THE EFFECTIVENESS OF PUBLIC PARTICIPATION:

PUBLIC ENGAGEMENT IN THE RE-PERMITTING

OF A SMELTER IN EL PASO, TEXAS

THESIS

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

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Public participation has become a popular focus of current policymaking. To legitimize their policy decisions government agencies often scramble to somehow involve the public before implementation. Published literature however tells us that not all attempts at public participation are effective. Based upon a review of previous research, this thesis develops a tool to evaluate the effectiveness of public participation and applies this to an evaluation of efforts by three government agencies at three scales – the Environmental Protection Agency (EPA), the Texas Commission for Environmental Quality (TCEQ), and the City of El Paso. The evaluation analyzes the attempts at public

participation in the process of re-permitting the American Smelting and Refining Company (ASARCO) smelter located west of downtown El Paso, Texas.

Using four prescribed criteria, this evaluation creates an assessment that combines digital spatial data, government documents, reports, websites, and local newspaper articles. The evaluation included measures of the strength of an agency's ability: to establish legitimacy with the public, to include the use of value-based testimony in the decision-making process, to achieve decision making transparency, and most importantly, to involve those who are most affected by the hazard.

CHAPTER 1

INTRODUCTION TO THE STUDY

Public participation has become a popular focus of current policymaking. To legitimize their policy decisions, government agencies often scramble to somehow involve the public before implementation. Published literature however tells us that not all attempts at public participation are effective (Rosener 1978, Rosener 1982, Thomas 1990, Eden 1996, Beierle 1998, Rowe and Frewer 2000, Webler et al. 2001).

Problematically, no single tool exists by which the effectiveness of public participation may be measured (Rosener 1978 and 1982, Fiorino 1992). Based upon a review of previous research, this paper develops a conceptual framework for evaluating the effectiveness of public participation and applies it to an evaluation of efforts by three government agencies at three scales – the Environmental Protection Agency (EPA), the Texas Commission for Environmental Quality (TCEQ), and the City of El Paso. The evaluation analyzes the attempts at public participation in the process of re-permitting the American Smelting and Refining Company (Asarco) smelter located west of downtown El Paso, Texas.

This research addresses the following question:

- How do government agencies meet or not meet the criteria for employing public participation as established by the literature?

Using the criteria established by the literature, this evaluation created an assessment using a mixed-methods case-study approach analyzing the utilization of public participation in the decision to re-permit the Asarco smelter in El Paso, Texas. This study combines both quantitative and qualitative analysis of digital spatial data, government documents and reports, websites, local newspaper articles, and direct observation to understand how public participation has been used among three agencies at the three levels of government: The US Environmental Protection Agency (EPA) at the federal level, the Texas Commission on Environmental Quality (TCEQ) at the state level, and the City of El Paso at the local level.

This research will add to the sparse literature evaluating institutional attempts at public participation. In an EPA manual published in 2001, the agency conceded that very little evaluation of their public participation techniques had been conducted. The report states that "it would be valuable to evaluate a greater number of EPA initiatives to work with the public" because it "isn't always...clear how effective EPA's initiatives have been" (U.S. EPA 2001, p22). One major question the manual felt that could be answered through research was "What major factors contributed to the success or shortcomings of the stakeholder involvement/public participation effort?" (U.S. EPA 2001, p22). Former El Paso mayor Joe Wardy (2003-2005) also remarked upon the importance of public participation in the decision-making process in a letter to the editor appearing in the *El Paso Times* in 2004 (*El Paso Times* 26 July 2004). Therefore, this thesis will examine how well the concerned governmental agencies involved and engaged the public in the decision to re-permit the Asarco smelter.

The implications of this study, first, include developing a general framework by which other case studies may be evaluated to determine the effectiveness of public participation in specific instances. Second, this study also has specific implications for the case under review. This analysis will determine how well concerned agencies work with and relate to the public regarding environmental decision-making. It will attempt to answer the above stated EPA questions for all three levels of government.

Background

The El Paso, Texas metroplex is often referred to as the Paso del Norte (Gateway to the North), referring to the economic and population geographic connotations, particularly for the many immigrants crossing its bridges and for the many items manufactured across the border in Cuidad Juárez. The Paso del Norte region has long held important economic significance, a concept exemplified by the Kansas City Consolidated Smelting and Refining Company's (later becoming the American Smelting and Refining Company – Asarco) decision to locate a copper smelter on the banks of the Rio Grande in 1887 to be as close as possible to the mines of interior Mexico. The century-long legacy of this factory remains despite its closure in 1999 due to decreasing metal prices on the world market (Perales 2003).

The now-vacant facility and its towering smokestacks that sit on the banks of the Rio Grande are at the forefront of El Paso's skyline as well as the local political debate due to the company's entanglement in environmental controversy concerning air pollution and soil and water contamination. This is not the first time the smelter has been shrouded in environmental controversy however. In 1973, the Asarco-operated company town, aptly named Smeltertown, was forced to shut down due to environmental health

concerns. Smeltertown was located adjacent to the smelter, and in the late 1960s and early 1970s researchers discovered extremely high concentrations of lead in the soil of Smeltertown (Perales 2003). In conjunction with the contamination of the soil surrounding the smelter, researchers discovered that children residing in Smeltertown had extremely high blood-lead levels - fifty-three percent of the tested children exhibited levels over 40 μg per 100 milliliters (Landrigan et al. 1975). Today's threshold for blood-lead levels for children is 10 μg per 100 milliliters.

