and legal documentation provided additional background information on the events surrounding the siting controversy.

### Structured Questionnaire

A structured questionnaire was administered in two parts. The initial questionnaire, given at the beginning of the interview, was entitled "Relationships and Roles in the Ramona Situation" (see Appendix D). This questionnaire consisted of eight questions intended to identify stakeholders' ties to Ramona, informational sources and confidence levels in those sources, participation levels in the siting controversy, and relationships with the various groups involved. Each stakeholder was given a copy of the initial questionnaire and asked to complete it. The completed questionnaire was reviewed for legibility and completeness and filed for subsequent analysis.

The final questionnaire was administered immediately after the initial questionnaire. The final questionnaire also consisted of eight questions and sought information on the participant's proximity to the proposed site, membership and participation in civic and other social groups, age, gender, occupation, and educational background (see Appendix C). These data were collected for the purposes of linking demographic, social, and physical variables with responses from the other methodologies used in the survey. Each stakeholder was given a copy of the final questionnaire and asked to complete it. The completed final questionnaire was reviewed for legibility and completeness and filed.

### Open-Ended Interview

The open-ended interview was conducted immediately following the final questionnaire. This interview consisted of 13 questions concerning participants' opinions and recollections of the siting controversy (Appendix E). All questions were read aloud by the researcher and participants were asked to respond to the questions based on their perspective of the dispute. Efforts were made during the interview not to influence respondents in any way that would bias their responses. Participants were encouraged to express their feeling and concerns honestly and to elaborate on any point they believed was important. All conversation during the open-ended interviews was audio recorded, with the stakeholders' permission, for later reference. Questions in the open-ended interviews centered on the participant's knowledge of and involvement in the siting controversy, reasons for their involvement, feelings toward Ramona, sense of community, and other stakeholders'

handling of the siting. The open-ended interviews concluded with a final question asking the participants to reveal their feelings and emotions about the controversy while the interviewer remained completely silent. In retrospect, this final question produced the most insightful information on the reasons for their involvement. Before proceeding to the card sorting exercise, the participants were asked to recommend other stakeholders whose interviews, they believed, would be valuable.

**Rank Order Card Sorts**

Two rank order card sorts were administered following the open-ended interview. The first set of thirteen cards (see Appendix F) consisted of a series of statements (one on each card) which described criteria important to community environmental decision making. These statements were aimed at determining what participants believed should be important in siting decisions involving hazardous waste facilities, and centered on themes such as economic impacts on the community and on the developer, scientific risk assessment, access to information, views toward technology, fairness, trust, cultural norms, disruption of community traditions, political involvement, and technical education.

The second set consisted of nine cards with statements focusing on citizen participation strategies (Appendix H). These strategies were intended to stimulate the participant to choose the strategy that he or she believed would have had the best chance at averting decision gridlock in the ESI siting controversy. The strategies varied according to the level of influence that the community would have over the decision making process.

Each set of rank order cards was shuffled and given to the participant. The participant was asked to read each card and place it in a line extending from low to high importance. Frequency distributions were later calculated for each card rank using median, individual, group, and weighted individual ranking methods. The card sorts were also analyzed using hierarchical agglomerative cluster analysis (Ward's Method). Card sorting results are presented in Chapter 7.

**Q Methodology**

Q methodology, developed by William Stephenson (1935, 1953), is a modified rank-ordering procedure in which stimuli (in this case, statements made by stakeholders in similar siting

controversies) are placed in a two dimensional sort (quasi-normal distribution) that is significant from the standpoint of the participant sorting the statements under a specified "condition of instruction" (Brown 1980). Q reveals a participant's subjectivity with a minimum of researcher-induced bias (Looney 1997). Fundamentally, Q technique provides an instrumental foundation to the operation of transitivity whereby stimulus objects (e.g., Q statements) can be placed in a significant order (Piaget 1971:29-31). Methodologically, Q gives substance to the logic of preference by explicitly recognizing the central role of subjectivity involved in evaluations of all kinds (Brown 1980). As Von Wright (1963:12) declares: "A preference, of any type, is necessarily relative to a subject. A preference is always somebody's preference." "It is this phenomenon, subjective *in extremis*, that Q technique seeks to model" (Brown 1980:155). Basically, the Q sort enables the subject to provide a model of his point of view (Brown 1980). Since Q statements typically contain opinions rather than facts, the construction of one's own statement arrangement, like the mixing of a tobacco blend, is strictly a matter of personal taste: any one Q sort is as valid as any other at the outset (Brown 1980:160). The sorting is interactive, dynamic, and operant, and the factors that emerge are "operational definitions" of the attitudes or value preference that produced them (Brown 1980:113). Individuals are factored across statements instead of statements across individuals (Looney 1997).

*Q Technique*

Q technique begins by asking a participant to place a sample of objects in a significant order according to his or her reactions or feelings toward them. The Q sample for the Ramona project involved statements of opinions, beliefs, recollections, or reactions to other stimuli relating to the topic under study. The Q sample consisted of 47 statements from comments, discussions, and opinions about environmental decision-making (Appendix J). Each statement was printed on a card and read by the participant while recalling their beliefs and feelings concerning the siting controversy. The participants were asked to place the cards into one of three piles according to whether they agreed with the statement, disagreed with the statement, or felt neutral or ambivalent toward it. Then they were asked to reread the statements from one pile only and place each on the form board according to their beliefs from most agree (+5) to least agree (-5), working from the ends toward the middle. The

form board was constructed as a pyramid of 47 rectangles arranged in a quasi-normal distribution (eleven piles with frequencies of 2, 3, 4, 5, 6, 7, 6, 5, 4, 3, 2). Q items were placed on the form board as constructed forcing participants to identify the few statements about which they felt most strongly and which therefore plays the greatest role in factor interpretation. Each participant was free to rearrange any statement on the form board at any time, and was encouraged to examine the arrangement when finished to make sure it reflected their beliefs. Each statement's unique number was recorded on a score sheet by the researcher.

The Q sort configurations were factor-analyzed at Oklahoma State University using PC QUANAL, a statistical factor analysis program specifically designed for Q methodology (Van Tubergen 1975). PC QUANAL correlates the Q sorts and the correlation coefficient matrix is factor analyzed using the principal components method and orthogonal varimax rotation to reveal commonly shared perspectives, opinions, beliefs, values or attitudes. QUANAL outputs factor score arrays for the common factors retained following rotation (Focht 1995:124). After analysis, the researcher attempts an interpretation of each common factor based on the factor score arrays and on other relevant information including prior interviews. These interpretations are then validated by re-interviewing the highest and purest loader(s) on each factor. The highest loader is the person whose sort correlates most highly with the common factor. The pure loader is the individual who best represents a common or shared perspective by loading most "cleanly" on a common factor. In many cases, the high and pure loader is the same person.

## CHAPTER V

## QUESTIONNAIRE AND INTERVIEW RESULTS

### Results of the Questionnaires

Seventeen stakeholders participated in this case study. Ten of these were members of TWIG opposed to the siting of the ESI injection well. Three participants were government employees, including a county commissioner and two OSDH employees – one of whom was involved in the controversy. Three participants were Ramona residents who adopted neutral positions on the siting controversy. The last participant was an industry insider familiar with and sympathetic to the plight of ESI. Table 1 summarizes the demographic characteristics of each stakeholder participant.

**TABLE 1 - DEMOGRAPHIC CHARACTERISTICS OF STAKEHOLDERS**

| ID # | Affiliation | Gender | Age | Education | Occupation | Proximity to Site | Participation |
|---|---|---|---|---|---|---|---|
| R-1 | TWIG | F | 46 | 1 Year College | Rancher | 10 miles | Never |
| R-2 | TWIG | F | 51 | BS Degree | Innkeeper | 3.5 miles | Occasionally |
| R-3 | TWIG | F | 53 | High School | Secretary | 3 miles | Never |
| R-4 | TWIG | F | 44 | BA Degree | Lab Tech | 14 miles | Never |
| R-5 | TWIG | F | 70 | 2 yrs College | Mother | 3 miles | Frequently |
| R-6 | TWIG | M | 71 | BS Degree | Oil Trader | 3 miles | Continuously |
| R-7 | TWIG | F | 69 | BS Degree | Housewife | 3 miles | Frequently |
| R-8 | Government | M | 52 | High School | County Comm | 6 miles | Continuously |
| R-9 | TWIG | M | 68 | High School | Postmaster | 2.5 miles | Continuously |
| R-10 | TWIG | F | 62 | High School | Homemaker | 2.5 miles | Continuously |
| R-11 | Government | M | 61 | BA Degree | OSDH | 95 miles | Never |
| R-12 | Neutral | F | 60 | High School | City Clerk | 4 miles | Never |
| R-13 | TWIG | M | 58 | BS Degree | Mayor | 3 miles | Frequently |
| R-14 | Neutral | F | 33 | 2 yrs College | Accountant | 3 miles | Never |
| R-15 | Neutral | M | 68 | High School | Postmaster | 4 miles | Never |
| R-16 | Industry | M | 26 | BS Degree | Self-employed | 120 miles | Never |
| R-17 | Government | M | 29 | MS Degree | OSDH | 250 miles | Never |

Categories utilized for Table 1 information were designed to obtain basic information about the participants to assure that the participants were demographically representative of the stakeholder population. The study included about half males (8) and half females (9). The median age of participants in the siting controversy was 59 years. Though this is somewhat older than average age of participants in the siting controversies studied elsewhere in Oklahoma as part of this project (Focht

1995), it was typical of the age of the stakeholders in this study.[1] The education level of the stakeholders varied from high school to a master's degree. Eleven of the 17 participants had some college. This range was also typical of those who participated in this controversy. Occupation varied quite a bit: from homemaker to self-employed to mayor to rancher, and several others. The stakeholders in Ramona were not dominated by any one occupational group, as reflected in the population sample. The proximity to the site was useful in relating categories of risk to the stakeholder. In general, one would expect that those who lived closer to the site were more active. As can be seen in this table, every non-government stakeholder who participated in the controversy lived within 10 miles of the site. Not a single resident from neighboring communities such as Bartlesville (12 miles) or Tulsa (30 miles) actively participated. Participation level refers to participation in civic groups or organizations outside TWIG. Most participants were not active in outside civic groups. This is particularly interesting in light of their intense activism in this controversy. It is reasonable to conclude that environmental threats in one's backyard can motivate political activity even in those not predisposed to such activity.

Table 2 presents the data obtained from the initial questionnaire. This questionnaire sought to identify the information sources upon which participants relied and which of these were most trusted. The questionnaire also inquired about the type and extent of political participation stakeholders engaged in during the siting controversy.

Participation level as shown in Table 2 refers to the subjective judgement of the researcher of the particular stakeholder's depth of involvement in the activities taking place during the siting controversy. These activities included speaking at rallies, attending meetings, attending court hearings, writing legislators, etc. Participation frequency refers to stakeholders' self-evaluations of their participation in the siting controversy. As in the demographic questionnaire, numeric levels for specific intervals of participation were not defined; rather, they were grouped into categories such as "never," "seldom," "occasionally," "frequently," and "continuously."

As discussed previously, the initial and final questionnaires were administered to obtain selected demographic and personal information about the participants. Drawing on the data presented in Tables 1 and 2 as well as that obtained from the questionnaires, stakeholder group-specific findings are presented in the sections that follow.

TABLE 2 - RELATIONSHIPS AND ROLES OF STAKEHOLDERS

| ID # | Ramona Ties | Information Sources | Most Trusted Sources | Least Trusted Sources | Participation Level | Participation Frequency | Relationship with TWIG |
|---|---|---|---|---|---|---|---|
| R-1 | Resident | 1,2,3,4,7,8 | None | 3,8 | High | Continuous | AM |
| R-2 | Resident | 1,2,8 | 2,1 | 8 | High | Continuous | President |
| R-3 | Resident | 1,2,4 | 4,2,1 | 3,8 | High | Frequent | AM |
| R-4 | PO | 1,2,3,8,10 | 2,1,10 | 3,8 | High | Frequent | AM |
| R-5 | Resident | 1,2,3,4,6,7,8,9,10 | 10 | 3,8 | High | Continuous | Founder |
| R-6 | Resident | 2,3,4,7,8,10 | 10,8,2 | 1,8,9 | High | Continuous | AM |
| R-7 | Resident | 1,2,3,4,7,8,10 | 10,2,4 | 3,8,1 | High | Continuous | Secretary |
| R-8 | Resident | 1,2,3,8,9 | 8,1 | 3 | High | Frequent | AM |
| R-9 | Resident | 1,2,3,4,8,9 | 4,2,9 | 3,8 | High | Continuous | BM |
| R-10 | Resident | 2,3,4,8,9 | 2,4,9 | 8,3 | High | Frequent | AM |
| R-11 | None | 1,3,4,5,7,8,9,10 | 5,3,4 | 1,4 | High | Continuous | None |
| R-12 | Resident | 1,2,5 | 5,1,2 | NA | None | Never | Aware of |
| R-13 | Resident | 1,2,3 | 2,1 | NA | High | Continuous | AM |
| R-14 | Resident | 1,2,9,10 | 10,1,2 | 9,1,2 | None | Rare | Attend 1 mtg. |
| R-15 | Resident | 1,2,5 | 10,2,1 | 1,2,5 | Low | Occasional | AM |
| R-16 | RA | 1,2,3 | 3,2,1 | NA | None | Never | None |
| R-17 | NA | NA | NA | NA | None | Never | None |

*Legend*

*Informational Sources

1 – News Media
2 – Friends and Neighbors
3 – ESI
4 – Environmental Groups
5 – Fellow Workers
6 – HEGI
7 – US EPA
8 – OSDH
9 – Local Government
10 – Other Sources (TWIG)

Abbreviations

AM – Active Member
BM – Board Member
PO – Property Owner
RA – Relative in the Area

**TWIG**

Ten TWIG members were interviewed, including seven females and three males. The average age of the ten TWIG members was 59 years (compared to 47-year average age for non-TWIG members). Five members had attained schooling through high school and five members held bachelor's degrees. They lived an average of 4.8 miles from the proposed ESI site. Like the overall stakeholder population, they came from diverse occupations. Included in the sample were

a rancher, secretary, art teacher, postmaster, innkeeper, laboratory technician, crude oil trader, mayor, and two homemakers. All TWIG members were residents of Ramona and had deep ties to the area including property ownership, children who had gone to school in Ramona, and family members in the area.

Informational sources utilized by the TWIG members included the news media, friends and neighbors, ESI, environmental groups, the US EPA, OSDH, fellow members of TWIG, local government, and professional geologists and engineers. The sources most trusted by TWIG members were friends and neighbors, news media, environmental groups, and local government. Though one TWIG member listed the OSDH as a trusted information source, not another identified either the OSDH or ESI as trusted.

All ten members were characterized as "active" participants. They signed petitions, contacted government officials, attended and spoke at meetings, organized meetings, attended government hearings, participated in rallies, and organized rallies. They each characterized their participation level as "frequently" or "continuously." Of the ten TWIG members interviewed, five were TWIG officers (founder, president, treasurer, secretary, and board member) and five were active members and supporters. Nine had no relationship whatsoever with ESI but one has a family member who had a non-employee business relationship with ESI during at least some of the period during the siting controversy.

Government

Three government officials (a county commissioner, and two OSDH employees) were interviewed – all were male. The average age of the government participants was 47 years. One had a high school education, one had a BA degree, and one had a master's degree. They lived an average of 117 miles from the proposed ESI site. One of the government participants was a resident of Ramona, one was from Oklahoma City, and one was from Poteau (in southeastern Oklahoma).

Informational sources utilized by the government officials included the news media, friends and neighbors, ESI, environmental groups, fellow workers, the US EPA, OSDH, TWIG members, and local

government. Most trusted of these informational sources were the OSDH, news media, fellow workers, ESI, and TWIG members. The least trusted information sources included ESI, the news media, and environmental groups.

Two of the government officials were characterized as "active" participants in the siting controversy, e.g., they reported that they signed petitions, contacted government officials, attended meetings, spoke at meetings, participated in rallies, and attended government hearings. The third government official was not active due to his remote location. The first two characterized their participation level as "frequently" or "continuously." One government participant was an active member/supporter of TWIG and one was involved with TWIG as an official but only during the siting controversy. The third had no relationship with TWIG and was familiar with the controversy only indirectly as an employee of OSDH. None had any business relationship with ESI.

**Neutral Citizens**

One male and two female neutral citizens participated in this study. Their average age was 54 years. Two neutral citizens had achieved a high school education and one was attending college. They lived an average of 3.7 miles from the proposed ESI site. They also had diverse work backgrounds: an accountant, a city clerk, and a postmaster. All were residents of Ramona.

Informational sources utilized by the neutral citizens included the news media, friends and neighbors, fellow workers, TWIG, and local government. The neutral citizen participants split in their judgments of the trustworthiness of information sources. Some most trusted fellow workers, the news media, friends, and TWIG; others most distrusted local government, friends, news media, and fellow workers.

Of the three neutral citizens, two did not participate in the siting controversy and one attended only one citizens' meeting. They characterized their participation level as "occasionally" or "never." One participant attended a TWIG meeting but never participated in any TWIG activity. A second citizen knew of TWIG but had no dealings with them. The third citizen was a passive supporter but not a member of TWIG. None had any business dealings with ESI.

### Industry

Since no representative of ESI was willing to participate, the researcher was fortunate to have located a friend and associate of the owner of ESI. His viewpoint was important to this study. The industry representative was a 26 year old male. He had a BS degree and was pursuing his MBA. He lived 120 miles from the proposed ESI site and owned and operated his own business: a towing and recovery service. One tie that he had to the Ramona area was a relative who lived in Bartlesville. The industry representative's family had a business relationship with the holding company for ESI on an unrelated venture.

Informational sources utilized by the industry representative included the news media, friends, neighbors, and ESI. Most trusted among these informational sources were ESI, friends and neighbors, and the news media. Though he did not identify any sources as least trusted, he did offer the opinion that "the media is biased and prints what the public wants to hear."

The industry representative did not directly participate in the siting controversy. He had no dealings with TWIG though he knew of them through his industry contact at ESI. He listed his relationship with the officer of ESI as "social." He related the facts that the president of ESI was deceased and that hard feelings existed between the remaining ESI personnel and TWIG.

### Discussion of Questionnaire Results

In general, the opponents of the siting most trusted their friends and neighbors, the news media, environmental groups, and TWIG to provide useful information. The supporters of the siting most trusted ESI, the OSDH, and the US EPA to provide salient information. Not surprisingly, the opponents distrusted ESI, the OSDH, and the US EPA to provide unbiased information. The supporters did not trust the news media and TWIG as informational sources. All of the opponents to the siting listed their participation level as high, while the neutral citizens, one of the government participants, and the industry insider had low or no participation.

As is evident in the data obtained from the questionnaires, the opponents to the siting of the ESI well were an active, well-organized, cohesive unit. These characteristics helped TWIG to oppose, fight, and ultimately succeed in stopping the construction of the injection wells.

## Results of Personal Interviews

### TWIG

Members of TWIG opposed the ESI siting proposal because they perceived that the risks posed by the facility would be unacceptably high and because they did not trust ESI or the OSDH to act in the best interests of the community of Ramona. Specifically, TWIG members worried about the migration of injected hazardous waste through a subsurface formation unsuitable for such disposal and about the loss in property value and quality of life if that happened. TWIG members' risk aversion is reflected in these comments:

> *We had technical knowledge and research to prove the site was not feasible and would contaminate the area.*
>
> *A toxic chemical is toxic forever.*
>
> *There is fracturing of the formations beneath the ground in this area. ESI knows it and is ignoring the risk of that fracturing for hazardous waste to migrate all over the country.*
>
> *The fire department is completely unprepared for what might happen if something goes wrong at that site.*
>
> *I know that saltwater from petroleum activity migrates through the aquifer, so why wouldn't the hazardous waste?*
>
> *The truck traffic that would be flying through Ramona on the highway would be dangerous. Its' only a matter of time before someone gets killed by one of those hazardous waste trucks.*

These comments reflect TWIG's opposition to the well based on risk-based criteria. TWIG not only felt that the wells posed a risk, but also the truck traffic and the lack of preparedness of the town to handle an emergency. A couple of the comments reflect the fact that TWIG had done their own research and were not just opposing the well out of irrational fears, but out of research and the advice of hired experts.

The members of TWIG also felt that ESI was completely incompetent to handle a project of this size and scope.

> *ESI was started on a shoestring, and they are still not financially stable.*

*Their technical data was shaky. I don't know where they got their information, but I can assure you it doesn't apply around here.*

*The OSDH wanted ESI to purchase an insurance policy through Lloyds of London. Sounds like a pretty risky proposition to me.*

These comments reflect the fact that ESI was unable to convince the TWIG members that they were prepared, technically and financially, to handle a project of this size and scope. These comments reflect elements of both risk and trust, with neither being within acceptable limits for TWIG.

The members of TWIG felt that the OSDH was not acting in the best interests of the citizens of Ramona and were working with an inadequate permitting system.

*The State Health Department is a joke; they don't seem to know what the hell is going on. They have no chain of command.*

*The notification process required by the state is almost criminal. There was a tiny notice in the paper, and a radio ad, and that was it.*

*ESI is in cahoots with the Health Department. The poor permitting system should show you that.*

*The permitting process needs to be changed. It should keep citizens informed. As it now stands, all it does is keep citizens in the dark.*

These comments reveal the TWIG members' feeling about the OSDH and the role that they played in the siting of the wells. The TWIG members' felt that the OSDH and ESI were acting in unison to stymie opponents' efforts to stop the siting. This perceived connection, coupled with a permitting process that the opponents' felt kept them in the dark, spelled trouble for the siting.

TWIG members had a distrust of both the OSDH and ESI, as evidenced by the following comments relating to institutional distrust:

*We were best informed by our mouth to mouth conversations.*

*You always trust your friends. TWIG was organized to fight this well.*

*If people know all the facts up front, they will come a lot closer to accepting you – not the other way, like ESI.*

*They tried to sneak it in when we weren't looking.*

*ESI should have opened up their records and files and shown everything.*

*The Health Department should look after the welfare of the people.*

*The Health Department enforces the law, but it does not watch out for the health and welfare of the people.*

*If ESI had come to us early, given us all the facts, and kept us informed rather than trying to sneak it through, they might have gotten the damn thing sited.*

Trust was a paramount issue in this siting controversy. TWIG did not trust ESI or the OSDH to consider citizens' input, fears, or concerns. This exclusion, and the appearance of withholding information on the part of ESI, was a milestone on the road to gridlock in Ramona.

The TWIG members in particular had strong feelings about their ties to the land and sense of community that they felt would be compromised if the siting proposal were allowed.

> *This is cattle country, and ranchland. We have an attachment to the country that ESI doesn't understand.*
>
> *The Cherokee Nation stood behind us 100%. The Cherokee people understand what we mean when we talk about our attachment to the land.*
>
> *Whether anyone will admit it or not, the people would have been sad if the facility had gone in. Our land would have devalued – and us along with it.*
>
> *Just look at that beautiful pasture. Do you really think we wanted to ruin that with an eyesore like the injection wells?*
>
> *ESI needed to know who the citizens were. They never understood that local culture is very important around here.*

The citizens of Ramona, and the TWIG member in particular, are a rural people with rural values. The importance of land, cattle, and small-town community values were paramount in the eyes of the TWIG members that opposed the siting. TWIG felt that ESI and the OSDH did not adequately consider these intrinsic factors when they sited the wells.

Another negative factor in the eyes of TWIG members was the bullying tactics employed by ESI to push the well siting through. TWIG members were offended by these tactics.

> *ESI sued [a TWIG member] for libel and slander; they were trying to intimidate us.*
>
> *ESI sued [a TWIG member] for $10 million.*
>
> *ESI seemed to become very hostile during meetings.*
>
> *ESI called [a TWIG member] that nosey old woman in the wheelchair.*
>
> *Not hiring a local attorney was their biggest mistake. They tried to ram this fancy lawyer from Yale down our throats.*
>
> *They said we were a bunch of NIMBYs and couldn't stop them anyway.*
>
> *They said that "We are going to do it, you're going to have it, and there is nothing you can do about it."*

As the research will show, one important factor in TWIG members' zealous opposition to the ESI siting was their belief that ESI and the OSDH failed to consider the community's viewpoint and that ESI and OSDH tried to force the siting decision on the citizens' of Ramona. Lawsuits, counter-suits,

threats, fancy lawyers, and personal attacks on TWIG members served as rallying points for the opponents of the siting.

When asked if anything good came from the controversy, and what, if anything, TWIG or ESI should have done differently, TWIG members offered the following comments:

> *This drew the community together. I met a bunch of good folks that I otherwise would not have.*
>
> *ESI did give a good presentation, slick, I'll give them that, but I think it was maybe a little too slick.*
>
> *There is a bond now between Ramona and Ochelata, the rivalry is buried. We all worked well together.*
>
> *We always opened our meetings with a prayer. We felt like we were there to protect God's creation.*
>
> *We really worked as a team, especially in fundraising.*
>
> *If ESI had come to us early, given us all the facts, and kept us informed rather than trying to sneak it through, they might have gotten the damn thing sited.*

Communitarian issues were paramount in the opposition to ESI's wells. The citizens felt that working together renewed bonds with nearby towns, stimulated feelings of spiritual connection with nature, and led to the formation of TWIG. ESI's main fault, in the eyes of some of TWIG members, was their "sneaking around." More than one TWIG participant said that ESI should have come forward early with concise information and work with the citizenry to have a chance at siting the wells.