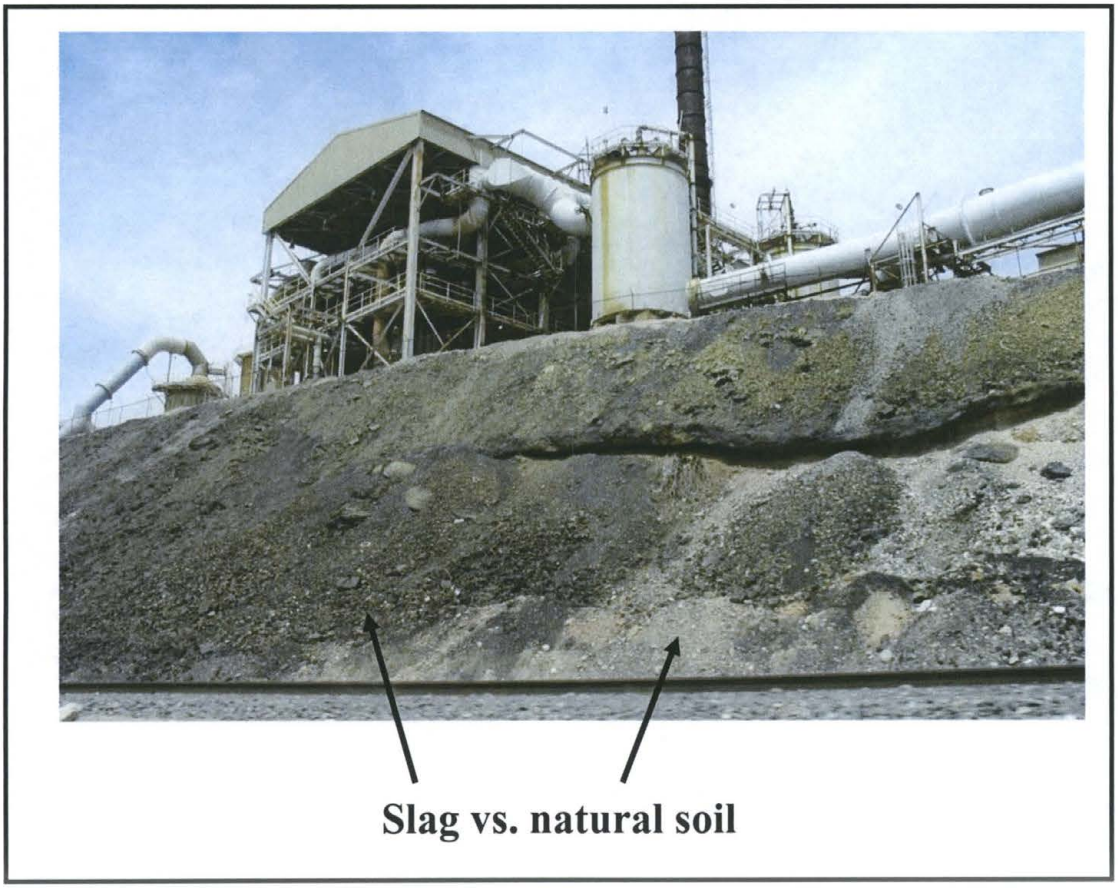
Elevated blood-lead levels among El Paso's children continue to plague the smelter's record. Though the smelter ceased processing lead in 1985 and zinc, cadmium, and antimony shortly thereafter, it continued to operate as a copper smelter until its closure producing 110,000 tons of anode copper every year (U.S. EPA 2003). The cessation of lead production however, did not mean the end of lead contamination as the smelter continued to emit lead into the atmosphere through airborne emissions in the processing of copper (U.S. EPA 2003). While significantly lower quantities were emitted than previously, it is worth noting that lead continues to contaminate the soil long after its emissions can no longer be detected in the air (American Academy of Pediatrics 2003). In June 2003 the EPA released findings on the source of the high levels of lead and arsenic found in El Paso's soils. Rebuking Asarco's claims that the metals occur naturally in the soil, the EPA stated that "nothing in the geological record...could account for the elevated metal concentrations...found in the residential soils" within a three-mile radius of the facility (U.S. EPA 2003, p 9). The report attributed fifty-three percent of the lead and eighty-five percent of the arsenic found in the residential soils of El Paso to the operations of the smelter (U.S. EPA 2003). Figure 1 demonstrates the color of the slag

produced by the smelter versus the natural color of the El Paso soil. Asarco denies responsibility for the contamination, placing the blame on third-party companies adjacent to the smelter who process their slag, lead-based paints, and pesticides (Q&A: Setting the Record Straight 2004, Washington-Valdez and Ortiz-Uribe 21 July 2004). Less than a year later, in 2004, the Agency for Toxic Substances and Disease Registry (ATSDR), in conjunction with the Texas Department of Health (TDH), found that the high soil-lead levels contributed significantly to children's elevated blood-lead levels in the El Paso area. Placing the blame on the smelter, they discovered a distance-decay relationship: "as the distance from the smelter increases, the odds of a child having an elevated blood lead level decreases" (Texas Department of Health 2004, p 8).

In 2002, as metal prices began to rise, the company expressed interest in reopening the facility. In order to re-open the facility Asarco needed to apply to have an old air permit issued in 1992 renewed by the TCEQ. They did so on March 28, 2002 (Washington-Valdez 17 March 2006). The significant environmental problems associated with the plant and political pressure, kept the TCEQ from rubber-stamping the permit, as it was highly controversial within the El Paso community. However, the Asarco El Paso case represents the first time a permit renewal has been contested in the state of Texas; therefore, the TCEQ has no process by which to judge this case.

While the city council members, citizens' groups such as the Sierra Club, and local neighborhood associations demanded a public hearing period before any decisions were made, Asarco, citing the State of Texas' Health and Safety Code, contended that such a process would be illegal. TCEQ's Office of the Public Interest Council on the other hand maintained that such a process was legal, citing the Texas Water Code.

Figure 1. Photograph of the Asarco smelter facility in El Paso, Texas demonstrating the difference between the natural soil color and the color of the slag produced by the smelter (Photo by author May 2005)



In March of 2005 an Austin judge ruled the public hearing to be legal, and set a date for the hearing to take place under the direction of two Administrative Legal Judges (ALJs) for the State of Texas (Washington-Valdez 12 March 2005, Washington-Valdez 25 July 2005). The hearings took place July 11-24, 2005 in El Paso, Texas. On October 27, 2005 the two ALJs, based on the hearings, recommended that TCEQ not renew Asarco's air permit.

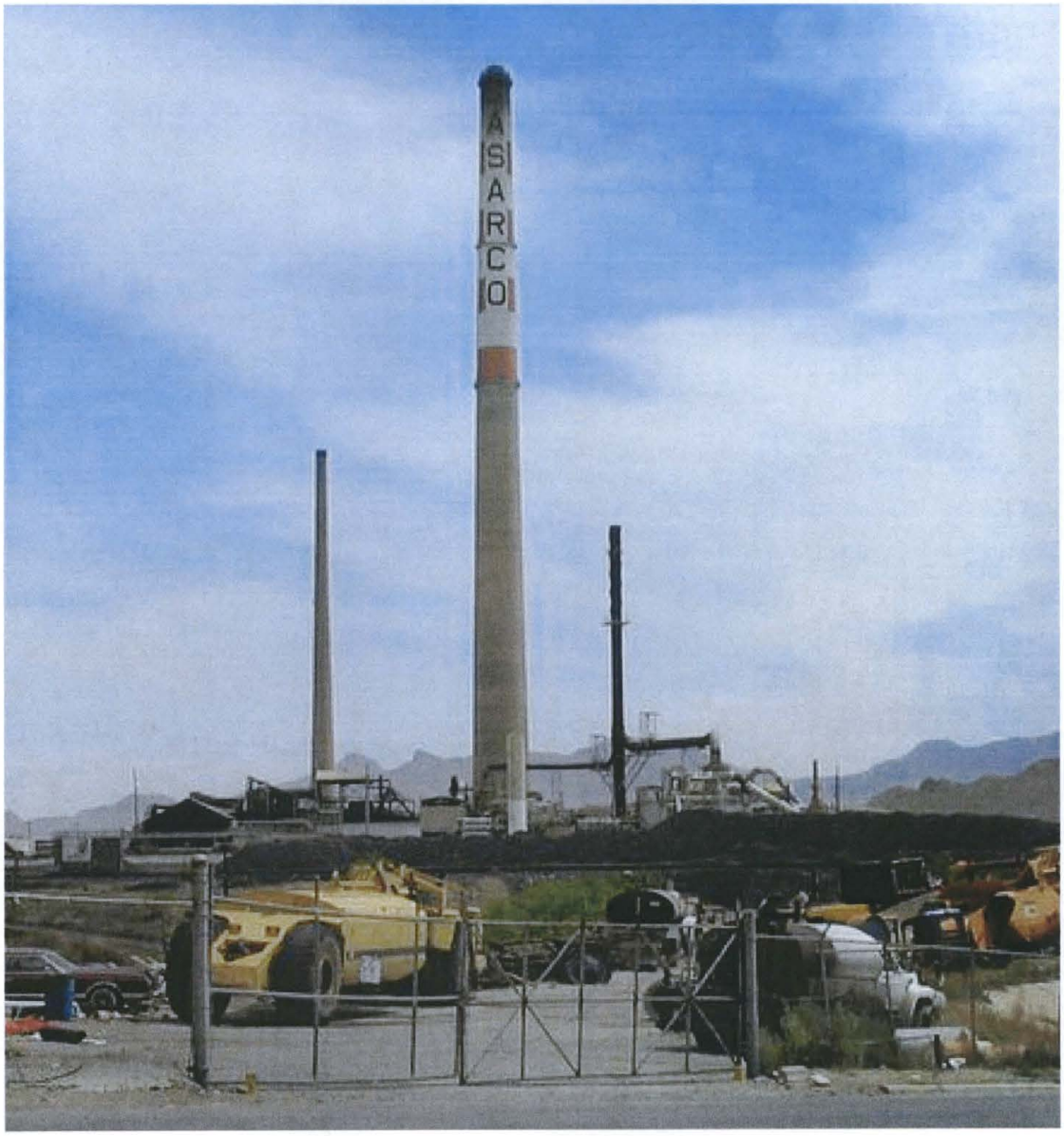
On February 8, 2006, at TCEQ headquarters in Austin, Texas, TCEQ commissioners were to consider the ALJs' recommendation regarding the permit and issue the final decision; however, the three commissioners ruled not to make the decision for another seven months in front of more than 150 expectant El Paso residents, setting off a barrage of criticism and outcry from the public. As of yet, no decision has been issued from the TCEQ commissioners.