**Government**

Government participants, although agreeing with TWIG members on several issues, also held views consistent with their role as the ultimate decision-maker. The government officials expressed views based not on the unacceptable risk and lack of trust between stakeholders, but on the validity of the permitting process and ability of the government to make correct decisions. Since the views of the government participants vary from one to the other, they are presented individually rather than for the group as a whole.

*County Commissioner*

The commissioner felt that government is sometimes hindered by its own rules and regulations.

> *The government has a process set up, but because of bureaucracy, they cannot operate outside of that process.*

*We have too much red tape, and we do not always accomplish what we set out to do.*

*Sometimes the people that write these rules and regulations have no idea how they will really work at the rural Washington county level.*

He also felt that the government, when pushed to make a decision, is not always honest.

*The government does not always tell the truth.*

He indicated that the risk for this particular siting was high, as evidenced by the following comment:

*They put a lot of liabilities on a small community that does not have many financial resources to clean up with if something goes wrong.*

He felt that the company proposing the siting of the wells ignored the social impacts to the Ramona community that the site may cause.

*When the company has already spent x number of dollars, whether it is a good location or not, the company has already committed and is responsible to their investors.*

*I was not aware of anybody who was for the siting.*

*I've attended meetings at the school with 300-400 people.*

*I think one reason that they wanted to place it here was because they thought that the little small community would not have the wherewithal to fight it.*

*They should meet other criteria, including how does it affect the public, devaluation of property, etc.*

The county commissioner was a member of TWIG. He felt that he could be a supporter, and even a member of TWIG, and separate that involvement from his government duties. He indicated that in some ways the siting could be beneficial to the community. He cited increased tax revenue for roads, schools, and the local health clinic. He also felt that some employment gains would be realized However, as evidenced by the comments, he felt that a legitimate risk existed and ESI tried to bully the citizenry.

*OSDH Employee*

This government official interviewed worked for the OSDH and was heavily involved in the siting controversy. He was very understanding of the plight of the opponents to the siting, but felt that the government had a responsibility to all citizens, not just those who opposed the siting. He truly felt that ESI played by the rules in obtaining the initial construction permit, as evidenced by the following comments:

*You can only do everything you can, and we did it. Everything looked proper to us.*

*We had a question of whether the Arbuckle [geological formation] where they were going to drill was suitable. We were going to pump water in to test it. For the time being, we were only going to issue the construction permit.*

The official also recognized that no matter what the OSDH did or said, opponents to the siting would not be convinced that the risk was acceptable; they were just too afraid of the technology.

*They did not understand what was going on. They saw the injection well as a threatening activity. For some reason, they thought it would kill all the trees, hell, there's not a tree in 20 miles of the site anyway.*

*I did my best to respond truthfully, but they did not want the truth.*

*I did my best to relay the risks, explain the procedures, and tell them what to look for to see for themselves that the site was suitable – but no one would listen to me.*

*One of the ladies was scared absolutely to death about this stuff being trucked around. She had done work with chemicals and that is why she said she was in a wheelchair now.*

The official admitted that the OSDH alienated itself from citizens through several of their actions.

*Our biggest problem was: one of our guys, the director of hazardous waste, was taking notes and not paying much attention, and somebody stood up and said he was asleep. Then they cried.*

*The state attorney tried to belittle them with a simplistic speech that killed us. A lady stood up and said, "Don't you ever talk to me like that." It was all downhill from there.*

*Two ladies were going to beat me up!*

*One thing was truly ill advised. We came with the highway patrol and sheriff because of a threat we received over the phone. In retrospect, rolling in with highway patrolmen from Oklahoma City was a terrible idea.*

*We should have taken out some newspaper ads to tell the OSDH position and put people's minds at ease.*

In discussing his views toward TWIG and their involvement in the controversy, the government official offered the following comments:

*I was present at the public meeting on the draft permit, but by this time TWIG was established and running hard.*

*A limited number of influential TWIG members managed to involve all these other people.*

*I don't like them running around trying to scare people.*

*Very organized with a small, core group.*

*Whomever these one or two people are who are opposed to these facilities, they do not truly represent the views of the general population. They are just the most vocal.*

In closing the interview with this government official, he was encouraged to summarize his feelings towards the siting controversy. The following comments summarize why the siting failed:

*More or less, it was a NIMBY sort of situation.*

*The biggest problem was that they did not trust us and did not believe us.*

*I don't recall anybody who supported it.*

It is apparent from the quotes that the OSDH employee felt that the siting should have gone through. He did know, however, that several of the actions on the parts of ESI and the OSDH made the situation extremely difficult. He felt that the citizens did not trust ESI or the OSDH, and that that made a siting impossible. He felt that NIMBY played a role in the opposition. He also felt that a small, core group of influential TWIG members was most responsible for the defeat of the siting.

*OSDH Employee*

The last government official interviewed was an employee of the OSDH and lived in the southeastern part of the state. Although he knew of the siting controversy, he did not play an active part in any of the proceedings. He did agree, however, to be interviewed and his views are considered important to gain another government perspective, especially an OSDH employee. Three of his comments are particularly insightful:

*Anytime I need technical assistance I call headquarters. Engineers, geologists, hydrogeologists, whatever, they are all right there. There are plenty of experts at the headquarters level of the OSDH.*

*You want to work with people; but then again, you have a job to do with guidelines to follow.*

*What we do to help pollution today, may not be what we have tomorrow; but it is better than what we had yesterday.*

Of particular importance in these statements is the government participants' belief that they have the authority and expertise to make the correct decisions. However, this belief did not mesh well with those of the siting opponents.

**Neutral Citizens**

Three neutral citizens were interviewed to obtain another viewpoint of the siting controversy. In such a small town, they were obviously aware of the controversy but chose not to get involved. The neutral citizens felt that several influential TWIG members were responsible for most of the uproar over the siting.

*A few people with money were the ones causing all the ruckus.*

*The leaders of the community did not want to protest; just the prestigious families.*

*The people who had the stroke to stop it did just that. They were determined that outsiders were not going to come in and tell them what to do with their land.*

The neutral citizens also felt that a legitimate risk was being imposed on the community.

*There is the threat of a spill, especially from the trucks. And the oil wells in the area – they were never properly plugged.*

*Our roads are not suitable for that kind of traffic.*

*My father opposed it, so for him to get involved, something must be wrong.*

The neutral citizens, although not actively involved, were aware of trust issues emanating throughout the community, specifically:

*I heard the company tried to sneak it through, so there was distrust from the beginning. They should have taken out a newspaper ad or something.*

The neutral citizens also felt the landowner was not well prepared to make a decision regarding the siting on his property:

*He was operating with poor information, offered some quick cash, and he jumped on it.*

The neutral citizens also felt that a sense of community, not understood by ESI or the State, contributed to the failure of the siting permit.

*TWIG's attorney understood how people in the area felt; ESI's did not.*

*The bigwigs underestimated the resiliency of the people to fight this thing.*

To summarize the feelings of the neutral citizens, the following was offered:

*Law is the deciding factor. This whole thing went to court and ESI lost – plain and simple.*

The neutral citizens felt that once again, like one of the government participants, that a core group of influential TWIG members was responsible for the defeat of the siting proposal. They were not upset about this, but simply had that observation. They also felt that the sense of community that existed was ignored by both ESI and the OSDH. They felt that a legitimate risk was posed by the wells, and that if the landowner had known of this risk he would not have struck a deal with ESI. It is interesting to note that the neutral citizens were the only ones who brought up the landowner connection, and his inability to make an informed decision.

### Industry

The industry representative interviewed was chosen for his familiarity with the siting controversy. He felt that ESI received no help from the local media as evidenced by the following comment:

*The media is biased and only prints what the public wants to hear.*

When asked what ESI did wrong, he offered he following comments:

*ESI tried to sneak it in, no doubt about it.*

*They tried to throw their weight around – probably a little too much.*

*When push came to shove, ESI was too patronizing to the people – especially during some of those wild meetings I heard about.*

As far as the permit is concerned, he offered the following comment:

*If it's legal, then it's legal. If the state sited the thing, what right do the people have to stop it? I know that ESI lost about $3 million, and it bankrupted the company. Hell, my old man spoke at the principal's funeral. That permit killed him.*

The industry representative adopted a utilitarian approach more than government representatives did. He indicated that legal is legal, and the OSDH sited the injection wells, and the citizens had no right to oppose it. He also felt that ESI's approach eroded the community's trust.

### Discussion of the Personal Interview Results

These results suggest that participants had different opinions of, attitudes toward, and reactions to ESI's proposal to site the injection wells.

TWIG members opposed the siting of the well due to risk concerns and a distrust of the OSDH and ESI. They also expressed concern about the ability of ESI to adequately manage an operation of this size and scope and the bullying tactics employed by ESI to try and gain permit approval. TWIG members believed that the OSDH was operating under an inadequate permitting system that unfairly favored industry, not the general public. TWIG members felt a very strong attachment to the land and were unwilling to jeopardize that with an injection well. TWIG members felt that the controversy brought the citizenry of Ramona together and helped them to work as a team. The overriding issue that led to the defeat of the injection well, in the minds of most TWIG members interviewed, was a lack of trust towards ESI and the OSDH regarding the siting.

The government officials interviewed came from three different backgrounds regarding the controversy. The county commissioner felt that government had a job to do – regardless of the popularity of the decisions it has to make – and felt that this hurt the OSDH on this case. He also felt that the risk for this particular site was inordinately high. He indicated that the principals of ESI did not take TWIG seriously about its commitment to the community and its ability to fight the siting.

The OSDH official involved with the siting took a more hard line government view and felt that the OSDH followed all applicable rules and regulations when they sited the injection well. He also felt that the citizens of Ramona and TWIG were inadequately informed of the risks posed by the injection wells and were needlessly concerned. He also indicated that OSDH failed to connect with citizens and had made several crucial blunders during the public participation phase of the siting controversy. He believed that only a few influential TWIG members were responsible for defeating the proposal.

The OSDH employee interviewed who was not directly involved in the controversy believed that the OSDH were the experts in this case and had a job to do regardless of the protests of concerned citizenry. He also indicated that although the OSDH is not perfect, they are doing the best they can with the technology that is available.

The neutral citizens interviewed concerning the siting controversy felt, as did the first OSDH employee, that a few influential community members were the ones most responsible for the defeat of the siting. They also believed that legitimate risks to community health and the environment would be posed by the injection wells and the associated trucking activity. The neutral citizens felt that ESI failed to address the citizens' sense of community and the willingness of the opponents to fight the siting. The bottom line for neutral citizens was that it was decided in a court of law and ESI lost.

The industry representative interviewed felt that although the siting was legal and approved by the OSDH, that ESI failed to adequately involve the citizens and tried to push the proposal through anyway. He indicated that the media was biased in this case and falsely alarmed the citizenry, which led to strong opposition by the general public.

---

[1] It was not determined whether this is a reflection of the average overall age of the community of Ramona or simply involvement by older members of the community.

# CHAPTER VI

## Q FACTOR RESULTS

### Three Factor Q Analysis

The 47-item Q sort data was entered into a software program known as PC Qanal (van Tubergen 1975). Two and three factor extractions were accomplished using the principal components method. These factors were rotated to simple structure by varimax rotation, which minimizes unexplained variance.

Only the three-factor solution was retained for analysis. Justifications for utilizing the three factor solution are: (1) each factor exhibited an eigenvalue greater than 1.0 (the traditional stopping criterion); (2) each factor explained at least 7% of the total variance; (3) three factors explained the perspectives of all participants except one (the two factor solution did not account for three participants) and only two of these were confounded; and (4) all three factors are of theoretical importance and correspond well with the interview and card ranking results. The three factors collectively explain 52% of the total variance.

Each common factor score array was interpreted by the author and validated via telephone by the stakeholder whose perspective best correlated with the perspective manifested by the common factor (the highest, purest loader).

Table 3 contains the re-ordered factor score matrix for the three factor solution after varimax rotation. For the level of significance = .001, the critical value for a significant factor loading is 0.451.[1]

TABLE 3

RE-ORDERED FACTOR MATRIX

| PARTICIPANTS | FACTOR A LOAD | FACTOR B LOAD | FACTOR C LOAD | COMMONALITY | PURITY |
|---|---|---|---|---|---|
| FACTOR A | | | | | |
| R7 (TWIG) | .722 | .212 | .093 | .575 | .907 |
| R3 (TWIG) | .800 | .086 | .365 | .780 | .820 |
| R1 (TWIG) | .521 | .266 | .169 | .371 | .732 |
| R4 (TWIG) | .614 | .195 | .334 | .527 | .716 |
| R14 (NC) | .618 | .435 | -.081 | .578 | .661 |
| R15 (NC) | .493 | -.016 | .463 | .458 | .531 |
| R9 (TWIG) | .554 | -.013 | .546 | .604 | .507 |
| FACTOR B | | | | | |
| R17 (GOVT) | .006 | .631 | .072 | .403 | .987 |
| R6 (TWIG) | .210 | .709 | .207 | .590 | .852 |
| R16 (INDUSTRY) | .156 | .362 | .051 | .158 | 830 |
| R2 (TWIG) | .302 | .540 | .373 | .522 | .559 |
| R8 (GOVT) | .353 | .508 | .446 | .582 | .445 |
| FACTOR C | | | | | |
| R13 (TWIG) | .082 | .171 | .566 | .356 | .899 |
| R10 (TWIG) | .309 | .168 | .612 | .498 | .752 |
| R12 (NC) | .114 | .400 | .682 | .639 | .729 |
| R11 (GOVT) | .001 | .443 | .570 | .522 | .624 |
| R5 (TWIG) | .372 | -.281 | .527 | .495 | 561 |

Table 4 presents the z-scores for the statements comprising each of the factors. The z-scores reflect the factor structure by representing each statement's relative importance. The scores are used to interpret the perspectives held by those participants who significantly load on the factor. Those statements that score nearer to ±1.00 are particularly useful because they elicited strong reactions (indicating higher importance) from the participants. Those item z-scores that differ by more than 1.0 are distinguishing items, whereas those that differ by less than 1.0 are consensus items. Comparisons among factor scores for the same items are also used in factor interpretation.

## TABLE 4

## TYPAL ARRAY Z-SCORES

| Q ITEM STATEMENT | Factor A | Factor B | Factor C |
|---|---|---|---|
| 1. Waste facility siting means economic growth and prosperity for the community. | -1.2 | .5 | -1.2 |
| 2. Offering cash payments to a community is the same as a bribe. | .7 | -.3 | .4 |
| 3. When jobs are scarce, increase in employment is good even if it results in pollution. | -1.3 | -1.4 | -1.5 |
| 4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed. | -1.3 | -1.0 | -1.8 |
| 5. Industry works with communities to maintain a good public image. | -.4 | -.1 | -.1 |
| 6. Scientific risk assessment should be the major consideration in siting decisions. | .3 | .7 | .2 |
| 7. Citizens need to control which risks they have to put up with. | .6 | .3 | 1.1 |
| 8. We should not take any chances with the environment. | 1.8 | .3 | 1.9 |
| 9. I tolerate risk as a fact of life, but I don't like it. | -.1 | .4 | .4 |
| 10. It doesn't matter how much we pollute today, because tomorrow's technology will solve the problem. | -2.1 | -2.5 | -1.7 |
| 11. The world would be a better place to live if we could go back to the good old days. | -1.0 | -1.4 | 1.4 |
| 12. It is better to put facilities in communities with high unemployment; the people there need the jobs. | -.9 | -.3 | -.4 |
| 13. The people who benefit most from a waste facility aren't ones who bear the risk. | .7 | .4 | 2.2 |
| 14. Government and industry know what they are doing; they are the experts. | -1.9 | .0 | -1.2 |
| 15. Cost effectiveness is more important to industry and government than environmental issues. | 1.2 | -.4 | -1.4 |
| 16. The government enforces environmental laws to protect human health and safety. | -1.6 | .1 | -.4 |
| 17. Industry usually complies with environmental laws even when it costs them money. | -1.6 | .7 | -.3 |
| 18. Environmental laws are full of loopholes for industry advantage. | 1.0 | -1.3 | -1.1 |
| 19. The character of a community changes after a waste facility is located there. | .0 | -.1 | -.3 |
| 20. Allowing a waste facility to locate in a community divides a community. | -.3 | -.5 | .6 |
| 21. Waste facilities give a community a bad reputation. | .3 | .4 | .4 |
| 22. Citizens should be involved in every step of a siting decision. | 7 | .8 | 1.3 |
| 23. Citizens have opportunity to be involved in siting decisions in their community. | -1.3 | .5 | .6 |
| 24. Industry, government, and the public should decide together what level of pollution should be allowed. | .3 | .6 | .3 |
| 25. All information must be shared in understood language as soon as it's available. | 1.3 | 1.7 | .6 |
| 26 Who provides information makes a difference to me; the person must be honest. | 1.1 | 1.3 | 1.4 |
| 27. It is really hard to know if decision-makers have the same value as I do. | 1.1 | .2 | 1.4 |
| 28. It is impossible to know whether or not a process is really safe without adequate technical education. | 1.2 | .6 | .8 |
| 29. If the public were more familiar with the operation of a waste facility, they would be more willing to consider it. | - 5 | .6 | -.8 |
| 30. Citizens should have their own experts. | .7 | 1.4 | .5 |
| 31. We would all be better off if the legal procedures were easier to follow. | 1.1 | 1.0 | .9 |
| 32. Government shouldn't be trusted in making siting decisions. | .7 | -.9 | -.1 |
| 33. Government uses citizen opinion against them. | -.3 | -.8 | -.8 |
| 34. Economic special interests have too much influence in siting decisions. | 1.2 | -.0 | -.6 |
| 35. The people living in a community know best what is good for them. | .2 | -1.0 | 1.2 |
| 36. Citizens should initially oppose all proposals for siting by industry. | -.8 | -1.9 | -.4 |
| 37. It is better to be active today, than to be radioactive tomorrow. | -.1 | 1.9 | .9 |
| 38. If you have enough money, you can get away with polluting. | -.7 | -1.2 | -1.0 |
| 39 Conflict in decision making is necessary and healthy. | .5 | - 2 | -.7 |
| 40. Consensus is impossible when activists are involved in environment decisions. | -1.1 | - 7 | -.5 |
| 41. The chief function of government is to support the economy. | -.5 | -.5 | - 8 |
| 42. Just being physically present in situations where environmental decisions are made is not enough | .1 | .3 | .5 |
| 43 The siting process is unfair because results provide greater risks to the people who are ethnically different or poor. | -.2 | -.9 | - 7 |
| 44. Environmental radicals are necessary to bring balance to the issues. | -.8 | -1.5 | -1.1 |
| 45. There are clean technologies available that must be used now to reduce pollution. | 1.5 | 1.8 | 1.1 |
| 46 Government and industry skew heir risk estimates to suit their own purposes. | .3 | -.1 | -1.4 |
| 47. Industry must be required to recycle, reduce waste, and use safer techniques and raw materials. | 1.6 | 2.1 | .3 |

## Q Factor Interpretation

Q factor interpretation is accomplished by examining and comparing item scores within and across factors, by incorporating information obtained from other techniques used in this research, and by theoretical insights from other relevant studies. All factor interpretations are given short, descriptive titles that best characterize the perspectives revealed by the factor scores (see Table 4). Each of the three factor interpretations developed for this study is explained below.

### Factor A Perspective: "Skeptical Citizens"

This factor accounts for 36% of the total explained variance and is the dominant factor among the three found in this study. Seven participants loaded on Factor A, including five TWIG members and two neutral citizens. Two sorts were confounded, meaning that the participants loaded significantly on two of the factors. The two confounded sorts are from a TWIG member and a neutral citizen. In analyzing the descending z-score array for Factor A loaders, the following statements best reflect the shared perspective of those loading significantly on this factor.

| Q ITEM # | STATEMENT |
|---|---|
| 8. | We should not take any chances with the environment. |
| 47. | Industry must be required to recycle, reduce waste, and use safer techniques and raw materials. |
| 45. | There are clean technologies available that must be used now to reduce pollution. |
| 25. | All information should be shared in easily understood language as soon as it is available. |
| 28. | It is impossible to know whether or not a process is really safe without adequate technical education. |
| 15. | Cost effectiveness is more important to industry and government than environmental issues. |
| 34. | Economic special interests have too much influence in siting decisions. |
| 26. | Who provides information makes a difference to me; the person must be honest. |
| 31. | We would all be better off if the legal procedures were easier to follow. |
| 27. | It is really hard to know if decision-makers have the same values as I do. |
| 18. | Environmental laws are full of loopholes for industry advantage. |

The following statements were most unlike the Factor A perspective.

| Q ITEM # | STATEMENT |
|---|---|
| 10 | It doesn't matter how much we pollute today, because tomorrow's technology will solve the problem. |
| 11. | Government and industry know what they are doing; they are the experts. |

Factor A loaders exhibit a genuine concern for the environment. They believe that the environment should be protected first and everything possible should be done to reduce the

pollulion generated by society. This reflects a concern for the root Issue of the siting controversy in the minds those sharing this perspective: they do not want their land and their environment polluted by the siting of an injection well.

The next set of values important to Factor A loaders include issues of trust, technical education, and economic influences in environmental issues. Indicators of skepticism appear regarding issues such as sharing information, honesty (or the lack of honesty by government and industry), the difficulty of dealing with overly burdensome legal procedures, and environmental legislation that affords shortcuts to industry at the expense of others. Economic skepticism is apparent in their view that industry values profitability over environmental and health concerns in their siting decisions. These beliefs relate to the trustworthiness of both industry and government; Factor A loaders see them as interrelated. In their minds, both industry and government should put less emphasis on the siting new waste management facilities and more on reducing pollution at its source so that new facilities are not needed.

The Factor A perspective was most unlike statements #10 and #11. These statements refer to government's and industry's inadequate expertise in dealing with complicated environmental issues. The skeptical nature of Factor A loaders is apparent by their belief that technology will not provide the answers to the problem of pollution. Once again, the basic issue of not polluting in the first place meshes with the beliefs of the Skeptical Citizens that selfish motives of industry and government incompetence, both of which erode trust, are precursors to siting gridlock because they prevent the building of a stable foundation for agreement.

The label "Skeptical Citizens" seems an apt one for this group of participants because they all were grassroots citizens who shared a basic distrust of government and industry in siting decisions and were skeptical of their motives and abilities to protect the public's interest.

**Factor B Perspective: "Experts"**

This factor accounts for 9% of the total explained variance. Five participants loaded on Factor B, including two TWIG members and two government representatives. The industry insider's sort not quite statistically significant at $p < .001$. In analyzing the descending array of z-

scores and item descriptions for Factor B loaders, the following statements were most salient on the positive (agree) side:

| Q ITEM # | STATEMENT |
|---|---|
| 47. | Industry must be required to recycle, reduce wastes, and use safest techniques and raw materials. |
| 37. | It is better to be active today than to be radioactive tomorrow. |
| 45. | There are clean technologies available that must be used now to reduce pollution. |
| 25. | All information should be shared in easily understood language as soon as it is available. |
| 30. | Citizens should have their own experts. |
| 26. | Who provides information makes a difference to me; the person must be honest |

The next set of statements were also salient but were disagreed with:

| Q ITEM # | STATEMENT |
|---|---|
| 10. | It doesn't matter how much we pollute today because tomorrow's technology will solve the problem. |
| 36 | Citizens should initially oppose all proposals for siting by industry. |
| 44. | Environmental radicals are necessary to bring balance to the issues. |
| 3. | When jobs are scarce, an increase in employment is good even if there is resulting pollution. |
| 11. | The world would be a better place to live if we could go back to the good old days. |
| 18. | Environmental laws are full of loopholes for industry advantage. |
| 38. | If you have enough money, you can get away with polluting. |

Factor B loaders agreed most strongly with statements reflecting technological and trust issues. Statements #47 and #45 indicate their belief that industry should use the technology that exists to recycle and/or reduce waste. Producing less waste requires that environmentally-appropriate technology be used.

Statements #25, #30, and #26 concern trust. Factor B loaders believe that information givers must be honest, that all information should be shared in easily understood language from the beginning, and that citizens should hire their own experts if they feel that it is necessary (reflecting their belief that any expert should arrive at the same conclusion).

Those sharing this perspective disagreed most strongly with statements that suggest that gratuitous pollution without regard for future impacts is acceptable. They believe that pollution is bad and that technology should be used to limit the amounts of pollution being generated. They also believe that initial citizen opposition and environmental radicalism are unacceptable. They disagree that industry has inherent advantages because of wealth and they do not think that industry gains any advantage from the exploitation of environmental loopholes.