As this is an important case not only for the city of El Paso, but also for the state of Texas at large, it is important to evaluate how effective were the EPA, the TCEQ, and the City of El Paso at involving and informing the public throughout the process? What are the necessary criteria by which the above question may be answered? The following chapter will give an overview of the pertinent literature important to evaluating the data and answering the research question.

Figure 2. Map of the study area – El Paso in the State of Texas

Figure 3. USGS Aerial Photo of El Paso, Texas, Asarco smelter located inside black box (USGS 1991)

Figure 4. The Asarco smelter in El Paso, Texas (photo by author May 2005)



CHAPTER 2

CONCEPTUAL FRAMEWORK FOR PUBLIC PARTICIPATION

Public Participation in Environmental Decision Making

With the emergence of the environmental movement in the late 1960s and early 1970s and the establishment of governmental regulatory agencies such as the EPA, the inclusion of public participation has become an important aspect of environmental decision-making (Rosener 1982). Public participation became important as agencies desired to include information from many different viewpoints, integrating citizens into the decision-making process (Stern and Feinberg 1996).

In attempting to construct a framework from which one can evaluate the use of public participation, it is important to have an understanding of what constitutes public participation. Renn, Webler, and Wiedemann (1995) define public participation as "forums for exchange that are organized for the purpose of facilitating communication between government, citizens, stakeholders and interest groups, and businesses." A wealth of research exists comparing different methods of public participation; however, there are few methods for evaluating the implementation of public participation. Therefore, this literature review will attempt to establish a framework by which public participation may be evaluated. In reviewing the existing literature on public

participation in environmental-decision making, I have pieced together an overview of the characteristics of effective public participation.

Rosener postulated that no consensus existed regarding a manner in which to evaluate the effectiveness of public participation in public policy making, especially environmental policy making (Rosener 1978). Since that time, researchers have moved from a theoretical approach to evaluating public participation to a practical application approach that works to meet the theoretical goals set forth by Mazmanian and Rosener (Mazmanian 1976, Rosener 1978 and 1982). However, Beierle and Cayford (2002) reported the need for a better understanding of what attributes are important for effective uses of public participation in environmental decision-making.

Characteristics of effective public participation

Four key components of effective public participation emerged from the literature on evaluation of public participation efforts: inclusion of those most vulnerable to the hazard, inclusion of value-based (non-expert) testimony in the process, ability to establish legitimacy with the public, and governmental transparency. Each key component is fully explained and supported by a review of the literature in the following sections.

Inclusion of those most vulnerable to the hazard

Most research pertaining to public participation cites the need for involvement of those most vulnerable to the environmental hazard as one of the most important and necessary components of any implementation of public participation (Fiorino 1990, Thomas 1990, Laird 1993, Beierle 1998, Rowe and Frewer 2000). The National

Research Council states that public participation efforts should strive to include all stakeholders from "diverse geographic areas, ethnic, or economic groups" in an effort to represent everyone affected by a hazard (Stern and Feinberg 1996, p87).

Concerned government agencies involved in this study have even expressed the importance of involving all stakeholders most vulnerable to the hazard. In February of 2000, the National Environmental Justice Advisory Council (NEJAC) to the EPA developed *The Model Plan for Public Participation* wherein they explicitly state several times the importance of involving affected communities and stakeholders (U.S. EPA 2000).

In the discussion of the integration and inclusion of those most vulnerable to the hazard in question, it is important to explicitly identify the vulnerable population. In this case, the smelter presents a risk to children under the age of six.

Research regarding the risks and hazards faced by children emphasize the high social and physical vulnerabilities of children, not only in regards to their developing minds, but also in regards to their developing bodies (American Academy of Pediatrics 2003, Hedlund 2004). Only recently have researchers begun to realize that environmental problems affect children's health at much higher rates than adults' health (American Academy of Pediatrics 2003). Landrigan and Carlson explain the problem this way: "Pound for pound of body weight, children drink more water, eat more food, and breathe more air than adults," making them much more susceptible to environmental hazards (Landrigan and Carlson 1995, p36).