In summary, Factor B loaders seem to believe that pollution should be controlled by modern technology, that environmental radicalism produces no benefit to stakeholders, that experts are important to siting decisions, and that environmental regulation is applied evenly. Especially noteworthy is their negative stance on statement #11: "The world would be a better place to live if we could go back to the good old days." This confirms their belief that technology is good, progress is beneficial, and going forward is preferable to standing still or regressing. Their faith in technology and expertise have earned this perspective the label of "Experts."

**Factor C Perspective: "Communitarians"**

This factor also accounts for 7% of the total explained variance and seven participants significantly loaded on Factor C, including four TWIG members, two neutral citizens, and one government representative. No confounded sorts were found. In analyzing the descending array of z-scores and item descriptions for Factor C participants, the following statements were most positively salient:

| Q ITEM # | STATEMENT |
|---|---|
| 13. | The people who benefit the most from a waste facility are not the ones who bear the risk. |
| 8. | We should not take any chances with the environment |

Whereas, they most disagreed with the following statements:

| Q ITEM # | STATEMENT |
|---|---|
| 4. | If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed. |
| 10. | It doesn't matter how much we pollute today because tomorrow's technology will solve the problem. |
| 3. | When jobs are scarce, an increase in employment is good even if there is resulting pollution. |
| 15. | Cost effectiveness is more important to industry and government than environmental issues. |
| 46. | Government and industry skew their risk estimates to suit their own purposes. |

Factor C loaders agreed most strongly with Statements #13 and #8 involving issues of justice, fairness, and risk aversion. They believe that those benefiting from facility siting (government and industry) do so at the expense of others (citizens). This meshes their beliefs that taking chances with the environment is unacceptable practice but that those who do take such chances are those who stand to benefit from those very chances.

Factor C loaders most disagreed with statements concerning firm economics, pollution for pollution's sake, and skewed risk estimates. They believe that all persons should be treated equally under environmental regulations and that industry should not be permitted to circumvent compliance for economic gain. Related to this belief is their opposition to dangling employment opportunities in front of local government and citizens at the expense of the environment (statement #3). Interestingly, those sharing this perspective believed that government and industry do not skew their risk estimates to fit the situation. This is an indication that they trust experts on these issues. Perhaps this is a stepping stone to building mutual trust and points of agreement.

In any event, their dominant concerns about fairness and justice, respect for community values, and their willingness to accept expertise as long as social norms are honored, justifies assigning the label "Communitarians" to this perspective.

**Similarities among Perspectives**

There are six consensus statements among the factors which are particularly salient (z-scores near or greater than 1.0). Consensus statements are those about which all three perspectives agree. These statements and corresponding average z-scores are listed below.

| Q ITEM | Z-SCORE |
|---|---|
| 45. There are clean technologies available that must be used now to reduce pollution. | 1.47 |
| 26. Who provides information makes a difference to me; the person must be honest. | 1.27 |
| 31. We would all be better off if the legal procedures were easier to follow. | .99 |
| 22. Citizens should be involved in every step of a siting decision. | .92 |
| 30. Citizens should have their own experts. | .90 |
| 28. It is impossible to know whether or not a process is really safe without adequate technical education. | .87 |

All participants agree that there are alternative technologies available that must be utilized now to cut down on our dependence on unsafe disposal methodologies. They also agree that if permitting procedures were easier to follow and if proponents had communicated honestly and forthrightly, acceptance may have been possible. All participants also believed that increased citizen involvement, and even citizen-hired experts, could have facilitated the siting process Finally, the participants felt that adequate technical information is crucial to avoiding gridlock.

Five consensus statements were universally strongly disagreeable (z-scores near or greater than -1.0), as shown below.

| Q ITEM | Z SCORE |
|---|---|
| 10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem. | -2.07 |
| 3. When jobs are scarce, an increase in employment is good even if there is resulting pollution. | -1.38 |
| 4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be released. | -1.37 |
| 44. Environmental radicals are necessary to bring balance to the issues. | -1.11 |
| 38. If you have enough money, you can get away with polluting. | -.99 |

Similarities can be found among the three perspectives, as illustrated by Statements #45, #26, #31, #22, #30, and #28. These statements concern technology, trust, and citizen involvement issues. All participants agree that cleaner technologies exist and that industry must strive to utilize those new technologies. Another consensus belief is that information providers must be honest. Citizen involvement is seen as vital, even to the point of hiring experts and involving the citizens in every step of a siting decision.

The three groups agreed that of pollution at the expense of others is inappropriate, that involving environmental radicals is not necessary to bring balance to the issues, and that industry does not have enough money to bend regulations to suit their purposes (statements #10, #3, #4, #44, and #38).

### Differences among Perspectives

Statements that differ by more than one standard deviation are particularly helpful in explaining differences in perspectives. Only item scores that differ by at least 1.5 standard deviations are discussed herein. In the discussion below, the Factor A (skeptical citizen) perspective will be compared to Factor B (expert) and Factor C (communitarian) perspectives, followed by a comparison of the Factor B (expert) perspective to the Factor C (communitarian) perspective.

#### Descending Array of Differences between Factors A and B

Skeptical Citizens differ from Experts in their judgment of government's and industry's motives with respect to environmental decision-making and trustworthiness. While Experts feel

that industry plays by the rules, Skeptical Citizens think that loopholes are available to industry to avoid environmental compliance. Economic issues surface (Statement #15) with Skeptical Citizens' belief that industry and government place more importance on monetary gains than environmental stewardship. Skeptical Citizens believe that government cannot be trusted to make sound siting decisions, whereas Experts believe that they can. Skeptical Citizens think that the government does not enforce environmental laws as zealously as they should and does not have the expertise to make competent decisions. Not surprisingly, Experts disagree with Skeptical Citizens on these points. The following Q-item statements highlight the differences.

| Q ITEM | Factor A Z-Score | Factor B Z-Score | Difference |
|---|---|---|---|
| 18. Environmental laws are full of loopholes for industry advantage. | .984 | -1.330 | 2.314 |
| 15. Cost effectiveness is more important to industry and government than environmental issues. | 1.168 | -.404 | 1.572 |
| 32. Government shouldn't be trusted in making siting decisions. | .693 | -.876 | 1.569 |
| 17. Industry usually complies with environmental laws even when it costs them money | -1.612 | .692 | -2.304 |
| 37. It is better to be active today than radioactive tomorrow. | -.114 | 1.912 | -2.026 |
| 14. Government and industry know what they are doing; they are the experts. | -1.921 | .021 | -1.921 |
| 23. Citizens have ample opportunity to be involved in siting decisions in their community | -1.253 | .527 | -1.779 |
| 1. Waste facility siting means economic growth and prosperity for the community. | -1.193 | .493 | -1.686 |
| 16. The government adequately enforces environmental laws to protect human health and safety. | -1.575 | .103 | -1.678 |

### Descending Array of Differences between Factors A and C

The major differences in Skeptical Citizen and Communitarian viewpoints concern economic and trust issues. Skeptical Citizens believe that industry and government enjoy too many loopholes in environmental law and that they take full advantage of those loopholes, which translates into more money and siting advantages for industry. Communitarians, on the other hand, do not think that economic issues are as important in determining environmental courses of action for government and industry. The "old school" mentality of Communitarians is apparent in Statement #11, which details the belief that the "good old days" were better and less complicated regarding environmental issues. Communitarians believe that they have adequate opportunities to be involved in siting decisions (Statement #23), while Skeptical Citizens disagree.

Communitarians believe that those benefiting from siting decisions will not be those bearing the risk. Although Skeptical Citizens agree, they do not endorse that statement nearly as strongly as Communitarians. Pessimistic attitudes by Skeptical Citizens concerning cost effectiveness, existence of environmental loopholes, inappropriate economic influence, and skewing risk estimates are in stark contrast with the optimistic judgments favored by Communitarians: wishing for a return to the good old days, ample participation opportunities, and the inequity of the distribution of risks and benefits.

| Q ITEM | Factor A Z-Score | Factor C Z-Score | Difference |
|---|---|---|---|
| 15. Cost effectiveness is more important to industry and government than environmental issues. | 1.168 | -1.401 | 2.570 |
| 18. Environmental laws are full of loopholes for industry advantage. | .984 | -1.132 | 2.116 |
| 34. Economic special interests have too much influence in siting decisions. | 1.153 | -.624 | 1.777 |
| 46. Government and industry skew their risk estimates to suit their own purposes. | .268 | -1.372 | 1.641 |
| 11. The world would be a better place to live if we could go back to the good old days. | -.961 | 1.370 | -2 330 |
| 23. Citizens have ample opportunities to be involved in siting decisions in their community. | -1.253 | .626 | -1.879 |
| 13. The people who benefit the most from a waste facility are not the ones who bear the risk. | .675 | 2.174 | -1.500 |

**Descending Array of Differences between Factors B and C**

The two distinguishing Q item statements between Experts and Communitarians deal with industry and the role that industry plays in the future of environmental management within communities. Experts believe that industry can try harder to use recycling, waste reduction, and substitution of safer raw materials and techniques. Communitarians also felt positively about this statement but not nearly as much as did Experts. Experts also felt that waste facility sitings mean economic opportunities for the host community whereas Communitarians strongly disagreed.

At the other end of the descending array of differences between Factors B and C, Communitarians distinguish themselves from the Experts in four statements. These statements deal with the Communitarian view toward progress, communitarian values, equity, and risk aversion.

| Q ITEM | Factor B Z-Score | Factor C Z-Score | Difference |
|---|---|---|---|
| 47. Industry must be required to recycle, reduce wastes, and use safer techniques and raw materials. | 2.088 | .284 | 1.805 |
| 1. Waste facility siting means economic growth and prosperity for the community. | .493 | -1.177 | 1.670 |
| 11. The world would be a better place to live if we could go back to the good old days. | -1.351 | 1.370 | -2.721 |
| 35. The people living in a community know best what is good for them. | -.994 | 1.202 | -2.196 |
| 13. The people who benefit the most from a waste facility are not the ones who bear the risk. | .369 | 2.174 | -1.806 |
| 8. We should not take any chances with the environment. | .342 | 1.925 | -1.583 |

### Q Factor Validation

After initial interpretation of each factor, those participants with the highest and purest loadings were contacted by telephone to confirm the author's interpretations. Because statements in the Q sort can have different meanings to different readers, confirmation of the author's interpretations are important to validity. The high-pure loaders on the three factors are as follows:

| FACTOR | PARTICIPANT | AFFILIATION | LOADING | PURITY |
|---|---|---|---|---|
| A - Skeptical Citizens | R7 | TWIG | .722 | .907 |
| B - Experts | R17 | Government (OSDH) | .631 | .987 |
| C - Communitarians | R13 | TWIG | .566 | .899 |

The three factors had in fact been accurately interpreted. A telephone interview with the three pure loaders revealed that their feelings closely resembled both the interpretation by the author and the name the author had assigned to the factor.

### Summary

The results and interpretation of the Q sort data revealed three distinct factors or perspectives present in the stakeholders involved in the dispute.

Factor A participants were called "Skeptical Citizens." Seven persons loaded on factor A: five TWIG members and two neutral citizens. Two of the sorts were confounded and loaded on factor C. Skeptical Citizens were most concerned about issues dealing with the environment and protecting the environment at all costs. Skeptical Citizens relate their concern for the environment to their love of the land and their surroundings. Skeptical Citizens were also extremely concerned

about trust issues: specifically distrust in government and industry relating to environmental issues. They feel that government and industry should share all information early and often to help citizens navigate the burdensome environmental regulations and legal questions of a siting controversy. Skeptical Citizens distrust of government and industry stems from the core belief that economic issues drive the motives behind environmental siting controversies. Coupled with the economic distrust apparent in Skeptical Citizen beliefs is the feeling that government and industry do not have the expertise to deal with issues as sensitive as the disposal of hazardous waste.

Factor B participants are called "Experts." Four persons loaded on factor B including two TWIG members and two government officials, with one industry insider nearly so. The insider's low loading can be explained by his relative lack of direct involvement in the siting controversy; however, his views were believed to resemble many of those of ESI officials (who declined to participate). Experts strongly believed that industry and government must use their access to technology to seek new and better technology to minimize waste. They believe that government and industry do not use loopholes to gain unfair advantages in environmental issues. Experts think that information shared early and honestly is advantageous to all parties to environmental disputes. They believe that environmental radicalism does more harm than good and has no place in the real world of environmental management. Progress and the advance of technology is a cornerstone of Experts' belief that environmental problems will eventually be minimized through waste reduction, recycling, and pollution prevention.

Factor C participants were named "Communitarians." Seven participants loaded on Factor C: four TWIG members, one government official, and two neutral citizens. Communitarians were most concerned with issues including justice, fairness, and risk aversion. They feel that those that benefit from a hazardous waste siting economically, technically, legally, or otherwise are not the ones who bear the risk. They feel that these siting issues are generally decided without regard to the price paid by citizens. Communitarians believe that we should not take any chances with the

environment. They have a desire to return to the good old days and feel that technological advancements are not necessarily a positive thing.

Consensus items involved issues such as employing clean technologies to minimize pollution now, utilizing trustworthy persons as mediaries between stakeholders, simplifying permitting procedures, and involving citizens early and often in hazardous waste siting decisions.

Differing viewpoints involved issues of risk, trust, and the economic benefits to the industry and the community. While the factor A participants felt that we should take no chances with the environment, factor B participants felt that chances have to be taken -- but they have the expertise to take those chances and make those decisions. The factor C participants partially agreed with the factor A viewpoint but were not as firm in their stance. Factor B participants felt that the economic benefits to a community from the siting of these facilities are real and positive, while the factor C participants did not agree with this viewpoint. The factor C participants wanted to go back to the good old days and felt that they knew best what values were most important to their community.

One could imagine the following conversation, which would succinctly summarize these perspectives. The scene begins with the Skeptical Citizen complaining, "We don't want your facility – no way, no how. We don't trust you to make these decisions, nor do we feel you will act in the best interests of the community and the land." The Expert counters, "We know you don't want the facility. Nevertheless, we have to site these facilities somewhere and your community is as good as any. Besides, we are the experts." The Communitarian responds, "Hey, wait a minute. We're the ones who live here. Don't you care about what we think? Besides, we know what's best for this community, and it is sure not your facility! So, put it somewhere else." The scene closes with argument, finger pointing, and gridlock: a mature siting controversy with seemingly no hope of resolution.

---

[1] This value is calculated as the two-tailed z-score corresponding to a specified level of significance (in this case, alpha = 0.001) multiplied by the standard error of the loading estimate, where $SE_r$ equals $(1/N)^{1/2}$ and N = number of Q items. Bold factor loadings in Table 3 are those that are statistically significant.

# CHAPTER VII

# PREFERENCE RANKING OF DECISION CRITERIA AND STAKEHOLDER PARTICIPATION STRATEGIES

## Introduction

In Chapter V, the results of the questionnaires and quasi-structured personal interviews were presented. In Chapter VI, a description of commonly held stakeholder perspectives made operant through analysis of stakeholders' Q sorts was presented. The results presented in these two chapters are important to grounding the results of the third method used in this research: preference ranking. As part of the effort to understand the Ramona siting controversy better, it was important to determine what, if any, differences exist among stakeholders' preferences for the criteria that should be used making siting decisions and the means by which the public should participate in making these decisions. Preferences were elicited by a technique known as card ranking. Card rank order data were then analyzed using comparison of ordinal measures of central tendency (median scores) and hierarchical agglomerative cluster analysis.

## Card Ranking Technique

The stakeholders who participated in this study were asked to participate in two card ranking exercises: one involving siting decision criteria and the other involving public participation strategies.

In the first exercise, participants were first asked to rank thirteen cards, each of which contained a decision criterion accompanied by a brief description, which could be used in making siting decisions (see Appendix F). They were instructed to carefully read all 13 cards and then

arrange them linearly from most preferred (rank order = 1) to least preferred (rank order = 13). The decision criteria card ranking results are tabulated by participant in Appendix G.

In the second part of the card ranking exercise, the participants were asked to repeat this process – this time with nine cards on each of which was written a public participation strategy, with a description, that could be used in making siting decisions (see Appendix H). The participation strategy card ranking results are tabulated by participant in Appendix I.

## Analytic Methods

Two analytic methods were used to analyze the card ranking data: comparisons of median scores and cluster analysis. These methods were applied to both siting decision criteria and public participation strategies. In the clustering methodology, the data were further analyzed by clustering criteria and strategies across people as well as people across criteria and strategies. The first of these approaches yields information about which criteria and strategies share similar preferences, which is important to understanding the participants' perceptions of the relationships among them. The second approach identifies which participants preference-ranked the criteria and strategies similarly. Based on the results of the second approach, the criteria and strategy preferences were again analyzed, this time by participant cluster. Comparisons across participant clusters will shed further light on the bases for the controversy.

## Median Scores

### Median Rank Order

The median rank order method was selected because of its suitability in finding a measure of central tendency in ordinal data. The 17 participants' rank order scores of each decision criterion and each public participation strategy were arranged in ascending order and the middle (median) rank order score was determined.

The median has an advantage over other descriptive statistics because it excludes outlying (extremely high or low) ranks. Unfortunately as a result, it suffers from a loss of data richness by

the loss of these outliers. To redress this deficiency, a second rank order analysis was performed as described next.

### Individual Rank Order

The individual rank order method was used to maximize the resolution the combined rank order by preserving the full richness of the data in the composite results. In this method, the individual rank order scores for each criterion and strategy were separately summed. The composite rank order was computed by arranging the sums in a manner identical to that used for median scores. Though this method is richer than the median method, it is sensitive to extreme values.

### Overall Rank Order

The overall rank score was calculated as the sum of the two rank orders described above. The overall rank order was determined using the ascending array of rank order scores as was used in the two previous methods.

## Cluster Analysis

The data obtained from the card ranking exercises were analyzed by Ward's method of agglomerative hierarchical cluster analysis (Sneath and Sokal 1973) to determine how decision criteria and decision processes tended to be grouped by the stakeholders. Ward's method is a space dilating technique that finds hyperspheroids of equal size by optimizing minimum variance within clusters. Ward's method is preferred over single, between-group average, and complete linkages because of its ability to handle cluster overlaps (there is no reason to hypothesize that decision criteria and process clusters are well separated). In addition, Ward's results agreed well with those produced from the popular within-group average linkage technique (Focht 1995b).

Cluster analysis of rank order data produces clusters of similar judgments of relative importance. Instead of significance testing (e.g., by a MANOVA technique such as discriminant analysis) of the variables to assess the quality of the cluster solutions as partitions of the data sets, the number of clusters retained was determined by a technique analogous to the scree test

used in factor analysis. Clusters were heuristically identified by determining marked jumps in the plot of number of clusters versus the cluster fusion coefficient (Focht 1995b).

In the discussion of card sort results, a criterion is referred to as method independent when the rank order for that criterion is constant across each ranking method. Method independence was common among those criteria and strategies that were ranked near the most preferred or least preferred; minor mixing of rank orders was found for those criteria and strategies ranked in the middle.

## Decision Criteria Preference Ranking Results

### Decision Criteria Considered

As mentioned in the introduction to this chapter, 13 decision criterion cards were sorted and ranked by the stakeholders. Decision criterion cards were stratified into six categories to aid interpretation by the researcher and are discussed below (following Focht (1995b)). The specific definitions of each criterion are included in Appendix F.

*Technological Criteria*

Three of the thirteen criteria can be included in this criterion grouping. These include technical/legal education, use of alternative technologies, and personal views toward technology.

*Economic Criteria*

Three criteria concern economic impacts: economic impact on the company, economic impact on the community, and fairness and justice. While the first two criteria deal with allocational impacts, the third concerns the equity of the distribution of risks, costs, and benefits among stakeholders.

*Community-Based Criteria*

Two of the criteria involve community-based concerns. Community disruption and understanding local culture are directly tied to community-level impacts, and relate to the participants' feelings toward their surroundings.

*Institutional Trust Criterion*

Trust in government and industry is the ninth criterion presented to stakeholders for their consideration in judging the relative importance that the criteria should play in siting decisions. Institutional trust is key in determining whether or not the stakeholders, and in particular the opponents, will believe and rely on the information being given to them by industry and government. Institutional trust was a determining factor in the failure of the Ramona siting and is prevalent not just with environmental concerns, but throughout society on a whole range of issues.

*Citizen Involvement Criteria*

Public participation and access to information are the citizen involvement criteria. These test the relative importance of citizen involvement in siting decisions and the importance that obtaining information has in that involvement. Citizen involvement must stem from not only a citizenry that has the willingness to get involved, but also the opportunity to get involved as delegated by the government and its siting processes.

*Risk Criteria*

Scientific risk estimates and personal risk perception/judgement are the risk criteria. Although scientific risk estimates are technical quantifications of risk, lay persons also quantify risk using heuristic guideposts. Both criteria help determine the propensity of a participant or group of participants to allocate risk and then take action based on that allocation.

## DECISION CRITERIA CARD RANKING RESULTS

Table 5 summarizes the decision criteria card data obtained from the ranking exercises. Public participation and access to information were ranked first and second as the preferred decision making criteria. This indicates that most participants prefer frequent, substantive and informed stakeholder involvement and access to timely and relevant information – but perhaps for different reasons. Skeptics may want access because they want corroborated or damaging evidence; communitarians may wish to judge whether a person has the interests of the community at heart, and experts because they were determined to educate those with less technical training. The use of alternative technologies was ranked second. The high ranking of alternative

technologies confirms the belief that more efficient and cleaner technologies should be used to reduce the quantity of hazardous waste generated by society, which in turn would lead to fewer siting controversies. Trust in government and industry is ranked fourth. Its high ranking lends credence to the claim that distrust of government and industry was important in the siting controversy.

The middle rankings consisted of personal judgements of risk (fifth), understanding local culture and technical and legal education (tied sixth), and economic impact on the community and the use of scientific risk assessments (tied eighth). Considerations that are involved in decision-making. The risk believed by stakeholders to exist was important to the participants in Ramona. Local culture plays an important role in siting decisions. As was evidenced by the interview comments, the failure of industry and government to appreciate the importance of local cultural values can lead to siting gridlock. Participants also considered technical and legal education and scientific risk assessments as moderately important decision-making criteria. Economic impact on a community was also rated as moderately important, illustrating that the participants as a whole felt that a facility's economic impact on a community is more important than economic impact on the company.

TABLE 5

DECISION CRITERION RANKING RESULTS

| DECISION CRITERION | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Economic Impact on Community | 9 | 10 | 132 | 7 | 17 | 8 |
| Economic Impact on Company | 11 | 12 | 178 | 13 | 25 | 13 |
| Scientific Risk Assessment | 8 | 7 | 136 | 10 | 17 | 8 |
| Personal Risk Judgement | 6 | 4 | 113 | 5 | 9 | 5 |
| Access to Information | 2 | 1 | 47 | 1 | 2 | 1 |
| Personal View toward Technology | 9 | 10 | 135 | 9 | 19 | 11 |
| Fairness | 8 | 7 | 137 | 11 | 18 | 10 |
| Trust in Government and Industry | 6 | 4 | 110 | 4 | 8 | 4 |
| Understanding Local Culture | 7 | 6 | 132 | 7 | 13 | 6 |
| Community Disruption | 11 | 12 | 154 | 12 | 24 | 12 |
| Citizen Involvement | 4 | 3 | 72 | 2 | 5 | 2 |
| Technical and Legal Education | 8 | 7 | 119 | 6 | 13 | 6 |
| Alternative Technologies | 3 | 2 | 82 | 3 | 5 | 2 |

The lowest ranked criteria were fairness (10th), personal views toward technology (11th), the potential for community disruption (12th), and economic impact on the company (13th). Among economic criteria, the higher rank of fairness over economic impact on the company confirms participants' elevation of egalitarian distribution of risks and benefits. Many TWIG members believed ESI was dishonest and wanted to construct the wells purely for self-serving economic reasons. Personal views toward technology and the potential for community disruption were not considered important. The former may be due to the universal agreement that technology should be used to proactively reduce risks. The latter may be due to the fact that the proposed well, located in the middle of a large ranch, would not necessarily disrupt communities further away.

The decision criteria rankings of the participants were further analyzed to determine if clusters were present. The cluster dendrogram, illustrated in Figure 1, illustrates how similarly the participants grouped decision criteria. The dendrogram shows three distinct clusters: Cluster #1 including technological, risk, and trust criteria; Cluster #2 including citizen involvement criteria; and Cluster #3 including economic and community based criteria.