Children also exhibit different behaviors than adults – children's play space is closer to the ground where environmental toxins tend to congregate (American Academy

of Pediatrics 2003). Complicating this factor is their tendency to engage in more hand-to-mouth activity and, therefore, ingest more soil and dust, a behavior making them especially vulnerable to problems such as lead poisoning (Barnes 1997).

As children have no means of mediating risks presented by hazards, their parents must do so for them. This analysis will therefore focus on analyzing the extent to which parents of young children in vulnerable areas of El Paso County, Texas are included in the public participation process.

Inclusion of value-based testimony in the process

American policy-making has long relied on scientific expertise to assist in environmental decision-making (Eden 1996). Therefore the implementation of public participation in the form of public hearings has often been a difficult concept for many policy-makers to grasp, and can often times be excluded. This can result in a one-way dialogue where simply informing citizens of the risks posed by the hazard passes as public participation. Researchers stress the importance of "value-based" testimony in public participation efforts (Fiorino 1990, Eden 1996, Rowe and Frewer 2000, Webler et al. 2001).

Value-based testimony is simply testimony by non-experts. It can reflect local knowledge, opinion-based testimony, and emotional testimony. It can reflect community sentiment on both sides of the debate, not being limited to only those supporting one side of the argument.

The aforementioned problem of creating a one-way dialogue represents another component of allowing value-based testimony into public participation methods.

Published literature tells us that one-way dialogue does not allow for discussion but instead, it often creates a pejorative relationship where policy-makers inform citizens of the risks involved with a particular environmental hazard. Though education is an important component of effective public participation, researchers stress the importance of facilitating discussion and dialogue (Eden 1996, Rowe and Frewer 2000). The EPA's previously referenced publication entitled *The Model Plan for Public Participation* equally stresses the importance of recognizing first-hand, non-expert knowledge, and incorporating it into the process (EPA 2000).

Ability to establish legitimacy with the public

Another extremely vital aspect to public participation stressed in both published research and government documents is the importance of governmental agencies establishing legitimacy with stakeholders. In a study of public participation activities in the U.S. Department of Energy, Carnes et al. (1998), found that stakeholders must not only accept eventual decisions by policy makers as legitimate, but they must also find the process of public inclusion legitimate as well. Webler et al. (2001), reported similar conclusions in their case study of forest planning in New England.

Rowe and Frewer (2000) designed a new theory for guiding public participation. They state for the need for two types of criteria: acceptance criteria and process criteria. Process criteria involve standards for conducting the process in a clear, concise, cost-effective and appropriate manner that seeks to adequately inform and empower the public. The acceptance criteria involve standards for conducting the process in a manner viewed by the public as legitimate.

Governmental Transparency

Finally, researchers stress the importance of a transparent process wherein relevant information that is known to policy makers is also available and easily accessible by the public at large, especially concerned stakeholders. Full disclosure or transparency can also allay "public suspicions about the sponsors and their motives" leading to a greater sense of legitimacy and trust in the view of stakeholders (Rowe and Frewer 2000, p 15). Webler et al. (2001), state that government transparency is necessary in order to "avoid conveying any sense of secrecy" which can lead to distrust.

Governmental transparency also involves access to all information needed for stakeholders to make an informed decision and effectively participate in public involvement activities (Stern and Feinberg 1996, Beierle 1998, Rowe and Frewer 2000). EPA documents also state the importance of transparency, stressing the need to maintain "honesty and integrity" during policy-making processes which involve public participation (U.S. EPA 2000, p 13).

Smelters and Heavy-Metal Contamination

There is a long-recognized connection between a child's elevated blood-lead level and proximity of residence to smelters. Though most of this research has been conducted within the past twenty years, Landrigan was one of the first researchers to study elevated blood-lead levels with regard to smelters and blood-lead levels in children. In 1975, he and his colleagues published a paper in the New England Journal of Medicine describing their evaluation of the role of the Asarco smelter on elevated child blood-lead levels in

the Smeltertown community of El Paso, Texas. They contended that elevated levels of lead in the soil corresponded with elevated levels of lead in children's blood and that the smelter was the principal culprit for the elevated levels of lead found in the soil (Landrigan et. al 1975).

Since Landrigan's research, others have conducted similar studies at smelters worldwide relating to various heavy metals. From Germany (Trepka et. al 1997) to communities throughout Mexico (Díaz-Barriga et al. 1993, Díaz-Barriga et al. 1997, Benin et al. 1999, Albalak et al. 2003) to Australia (Baghurst et al. 1992, Galvin et al. 1993), researchers have found similar patterns in lead absorption by children: a distance-decay (or inverse) relationship between a child's distance from the smelter and his or her blood-lead level. Albalak et al. (2003), reported that Mexican communities across the river from the El Paso smelter in Cuidad Juárez had similar levels to those found in Landrigan et al.'s 1975 study.