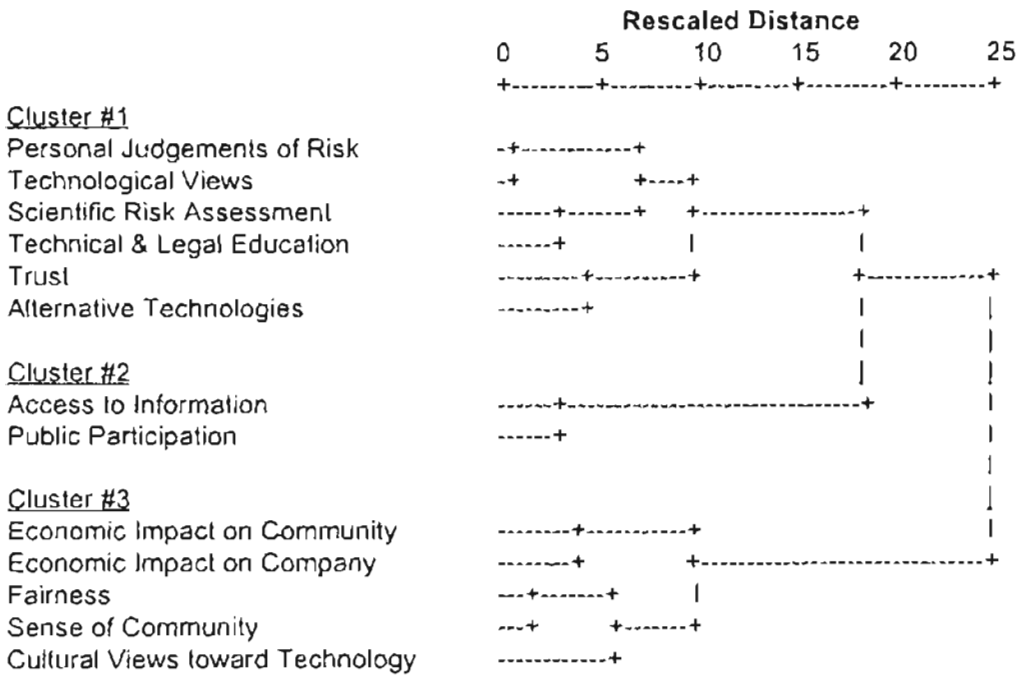



FIGURE 1. HIERARCHICAL CLUSTER ANALYSIS (13 Decision Criteria across 17 People)

Cluster #1 includes technological, trust, and risk-based criteria. These criteria may have been grouped together because participants' believe they are inseparable in a siting controversy. Opponents, in particular the Skeptical Citizens, believed that there were legitimate risks involved with the siting of the wells. They felt that a number of concerns, including adverse impacts on health, welfare, environment, and community, should be addressed by government and industry. To decrease opponent's distrust, ESI and OSDH could have provided more information and technical debate on the technical issues concerning the injection well. They also could have provided independent technical expertise to the community.

Cluster #1 also included the grouping of alternative technologies, technical and legal education, scientific risk assessment, and personal views toward technology with trust and risk criteria. It is apparent that participants wanted to decrease their perceptions of risk by increasing their knowledge of technical issues. If information had been imparted by government and industry representatives, perhaps erosion of trust would have been slowed or stopped altogether.

Cluster #2 includes stakeholder involvement criteria. Access to information and public participation are important to citizens who wish to play a more active role in a siting controversy. Not surprisingly, these criteria are highly preferred (first and second overall). As will be argued later, increasing opportunities for citizen involvement (particularly among Communitarians) may build trust and decrease opposition to siting proposals.

Cluster #3 includes socioeconomic criteria. These may have been grouped together by participants to illustrate that economic impact on the community, economic impact on the company, and fairness in the distribution of costs and benefits. Sense of community and views toward technology were grouped with to determine the suitability of a siting proposal.

The clusters were further analyzed for relative importance of the criteria contained therein. Tables 6, 7, and 8 present decision criteria clusters #1, #2, and #3 with information on the clusters by median, individual, and overall rank orders. This summation helps to understand the relative

importance that participants assigned to decision criteria. Raw data from the decision card rankings are included in Appendix H.

**TABLE 6**

**DECISION CRITERION CLUSTER #1 RANKINGS (N=17)**

| DECISION CRITERION | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Personal Risk Judgement | 6 | 2 | 113 | 3 | 5 | 3 |
| Personal View Toward Technology | 8 | 4 | 135 | 5 | 9 | 5 |
| Scientific Risk Assessment | 8 | 4 | 136 | 6 | 10 | 6 |
| Technical and Legal Education | 8 | 4 | 119 | 4 | 8 | 4 |
| Trust | 6 | 2 | 110 | 2 | 4 | 2 |
| Alternative Technologies | 3 | 1 | 82 | 1 | 2 | 1 |
| *Average Cluster #1 Scores* | *6.5* | | *116* | | | |

The most important criterion in Cluster #1 is the use of alternative technologies to lessen the quantity of hazardous waste to be dealt with in the future. The median, individual, and overall ranks suggest that the need to produce less waste in the first place was judged most important by a wide margin. Trust also ranks highly and is indicative of the feeling of a majority of the participants that all parties to a siting controversy should trust each other, or else no basis for future agreement exists. Personal judgments of risk ranked third, confirming that risk perception must be lowered to successfully resolve siting controversies.

Less important criteria in Cluster #1 include technical and legal education, personal views toward technology, and scientific risk assessments. These criteria deal with the quantification of risk and a person's ability to equate that risk, through education and research, with their own thoughts on the technology that is being proposed. Though less important to than alternative technologies, risk perception, and trust, these criteria were nevertheless grouped with them because they share a technical relationship. Perhaps most interestingly, trust apparently was seen as a risk-technology issue rather than a public involvement or socioeconomic issue. This suggests that judgments of trustworthiness by Ramona participants hinged on their perceptions of

whether government and industry are in fact exercising their fiduciary responsibility to safeguard the community from environmental threats from the proposed facility, and less on their perceptions of the equity of the distribution of risks and benefits or of the willingness of decision-makers to involve the public. It is fair to state, however, that distrust based on fiduciary responsibility may very well trigger increased demands for participation (and not the other way around).

Table 7 is a statistical summary of Criterion Cluster #2. This cluster highlights citizen involvement criteria. Access to information is ranked more highly than public participation. This suggests that participants may have wanted information to judge for themselves the wisdom of the siting proposal, without necessarily planning to participate politically. Consonant with the observation made in the previous paragraph, citizens seemed to choose to oppose the facility only after they had become convinced that the risk was unacceptable based on information that they had obtained, rather than prejudging the facility as unacceptable and then seeking information to justify their prejudice. This "participate only if you have to" approach is quite rational given the numerous other demands made on people's time.

**TABLE 7**

**DECISION CRITERION CLUSTER #2 RANKINGS (N=17)**

| DECISION CRITERION | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Access to Information | 2 | 1 | 47 | 1 | 2 | 1 |
| Public Participation | 4 | 2 | 72 | 2 | 4 | 2 |
| *Average Cluster #2 Scores* | *3* | | *59.5* | | | |

Table 8 is a statistical summation of cluster #3. Cluster #3 includes economic and community-based criteria. As has been previously stated, three of these five criteria relate to economic issues: firm economics, community economics, and equity/fairness. From another perspective, three of the five criteria in this group refer to community issues: local culture, community disruption, and economic impact on the community. Either way, these criteria can be

considered socioeconomic criteria that are highly valued, especially by Communitarians (as has been pointed out in Chapter VI).

TABLE 8

DECISION CRITERION CLUSTER #3 RANKINGS (N=17)

| DECISION CRITERION | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Economic Impact on Community | 9 | 3 | 132 | 1 | 4 | 2 |
| Economic Impact on Company | 11 | 4 | 178 | 5 | 9 | 5 |
| Fairness | 8 | 2 | 137 | 3 | 5 | 3 |
| Community Disruption | 11 | 4 | 144 | 4 | 8 | 4 |
| Understanding Local Culture | 7 | 1 | 132 | 1 | 2 | 1 |
| *Average Cluster #3 Scores* | *9.2* | | *144.6* | | | |

Note that these criteria were ranked low in importance. Firm economics was ranked low perhaps because none of the participants was a representative of ESI. Community disruption was ranked low probably because the well would have been located far from the community Obviously, socioeconomic criteria pale in importance compared to technical, risk, trust, and participation criteria when examined from the perspectives of all 17 study participants.

Table 9 presents an overall ranking of the relative importance of the three clusters of decision criteria. As can be seen, Cluster #2 (stakeholder involvement) ranked first, Cluster #1 (technical and trust criteria) ranked second, and Cluster #3 (socioeconomic criteria) ranked third. This extraordinary emphasis on stakeholder participation can be explained in part by the recognition that most (10) of the participants were opponents compared to four proponents. However, recall that the Q methodological results also demonstrated that there was a substantial consensus that participation was desirable and that citizens should have ready access to information.

Technical and trust criteria were ranked moderately important. In part, this is due to the preponderance of Skeptical Citizens in this study. However, this can also be explained, as has

been suggested above, by the initial concerns that citizens had about the safety of the proposed facility and the belief that OSDH had not acted properly to protect the community's interests.

TABLE 9

RELATIVE IMPORTANCE OF DECISION CRITERION CLUSTERS

| DECISION CRITERION CLUSTER | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Cluster #1: Technical, Risk and Trust Criteria | 6.5 | 2 | 116 | 2 | 4 | 2 |
| Cluster #2: Stakeholder Involvement Criteria | 3 | 1 | 59.5 | 1 | 2 | 1 |
| Cluster #3: Socioeconomic Criteria | 9.2 | 3 | 144.6 | 3 | 6 | 3 |

Socioeconomic criteria ranked third in the study. Issues such as economic impact on the company and community, fairness in the distribution of costs and benefits, local culture and community disruption are much less important. Again, this result can be partially explained by the low number of Communitarian participants in the study (and most likely in the community as well) The low importance of socioeconomic criteria and low percentage of Communitarians were also found in the other studies of siting controversies in Oklahoma (Focht 1995a). This suggests that Ramona participants, like other Oklahomans, are generally predisposed to trust decision makers, they get involved only when threatened and when they believe their direct participation is necessary to ensure that their interests are protected.

### Cluster Analysis of Participants across Decision Criteria

Further insight can be obtained by clustering participants across decision criteria. This analysis helps to validate the findings of Q methodology, questionnaires, and interviews. The dendrogram in Figure 2 displays how different participants clustered according to how similarly they ranked decision criteria in relative importance. Note that only two clusters were identified.

Participant Cluster #1 consists of nine stakeholders: five TWIG members, one neutral citizen, two government representatives, and one industry representative. Most noteworthy is the preponderance of Factor A and Factor B participants (Skeptical Citizens and Experts) in Cluster #1. Of the nine participants in Cluster #1, five are Skeptical Citizens, three are Experts, and only

one is a Factor C stakeholder (Communitarian). This suggests similarities among beliefs, values, and expectations between these Factors, which are further discussed below.

Participant Cluster #2 consists of eight stakeholders: five TWIG members, two neutral citizens, and one government representative. In contrast to Cluster #1 participants, Cluster #2 participants are dominated by Communitarians. Four of the eight stakeholders are Communitarians (as defined in Chapter VI) with two Skeptical Citizens and two Experts also included. The significance of this is discussed below.

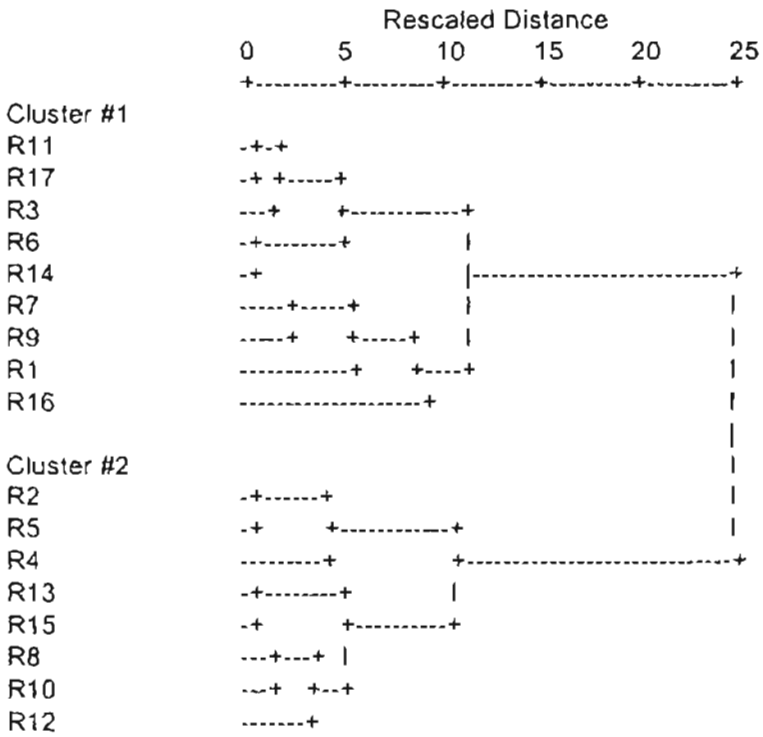



**FIGURE 2. HIERARCHICAL CLUSTER ANALYSIS**
**(17 People across 13 Decision Criteria)**

Card ranking data can be further analyzed statistically by viewing the clusters of participants across decision criteria. Tables 10 and 11 present decision criteria rankings (median, individual, and overall) for Participant Clusters #1 and #2, respectively. Raw data from the decision card rankings are presented in Appendix I.

Although dominated by TWIG participants, Cluster #1 also includes two government participants, one neutral citizen, and one industry representative. Combining Criteria Clusters #1 and #2, Participant Cluster #1 participants ranked access to information, the use of alternative technologies, personal risk judgements, technical and legal education, public participation, trust in government and industry, and personal views toward technology as most important to siting decision-making. As discussed previously, it is apparent that both Skeptical Citizens and Experts believed that technical criteria and stakeholder involvement were important issues – but probably for different reasons. Experts prefer that stakeholders be technically educated before participating whereas Skeptical Citizens want to participate because their distrust of decision-makers motivates them to protect their interests themselves.

TABLE 10

DECISION CRITERION RANKINGS (PARTICIPANT CLUSTER #1)

| DECISION CRITERION | PARTICIPANTS | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Economic Impact on the Comm. | R-11 (Govt), R-17 (Govt), R-3 (TWIG), R-6 (TWIG), R-14 (NC), R-7 (TWIG), R-9 (TWIG), R-1 (TWIG), R-16 (Industry); (n=9) | 10 | 10 | 81 | 9 | 19 | 10 |
| Economic Impact on the Co. | | 10 | 10 | 85 | 11 | 21 | 11 |
| Scientific Risk Assessment | | 8 | 8 | 73 | 8 | 16 | 8 |
| Personal Judgements of Risk | | 4 | 3 | 38 | 3 | 6 | 3 |
| Access to Information | | 2 | 1 | 28 | 1 | 2 | 1 |
| Personal View toward Technology | | 7 | 6 | 60 | 7 | 13 | 7 |
| Fairness | | 8 | 8 | 82 | 10 | 18 | 9 |
| Trust in Government and Industry | | 6 | 5 | 54 | 6 | 11 | 5 |
| Understanding Local Culture | | 10 | 10 | 86 | 12 | 22 | 12 |
| Community Disruption | | 12 | 13 | 104 | 13 | 26 | 13 |
| Citizen Involvement | | 7 | 6 | 51 | 5 | 11 | 5 |
| Technical and Legal Education | | 4 | 3 | 45 | 4 | 7 | 4 |
| Alternative Technologies | | 3 | 2 | 32 | 2 | 4 | 2 |

Access to information is ranked first among the participants (three government and one industry stakeholder) in Cluster #1 and was seen as a building block for future siting decisions. These participants acknowledge the merit of timely stakeholder access to accurate information – whether it is to participate more effectively (Skeptical Citizens) or to be convinced that

participation is not necessary (Experts). This suggests that technical and legal education may not produce the outcome that Experts hope it will (i.e., lowering of community concern). The difference in the perceived role and outcome of education is most likely linked to the role of trust: if social trust is high, then education is probably not necessary to assure community acceptance of risk; if social trust is low, then education will not suffice to assuage community concern. This dilemma can be explained by reference to Focht's (1996) model of social trust and legitimate technological decision-making.

Decision criteria viewed as least important to Cluster #1 participants include scientific risk assessments, fairness, economic impacts on the company and on the community, understanding local culture, and community disruption. These are primarily community-based socioeconomic and equity criteria. The failure of government and industry representatives to be more responsive to citizens' concerns (particularly those of TWIG members) was an important factor in the failed siting. Also noteworthy is the finding that economic issues are less important than trust, risk, technology, and participation issues – probably due to the small Communitarian population and the low salience of economic issues in a controversy dominated by non-economic concerns.

**TABLE 11**

**DECISION CRITERION RANKINGS (PARTICIPANT CLUSTER #2)**

| DECISION CRITERION | PARTICIPANT | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Economic Impact – Community | R-2 (TWIG)<br>R-4 (TWIG)<br>R-5 (TWIG)<br>R-13 (TWIG)<br>R-15 (NC)<br>R-8 (GOVT)<br>R-10 (TWIG)<br>R-12 (NC)<br>[n=8] | 6 | 5 | 51 | 6 | 11 | 6 |
| Economic Impact – Company | | 13 | 13 | 93 | 13 | 26 | 13 |
| Scientific Risk Assessment | | 8 | 9 | 63 | 9 | 18 | 9 |
| Personal Risk Judgment | | 10 | 11 | 75 | 11 | 22 | 12 |
| Access to Information | | 2 | 1 | 19 | 1 | 2 | 1 |
| Personal Views of Technology | | 9 | 10 | 75 | 11 | 21 | 10 |
| Fairness | | 6 | 5 | 55 | 7 | 12 | 7 |
| Trust in Government & Industry | | 7 | 8 | 56 | 8 | 16 | 8 |
| Understand Local Culture | | 5 | 3 | 46 | 3 | 6 | 3 |
| Community Disruption | | 5 | 3 | 50 | 4 | 7 | 4 |
| Citizen Involvement | | 2 | 1 | 21 | 2 | 3 | 2 |
| Technical & Legal Education | | 10 | 11 | 74 | 10 | 21 | 10 |
| Use of Alternative Technologies | | 6 | 5 | 50 | 4 | 9 | 5 |

Participant Cluster #2 consists of eight stakeholders including five TWIG members, two neutral citizens, and one government representative. These participants believed that access to information, public participation, understanding local culture, community disruption, the use of alternative technologies, and economic impact on the community were the most important criteria when making decisions on siting issues. This is markedly different than Cluster #1 participant concerns. Cluster #2 puts most emphasis on decision-making criteria involving stakeholder involvement and community-based criteria. This is consistent with Communitarian concerns. In fact, information access, participation, community disruption, and understanding local culture ranked quite highly (1, 2, 3, and 4, respectively). Once again, the failure of the proponents' to account for community-based concerns is seen as a contributor to siting failure. Cluster #2 participants' valuation of community-based criteria most clearly differentiates them from Cluster #1 participants.

Cluster #2 participants ranked trust in government and industry, the use of scientific risk assessments, technical and legal education, personal views toward technology, personal judgments of risk, and economic impact on the firm as least important in evaluating siting decisions. Clearly, citizen involvement and community concerns take precedence over technical education, technological, non-community based economic, and risk-oriented criteria. Also differentiating Cluster #2 participants' criteria preferences from those of Cluster #1 participants is the role of trust, which merits only a moderate importance rating among Cluster #2 participants. Again, the concerns of Communitarians have less to do with trust, risk, and technical criteria than they do with accommodating community-based concerns.

### Summary of Decision Criteria Rankings

Thirteen decision criteria were ranked by the participants. The criteria were grouped into categories including technological, economic, community-based, trust, citizen involvement, and risk. Overall rankings by all participants are summarized in Table 5 and indicate a preference for the use of citizen involvement criteria when making siting decisions. The use of alternative

technologies, institutional trust, risk-related concerns, and technological criteria were also ranked highly.

Ranked least important by participants were fairness in the distribution of costs and benefits, personal views toward technology, potential for community disruption, and the economic impact the siting may have on the company.

Cluster analysis of the rankings of participants showed that the criteria were stratified into three clusters. Cluster #1 consisted of technological, risk, and trust-based criteria. Cluster #2 consisted of stakeholder involvement criteria. Cluster #3 consisted of community-based socioeconomic criteria. Preference analysis of the criteria in the three clusters showed that the participants ranked citizen-involvement criteria as most important; technological, trust, and risk-based criteria moderate importance; and economic and community-based criteria least important.

Participants were also evaluated by how they clustered into groups across decision criteria. This evaluation showed two distinct clusters of participants. Cluster #1 consisted of Expert and Skeptical Citizen stakeholders Cluster #1 participants placed most emphasis on technical, risk-based, and participatory decision criteria. Least important were socioeconomic criteria. As discussed previously, the relationship among technical, risk, and participatory criteria stems from the high perceived risk by Skeptical Citizens of the proposed injection well. Their belief that industry and (especially) government did not exercise their fiduciary responsibility to allay citizens' concerns led to a distrust of government and ultimately industry, which in turn prompted their participation (and opposition).

Cluster #2 participants consisted chiefly of Communitarian stakeholders, but also included two Skeptical Citizens and two Experts. Cluster #2 participant decision criteria preferences differed from Cluster #1 participants' preferences by reversing the relative importance attached to technical and risk-based criteria versus socioeconomic criteria. Decision criteria least preferred by Cluster #2 participants include technical and legal education, personal views toward technology, personal judgments of risk, and economic impact on the company. Technical criteria

ranked near the bottom of preferred decision-making criteria. The low preference for technical criteria bolsters the claim that Cluster #2 participants, and in particular the Communitarians, did not desire more involvement. They did not have unusually high concerns about health or environmental issues; they simply wanted to be kept advised and informed. Technical and legal education would not have lowered Cluster #2 participants' opposition to the siting, since it was not based on technical and criteria. In any event, education from the Experts' viewpoint, is intended to reduce participation and involvement by allaying citizens' fears about risky technologies.

## Stakeholder Participation Strategy Ranking Results

### Stakeholder Participation Strategies Considered

As mentioned in the introduction, nine stakeholder participation strategies were considered by participants in ranking exercises. These strategies can be grouped into four categories, ranging from no citizen power to high citizen power. Each is briefly described below. Specific definitions of each strategy are included in Appendix H.

*No Citizen Power*

Preemption is the participation strategy that affords citizens least input and influence in decision-making. In preemption, government alone makes environmental decisions.

*Low Citizen Power*

Public comment and hearing and consultation are classified as low citizen power strategies. Public comment and hearing provides that government proposes a decision, seeks comment from the public, and then makes the final decision. Though consultation allows citizen input throughout the siting process, government still makes the final decision.

*Moderate Citizen Power*

Non-binding negotiation, third-party mediation, and binding arbitration are the three participation strategies that afford moderate power and influence to citizens. With non-binding negotiation, company officials enter into negotiations with citizens to try to reach an agreement, with the final decision being made by the government. In mediation, a neutral third party

recommends a decision to the government, which can accept, modify, or reject the recommendation. In binding arbitration, the parties try to negotiate an agreement and, if no agreement can be reached within a year, the arbiter makes the decision.

*High Citizen Power*

An oversight board, referendum, and citizen control are participation strategies that give high power to citizens. An oversight board is composed of an equal number of citizens, industry representatives, and government officials who together make decisions. A referendum is a vote, up or down, of a siting proposal by the host community. Citizen control is effected through a citizens' committee whose representatives are chosen by members of various environmental, community, and civic groups. This committee makes all the decisions.

**Stakeholder Participation Strategy Ranking Results**

Table 12 summarizes the card ranking results for stakeholder participation strategies from all 17 participants in the study. Consultation ranked as the most-preferred participation strategy. This is a low citizen power strategy and a surprising first choice given the numerical dominance of TWIG members in the study. This suggests a willingness by siting opponents to compromise. Oversight board, public comment and hearing, third party mediation, and binding arbitration were ranked in the next four spots. Upon cursory review, the preference ranking of the first five strategies seem not to make sense; they include low, moderate, and high citizen power strategies. A hint of what they have in common can be seen by comparing these strategies to those that are least preferred.

Referendum and citizen control (high citizen power strategies), non-binding negotiation (moderate citizen power), and preemption (low citizen power) are least preferred among the 17 participants As in the case of the most preferred strategies, these come from all levels of citizen power. However, it is immediately apparent that three of these strategies (all but non-binding agreement) share one feature in common: they lack dialogue and negotiation in their protocols and are, in effect, unipolar decision making strategies. Upon closer examination, non-binding

negotiation, although it involves stakeholder interaction, is also unipolar. Though non-binding negotiation may have been rejected on pragmatic grounds (any agreements that may result can be ignored), the government essentially has veto power. Arguably, this veto power, coupled with the fact that government does not participate in the negotiations, places this strategy squarely in the camp of unipolar strategies

TABLE 12

STAKEHOLDER PARTICIPATION STRATEGY RANKING RESULTS

| PARTICIPATION STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Preemption | 9 | 9 | 140 | 9 | 18 | 9 |
| Public Comment and Hearing | 5 | 3 | 81 | 4 | 7 | 3 |
| Consultation | 2 | 1 | 48 | 1 | 2 | 1 |
| Non Binding Negotiation | 6 | 6 | 100 | 8 | 14 | 8 |
| Third Party Mediation | 5 | 3 | 81 | 4 | 7 | 3 |
| Binding Arbitration | 5 | 3 | 83 | 6 | 9 | 5 |
| Oversight Board | 3 | 2 | 64 | 2 | 4 | 2 |
| Referendum | 6 | 6 | 75 | 3 | 9 | 5 |
| Citizen Control | 6 | 6 | 93 | 7 | 13 | 7 |

Returning to those strategies that are most preferred, all five include stakeholder dialogue and interaction. Comparing most and least preferred strategies makes it clear that participant stakeholders in this study prefer to negotiate a meaningful agreement in a shared power arrangement over unipolar dictation of the siting outcome.