The present pattern of contamination by the Asarco smelter in El Paso, Texas fits into past and present literature, rendering the case important to study, and not an isolated problem. Recent studies in the El Paso area have established that the Asarco smelter continues to pose problems of soil contamination that have resulted in current elevated blood-lead levels (U.S. EPA 2003, Texas Department of Health 2004).

Using this literature as a framework for evaluating the effective use of public participation, the following chapter describes the methodologies implemented to analyze the effective use of public participation in the case of the re-permitting of the Asarco smelter in El Paso, Texas.

CHAPTER 3

METHODOLOGY

Beierle and Cayford (2002) state that the case study tradition represents the best method for evaluating public participation. Therefore, using a mixed-methods approach of both quantitative and qualitative research techniques, this thesis examines the use of public participation in El Paso, Texas surrounding the re-permitting of the Asarco smelter (Tellis 1997). This paper examines thirteen different public participation events facilitated by three government agencies: the City of El Paso, the TCEQ, and the EPA. In total, this thesis considers all public participation events from the time under which the permit was under question – 2002 to 2006. A public participation event is defined using the Renn, Webler, and Wiedemann (1995) definition as a forum "for exchange that [is] organized for the purpose of facilitating communication between" government and concerned stakeholders, community groups, and interested businesses.

As an example of the qualitative research tradition of an exploratory case study, the case under examination represents a bounded system wherein the study is limited spatially and temporally (Stake 1995, Creswell 1998). The study is limited spatially to the neighborhoods most vulnerable to the risks posed by the smelter as defined by the Texas Department of Health (Lyke 2003), and further discussed below. The study is

limited temporally as I studied only the time period in which public participation has been utilized in the re-permitting process, 2002 to present (2006).

Using four criteria, this exploratory study conducted an assessment combining digital spatial data, government documents, reports, websites, local newspaper articles, and direct observation. The direct observation occurred on February 8, 2006 at the TCEQ headquarters in Austin, Texas.

The research addressed the following question:

- How do government agencies at three levels (federal, state, and local) meet or not meet the criteria for effective public participation as established by the literature?

The following sub-questions that relate to the established criteria will seek to answer the research question mentioned above. In the following questions, the hazard refers to the lead emissions from the Asarco smelter:

- What are the demographics of those neighborhoods targeted and included in public participation processes? Are they the communities most vulnerable to the risks posed by the hazard itself?
- How do government agencies conduct public hearings? Do they include value-based testimony fostering discussion, or do they simply inform community members of the dangers of the hazard?
- How does the community view the process? Do they feel that the processes of public participation are legitimate and adequate means of assessing public sentiment?

- What information are government bodies relaying to the public? Are they being completely transparent, informing the public of the actual risks presented by the hazard?

Using the qualitative research tradition of triangulation of data sources, this research acquired data from four sources: United States Census 2000 data, newspaper articles appearing in the *El Paso Times*, and government and corporate documents and websites, and direct observation (Yin 1984, Tellis 1997). Triangulation of data involves acquiring data from three or more different sources so as to increase verification and validity in qualitative research (Creswell 1998). Morris and Chandra (1993) state that external sources such as public documents, government publications, and newspapers represent key data sources for case study analysis.

Attributes of effective public participation

The key attributes of effective public participation as established by the literature are:

- Involving and engaging those who are most vulnerable to the risks presented by the hazard in question in the processes of public participation (Fiorino 1990, Thomas 1990, Laird 1993, Beierle 1998, Stern and Feinberg, Rowe and Frewer 2000, U.S. EPA 2000)
- Including value-based testimony which can foster discussion (Fiorino 1990, Eden 1996, Rowe and Frewer 2000, U.S. EPA 2000, Webler et al. 2001)
- Establishing legitimacy with the public (Carnes et al. 1998, Webler et al. 2001, Rowe and Frewer 2000)