**Cluster Analysis of Decision Strategy Preferences**

Cluster analysis results of the citizen participation strategies across participants is presented below as Figure 3. Three clusters are shown in the dendrogram: referendum and citizen control; preemption (alone); and public comment and hearing, binding arbitration, non-binding negotiation, consultation, oversight board, and third-party mediation. Confirming the card ranking analyses, Ward's method also shows a distinction between shared power/negotiation-based strategies (Cluster #1) and the unipolar strategies (Clusters #2 and #3).

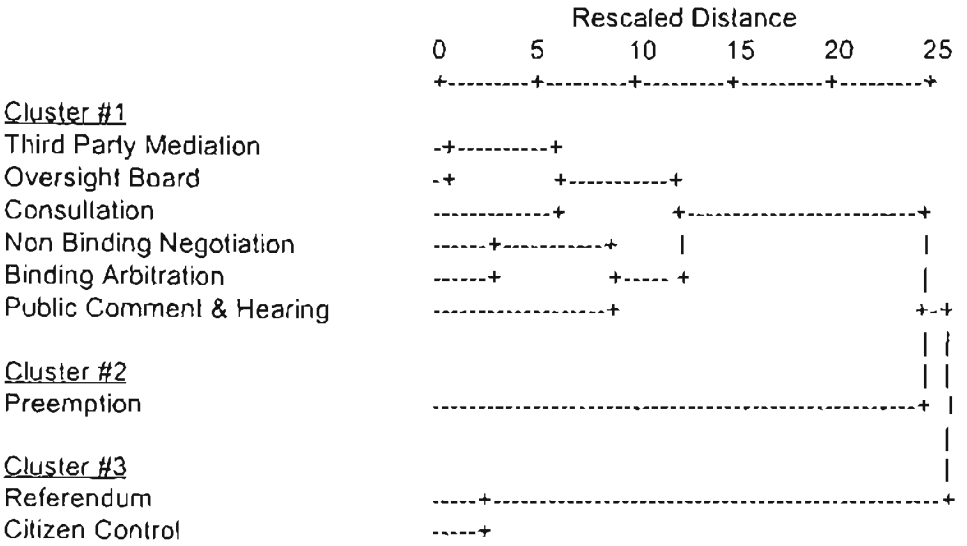



**FIGURE 3. HIERARCHICAL CLUSTER ANALYSIS**
**(9 Strategies across 17 People)**

More insight can be gleaned from the data by examining median card rank data from participation strategy groupings created by cluster analysis. The rank order scores of the three clusters are presented in the next three tables.

As shown in Table 13, consultation is the most preferred strategy in Participation Cluster #1, followed by oversight board, public comment and hearing, third-party mediation, binding arbitration, and non-binding negotiation. Both consultation and oversight board are intensively face-to-face stakeholder negotiation strategies. Mediation and arbitration involve third party participation but nevertheless involve direct negotiation. Public comment and hearing is less direct negotiation but nevertheless allows two-way communication. The preference of direct over facilitated and indirect forms of negotiation suggests that the participants are reluctant to share power with non-participants – preferring instead to keep power to themselves.

TABLE 13

PARTICIPATION STRATEGY CLUSTER #1 RANKINGS (N=17)

| PARTICIPATION STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Third Party Mediation | 5 | 3 | 81 | 3 | 6 | 3 |
| Oversight Board | 3 | 2 | 64 | 2 | 4 | 2 |
| Consultation | 2 | 1 | 48 | 1 | 2 | 1 |
| Non Binding Negotiation | 6 | 6 | 100 | 6 | 12 | 6 |
| Binding Arbitration | 5 | 3 | 83 | 5 | 8 | 5 |
| Public Comment and Hearing | 5 | 3 | 81 | 3 | 6 | 3 |
| *Average Cluster #1 Scores* | *4.3* | | *76.2* | | | |

Table 14 shows that Cluster #2 includes only one strategy: preemption. Preemption, a unipolar strategy that excludes citizens from the decision-making process, was overwhelmingly rejected by the participants (median rank = 9, out of 9 strategies). The average preference rank of 8.24 (= 140/17) confirms that preemption was rejected by virtually all 17 participants.

TABLE 14

PARTICIPATION STRATEGY CLUSTER #2 RANKING (N=17)

| PARTICIPATION STRATEGY | MEDIAN RANK SCORE | INDIVIDUAL RANK SCORE |
|---|---|---|
| Preemption | 9 | 140 |

Referring to Table 15, it can be seen that Cluster #3, consisting of referendum and citizen control, are unipolar strategies that accord most power to citizens. The similarity of the rank scores indicates that participants saw little difference between the two.

TABLE 15

PARTICIPATION STRATEGY CLUSTER #3 RANKINGS (N=17)

| PARTICIPATION STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Referendum | 6 | 1 | 75 | 1 | 2 | 1 |
| Citizen Control | 6 | 1 | 93 | 2 | 3 | 2 |
| *Average Cluster #3 Scores* | 6 | | 84 | | | |

*Comparison of Clusters*

The relative preference of participation strategy clusters is presented in Table 16. Multi-polar strategies requiring power sharing among stakeholders are most preferred. Cluster #3 strategies, which accorded unipolar power to community stakeholders, ranked second. Cluster #2, the unipolar strategy that accorded power only to the decision-makers ranked last. Clearly, the participants preferred shared power arrangements to unipolar ones. This point will be returned to in Chapter VIII.

TABLE 16

RELATIVE IMPORTANCE OF PARTICIPATION STRATEGY CLUSTERS

| PARTICIPATION STRATEGY CLUSTER | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Cluster #1: Low to Moderate Power | 4.3 | 1 | 76.2 | 1 | 2 | 1 |
| Cluster #2: No Power | 9 | 3 | 140 | 3 | 6 | 3 |
| Cluster #3: High Power | 6 | 2 | 84 | 2 | 4 | 2 |

**Cluster Analysis of Participants across Strategies**

Cluster analysis of participants across strategies is portrayed in the dendrogram in Figure 4. Two clusters are apparent. Participant Strategy Cluster #1 consists of five TWIG members including participants R-4 and R-3 (Skeptical Citizens), and R-10, R-5, and R-13 (Communitarians). The rankings of these participants were very similar on participation strategies. All Participant Strategy Cluster #1 participants ranked referendum as their first choice, and four of the five ranked citizen control as their second choice in preferred participation strategies. The oversight board strategy was ranked as either third, fourth, or fifth by all Participant Strategy Cluster #1 members. In general, it can be said that the Cluster #1 participants preferred high citizen power strategies over low citizen power strategies. Preemption was ranked last (ninth) by all members of Cluster #1. The complete control of siting situations by government is seen as unacceptable by Participant Strategy Cluster #1 members, and indeed this meshes well with the rankings of preferred high citizen power strategies. It is theorized that the

clustering of these participants can be related to their very active involvement in the siting controversy. Participants R-13 (the former mayor of Ramona and the highest pure loader on Factor C) and R-5 (former president and the founder of TWIG) were both extremely active in the siting controversy. The lack of Factor B loadings by the TWIG members on this cluster would suggest that these are purely opponents of the siting, and indeed this was the case.

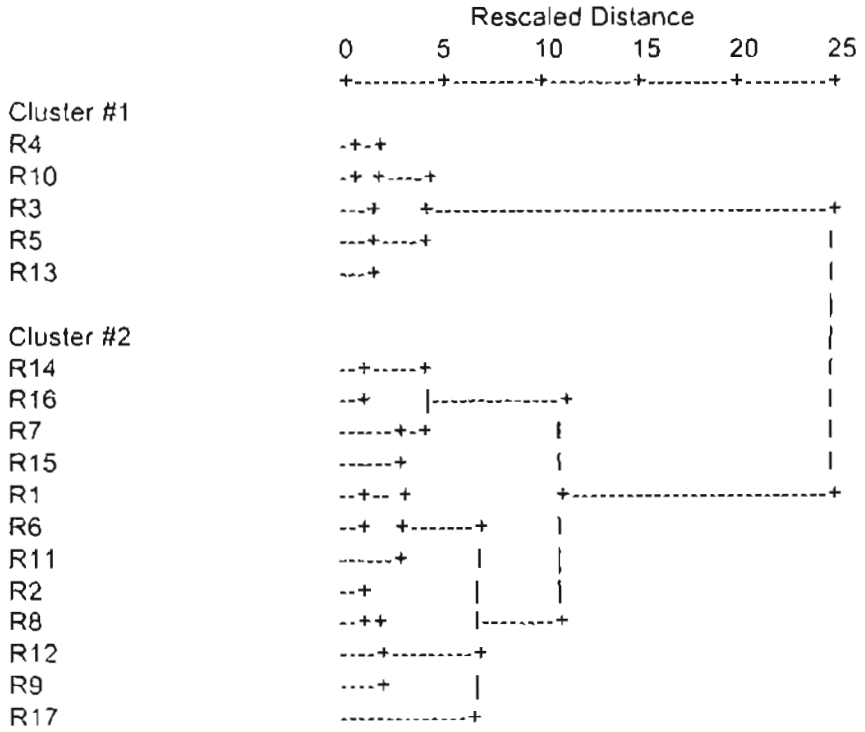



FIGURE 4. HIERARCHICAL CLUSTER ANALYSIS
(17 People across 9 Strategies)

Participant Strategy Cluster #2 consists of five TWIG members, three neutral citizens, one industry representative, and three government representatives. Cluster #2 was more fragmented than Cluster #1 in participant loyalties. As the dendrogram shows, this cluster is representative of all parties to the siting controversy (TWIG, Government, Industry, and Neutral Citizens). Participant Strategy Cluster #2 members tended to prefer more shared power participation strategies as a whole than did Cluster #1 members. Consultation received the majority of preferred (first) rankings with 50% (6 out of 12) participants agreeing. Across all Cluster #2

participants, it is apparent that shared power rankings are paramount. High citizen power strategies (oversight board, referendum, and citizen control) rankings are widely varying. Participant Strategy Cluster #2 members rank preemption last among the majority of participants (8 out of 12), and this lends credence to the argument that the Cluster #2 participants prefer shared power to extreme strategies (no-power and/or high-power).

Table 17 presents the participation strategy card ranking results for Participant Cluster #1. Cluster #1 participants ranked referendum, citizen control, and oversight board as the most-preferred strategies for participation by citizens in siting decisions. These strategies are high-power strategies, which give citizens maximum influence over siting decisions. This result confirms that Cluster #1 TWIG members believe that citizens should be empowered, even to the point of exclusion of industry and government, to make their own decisions on what is best for their community probably because their concerns are parochial. Relating this finding to the Q results confirms that the Skeptical Citizens and Communitarian participants did indeed desire input and involvement in siting decisions. Skeptical Citizens required input as a result of a fiduciary breach-of-trust on the part of government and industry and Communitarians sought involvement as a normal course of action for them as community stakeholders.

TABLE 17

PARTICIPANT CLUSTER #1 STRATEGY RANKINGS (N=5)

| PARTICIPATION STRATEGY | PARTICIPANTS | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Public Hearing and Comment | R-4(TWIG) R-10 (TWIG) R-3 (TWIG) R-5 (TWIG) R-13 (TWIG) [n=5] | 7 | 7 | 32 | 8 | 15 | 8 |
| Consultation | | 6 | 6 | 26 | 6 | 12 | 6 |
| Non Binding Agreement | | 7 | 7 | 31 | 7 | 14 | 7 |
| Mediation | | 5 | 4 | 28 | 4 | 8 | 4 |
| Binding Arbitration | | 5 | 4 | 28 | 4 | 8 | 4 |
| Oversight Board | | 4 | 3 | 19 | 3 | 6 | 3 |
| Referendum | | 1 | 1 | 5 | 1 | 2 | 1 |
| Citizen Control | | 2 | 2 | 11 | 2 | 4 | 2 |

The remaining strategies are all moderate-to-low citizen power strategies and are not preferred by Cluster #1 participants. Obviously these participants are unwilling to defer to government and industry stakeholders. This declination to defer to other decision-makers and proponents, or even share power with them, may be a result of their distrust of them. In comparing the Cluster #1 strategy participants' grouping of decision criteria cards, only R-3 was an outlier. The majority most highly ranked access to information, public participation, understanding local culture, and the potential for community disruption. This is evidence that this group's distrust of other stakeholders, in particular government and industry, led to increased demands for information and participation. This issue will be discussed more thoroughly in Chapter VIII, and illustrates the point that trust, as social capital, is perhaps the most valued of all capital: companies can save significant money and time by gaining and maintaining social trust – it allows them to make decisions more quickly and efficiently.

Table 18 presents card-ranking results for Cluster #2 participants. The remaining twelve participants are included in this cluster: five TWIG members, three neutral citizens, one industry representative, and three government officials. The five TWIG members in Cluster #2 include three Skeptical Citizens and two Experts. Three of the five TWIG members, clustered together as Cluster #1 participants in the decision criteria grouping of participants, differed from the other two TWIG members in their high ranking of alternative technologies, risk assessments, and technical and legal education. These preferences are associated mainly with expert-oriented preferences. To further illustrate the difference, no Communitarian influences are present within the TWIG group in Cluster #2. This explains the unimportance of cultural and community concerns.

Consultation, oversight board, and public hearing and comment were most preferred by Cluster #2 participants. Consultation and public comment and hearing are low citizen power strategies. Though oversight board is considered a shared power strategy, it may be that the participants saw the oversight board as a post-siting strategy: an oversight board would only exist

after the facility is constructed. Once constructed, operational controls can be negotiated but the facility will presumably continue operating.

TABLE 18

PARTICIPANT CLUSTER #2 STRATEGY RANKINGS (N= 12)

| PARTICIPATION STRATEGY | PARTICIPANTS | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Preemption | R-14 (NC), R-16 (IND) R-7 (TWIG), R-15 (NC) R-1 (TWIG), R-6 (TWIG) R-11 (GOVT), R-2 (TWIG) R-8 (GOVT), R-12 ( NC) R-9 (TWIG), R-17 (GOVT) [n-12] | 9 | 9 | 95 | 9 | 18 | 9 |
| Public Hearing and Comment | | 4 | 3 | 49 | 3 | 6 | 3 |
| Consultation | | 2 | 1 | 22 | 1 | 2 | 1 |
| Non Binding Agreement | | 5 | 5 | 69 | 6 | 11 | 5 |
| Mediation | | 4 | 3 | 53 | 4 | 7 | 4 |
| Binding Arbitration | | 6 | 6 | 55 | 5 | 11 | 5 |
| Oversight Board | | 3 | 2 | 45 | 2 | 4 | 2 |
| Referendum | | 6 | 6 | 70 | 7 | 13 | 7 |
| Citizen Control | | 8 | 8 | 82 | 8 | 16 | 8 |

Moderate citizen power strategies – non-binding negotiation, third-party mediation, and binding arbitration – were ranked fourth, fifth, and sixth, respectively, by Cluster #2 participants. Referendum and citizen control (both high power strategies) and preemption (a no power strategy) were ranked seventh, eighth, and ninth, respectively.

Clearly a trend can be discerned: the more citizen power that a strategy entails, the less Cluster #2 participants prefer it (although neither group preferred preemption). This essentially is in direct opposition to Cluster #1 participant rankings. These results indicate that Cluster #2 participants did not wish to share power with the Cluster #1 participants any more than Cluster #1 participants wished to share power with Cluster #2 participants.[1] A more detailed exploration of the reasons underlying these preferences can be justified by the results of the Q methodology and open-ended interview investigations. Chapter VIII presents this analysis.

### Summary of Citizen Participation Strategy Rankings

Nine citizen participation strategies were ranked by the participants. The strategies were grouped into four categories of citizen power level ranging from none to high. Rankings by all participants indicate that shared power strategies were dominant among stakeholder choices for

involvement in siting decisions. This reflects the attitudes of the citizens, and even government and industry, that the need exists to have input from all sides in a siting decision. This is seen as a positive undercurrent in the Ramona siting situation and an opportunity for all parties to share in the decisions that will determine the outcome of siting proposals.

Cluster analysis of the citizen participation strategies produced three clusters: a high citizen power cluster, a no power cluster, and a shared power cluster. The high citizen power cluster included the strategies of referendum and citizen control. These strategies reflect the belief of five TWIG members (R-4, R-10, R-3, R-5, and R-13) that to have a voice in the Ramona controversy they needed strong, high power input. This is related to the findings in Q analysis and the decision criteria card rankings that the breach of fiduciary trust by government and industry prompted the more active TWIG members to oppose the siting when they felt that government and industry did not have their best interests at heart.

The no-power participation cluster consisted of the strategy of preemption. This strategy grouped alone and reflected the belief of the majority of participants that this was an undesirable strategy. As discussed previously, for government and industry to make all the decisions with no input from citizens is a guarantee of siting failure. Government and industry were aware that input and involvement of citizens are necessary to decrease opposition. This is also consistent with their belief that education and inclusion will reduce unfounded fears and therefore their opposition to siting proposals.

The shared power cluster of participation strategies included public comment and hearing, consultation, non-binding negotiation, third-party mediation, binding arbitration, and an oversight board as strategies of choice. The high preference for these strategies reflects a belief on the part of participants that dialogue, communication, and interaction is preferred to unipolar participation methods.

Cluster analysis of participants' rankings across participation strategies produced two clusters. Cluster #1, consisting of five TWIG members, included two Skeptical Citizens and three

Communitarians. This was the more active opponent group that believed high-power citizen strategies, combined with opportunities for citizen involvement and community-based concerns, were essential.

Cluster #2 participants were representative of all the stakeholders in the siting controversy, consisting of TWIG members, government representatives, industry representatives, and neutral citizens. The TWIG members in Cluster #2 included three Skeptical Citizens and two Experts. These participants preferred lower citizen power strategies than Cluster #2 participants. It appears that higher institutional trust drives this distinction.

### Integration of Decision Criteria and Participation Strategy Rankings

Combining the statistical data presented above allows an investigation of the relationship between participant preferences for decision criteria and participation strategies. Participants clustered into two groups with respect to both decision criterion and participation strategy preferences. The obvious question is: how closely did the same participants cluster between criterion and strategy clusters? This comparison will reveal if stakeholders "stuck together" in their beliefs across different card decks.

The results of this comparison are shown below. Numbers shown in the cells are participant numbers and the percentage of them who share in common the referenced criterion and strategy clusters. Criterion Cluster #1 consists of nine stakeholders including five TWIG members, one neutral citizen, two government representatives, and one industry representative. Strategy Cluster #2 consists of twelve stakeholders including five TWIG members, three neutral citizens, one industry representative, and three government representatives. Criterion Cluster #2 consists of eight stakeholders including five TWIG members, two neutral citizens, and one government representative. Strategy Cluster #1 consists of five stakeholders (all TWIG members).

| PARTICIPANT CLUSTER NUMBER | Strategy #1 (3, 4, 5, 10, 13) | Strategy #2 (1, 2, 6, 7, 8, 9, 11, 12, 14, 15, 16, 17) | Percentage in Common, by Criterion |
|---|---|---|---|
| Criterion #1 (1, 3, 6, 7, 9, 11, 14, 16, 17) | 3 (20%) | *1, 6, 7, 9, 11, 14, 16, 17 (67%)* | 11% with Strategy #1<br>*89% with Strategy #2* |
| Criterion #2 (2, 4, 5, 8, 10, 12, 13, 15) | *4, 5, 10, 13 (80%)* | 2, 8, 12, 15 (33%) | 50% with Strategy #1<br>50% with Strategy #2 |
| Percentage in Common, by Strategy | 20% with Criterion #1<br>*80% with Criterion #2* | *67% with Criterion #1*<br>33% with Criterion #2 | BEST FIT:<br>Criterion #1/Strategy #2<br>Criterion #2/Strategy #1 |

*Group 1*

Group 1 consists of eight stakeholders including two government representatives, four TWIG members, one neutral citizen, and one industry representative. Eight of the nine Criterion #1 participants (89%) and eight of the 12 Strategy #2 participants (67%) were grouped together This grouping consisted of four TWIG members, two government representatives, one industry representative, and one neutral citizen. The TWIG members comprise the majority of the stakeholders in this group, and of the four TWIG members, three are defined as Skeptical Citizens. These TWIG members most closely identified with the decision criteria of alternative technologies, risk, and technical and legal education. These are the participants who preferred high citizen power strategies, but only after a breach of fiduciary trust by government and industry.

*Group 2*

Group #2 consists of four stakeholders including TWIG members exclusively Four of the five Strategy #1 participants (80%) and four of the eight Criterion #2 participants (50%) were grouped together. These participants included three Communitarians and one Skeptical Citizen These participants placed the most emphasis on citizen involvement and community-based decision criteria. These are the stakeholders that were very active in the siting controversy, and included the founder and former president of TWIG, and the former mayor of Ramona

*Group 3*

Group 3 consists of four stakeholders including one TWIG member, one government representative, and two neutral citizens. These participants shared a Criterion #2 – Strategy #2 relationship. Factor perspectives represented included one Skeptical Citizen, two Experts, and one Communitarian.

*Group 4*

One TWIG member comprises Group 4. She shared a Criterion #1 – Strategy #1 relationship. This TWIG member was defined by Q factor analysis as a Skeptical Citizen. Strategy #1 participants favored high-power participation levels by citizens. The decision criteria preferred by the Criterion #1 participants involved technical, trust, and risk criteria in environmental decision-making.

**Summary**

The decision criteria and participation strategies card-ranking exercise helped to detail the differences between the Skeptical Citizens, Experts, and Communitarians. Combined with the information obtained from the questionnaires, open-ended interviews, and Q sort exercises, a clearer understanding of what motivated the participants in Ramona can be inferred. The Skeptical Citizens were motivated in their opposition to the siting of the well by three primary factors: a belief that the location chosen for the siting, and the lack of technical expertise of government and industry were insufficient; a breach of fiduciary trust by government and industry when the desire of the citizens to be included was ignored; and the unwillingness of government and industry to listen to their concerns and repair the trust that was breached. The card sorting exercise illustrated these factors because the Skeptical Citizens favored citizen involvement criteria combined with shared-power strategies. The Skeptical Citizens wanted access to information and the opportunity for public participation, but only after trust was breached.

The Experts also favored decision criteria that involved citizen involvement. The Experts wanted the citizens to be involved, if only to increase the chances for a successful siting through

increased knowledge and participation by citizens. The Experts favored shared power strategies that gave all participants a voice in siting decisions, once again to increase the chances for a successful siting.

The Communitarians were motivated by a distrust of government and industry, but not to the level of the Skeptical Citizens. The Communitarians did not favor citizen involvement criteria as highly as the Skeptical Citizens, but instead centered their opposition to the siting of the well on community-based issues, and a difference in perceived values with government and industry. The Communitarians did favor high-power citizen participation strategies because they believed that high-power strategies such as oversight board, referendum, and citizen-control empowered more citizens in a communitarian effort.

---

[1] Though Cluster #2 participants' rejection of preemption agrees with the preference of Cluster #1 participants, in the former case this rejection may reflect their appreciation that facility opponents have enough political power to prevent being ignored or overruled. Under these circumstances, cooptive strategies may be best, in their opinion.

# CHAPTER VIII

# INTEGRATION OF FINDINGS AND CONCLUSIONS

## Introduction

In Chapter V, the results of the questionnaires and quasi-structured personal interviews were presented. In Chapter VI, a description of commonly held stakeholder perspectives made operant through analysis of stakeholders' Q sorts was presented. In Chapter VII, the differences between stakeholder preferences for criteria that should be used in making siting decisions and the means by which the public should participate in making those decisions was presented using a card-ranking strategy. In Chapter VIII, the results of Chapters V, VI, and VII will be integrated by examining the Q-factor groupings across decision criteria and participation strategy preferences in hopes of further discerning the underlying reasons behind the siting gridlock that occurred in Ramona.

## Gridlock

The results of this research indicate that differences between facility proponents' (industry and government) and opponents' (citizen) views on risk perception, institutional distrust, and community values and culture combined to produce gridlock in the Ramona hazardous waste siting controversy. These findings support and build upon studies such as those by Armour (1991) and Duberg, Frankel, and Niemeczewski (1980) that have shown that community resistance to siting proposals is linked to four important concerns: inequities in the distribution of costs and benefits, perceived risks, feelings of loss of control over forces affecting the quality of one's life and community, and lack of trust in proponents and regulators. These findings also support Portney's (1991) risk perception conversion theory, which states that qualitative attributes

of risk objects such as familiarity, scientific uncertainty, equity in distribution of risk and benefits, and institutional trust affect the level of risk that is perceived.

The four research instruments used in this study have produced evidence that the three elements mentioned above consistently appeared in the data obtained from those participating in this study.