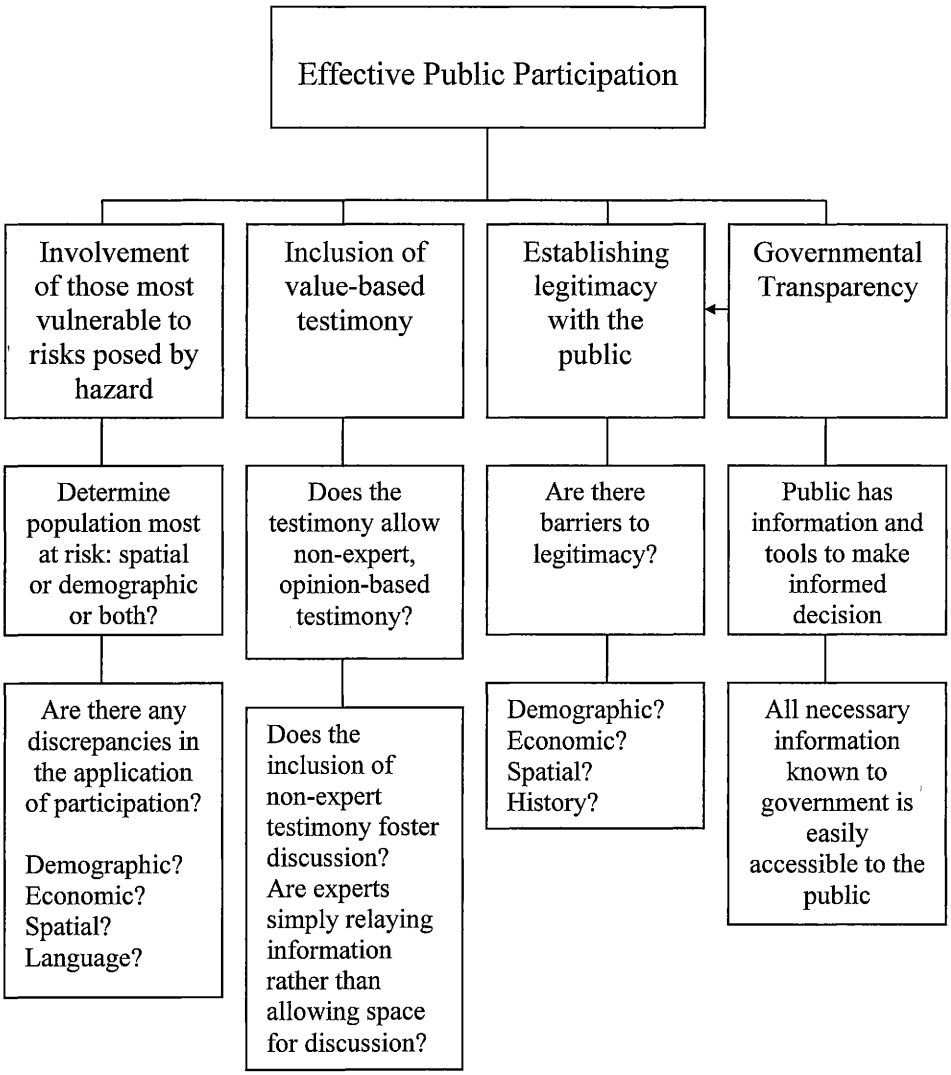
- Governmental transparency throughout the entire decision-making process (Stern and Feinberg 1996, Beierle 1998, Rowe and Frewer 2000, U.S. EPA 2000, Webler et al. 2001)

Attributes are not necessarily mutually exclusive (Carnes et al. 1998). For example, governmental transparency is an independent attribute but it can also affect the public's perception of the process. The flow chart (Figure 5) shows the necessary components of effective public participation and the characteristics of each component of effective public participation. The relationship between my research question and the key attributes is also shown.

Involvement by those most affected

Researchers have established that children are the most vulnerable population to the risks presented by the Asarco smelter. I evaluated the inclusion of parents of young children living in zip codes tested for elevated blood lead levels (American Academy of Pediatrics 2003, Hedlund 2004). Children are more vulnerable to environmental hazards, yet they are unable to mediate them. Therefore, children must rely on adults, specifically their parents, to properly allay the risks of environmental hazards. I compared the location of public participation events to the existence of elevated blood lead levels in seven El Paso zip codes according to a variety of socio-economic indicators.

Figure 5. Tool for evaluating the necessary components for effective public participation



In order to conduct this analysis, I built two separate databases in Microsoft Excel. The first contains descriptive statistics for each public participation event: date, physical location, zip code, and time of day of each event (Table 1).

The second database included health information and socio-economic information for the seven zip codes tested by the Texas Department of Health (TDH) from 1997-2003 for seven El Paso zip codes (Lyke 2003). TDH tested a representative sample in each zip code for a seven-year period, and established the percentage of children within each zip code with elevated blood lead levels for each year. From these data, I calculated the mean percentage of children under the age of six with elevated blood lead levels over the seven-year period. I also calculated the standard deviation to test for variation around the mean.

I also include socio-economic factors to test for discrepancies in both the impact of the smelter's health effects and the application of public participation in the re-permitting decision. I include the following socio-economic factors: median income and the percentage of people within each zip code who speak Spanish (Table 2). This does not mean that they speak only Spanish, but rather consider themselves to be fluent in the language. Since El Paso is a border community on the Texas-Mexico border, we can assume that many people learn Spanish as their first language, adding English either in school or later in life.

I used the U.S. Census Bureau website to obtain socio-economic data for each zip code. Using the American Fact Finder program, I was able to query the detailed tables of the U.S. Census 2000 Summary File 3 (SF3) Sample Data. My geographic scale of analysis was the 5-Digit ZIP Code Tabulation Area. I then acquired the median income

and percentage of total population that spoke Spanish at all age levels for each of the seven zip codes included in the TDH study: 79901, 79902, 79903, 79905, 79912, 79922, and 79930.

I mapped the variables using the ESRI ArcGIS program. After acquiring the zip code shapefiles for the state of Texas from the Texas Natural Resources and Information System website (TNRIS 2006), I joined that shapefile with my imported table of socio-economic variables and health study results from TDH. Using the graduated colors technique to create a chloropleth map, I compared the mean percentage of children with elevated blood lead levels for each zip code based on the zip code shapefile. I created another graduated colors legend from the same shapefile, but this time based on the median income by zip code.