## Integration of Findings by Factors

### Factor A: Skeptical Citizens

*Decision Criteria Preferences*

Table 19 illustrates the distribution of decision criteria card rankings among Skeptical Citizens. Skeptical Citizens felt that the most important criteria for sound environmental decision making involved citizen involvement, technological concerns, trust, and risk, as evidenced by their rankings of access to information, alternative technologies, personal judgements of risk, trust in government and industry, and technical and legal education. These criteria are in agreement with the high loadings of Skeptical Citizens on citizen involvement statement #25 (All information should be shared in easily understood language as soon as it is available, (1.3)), technological statements #47, #45, #28 (Industry must be required to recycle, reduce wastes, and use safer techniques and raw materials (1.6), There are clean technologies available that must be used now to reduce pollution (1.5), and It is impossible to know whether or not a process is really safe without adequate technical education (1.2)), and risk statement #8 (We should not take any chances with the environment (1.8)). The quotes by Skeptical Citizens mesh well with the findings above:

> *We banded well together.*
>
> *We were determined that outsiders would not come in and tell us what to do.*
>
> *Injection is not disposal. It is just storage*
>
> *Our land values would go down.*
>
> *The Health Department should look after the welfare of the people.*
>
> *Just look at that beautiful pasture, with the well there it would be an eyesore and ruin the land.*
>
> *We had an attachment to the country that we did not want to jeopardize.*

*The State Health Department was a joke.*

*ESI seemed to become hostile. I did not trust them after that.*

*The process of notification was a joke.*

*ESI is in cahoots with the Health Department.*

*They* [ESI and OSDH] *tried to sneak it through.*

These quotes, taken from Skeptical Citizens during the open-ended interview segment of the study, helped to illustrate the findings of the overall study, and that is that the Skeptical Citizens are predominantly motivated by issues involving trust, citizen involvement, and risk

Criteria of least importance to Skeptical Citizens were economic crileria: fairness, community economics, and company economics. Economic harm, the opportunity for economic benefit, and fairness in the distribution of costs and benefits do not matter as much to the Skeptical Citizens, instead, health and environmental concerns and their distrust of government and industry dominated their concern. The relative importance of these decision criteria are consistent with Skeptical Citizens' Q sorts. Statements involving economic issues include #15 and #34 (Cost effectiveness is more important to industry and government than environmental issues (1.2), (Economic special interests have too much influence in siting decisions (1.2)) address the economic influences that, in the view of Skeptical Citizens, motivate industry and government decisions.

Local culture and sense of community are relatively unimportant to Skeptical Citizens in decision making. No Q sort statements dealing with community issues and values were evident in Factor A item scores. This is an illustration of Skeptical Citizens' belief that the injection well did not pose a big concern from the standpoint of community disruption. A well placed in the middle of a large ranch outside of town would not likely disrupt the day-to-day activities of the residents of Ramona. However, the potential for adverse health and environmental impacts from the well due to the migration of hazardous waste through fractured bedrock (as TWIG believed) was a source of real concern. This is in stark contrast to Communitarians, who felt that the community-based criteria, and not technical issues, were paramount in deciding on the merits of a hazardous waste siting in their community.

TABLE 19

DECISION CRITERION PREFERENCES OF "SKEPTICAL CITIZENS"

| DECISION CRITERION | PARTICIPANT | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Economic Impact on Community | R-7 (TWIG) R-3 (TWIG) R-1 (TWIG) R-4 (TWIG) R-14 (NC) R-15 (NC) R-9 (TWIG) (n=7) | 10 | 11 | 66 | 12 | 23 | 12 |
| Economic Impact on Company | | 10 | 11 | 72 | 13 | 24 | 13 |
| Scientific Risk Assessment | | 9 | 9 | 57 | 9 | 18 | 9 |
| Personal Risk Judgment | | 5 | 4 | 40 | 4 | 8 | 4 |
| Access to Information | | 2 | 1 | 17 | 1 | 2 | 1 |
| Personal Views toward Technol. | | 8 | 8 | 53 | 8 | 16 | 8 |
| Fairness | | 10 | 11 | 64 | 10 | 21 | 11 |
| Trust in Government & Industry | | 6 | 5 | 52 | 7 | 12 | 7 |
| Understanding Local Culture | | 6 | 5 | 51 | 6 | 11 | 6 |
| Community Disruption | | 9 | 9 | 64 | 10 | 19 | 10 |
| Citizen Involvement | | 3 | 2 | 26 | 2 | 4 | 2 |
| Technical and Legal Education | | 6 | 5 | 44 | 5 | 10 | 5 |
| Use of Alternative Technologies | | 3 | 2 | 31 | 3 | 5 | 3 |

*Participation Strategy Preferences*

Table 20 presents the results of Skeptical Citizens' preference ranking of public participation strategies Surprisingly, consultation was the preferred strategy for Skeptical Citizens. This is a low-power citizen strategy that allows the government to make decisions with only moderate citizen input. Next are the oversight board, referendum, and binding arbitration. These choices do reflect the desire of Skeptical Citizens to influence the siting of hazardous waste facilities. These preferences also confirm their Q sorting of statements (#25 and #31) that indicate Skeptical Citizens want to play an active role in the activities surrounding the siting of a hazardous waste facility (All information should be shared in easily understood language as soon as it it available (1.3), We would all be better off if the legal procedures were easier to follow (1.1) )

Least preferred lower power strategies include preemption, non-binding agreement, and public hearing and comment. The low to no-power that these strategies afford citizens make them unacceptable to the Skeptical Citizens. The low ranking of these strategies is consistent with the Skeptical Citizens belief that government and industry should allow ample opportunities for citizen input in siting hazardous waste facilities.

TABLE 20

PARTICIPATION STRATEGY PREFERENCES OF "SKEPTICAL CITIZENS"

| STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Preemption | 9 | 9 | 62 | 9 | 18 | 9 |
| Public Hearing/Comment | 6 | 6 | 41 | 7 | 13 | 7 |
| Consultation | 2 | 1 | 19 | 1 | 2 | 1 |
| Non-Binding Agreement | 7 | 8 | 47 | 8 | 16 | 8 |
| Mediation | 5 | 5 | 35 | 6 | 11 | 6 |
| Binding Arbitration | 4 | 3 | 30 | 4 | 7 | 3 |
| Oversight Board | 3 | 2 | 21 | 2 | 4 | 2 |
| Referendum | 6 | 6 | 28 | 3 | 9 | 5 |
| Citizen Control | 4 | 3 | 32 | 5 | 8 | 4 |

**Factor B: Experts**

*Decision Criteria Preferences*

Table 21 presents the distribution of decision criteria card rankings among Experts. The criteria that those in this group most preferred were access to information and alternative technologies. Their Q sorts of #47 (Industry must be required to recycle, reduce wastes, and use safer techniques and raw materials (2.1)), #45 (There are clean technologies available that must be used now to reduce pollution (1.8)), #25 (All information should be shared in easily understood language as soon as it is available (1.7)), and #30 (Citizens should have their own experts (1.4)) confirm their decision criteria preference rankings. Also rated highly were public participation criteria, consistent with their Q sorts of statements #37 (It is better to be active today than to be radioactive tomorrow (1.9)), #25 (All ;information should be shared in easily understood language as soon as it is available (1.7)), #30 (Citizens should have their own experts (1.4)). Underlying Experts' preference for citizen involvement criteria may be their belief that more access to information and additional opportunities for participation will increase acceptance and decrease opposition to the proposed siting. Their preference for community economics as an important decision criterion can be explained by Experts' belief that successful siting presents an economic opportunity for the community via increased employment and tax revenues. It is also their belief

that the community, and in particular opponents, should see the wisdom of the "economic benefit to the community" rationale.

TABLE 21

DECISION CRITERION PREFERENCES OF "EXPERTS"

| DECISION CRITERION | PARTICIPANT | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Economic Impact on Community | R-17 (Gov't) R-6 (TWIG) R-16 (Industry) R-2 (TWIG) R-8 (Gov't) [n=5] | 5 | 3 | 30 | 4 | 7 | 4 |
| Economic Impact on Company | | 8 | 8 | 43 | 11 | 19 | 11 |
| Scientific Risk Assessment | | 6 | 5 | 39 | 9 | 14 | 7 |
| Personal Risk Judgment | | 6 | 5 | 33 | 6 | 11 | 6 |
| Access to Information | | 1 | 1 | 16 | 1 | 2 | 1 |
| Personal Views toward Technol. | | 8 | 8 | 40 | 10 | 18 | 10 |
| Fairness | | 8 | 8 | 38 | 8 | 16 | 8 |
| Trust in Government & Industry | | 6 | 5 | 30 | 4 | 9 | 5 |
| Understand Local Culture | | 12 | 12 | 49 | 12 | 24 | 12 |
| Community Disruption | | 12 | 12 | 52 | 13 | 25 | 13 |
| Citizen Involvement | | 5 | 3 | 29 | 3 | 6 | 3 |
| Technical and Legal Education | | 9 | 11 | 33 | 6 | 17 | 9 |
| Use of Alternative Technologies | | 3 | 2 | 23 | 2 | 4 | 2 |

The following quotes illustrate the propensity of Experts to focus on the economic aspect of the siting proposal:

*ESI made a one-time payment to the State of twenty-thousand dollars.*

*I know that the owners of ESI lost about three million dollars pursuing the siting of the well.*

Evidence that they learned from their experience in Ramona that the public can't be taken lightly can be found in these comments:

*We were too patronizing to the people.*

*ESI tried to sneak in and throw its weight around.*

*Not hiring a local attorney was their [ESI's] biggest mistake.*

The community-based decision criteria (understanding local culture and sense of community) that were least preferred by Experts were, in retrospect an important predictor of siting failure. Their low preference for community-based criteria is confirmed by their Q sort of statement #11 (The world would be a better place to live if we could go back to the good old days (-1.4)). This type of statement tends to elicit a desire for the simple life and the way a small, rural community such as Ramona is viewed, especially by residents. The failure of ESI and OSDH to

appreciate the depth of attachment that citizens, and in particular the Communitarians of Ramona had with "the land" and "the community" was a milestone on the road to siting failure.

*Participation Strategy Preferences*

Table 22 presents Experts' preferences for citizen participation strategies. Experts prefer low citizen power strategies such as consultation and public hearing and comment as the best means for getting citizens involved in siting decisions. Although these are low citizen power strategies, they are shared power strategies, and a potential building block for future progress is apparent. The extreme strategy beliefs (preemption, referendum, and citizen control) were ranked seventh, eighth, and ninth by the Experts and are analyzed in the following paragraph. This belief in shared power strategies meshes with the Experts sorting of Q statements #37, #25, and #30 (It is better to be active today than to be radioactive tomorrow (1.9)), (All information should be shared in easily understood language as soon as it is available (1.7)), and (Citizens should have their own experts (1.4)). These Q item statements are suggestive of shared power beliefs and suggest that the Skeptical Citizens held consistent from Q item rankings through participation strategy cards.

**TABLE 22**

**PARTICIPATION STRATEGY PREFERENCES OF "EXPERTS"**

| STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Preemption | 9 | 9 | 36 | 8 | 17 | 8 |
| Public Hearing/Comment | 3 | 2 | 18 | 2 | 4 | 2 |
| Consultation | 1 | 1 | 7 | 1 | 2 | 1 |
| Non-Binding Agreement | 5 | 5 | 25 | 5 | 10 | 5 |
| Mediation | 4 | 4 | 21 | 4 | 8 | 4 |
| Binding Arbitration | 6 | 6 | 27 | 6 | 12 | 6 |
| Oversight Board | 3 | 2 | 20 | 3 | 5 | 3 |
| Referendum | 7 | 7 | 33 | 7 | 14 | 7 |
| Citizen Control | 8 | 8 | 38 | 9 | 17 | 8 |

The least preferred scenario for citizen involvement to Experts is citizen control. This strategy gives most power to citizens. This is consistent with Experts' Q sorts of statements #36 (Citizens should initially oppose all proposals for siting by industry (-1.9)), and #44 (Environmental

radicals are necessary to bring balance to the issues (-1.5)). Preemption is unfavorably viewed by Experts and suggests that they realize that for industry and government to take complete control of a siting situation and force it on the citizens of a community is a hopeless scenario for achieving desired results.

**Factor C: Communitarians**

*Decision Criteria Preferences*

Table 23 presents the distribution of decision criteria rankings among Communitarians. Their most preferred criteria were access to information, citizen involvement, and alternative technologies. These support a claim that involving Communitarians by providing information, demonstrating that minimum residual risk will be posed, and considering their perspectives and values is a sensible way for siting proponents to gain their confidence. Institutional trust and understanding local culture were also ranked highly by Communitarians (fourth and fifth). This suggests that if government and industry wish to gain Communitarians' trust, they must first understand the attachment that Communitarians have to their community and its values.

TABLE 23

DECISION CRITERION PREFERENCES OF "COMMUNITARIANS"

| DECISION CRITERION | PARTICIPANT | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|---|
| | | Score | Order | Score | Order | Score | Order |
| Economic Impact on Community | R-13 (TWIG) R-10 (TWIG) R-12 (NC) R-11 (Gov't) R-5 (TWIG) [n=5] | 7 | 7 | 36 | 7 | 14 | 7 |
| Economic Impact on Company | | 13 | 13 | 63 | 13 | 26 | 12 |
| Scientific Risk Assessment | | 8 | 8 | 40 | 9 | 17 | 9 |
| Personal Risk Judgment | | 8 | 8 | 40 | 9 | 17 | 9 |
| Access to Information | | 2 | 2 | 14 | 1 | 3 | 1 |
| Personal Views toward Technol. | | 9 | 11 | 42 | 11 | 22 | 10 |
| Fairness | | 6 | 5 | 35 | 6 | 11 | 6 |
| Trust in Government & Industry | | 5 | 4 | 28 | 3 | 7 | 4 |
| Understand Local Culture | | 6 | 5 | 32 | 5 | 10 | 5 |
| Community Disruption | | 8 | 8 | 38 | 8 | 16 | 8 |
| Citizen Involvement | | 1 | 1 | 17 | 2 | 3 | 1 |
| Technical and Legal Education | | 10 | 12 | 42 | 11 | 23 | 11 |
| Use of Alternative Technologies | | 4 | 3 | 28 | 3 | 6 | 3 |

The following comments, taken in context from Communitarian interviews, reflect their beliefs regarding citizen involvement, trust in government and industry, and community-based values:

*We had strong community spirit.*

*We felt we were protecting God's creation.*

*We worked well as a team to protect our community.*

*We had people who cared; because just one spill, just one time, could spell disaster.*

*They should have opened up their files and research and shown us everything.*

*ESI tried to buy the State.*

*The only persons benefiting from the siting were ESI and the government. It was a very small benefit to the landowner and the community.*

*They should be required to notify public officials in the area -- like the mayor and maybe the school district.*

For Communitarians, the siting of the well and their opposition to it was not as risky as it was to Skeptical Citizens. Communitarians believed that to be involved, with access to relevant information, was paramount. They also believed that government and industry must give credence to their concerns about community values in order to be trusted. They felt that a lack of equity played a part in their opposition to the siting of the well. Fairness in the distribution of costs and benefits was ranked sixth by Communitarians, reflecting their belief that the community would bear the risks of siting but government and industry would reap the benefits.

The least important decision criteria to Communitarians were personal views toward technology, technical and legal education, and economic impact on the company. Communitarians seemed unwilling to put much faith in technology to solve the problem of hazardous waste disposal. Their dim view of technology and its potential impacts on future generations is amply demonstrated by their Q sort of statement #10 (It does not matter how much we pollute today because tomorrows technology will solve the problem (-1.7)). Technical considerations are subordinate to access to information by all stakeholders, opportunities for citizens to get involved, trust of those providing information, importance of the local culture, and fairness to all stakeholders – including future ones. Communitarians strongly believed that economic issues should have little importance in environmental decisions, as evidenced by Statements #4 (If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed (-1.8) and #3 (When jobs are scarce, an increase in employment is

good even if there is resulting pollution (-1.5)). This is consistent with their low ranking of economic impacts to the company.

*Participation Strategy Preferences*

Table 24 details the preferences of Communitarians for stakeholder participation strategies. Referendum was most preferred by Communitarians. In their opinion, if a majority of residents do not believe that a siting is beneficial to their community, then it should fail by a vote of the people.

After referendum, public hearing and comment and consultation are preferred. The high ranking of these strategies demonstrates the cooperative approach preferred by Communitarians and their willingness to work within guidelines set up by the regulatory agencies. Citizen control was ranked third, illustrating that Communitarians preferred giving the strongest voice in siting decision-making to the residents of Ramona.

TABLE 24

PARTICIPATION STRATEGY PREFERENCES BY "COMMUNITARIANS"

| STRATEGY | MEDIAN RANK | | INDIVIDUAL RANK | | OVERALL RANK | |
|---|---|---|---|---|---|---|
| | Score | Order | Score | Order | Score | Order |
| Preemption | 9 | 9 | 42 | 9 | 18 | 9 |
| Public Hearing/Comment | 3 | 3 | 22 | 2 | 5 | 2 |
| Consultation | 4 | 4 | 22 | 2 | 6 | 3 |
| Non-Binding Agreement | 6 | 7 | 28 | 8 | 15 | 8 |
| Mediation | 5 | 6 | 25 | 6 | 12 | 6 |
| Binding Arbitration | 6 | 7 | 26 | 7 | 14 | 7 |
| Oversight Board | 4 | 4 | 23 | 4 | 8 | 5 |
| Referendum | 1 | 1 | 14 | 1 | 2 | 1 |
| Citizen Control | 2 | 2 | 23 | 4 | 6 | 3 |

Least preferred among stakeholder participation strategies are preemption, non-binding agreement, and binding arbitration. These strategies afford lower levels of control to citizens ranging from no-power to moderate power.

## Comparison of Preferences by Q Factor Stakeholder Group

### Comparison of Decision Criteria Preferences

Table 25 presents a comparison of decision criteria preference rankings by Q factor group. Important similarities and differences are apparent among Skeptical Citizens, Experts, and Communitarians. All participants agreed that access to information, public participation, and the use of alternative technologies are the criteria upon which siting decision making should be built. These decision criteria correspond to the beliefs of the participants as illustrated by consensus Q statements #45 (There are clean technologies available that must be used now to reduce pollution (1.47)), #26 (Who provides information makes a difference to me; the person must be honest (1.27)), #31 (We would all be better off if the legal procedures were easier to follow (.99)), #22 (Citizens should be involved in every step of a siting decision (.92)), #30 (Citizens should have their own experts (.90)), and #28 It is impossible to know whether or not a process is really safe without adequate technical education (.87)).

As discussed previously, the apparent common support by all stakeholder groups for higher intensity stakeholder involvement may be superficial. Skeptical Citizens wanted to be involved only after a breach of fiduciary trust by government and industry. This motivated their opposition to the siting of the well. Experts believed that citizens should be involved and have access to information and opportunities for involvement to quell their fears and concerns about the proposed facility, which in turn would increase the chances for a successful siting. Communitarians wanted to be involved and informed, not because they perceived that inordinate health and environmental risks existed, but because they wanted to ensure that their values are considered. The use of alternative technologies to reduce waste quantities is an example of their belief that something must be done to avoid siting conflicts like the one they had experienced. One way to avoid conflict is to decrease the amount of hazardous waste being generated, which in turn would lessen the need for disposal methodologies.

TABLE 25

COMPARISON OF STAKEHOLDERS' DECISION CRITERIA PREFERENCES

| DECISION CRITERION | SKEPTICAL CITIZENS | EXPERTS | COMMUNITARIANS |
|---|---|---|---|
| Economic Impact on the Community | 12 | 4 | 7 |
| Economic Impact on the Company | 13 | 11 | 12 |
| Scientific Risk Estimates | 9 | 7 | 9 |
| Personal Judgments of Risk | 4 | 6 | 9 |
| Access to Information | 1 | 1 | 1 |
| Personal Views Toward Technology | 8 | 10 | 10 |
| Fairness | 11 | 8 | 6 |
| Trust in Government and Industry | 7 | 5 | 4 |
| Understanding Local Culture | 6 | 12 | 5 |
| Community Disruption | 10 | 13 | 8 |
| Citizen Involvement | 2 | 3 | 1 |
| Technical and Legal Education | 5 | 9 | 11 |
| Use of Alternative Technologies | 3 | 2 | 3 |

Conversely, the participants agreed that the least preferred criteria for siting decisions are the economic impact on the company and scientific risk assessments. It is surprising that Experts did not rank the use of scientific risk assessments higher than they did. Perhaps it is because Experts believed that scientific risk assessments are not well suited to convincing citizens that a facility is safe because they have learned that these assessments are difficult to appreciate.

Perhaps, the main differences between the three Factor perspectives can be best understood by looking at the outlying rankings of decision criteria. Skeptical Citizens felt that economic criteria and fairness were unimportant in a siting decision whereas Experts and Communitarians rated them higher. Skeptical Citizens believe that the potential for community economic gains should play no part in siting decision-making. They felt that more important issues are risk, trust, and participation.

Experts separated themselves from the other stakeholders by their view of the importance of understanding local culture and the potential for community disruption to siting decisions. Experts ranked these criteria 12$^{th}$ and 13$^{th}$, respectively. This was a major source of contention with other stakeholders and is one of the major reasons that the siting was unsuccessful. Their inability to

understand that these criteria played a major role in citizens' opposition to the siting, of especially with Communitarians, proponents at a disadvantage from the start.

Communitarians' were most different from other stakeholders with respect to the criterion of technical and legal education. Communitarians believed that technical and legal education was not an important issue in environmental decision making and that other criteria are more relevant to siting decision-making. Both Skeptical Citizens and Experts ranked technical and legal education more highly, but probably for different reasons. Skeptical Citizens wanted more education to increase their knowledge and participation while Experts want increased education of citizens to decrease participation (by showing that the well siting was not dangerous). Communitarians thought that ESI and the OSDH tried to force a very technical project upon an uninformed community.

**Comparison of Stakeholder Participation Strategy Preferences**

Table 26 presents a comparison of participation strategy preferences by stakeholder group. The ranking of participation strategies revealed several different viewpoints among Factor A, B, and C perspectives. All participants saw preemption as an undesirable strategy; it was ranked last by Skeptical Citizens and Communitarians and next to last by Experts. Consultation was viewed by participants as the most desirable strategy, with rankings of first, first, and third by Skeptical Citizens, Experts, and Communitarians, respectively.

TABLE 26

COMPARISON OF STAKEHOLDERS' PARTICIPATION STRATEGY PREFERENCES

| PARTICIPATION STRATEGY | SKEPTICAL CITIZENS | EXPERTS | COMMUNITARIANS |
|---|---|---|---|
| Preemption | 9 | 8 | 9 |
| Public Hearing and Comment | 7 | 2 | 2 |
| Consultation | 1 | 1 | 3 |
| Non-Binding Agreement | 8 | 5 | 8 |
| Third Party Mediation | 6 | 4 | 6 |
| Binding Arbitration | 3 | 6 | 7 |
| Oversight Board | 2 | 3 | 5 |
| Referendum | 5 | 7 | 1 |
| Citizen Control | 4 | 8 | 3 |

An examination of the outlying rankings between the three factor perspectives is a fruitful way to examine the differences in their beliefs. Public hearing and comment was viewed by Experts and Communitarians as highly preferred (rank = 2); however, Skeptical Citizens believed that it is undesirable (rank = 7). Public hearing and comment is a low citizen power strategy that was viewed by Skeptical Citizens as not providing sufficient opportunity for stakeholder influence. Skeptical Citizens and Communitarians also disagreed on their preference for binding arbitration. Binding arbitration is a moderate citizen power strategy that Skeptical Citizens viewed as a means to increase their influence. Communitarians believed that that the one-year of discussion was too long, creating a likelihood that discussions could drag out and citizen stakeholders may lose focus and drop out.

Citizen control and referendum, both high citizen power participation strategies, were ranked by Experts as eighth and seventh, respectively. In contrast, Communitarians ranked referendum first and citizen control third on their list of preferred citizen participation strategies. (Skeptical Citizens only moderately preferred these strategies). Given earlier observations, it is not surprising the Experts are unsympathetic to delegating decision making power to citizens whereas Communitarians are unwilling to defer to the discretion and authority of Experts.

### Comparisons among Stakeholder Perspectives

#### Factor A - Factor B Comparison

Skeptical Citizens and Experts believed that access to information and opportunities for participation were most important to siting decision-making. This suggests that they agreed that citizen participation and education is viewed as desirable. However, as has been pointed out above, this agreement may be superficial. Skeptical Citizens believed that education will increase their opportunity to influence the decision outcome. Experts hoped that education will decrease the propensity for citizens to participate and, in particular, oppose siting proposals. Experts, consisting mainly of government and industry stakeholders who, sensitized by the siting failure in Ramona, came to realize that providing citizens information early was a vital step to improving community relations.

Skeptical Citizens' preference for alternative technologies reflects their belief that alternative methods of hazardous waste disposal are available. Due to countless hours of research and the hiring of outside experts, Skeptical Citizens increased their awareness of their existence.

The most notable difference between Skeptical Citizens and Experts, however, concerns their preference for community-based and economic decision criteria. While Skeptical Citizens least preferred consideration of economic impacts to the community and the company, Experts gave little credence to understanding local culture and community disruption. Skeptical Citizens believe that the ability of a company to make money should not come at the expense of the parties bearing the risks of LULU siting. Further, they reject arguments that economic benefits to the community are sufficient justification for the acceptance of risks. This is ironic because the majority of Skeptical Citizens were landholding citizens who were in businesses that profited from the utilization of land: ranching, oil extraction, and farming.

Experts' low ranking of understanding local culture and community disruption ($12^{th}$ and $13^{th}$, respectively) is indicative of the problems encountered throughout the siting controversy. Opponents were frequently upset because OSDH and ESI did not value their input regarding "their attachment to the land." This is a major reason for the siting failure.

Both groups favored consultation as a preferred citizen participation strategy. This is surprising given the relatively low power that would be given to citizens. This could be a misinterpretation of the definition of this strategy by Skeptical Citizens.

Both groups also give high ratings to an oversight board, which is a high citizen power strategy. This could also be superficial. Skeptical Citizens likely preferred this strategy because it affords citizens significant influence. However, Experts have preferred this strategy because it suggests a *fait accompli*, that is, the facility would already be sited, and thus only its operation would be subject to negotiation. Perhaps, Experts believed that they would have more relative influence over operational deliberations than siting ones.

Factor A - Factor C Comparison

Skeptical Citizens and Communitarians considered access to information to be the single most important criterion in siting decision-making. Public participation and the use of alternative technologies were ranked second and third, respectively. The identical rankings of these three criteria help explain the basis for their cooperation in opposing the siting proposal. Of the 12 participants identified as Skeptical Citizens and Communitarians, eight were members of TWIG. Early citizen involvement, with ready access to relevant information, is extremely important to both Skeptical Citizens and Communitarians. The search for alternative technologies is important to reduce the need for such facilities.

Although Skeptical Citizens and Communitarians agreed on which criteria were most important to siting decisions, they were less in agreement on which were least important. Skeptical Citizens' least preferred criteria were economic. Economic impact on the community and the company, and fairness and equity in the distribution of costs and benefits, were ranked at the bottom. They believed that no matter who stands to gain or lose from the proposed siting, the siting decision should be based on risk, environmental health and safety, and trust.

Communitarians agreed with the Skeptical Citizens that economic benefit to the company should have little importance in decision-making (rank of twelfth.) The Communitarians also believed, however, that technical and legal education and personal views toward technology were of little importance in environmental decision-making (ranks of eleventh and tenth, respectively) This reflects the beliefs of the Communitarians that the approval or disapproval of the siting was not necessarily a technical issue, but rather an issue of community togetherness and beliefs.

With respect to stakeholder participation strategies, Skeptical Citizens and Communitarians agree on most strategies, with the largest difference coming on public hearing and comment, which Skeptical Citizens ranked seventh and Communitarians ranked second. This is a reflection of the Skeptical Citizens view that public hearing and comment is not the method by which to obtain the best results for the community. The Skeptical Citizens probably viewed the experience they had just been through as public hearing and comment based, which took place only after

mobilization by citizens to oppose the siting of the well. This study has shown that the Communitarians wanted to be involved, but not really control, any aspect of the siting controversy. Public hearing and comment is a low-power citizen strategy that the Skeptical Citizens viewed as unacceptable, and Communitarians viewed as meeting their definition of involvement.

**Factor B - Factor C Comparison**

Experts and Communitarians both believe that access to information, public participation, and alternative technologies were the most important criteria to siting decision-making. Interestingly, this can be seen in retrospect as an opportunity for these groups to have work together and avoid a conflict. If OSDH and ESI had provided information early, had justified the siting proposal on the lack of reasonable alternatives, and had been more willing to accommodate citizens' concerns, gridlock may have been avoided.

The main differences between Experts and Communitarians concern their preferences for understanding local culture, community disruption, and technical and legal education as decision criteria. While Experts gave little credence to culture and sense of community, Communitarians ranked them highly: a major reason for the controversy. Experts felt that the siting was a technical issue, therefore issues of community and culture had no legitimate place in the decision. Communitarians strongly rejected this argument and lost trust of Experts as a result.

Technical and legal education is seen as important by Experts, but not nearly as important as it is seen by Communitarians. This is a reflection of Experts' belief that are more knowledgeable than lay citizens about hazardous waste disposal and since technical and legal issues dominate siting decisions, their views should be privileged. Communitarians rejected the Experts' claim to privilege, arguing instead that the siting issue involves non-technical cultural community value issues as well. Siting proposal deliberations, according to Communitarians, are debates about alternative futures, not just optimization of economic resources.

While Experts view consultation as the preferred strategy, Communitarians prefer referendum. This illustrates the marked contrast between Experts' preference for low citizen power strategies and Communitarians' preference for high power strategies.

**Summary**

A firm, Environmental Solutions, Inc. (ESI) proposed to the Oklahoma State Department of Health (OSDH), and the citizens of Ramona, Oklahoma, the siting of a Class I hazardous waste injection well. The OSDH believed the risks to be manageable, the technical prowess of ESI to be sufficient, and the siting to be feasible. Upon learning of the siting proposal, the citizens of Ramona that were opposed to the siting formed a citizens' group known as the Toxic Waste Impact Group (TWIG). TWIG opposed the siting proposal on the grounds that its location was technically unsuitable and that ESI had not played by the rules in dealing with the community. Their determination to stop construction of the well ultimately led to the courts, which determined that construction would be halted. This study attempted to determine, through the use of open-ended interviewing, Q sorting, and card ranking, the reasons underlying citizen opposition.

The participants in the controversy included TWIG members, government representatives, an industry representative, and neutral citizens. Q factor analysis revealed three stakeholder perspectives: Skeptical Citizen, Expert, and Communitarian. The Skeptical Citizens consisted of seven stakeholders that as a group believed the siting of the well posed a legitimate risk to the environmental health and safety of the community. They also believed that government and industry had a fiduciary responsibility to protect the citizens and environment of Ramona. When that responsibility was breached through lack of forthright communication by government and industry, trust was lost in the minds of the Skeptical Citizens. This breach of fiduciary trust spurred the Skeptical to become involved and oppose the siting of the well.

The Experts included five stakeholders and included TWIG, government, and industry participants. The Experts believed that citizens did have a right to information and participation, but perhaps for different reasons than the Skeptical Citizens. The Experts believed that providing citizens with information, and involving them in decisions would lead to acceptance of the siting.

In other words, if they provided citizens with information about the well, the citizens would decide for themselves that the siting posed no health or environmental risks.

The Communitarians included seven participants that consisted of TWIG, neutral citizen, and government representatives. The Communitarians wanted to be involved in the siting decision for different reasons than the Skeptical Citizens. The Communitarians were opposed to the siting of the well on the basis of differing values. They did not necessarily distrust government, but wanted to make sure that government and industry took their views into account and made decisions based on what was good for the community, not just what was economically justified.

Cluster analysis of preference rankings of decision criteria revealed three distinct clusters opinion on the relative importance of criteria siting decision-making. Criterion Cluster #1 focused on technological, trust, and risk-based criteria. These criteria mesh well with the viewpoints of Skeptical Citizens and center on the belief that the well is technologically not feasible, which heightens perceived risk, which leads to a breach of trust when they are not involved in the decision-making. Criterion Cluster #2 included citizen involvement criteria. Citizen involvement criteria included access to information and public participation. The Skeptical Citizens and Experts both believed that citizen involvement was critical to the success of environmental siting decisions, but for different reasons as the research has shown. Criterion Cluster #3 concerned socioeconomic criteria. The socioeconomic criteria were most important to the Communitarians. This was a diversified cluster that touched on issues that were not as defined as the other two clusters.

Individual participants were also cluster-analyzed to discover the similarities among them by their preference ranking of decision criteria. Two clusters were revealed: Participant Cluster #1 chiefly consisting of Skeptical Citizens and Experts and Participant Cluster #2 primarily including Communitarians.

Cluster analysis of preference rankings of participation strategies also revealed three distinct clusters of opinion on the means by which citizens should be involved. Strategy Cluster #1

consists of six strategies, all of which were shared power strategies. Strategy Cluster #2 is preemption, a unipolar strategy that gives no power to citizens for meaningful participation. Strategy Cluster #3 includes referendum and citizen control, both unipolar strategies that accord nearly exclusive power to citizens. From these findings, it is reasonable to conclude that inclusive strategies that sought the participation of all stakeholders may have averted gridlock

Analysis of participants' preferences across stakeholder participation strategies revealed two distinct groups. Participant Cluster #1 consisted of five TWIG members, including two Skeptical Citizens, and three Communitarians. Participant Cluster #2 consisted of twelve stakeholders, including six Skeptical Citizens, four Experts, and two Communitarians. Participant Cluster #1 included participants that believed in high-power being afforded to citizens. This cluster centered on Communitarian viewpoints. Participant Cluster #2 stakeholders believed that shared power strategies were a better method to include all viewpoints in a siting controversy, and included TWIG, government, industry, and neutral citizens.

Initial inquiry into the Ramona controversy, based on the interviews, Q sort results, and card-sort rankings, suggested an initial hypothesis that institutional distrust and high perceived risk led TWIG to seek legal action to enjoin construction of the well. However, closer examination shows that citizen opposition may in fact been triggered by OSDH and ESI failing or refusing to legitimate the importance that citizens placed on cultural and community-based concerns.

Following is a synopsis of lessons learned from this analysis of policy gridlock and some insight on what could have been done differently to have avoided it.

Skeptical Citizens had legitimate concerns about the potential environmental health and safety risks posed by the proposed injection well. They believed that government had fiduciary responsibility to protect them and their families from these risks. Distrust led to a decline of deference and concomitant demand for participation to ensure that their concerns were properly addressed. When that failed to gain government cooperation, distrust grew and citizens resorted to the only recourses available: political protests and lawsuits.

Communitarians wanted to be involved to guarantee that their community-based concerns were addressed in the decision-making process. Communitarians did not view the siting proposal as especially hazardous, especially since it was to be located in the middle of a large ranch outside of town. However, the failure of government and industry to legitimate their cultural and community-based concerns led Communitarians to join Skeptical Citizens in their protest.

Technical and legal education was universally preferred, but for different reasons. Experts hoped that education would decrease participation, while Skeptical Citizens hoped for increased participation through education. The irony is this dilemma is that if trust is high, education is not necessary (citizens will be willing to defer to expert judgments); but if trust is low, education will not reduce opposition. As Focht (1996) explains, using his model of social trust and political legitimacy, stakeholder concerns are often not about facts that lend themselves to informative strategies for conflict resolution. Instead, locational disputes are typically about values for which technical and legal education is inapplicable.

In retrospect, the most important obstacle to successful siting of the well was the betrayal of public trust by OSDH and to a lesser extent by ESI. Gridlock could have been averted by an effort on the part of industry and the government to address and respond to citizens needs for input and participation. Had they talked to citizens about their reactions to the proposal before reaching decisions, trust may not have been lost. Instead, government's reluctance to acknowledge and legitimate citizens' concerns motivated doubt among Skeptical Citizens that government had the community's best interests at heart. This violation of fiduciary responsibility spurred opposition. Trust, based on shared values, may help gain the acceptance of Communitarians whereas trust based on demonstrated fiduciary responsibility and technical competency, may bring Skeptical Citizens closer to acceptance.

What should have happened? First, ESI, with input from OSDH, should have developed plans for a Class I hazardous waste injection well that were so technically rigorous that no legitimate health and safety issues could have been raised. Second, OSDH, working with the community as well as ESI, should have sponsored open and meaningful dialogues with the

citizens of Ramona on all aspects of the proposed well. This would have demonstrated a willingness on their part to involve all stakeholders from the beginning. When the OSDH and ESI put together the construction permit for the siting of the well without involving citizens, trust was lost and only negative participation by citizens was possible.

Most importantly, after trust was lost and citizens began to protest, no meaningful dialogue took place between the opponents and proponents of the siting. The possibility existed for the rehabilitation of trust, but inflammatory rhetoric by ESI in public meetings and the seeming indifference by OSDH precluded that possibility. What resulted, therefore, was a "comedy of errors" in which each successive breach of trust triggered stronger opposition, which was met with another round of actions that further eroded trust. Rapidly, the proposal degenerated into a hopeless spiral of frustration and distrust – leading, eventually, to GRIDLOCK.

# CHAPTER IX

## IMPLICATIONS

Unfortunately, there are no easy solutions to the problems associated with the siting of hazardous waste facilities. There are, however, a few simple recommendations that can be made to facilitate mutual understanding and increase the level of trust between stakeholders. These recommendations were based on an understanding of what occurred in the Ramona siting controversy as viewed by citizen, government, and industry stakeholders.

It should be noted that two limitations of this study prevented a richer understanding of the events that occurred, and the beliefs of the stakeholders most directly involved. The first limitation is the non-participation of ESI representatives. The stakeholders from ESI most directly involved in the siting controversy harbored feelings of deep resentment toward the citizenry of Ramona, and in particular TWIG members, sufficient enough to make their input impossible to obtain.

The second limitation is the time-period in which the study took place. The major events in the dispute occurred in the mid-1980s, with the study period being the fall of 1993. This difference was probably substantial enough to change, or at least soften the stances of some of the most active participants. In particular, the thoughts of government officials at the height of the controversy would have been interesting.

The research has shown that the gridlock in Ramona occurred due to three primary factors: distrust of government and industry by citizens; risk that was perceived to be too high; and a failure by government and industry to legitimate citizens' community and cultural values. The underlying problem contributing to all three factors, and also the solution, is communication.

Early, effective, and meaningful dialogue could have at several junctions in the Ramona controversy defused the undercurrent of citizen opposition to the siting of the injection well. As

the scene played out, however, the failure of government and industry to involve and communicate with citizens resulted in intractable gridlock. Citizens said time and again that if ESI and the OSDH had informed them early and asked for their input, instead of trying to sneak the siting through, that the opposition might not have been so fierce. Instead, ESI and the OSDH were seen as plotting to circumvent citizens' involvement and site the well regardless of citizens' concerns and preferences. This perceived behavior by ESI and the OSDH resulted in political and legal action by the citizens, and ultimately, to gridlock.

There were several points of agreement among the participants in the siting controversy. Clean technologies to reduce pollution, honest information providers, and easier permitting procedures were points on which all stakeholders agreed. The stakeholders also believed that corporate profits at the expense of the environment are unforgivable. The stakeholders also agreed that access to information is the most important criterion for sound environmental decision-making and that shared power participation strategies are preferred over unipolar strategies. These points of agreement should be viewed as building blocks for constructing consensus in future siting proposals.

In retrospect, the controversy in Ramona could have been avoided. That is not to say that the well would have been sited, but if ESI and the OSDH had sought to incorporate citizens' concerns into the decision-making process from the beginning, and thus had preserved the trust that the citizens had of these institutions, perhaps years of frustration and the effort expended by all participants could have been avoided. As Scoville (1989) points out, the inclusion of citizens in hazardous waste siting proposals is no guarantee of success, but the exclusion of citizens is practically a guarantee that the siting will fail. These are certainly words borne out of painful experience that any future developer that wishes to site a LULU should heed.

# BIBLIOGRAPHY


Armour, A. M. 1991. *The Siting of Locally Unwanted Land Uses: Towards a Cooperative Approach.* New York: Pergammon Press.

Ashford, N. 1988. "Science and Values in Regulatory Process," *Statistical Science* 3:377-83.

Bachrach, K. M., and A. J. Zautra. 1985. "Coping With a Community Stressor: The Threat of a Hazardous Waste Facility," *Journal of Health and Social Behavior* 26:127-41.

Bord, R. J., and R. E. O'Connor. 1992. "Determinants of Risk Perception of a Hazardous Waste Site," *Risk Analysis* 12:411-16.

Bosma, K. 1996. "Exploring NIMBY Gridlock: A Case Study of the Haystack Hazardous Waste Facility Siting Controversy." Master's Thesis, Oklahoma State University.

Brown, S. R. 1980. *Political Subjectivity: Applications of Q-Methodology in Political Science.* Westford, MA: Murray Printing Company.

Carlisle, T. Oct. 21, 1984. "Toxic Waste Dump Meeting Gathers 400," *The Sayre Journal* 51(84):1.

Carr, S. C. 1989. "The Use and Interpretation of the Q-Technique Factor Analysis." Presented at the annual meeting of the Southwest Educational Research Association. ERIC Document Reproduction Service no. ED 306 297.

Covello, V. T. 1983. "The Perception of Technological Risks: A Literature Review," *Technology Forecast and Social Change* 23:285-97.

Douglas, M., and A. Wildavsky. 1982. *Risk and Culture.* Berkeley: University of California Press.

Duffy, C. P. 1984. "State Hazardous Waste Facility Siting: Easing the Process Through Local Cooperation and Preemption," *Environmental Affairs* 11:755-804.

DuPont, R. L. September 7, 1981. "The Nuclear Power Phobia," *Business Week* 14-16.

Easton, D. 1965. *A Systems Analysis of Political Life.* New York: John Wiley and Sons, Incorporated.

Edelstein, M. 1988. *Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure.* Boulder, CO: Westview Press.

Fessenden-Raden, J., J. Filchen, and J. Heath. 1987. "Providing Risk Information in Communities: Factors Influencing What is Heard and Accepted," *Science Technology and Human Values* 12 (3,4):94-101.

Fischhoff, B., P. Slovic, and S. Lichtenstein. 1983. "The 'Public' vs the 'Experts': Perceived vs. Actual Disagreements About Risks of Nuclear Power," In *Analysis of Actual Versus Perceived Risk.* eds. J. Rodericks and R. Tardiff. NewYork: Plenum.

Focht, W. J. 1992. "The Role of Risk Judgment in Predicting Political Participation." Master of Art Thesis, Oklahoma State University, Stillwater, OK.

Focht, W. J. 1995a. "A Heuristic Inquiry into NIMBY Conflict: Exploring Solutions to Gridlock." Ph.D. Dissertation, Oklahoma State University, Stillwater, OK.

Focht, W. J. 1995b. "Identifying Stakeholder Preferences for Legitimated Siting Decision Criteria and Processes."

Focht, W. J. 1996. "Model of Social Trust and Political Legitimacy." Presented at the International Social Trust Conference, Bellingham, WA.

Folk, E. 1991. "Public Participation in the Superfund Cleanup Process," *Ecology Law Quarterly* 18:173-221.

Heiman, M. 1990. "From 'Not in My Backyard!' to 'Not in Anybody's Backyard!': Grassroots Challenge to Hazardous Waste Facility Siting," *Journal of American Planning Association* 359-362.

Hodges-Koppel, J. 1987. "State Roles in Siting Hazardous Waste Facilities," *Forum for Applied Research and Public Policy* 2(3):78-88.

Inhaber, H. 1992. "Of LULUs, NIMBYs and NIMTOOs," *The Public Interest* 107:52-64.

Kasperson, R. E. 1986. "Six Propositions on Public Participation and Their Relevance for Risk Communication," *Risk Analysis* 6:275-81.

Kasperson, R. E., D. Golding, and S. Tuler. 1992. "Social Distrust as a Factor in Siting Hazardous Facilities and Communicating Risks," *Journal of Social Issues* 48(4):161-87.

Kasperson, R. E., O. Renn, P. Slovic, H. S. Brown, J. Emel, R. Goble, J. X. Kasperson, and S. Ratick. 1988. "The Social Amplification of Risk: A Conceptual Framework," *Risk Analysis* 8:177-187.

Kraft, M. E., and B. B. Clary. 1991. "Citizen Participation and the NIMBY Syndrome: Public Response to Radioactive Waste Disposal," *Western Political Quarterly* 44(2):299-328.

Kraft, M. E. 1994. "Searching for Policy Success: Reinventing the Politics of Site Remediation," *Environmental Professional* 16:245-53.

Kunreuther, H., D. Easterling, W. Desvousges, and P. Slovic. 1990. "Public Attitudes Toward Siting a High Level Nuclear Waste Repository in Nevada," *Risk Analysis* 10(4):469-84.

Lake, R. W., ed. 1987. *Resolving Locational Conflict.* New Brunswick, NJ: Transaction Publishers, Rutgers, Center for Urban Policy Research.

Lawler, J. J., and W. J. Focht. 1989. "Risk Communication and Citizen Participation Under *Superfund*, Title III; Strategies for Reconciling Citizen Participation with Technical Opinion Under the Emergency Planning and Community Right-To-Know Act." Presented at the annual meeting of the Southwestern Political Science Association, Little Rock.

Lawler, J. J., W. J. Focht, and E. L. Hatley. 1992. "Citizen Participation in Hazardous Waste Controversies: NIMBY and Beyond," *National Social Science Perspectives Journal* 7:61-75.

Lipset, S. M., and W. Schneider. 1983. *The Confidence Gap.* New York: The Free Press.

Looney, Jeff. 1997. "In Search of the Olivefield: Case Study of A Unique Hazardous Waste Siting Controversy, Masters Thesis, Oklahoma State University, Stillwater, OK.

The Mangum Star-News. Jan. 12 & 19, 1984. *Affidavit of Publication.*

Matheny, A. R., and B. A. Williams. 1985. "Knowledge Vs. NIMBY: Assessing Florida's Strategy for Siting Hazardous Waste Disposal Facilities," *Policy Studies Journal* 14(1):70-80.

Mitchell, R. C., and R. T. Carson. 1986. "Property Rights, Protest, and the Siting of Hazardous Waste Facilities," *American Economic Review* 76:285-90.

Morell, D., and C. Magorian. 1982. *Siting Hazardous Waste Management Facilities.* Cambridge, MA: Ballinger.

O'Hare, M. 1977. "Not On My Block You Don't: Facility Siting and the Strategic Importance of Compensation," *Public Policy* 25:407-58.

O'Hare, M., L. Bacow, and D. Sanderson. 1983. *Facility Siting and Public Opposition.* New York: Van Nostrand Reinhold Company.

Oklahoma State Department of Health. September 1988. Fact Sheet: Environmental Solutions Inc.

Oklahoma State Supreme Court. July 14, 1989. Appeal From the District Court of Washington County, The Honorable Janice P. Dreiling, Presiding. Brief of State Health Department

Otway, H. 1987. "Risk Communication and Democracy," *Risk Analysis* 7:125-9.

Otway, H., and D. von Winterfeldt. 1982. "Beyond Acceptable Risk: On the Social Acceptability of Technologies," *Policy Sciences* 14:247-56.

Pijawka, K. D., and A. H. Mushkatel. 1991. "Symposium on the Development of Nuclear Waste Policy: Siting the High-Level Nuclear Waste Repository," *Policy Studies Review* 10(4):88-194.

Popper, F. J. 1981. "Siting LULUs," *Planning* 47(4).

Portney, K. E. 1986. "The Perception of Health Risk and Opposition to Hazardous Waste Treatment Facility Siting: Implications for Hazardous Waste Management and Policy from Survey Research." In *Papers and Proceedings of the Applied Geography Conferences* 9:114-23.

Portney, K. E. 1991. *Siting Hazardous Waste Treatment Facilities: The NIMBY Syndrome*. New York: Auburn House.

Rayner, S., and R. Cantor. 1987. "How Fair is Safe Enough? The Cultural Approach to Societal Technology Choice," *Risk Analysis* 7(1):3-9.

Rubin, N. 1986. *Probability Times Consequences: Rational and Scientific, or Just Imprudent?* Toronto: Pollution Probe.

Slovic, P. 1986. "Informing and Educating the Public About Risk," *Risk Analysis* 4(4):403-415.

Slovic, P. 1987. "Perception of Risk," *Science* 236:80-5.

Slovic, P. 1993. "Perceived Risk, Trust, and Democracy," *Risk Analysis* 13(6):675-82.

Slovic, P., B. Fischhoff, and S. Lichtenstein. 1984. "Perception and Acceptability of Risk from Energy Systems." In *Public Reaction to Nuclear Power: Are there Critical Masses?*" ed. W R. Freudenburg and E. Rosa. Boulder, CO: Westview.

Tversky, A., and D. Kahneman 1981. "The Framing of Decisions and the Psychology of Choice," *Science* 211:453-58.

Van Tubergen, G. N. 1975. *QUANL Users' Guide*. Lexington: Department of Communication, University of Kentucky.

Vlek, C., and P. Stallen. 1980. "Rational and Personal Aspects of Risk," *Acta Psychologica* 45:273-300.

Weinstein, N. 1984. "Why It Won't Happen To Me," *Health Psychology* 3:431-57.

Wildavsky, A., and K. Dake. 1990. "Theories of Risk Perception: Who Fears What and Why?" *Daedalus* 119(4):41-61.

Wynne, B. 1983. "Redefining the Issue of Risk and Public Acceptance: The Social Viability of Technology," *Futures* 15(1):13-32.

Wynne, B. 1992. *Risk and Social Learning: Reification to Engagement in Social Theories of Risk*. Ed. S. Krimsky and D Golding. Westport, CT: Praeger.

# APPENDIX A

## OPENING STATEMENT

DATE: _____ INTERVIEW#: _____

OPENING STATEMENT

Hello. My name is Robin Lacy I am a student at Oklahoma State University and am participating in a study of communities and environmental issues in the State of Oklahoma. As I said on the phone, this study is about people's involvement in their community in making decisions about environmental issues, such as the Ramona area. The purpose of our study is to gain a better understanding of what issues are important to people like yourself who get involved and how best to get those issues considered as part of early decisions. Here is a copy of a letter of introduction from the project director, Dr. James Lawler, at Oklahoma State University. Her is my student I.D. card.

Our interview will take about two hours. We are interested in your views. In order to allow me to make a better record of your answers to my questions, I would very much like to request your permission to allow me to record this conversation on this tape recorder. I will use this tape to double-check or fill in any blanks in my notes. We will never release the notes or tapes of our conversation to anyone outside of the research team. We are only interested in your responses as a citizen, not as a particular individual. We can assure you that all of your responses will be kept strictly confidential Here is a consent form that I would like you to take a moment to read. Do you have any questions about this study? If you have no questions, would you please sign the consent form?

# APPENDIX B

## INFORMED CONSENT STATEMENT

The purpose of this research is to examine citizens' thoughts and feelings about environmental decisions that may affect their communities. You were chosen to be a part of the study because of your participation in a citizens' group concerned with an environmental issue that concerned the community.

The first part of the study consists of interviews in which you will be asked to freely describe your thoughts and feelings about a recent community environmental decision situation. Next, you may be asked to sort sets of cards into groups. Finally, you may be asked to participate, at a later date, in a group exercise to identify criteria and citizen participation strategies to be used in making community environmental decisions.

It is important that you understand the following guidelines:

1. Your participation in this research is entirely voluntary, and you may stop at any time if you so choose.

2. The information we collect in this study will be held in strict confidence and all participants will remain anonymous to anyone outside of the research team.

_____

Signature of Interviewer

3. Our research focuses on how people, in general, express concerns about community environmental decisions. We are not interested in any one individual's responses. Rather, we look at information grouped across categories of people.

If you agree to participate in this research voluntarily and freely, please sign your name on the line below.

_____ _____

Signature of Research Participant Date

# APPENDIX C

## FINAL QUESTIONNAIRE

### DEMOGRAPHIC CHARACTERISTICS

1. How close did you live to the proposed ESI site during the time of the dispute? _____

2. Are you now an active member of any citizens' group or service organization (other than TWIG)?

   [ ] Yes
   [ ] No

3. How often do you participate in these organizations' activities?

   [ ] Never
   [ ] Seldom
   [ ] Occasionally
   [ ] Frequently
   [ ] Continuously

4. How old are you? _____

5. Gender?

   [ ] Male
   [ ] Female

6. What is the highest level of formal education that you have attained? _____

7. What was your major subject of study in school? _____

8. What is (or was, if retired) your primary occupation? _____

# APPENDIX D

## INITIAL QUESTIONNAIRE

### Relationships and Roles in the Ramona Situation

The following eight questions concern the situation that existed in the Ramona area.

1. What relationship did you have with the Ramona area at the time of the situation?

   [ ] I lived in the Ramona area.
   [ ] A member of my family lived in the Ramona area.
   [ ] I own property in the Ramona area but did not live there.
   [ ] My children went to school in the Ramona area.
   [ ] I visited a park in the Ramona area.
   [ ] Other (please specify).

2. From what sources did you get information about the situation? CHECK ALL THAT APPLY.

   [ ] News Media.
   [ ] Friends and neighbors.
   [ ] ESI.
   [ ] Environmental groups such as the National Toxics Campaign.
   [ ] Fellow workers at my place of employment.
   [ ] HEGI.
   [ ] US Environmental Protection Agency (EPA).
   [ ] Oklahoma State Department of Health.
   [ ] Local Government.
   [ ] Other (please specify).

3. Which of the sources listed in Question #2 did you most rely on and trust? LIST TOP 3 IN ORDER.

   Most Important: _____

   Second Most Important: _____ _____

   Third Most Important: _____

   Why? (Explain these choices).

4. Which of the sources listed in Question #2 did you least rely on and trust? LIST BOTTOM 3 IN ORDER.

   Least Important: _____

   Next to Least Important: _____ _____

   Third Least Important: _____

   Why? (Explain these choices).

5. How would you describe your participation in the situation at that time? CHECK ALL THAT APPLY.

[ ] I did not participate.
[ ] I signed a petition.
[ ] I contacted a government official.
[ ] I attended a meeting of concerned citizens.
[ ] I spoke at a meeting of concerned citizens.
[ ] I helped organize a meeting of concerned citizens.
[ ] I attended a government meeting or public hearing.
[ ] I testified at a government meeting or public hearing.
[ ] I participated in a rally or demonstration.
[ ] I helped organize a rally or demonstration.
[ ] Other (please specify).

6. How often did you participate?

[ ] Never
[ ] Seldom
[ ] Occasionally
[ ] Frequently
[ ] Continuously

7. At the time of the situation, what relationship, if any, did you have with the group known as the Toxic Waste Impact Group (TWIG)?

[ ] I did not know anything about TWIG and had no dealings with them.
[ ] I knew about TWIG but I had no dealings with them.
[ ] I attended at least one TWIG meeting or function sponsored by them but I never became an active supporter or member.
[ ] I was an active supporter or member of TWIG.
[ ] Other (please specify).

8 What relationship did you or a family member have with ESI before or during that period?

[ ] I had/family member had no employee or business relationship with ESI before or during the period of the situation.
[ ] I was/family member was an ESI employee during at least some of the period of the situation.
[ ] I was/family member was an ESI employee before the situation began but not during it.
[ ] I had/family member had a non-employee business relationship with ESI during at least some of the period of the situation.
[ ] I had/family member had a non-employee business relationship with ESI before the situation began but not during it.
[ ] Other (please specify).

# APPENDIX E

## OPEN-ENDED INTERVIEW SCRIPT

1. How long have you lived in the Ramona area?
2. Let's talk about the ESI siting situation. I am interested in your opinions and recollections of events that occurred then. I understand that you played an active role in the events that occurred then. Is that correct?
3. About when did you get involved? (ask for a date). For what reasons? Which of these is most important? Who was most responsible for influencing your involvement?
4. What were your concerns about the siting of a hazardous waste facility in your community? [ Add important concerns to the card deck used in the ranking and sorting task, if they are not already represented there. ]
5. At the time of siting situation there were some people who agreed with the siting proposals and some who disagreed. What things about the siting do you think most people agreed on?
6. I want to ask you now about how things have changed in the community since the time you were active in the situation. How would you say things have changed in your community economically since then? [ Gotten better, worse, less jobs, more jobs, etc. ]
7. How have things changed insofar as your sense of community; in other words, how you view you community as a place to live and what it means to you? [ People not as friendly as before, community has become stigmatized, neighborhood disruption, traditions abandoned or changed, etc. ] Has the sense of community become stronger?
8. Have there been any other proposals to site a hazardous waste facility in your county? If so, did you feel more or less able to effectively respond to the proposal?
9. Now, I want to ask you whether or not the siting situation could have been handled differently. I am interested if your views of what things could have been done in dealing with the siting to better serve all members of your community. Let's first talk about government's dealings with the siting. What things did EPA, OSDH, and local government officials do right in presenting the proposal to the community? What do you believe they might have done wrong?
10. Now, let's talks about industry. What things did ESI officials do right in presenting the proposal to the community? What do you believe they might have done wrong? What do you believe ESI could have done in order to best serve all members of the community?
11. Finally, let's talk about the citizens of your community. What things did citizens do right in dealing with the siting proposal? What do you believe might have been done wrong? Is there anything the citizens could have done to act in the best interest of all community members?
12. Is there anything else that you would like to tell me about your feelings, concerns or suggestions about the Ramona situation or about hazardous waste sitings in general that we have not covered so far?
13. Before moving on to the next part of this interview, I have one more question. Is there anyone else that I should talk to about the issues that we have discussed?

    Name? _____ Telephone? _____

    Can you recommend a good time to contact him/her?

    Why do you think this person would be important for me to talk to?

    Would you mind if I mentioned your name in my conversation with him/her?

# APPENDIX F

## CARD DECK #1

## DECISION CRITERIA CARD INSTRUMENT

### CARD #1:
### Economic Impact on the Community

Community environmental cleanup decisions can affect the economic health of the community. Economic benefits could include: creation of jobs; increase in tax revenue; compensation in the form of cash payments; and improvements to parks, libraries, schools, or hospitals. Economic costs could include: loss of tourism; change in land use; traffic disruption; and increases in demand for community services.

I believe that economic impact on the community should be important in making community environmental cleanup decisions.

### CARD #2:
### Economic Impact on the Company

Private companies want to make a profit to stay in business. Ability to make a profit can be affected by various costs, including: costs of environmental remediation; compliance with regulations; construction and operation; legal liability; compensation payments to the community; and limits on how the company may operate.

I believe that a company's ability to make a profit should be important in making community environmental cleanup decisions.

### CARD #3:
### Scientific Risk Estimates

Scientific experts in government and industry claim that they can scientifically measure risk to human health and the environment. To estimate the risk that may result from a harmful event, they multiply the seriousness of the potential harm by how likely it is that the harm may happen.

I believe that scientific risk assessments should be important in making community environmental cleanup decisions.

### CARD #4:
### Personal Judgements of Risk

People often make judgments about whether to accept or avoid risks. Factors that may be important in judging environmental risk include: personal familiarity and understanding of the risk involved; whether the risks are voluntary and controllable; whether experts agree on the amount of risk; whether children or future generations are affected; and whether the risks are reversible or have delayed effects.

I believe that citizens' judgments of risk should be important in making community environmental

cleanup decisions.

### CARD #5:
### Access to Information

The ability to obtain relevant information easily in a timely manner and in an understandable way can help people make informed decisions. This is especially true if the decision involves complex issues where it is important to consider all of the facts.

I believe that assurance of citizens' timely access to relevant information should be important in making community environmental cleanup decisions.

### CARD #6:
### Personal Views Toward Technology

Some people claim that continuing advances in technology are important to improving quality of life. Others question whether reliance on technology is always a good thing. For example, some people believe that some technologies create more harm than good and should not be used.

I believe that citizens' views toward a technology should be important in making community environmental cleanup decisions.

### CARD #7:
### Fairness

Even though a decision may produce a community benefit when all costs and benefits are added u, some citizens or neighborhoods may experience more harm than good and other citizens or neighborhoods may experience more good than harm. Some people may consider that an unequal distribution of costs, benefits, and risks in a community is unfair.

I believe that the fairness of the distribution of benefits, costs, and risks should be important in making community environmental cleanup decisions.

### CARD #8:
### Trust in Government and Industry

Trust has different meanings. For example, acting in the community's best interests (being a good neighbor), credibility (truthfulness, believability), and openness (accessibility, forthrightness), may each be important to judgments about whether a person or organization is trustworthy.

I believe that citizens' level of trust in government and industry should be important in making community environmental cleanup decisions.

### CARD #9:
### Understanding Local Culture

Communities vary in their traditions, customs, values, attitudes, and identities. Decisions that can affect a community may require that decision-makers be knowledgeable about the local culture. Since different communities and regions of the nation have different cultures, it is not always easy to know what local values may be.

I believe that an adequate consideration of the local community's culture and values should be important in making community environmental cleanup decisions.

**CARD #10:**
**Community Disruption**

Environmental cleanup activities may disrupt the normal flow of a community. For example, rerouting of traffic, separation of one neighborhood from another, and loss of reputation may cause a decline in a sense of community and an interruption of long-held traditions.

I believe that consideration of the potential for community disruption should be important in making community environmental cleanup decisions.

**CARD #11:**
**Citizen Involvement**

Some citizens choose to become actively involved in decisions that affect their community or them personally. The amount of involvement not only depends on their willingness and ability to participate, but also on the opportunities that the decision process offers for participation.

I believe that the provision of adequate opportunities for citizen involvement should be important in making community environmental cleanup decisions.

**CARD #12:**
**Technical and Legal Education**

Decisions about the cleanup of community environmental contamination involve various technical and legal issues. Technical issues may include the proper measurement of long term health risks, whether a technology will operate as it was designed, and what the odds are of a plant upset or spill that would result in a major environmental threat to the community. Legal issues may include how to understand complicated laws and regulations and what procedures apply in the decision making process. Many of these issues are difficult to understand without technical and legal training.

I believe that assurances of adequate training in relevant technical and legal areas should be important in making community environmental cleanup decisions.

**CARD #13:**
**Alternative Technologies**

It used to be commonplace for waste to be disposed of by dumping it into landfills and open pits. Recently, there have been efforts to find alternatives to land disposal. One approach is to develop new manufacturing and processing techniques that do not generate toxic waste, for example, by recycling wastes back into the process or by the use of less dangerous raw materials. For those toxic wastes that cannot be eliminated, new and innovative waste treatment methods are being developed that can convert them into non-toxic forms without creating emissions or discharges to the environment.

I believe that preference for alternative technologies such as recycling and non-emitting waste treatment should be important in making community environmental cleanup decisions.

# APPENDIX G

## DECISION CRITERIA RANKING RESULTS

| CRITERION | PARTICIPANT | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 | R16 | R17 |
| Economic Impact on the Community | 10 | 5 | 11 | 7 | 7 | 12 | 7 | 2 | 9 | 4 | 10 | 12 | 3 | 11 | 11 | 1 | 10 |
| Economic Impact on the Company | 11 | 13 | 13 | 9 | 13 | 7 | 8 | 8 | 8 | 11 | 13 | 13 | 13 | 10 | 13 | 2 | 13 |
| Scientific Risk Estimates | 9 | 6 | 9 | 2 | 4 | 6 | 12 | 13 | 13 | 12 | 5 | 11 | 8 | 5 | 7 | 8 | 6 |
| Personal Judgments of Risk | 2 | 7 | 5 | 12 | 11 | 4 | 2 | 11 | 4 | 10 | 4 | 8 | 7 | 6 | 9 | 6 | 5 |
| Access to Information | 4 | 1 | 2 | 3 | 2 | 9 | 1 | 1 | 3 | 2 | 2 | 6 | 2 | 2 | 2 | 4 | 1 |
| Personal Views Toward Technology | 1 | 8 | 7 | 13 | 9 | 11 | 5 | 10 | 10 | 9 | 6 | 9 | 9 | 9 | 8 | 7 | 4 |
| Fairness | 8 | 11 | 12 | 10 | 10 | 8 | 11 | 5 | 11 | 6 | 11 | 3 | 5 | 7 | 5 | 5 | 9 |
| Trust in Government and Industry | 6 | 4 | 6 | 11 | 1 | 3 | 13 | 6 | 5 | 7 | 3 | 5 | 12 | 1 | 10 | 9 | 8 |
| Understanding Local Culture | 5 | 3 | 10 | 4 | 5 | 10 | 10 | 12 | 6 | 5 | 9 | 7 | 6 | 12 | 4 | 12 | 12 |
| Community Disruption | 13 | 12 | 8 | 6 | 12 | 13 | 9 | 3 | 12 | 8 | 12 | 2 | 4 | 13 | 3 | 13 | 11 |
| Citizen Involvement | 7 | 2 | 1 | 5 | 6 | 5 | 3 | 4 | 1 | 1 | 8 | 1 | 1 | 8 | 1 | 11 | 7 |
| Technical and Legal Education | 12 | 10 | 3 | 8 | 8 | 2 | 4 | 9 | 7 | 13 | 1 | 10 | 10 | 4 | 6 | 10 | 2 |
| Alternative Technologies | 3 | 9 | 4 | 1 | 3 | 1 | 6 | 7 | 2 | 3 | 7 | 4 | 11 | 3 | 12 | 3 | 3 |

# APPENDIX H

## CARD DECK #2

## CITIZEN PARTICIPATION STRATEGIES CARD INSTRUMENT

### CARD #1:
### Preemption

The expertise of government officials is relied on to make cleanup decisions. The public is effectively excluded from participating directly in the decision making process.

I believe that community environmental cleanup decisions should be made by experts in government and industry.

### CARD #2:
### Public Comment and Hearing

The government makes a tentative cleanup decision, announces it to the public, considers comments received from the public, and then makes a final decision.

I believe that community environmental cleanup decisions should be made by the government, but only after the public has had a chance to comment on the proposals.

### CARD #3:
### Consultation

Government conducts public meetings, distributes information, conducts surveys, and asks for comments throughout the entire cleanup decision process. Government considers all public comments before making cleanup decisions.

I believe that community environmental cleanup decisions should be made by the government, but the public should be allowed to voice its concerns throughout the entire decision making process.

### CARD #4:
### Non-Binding Negotiation

Company officials are required to enter into preliminary negotiation with citizen representatives of the community. Any agreement that may be reached will be delivered to government decision makers for their consideration. However, the final cleanup decision will be made by the government. Its decision may or may not include any or all of the agreement.

I believe that the citizens of a community and the company should be allowed to try to reach an agreement before the government makes community environmental cleanup decisions.

**CARD #5:**
**Third Party Mediation**

A neutral third party attends all meetings between citizen representatives of the community and the company concerning the environmental cleanup of the community. The mediator attempts to help the parties to reach an agreement. This agreement is then forwarded to the government for their consideration; however, the government is free to include none, part, or all of the agreement in its decision.

I believe that a mediated agreement between the community and the company should be reached before the government makes community environmental cleanup decisions; however, the government may pick and choose which, if any, parts of the agreement to include in its decisions.

**CARD #6:**
**Binding Arbitration**

A fixed period of time (e.g., one year) is provided to allow community and industry representatives to try to reach a voluntary agreement on how environmental cleanup of a community would be accomplished. If no agreement is reached during this time, an experienced arbitrator will consider the positions of both parties and develop a document that binds both parties. Industry is required to pay for, but the citizens select, the arbitrator. Subject to verification of legality, the government is required to attach the agreement to its permit and enforce it as part of its oversight duties.

I believe that an independent arbitrator should be brought in to resolve any disputes between citizens and industry concerning community environmental cleanups and that the government should be required to enforce the arbitrator's decisions.

**CARD #7:**
**Oversight Board**

An oversight board composed of an equal number of citizens (selected by a consensus of public interest groups in the community), industry representatives, and government representatives provides continuous control of the entire decision making process. All parties agree to abide by the oversight board's decisions.

I believe that an oversight board, composed of equal numbers of representatives from government, industry, and self-selected citizens, should be used to oversee the entire decision making process concerning community environmental cleanups.

**CARD #8:**
**Referendum**

Any community environmental cleanup proposal must be approved by a vote of the majority of the community before it can take effect.

I believe that community environmental cleanup proposals should be approved by a majority vote of the citizens of a community before they can take effect.

**CARD #9:**
**Citizen Control**

The community itself controls the community environmental cleanup decision process. A citizens' committee, whose representatives are chosen by members of various environmental, community action, neighborhood development, and other citizens' groups, make all decisions. The government and industry are bound by the decisions of the committee and must provide whatever funds are necessary to comply with the decisions of the committee.

I believe that community environmental cleanup decisions should be made solely by the citizens of a community and that industry and government should be bound by those decisions.

# APPENDIX I

## CITIZEN PARTICIPATION STRATEGIES RANKING RESULTS

| STRATEGY | PARTICIPANT | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 | R16 | R17 |
| Preemption | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 6 | 9 | 9 | 9 | 8 | 7 | 2 |
| Public Comment and Hearing | 1 | 3 | 6 | 8 | 8 | 1 | 7 | 2 | 6 | 7 | 2 | 2 | 3 | 8 | 5 | 8 | 4 |
| Consultation | 2 | 2 | 2 | 6 | 7 | 2 | 4 | 1 | 3 | 4 | 3 | 1 | 7 | 1 | 1 | 1 | 1 |
| Non-Binding Negotiation | 7 | 5 | 7 | 7 | 3 | 4 | 8 | 5 | 5 | 8 | 4 | 7 | 6 | 4 | 9 | 5 | 6 |
| Third Party Mediation | 8 | 4 | 8 | 5 | 5 | 6 | 3 | 4 | 4 | 6 | 5 | 5 | 4 | 5 | 2 | 4 | 3 |
| Binding Arbitration | 3 | 7 | 5 | 4 | 6 | 5 | 2 | 6 | 7 | 5 | 1 | 6 | 8 | 2 | 7 | 2 | 7 |
| Oversight Board | 5 | 1 | 4 | 3 | 4 | 8 | 1 | 3 | 2 | 3 | 7 | 4 | 5 | 3 | 3 | 3 | 5 |
| Referendum | 6 | 6 | 1 | 1 | 1 | 3 | 6 | 7 | 1 | 1 | 8 | 3 | 1 | 7 | 6 | 9 | 8 |
| Citizen Control | 4 | 8 | 3 | 2 | 2 | 7 | 5 | 8 | 8 | 2 | 9 | 8 | 2 | 6 | 4 | 6 | 9 |

# APPENDIX J

## Q SORT CONCOURSE

1. Waste facility siting means economic growth and prosperity for the community.
2. Offering cash payments to a community is the same as a bribe.
3. When jobs are scarce, an increase in employment is good even if there is resulting pollution.
4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed.
5. Industry works with communities to maintain a good public image.
6. Scientific risk assessment should be the major consideration in siting decisions.
7. Citizens need to control which risks they have to put up with.
8. We should not take any chances with the environment.
9. I tolerate risk as a fact of life, but I don't like it.
10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem.
11. The world would be a better place to live if we could go back to the good old days.
12. It is better to put facilities in communities with high unemployment; the people there need the jobs.
13. The people who benefit the most from a waste facility are not the ones who bear the risk.
14. Government and industry know what they are doing; they are the experts.
15. Cost effectiveness is more important to industry and government than environmental issues.
16. The government adequately enforces environmental laws to protect human health and safety.
17. Industry usually complies with environmental laws even when it costs them money.
18. Environmental laws are full of loopholes for industry advantage.
19. The character of a community changes after a waste facility is located there.
20. Allowing a waste facility to locate in a community divides a community.
21. Waste facilities give a community a bad reputation.
22. Citizens should be involved in every step of a siting decision.
23. Citizens have ample opportunity to be involved in siting decisions in their community.
24. Industry, government, and the public should decide together what level of pollution should be allowed.
25. All information should be shared in easily understood language as soon as it is available.
26. Who provides information makes a difference to me; the person must be honest.
27. It is really hard to know if decision-makers have the same values as I do.
28. It is impossible to know whether or not a process is really safe without adequate technical

education.

29. If the public were more familiar with the operation of a waste facility, they would be more willing to consider it.
30. Citizens should have their own experts.
31. We would all be better off if the legal procedures were easier to follow.
32. Government shouldn't be trusted in making siting decisions.
33. Government uses citizen opinion against them.
34. Economic special interests have too much influence in siting decisions.
35. The people living in a community know best what is good for them.
36. Citizens should initially oppose all proposals for siting by industry.
37. It is better to be active today than to be radioactive tomorrow.
38. If you have enough money, you can get away with polluting.
39. Conflict in decision making is necessary and healthy.
40. Consensus is impossible when activists become involved in environmental decisions.
41. The chief function of government is to support the economy.
42. Just being physically present in situations where environmental decisions are made is not enough.
43. The siting process is unfair because the results provide greater risks to the people who are ethnically different or poor.
44. Environmental radicals are necessary to bring balance to the issues.
45. There are clean technologies available that must be used now to reduce pollution.
46. Government and industry skew their risk estimates to suit their own purposes.
47. Industry must be required to recycle, reduce wastes, and use safer techniques and raw materials.

# APPENDIX K

**OKLAHOMA STATE UNIVERSITY**
**INSTITUTIONAL REVIEW BOARD**
**FOR HUMAN SUBJECTS RESEARCH**

**Date:** 04-12-93 **IRB#:** AS-93-064

**Proposal Title:** PRAGMATIC APPROACHES TO RESOLVING GRIDLOCK IN THE SITING AND REMEDIATION OF HAZARDOUS AND RADIOACTIVE WASTE FACILITIES

**Principal Investigator(s):** Mike Hirlinger, Keith Willet, Jim Lawler

**Reviewed and Processed as:** Exempt

**Approval Status Recommended by Reviewer(s):** Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

---

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: Marcia L. Tilley Date: April 23, 1993

Chair of Institutional Review Board

# VITA

Robin H. Lacy, Jr.
Candidate for the Degree of
Master of Science

Thesis: NIMBY in Ramona: A Case Study of a Hazardous Waste Siting Controversy

Major Field: Environmental Science

Biographical:

Personal Data:

Born in McAlester, Oklahoma on August 30, 1963, son of Robin H. Sr. and Betty L. Lacy. Married to Sheryl L. Arthur on December 10, 1994. One son, Hudson Arthur born April 5, 1996.

Education:

Graduated from C.E. Donart High School, Stillwater, Oklahoma in 1981; Bachelor of Science in Marketing from Oklahoma State University in December 1985; Bachelor of Science in Management from Oklahoma State University in December 1985; Completed requirements for the Master of Science degree with a major in Environmental Science at Oklahoma State University in December 1997.

Experience:

Manager, Bates Bros., Stillwater, Oklahoma 1985-1991; Aviation Officer Candidate, United States Marine Corps, Quantico, Virginia 1991-1992; Environmental Scientist/Project Manager, C.H. Guernsey & Company, Oklahoma City, Oklahoma, 1993-Present.