I proceeded to create a point shapefile in ArcCatalog, which allowed me to plot the points where the public participation events occurred. I created two other point shapefiles to map "points of interest." The first point was the location of the Asarco smelter, and the second point the location of the University of Texas at El Paso, simply for reference.

By creating the above map in ESRI ArcGIS, I was able to visualize the locations of public participation events, and find any discrepancies both in the environmental health effects of the Asarco smelter and the application of the public participation process throughout the re-permitting process of the Asarco smelter.

Inclusion of Value-Based Testimony

I use two separate data sources to evaluate the inclusion of value-based testimony: the *El Paso Times* newspaper and direct observation. From these sources, I then built a table of the public participation events conducted by the EPA, TCEQ, and the City of El Paso concerning the Asarco smelter. In total, there were thirteen events. I examine all articles from August 2003 to present to gauge how the processes of public hearings proceeded.

I ask the following questions to evaluate the database for each of the events. What was the purpose of the hearing? Was it to simply educate the public on the proceedings of the soil remediation or the permit process? Who spoke at the hearings? Did they allow non-experts to testify in favor of or against the re-permitting of the smelter? I answer these questions for each event with four possible answers: no value-based testimony was allowed, limited value-based testimony was allowed where a representative of the community (i.e. a lawyer) was allowed to speak on their behalf, open testimony was allowed where the public was free to speak, or for two events there was not sufficient information to determine the degree to which value-based testimony was included. I then conduct several descriptive statistical tests to determine the extent to which value-based testimony was included in the process of re-permitting the Asarco smelter.

Legitimacy with the public

Attempting to understand the extent to which the public finds the processes of public participation legitimate can be very difficult to measure. However, events such as

marches, protests, and letters to the editor can signify a lack of commitment to and/or trust in the process. I rely on two data sources to evaluate this component of effective public participation: articles appearing in the *El Paso Times* and direct observation.

To evaluate this component of public participation, I asked the following questions: What are residents stating when they march on the El Paso City Hall or write letters to the editor? Are they expressing feelings of alienation and frustration with perceived illegitimate processes put forth by the City of El Paso, TCEQ, and the EPA? What are citizens saying in public participation events? Are they expressing similar feelings to those expressed in marches and letters to the editor?

Using this framework, I examine the context of the messages at protests and letters and the words of those at the public participation event that took place in Austin, Texas at the TCEQ headquarters on February 8, 2006. I compile the events and I determine the public perception of the process by examining events. This analysis could have been made stronger by the use of survey data; however, due to time and financial constraints that was not possible.

Governmental Transparency

I used two different techniques to conduct an evaluation of governmental transparency throughout the process of public participation. I obtained much information from both the EPA and the TCEQ, formerly the Texas Natural Resource Conservation Commission (TNRCC) through the Freedom of Information Act (FoIA). This information includes environmental reports, personal communications between

government officials including faxes, letters, and e-mails, health consultations, and unpublished study findings.

First, acting as "concerned citizen," I search for information regarding the hazards presented by the smelter, the compliance history of the smelter, and the re-permitting process itself. I choose to include all three types of information, as adequate information regarding the history, hazards and risks presented by the smelter could in turn determine a person's decision to participate in the processes of public participation. For example, a person who finds that the smelter poses possible health risks to their children, might be more inclined to participate than the person who finds no information regarding the risks associated with the smelter. Also, a history of compliance with the permit in question could help the average citizen form an opinion to support or not support the re-permitting of the smelter.

I examine government websites at all three levels looking for information related to the hazard, the re-permitting process, and the compliance history. I turn to the FoIA documents after collecting the appropriate information from my web-based search.

I proceeded to read all of the documents acquired through the FoIA relating to both the EPA and the TCEQ. I compared the information found in the documents (the known information) to the information found on the websites (the available information) in order to determine the degree to which the governmental agencies were conducting the process in an open manner.

CHAPTER 4

RESULTS

Involvement of those most affected

The locations of each of the thirteen public participation events were compared to socio-economic data and the mean blood-lead levels of each zip code. Of the thirteen public participation events held between 2002 and 2006, 69 % (9) of the events took place in the 79901 zip code, which also corresponds with downtown El Paso. This zip code, located directly southeast of the Asarco smelter, had the highest mean percentage of young children with elevated blood lead levels (6.14% with a standard deviation of .024). This zip code also had the lowest median income - $9,783, more than $5,000 less than the national poverty standard, and significantly lower than the surrounding zip codes – and had the second highest percentage of Spanish-speaking residents (87%) (Tables 1 and 2). ESRI ArcGIS was used to display these components (with the exception of percentage of residents who speak Spanish) (Figure 7).

Table 1. Public participation event locations with zip code and time of day data

Event	Date	Location	Zip Code	Time of Day
1	10/20/03	City Hall	79901	daytime
2	12/10/03	Alamo Elem	79901	unknown
3	12/11/03	Hart Elem	79901	daytime
4	12/13/03	La Fe CC *	79901	weekend
5	12/15/03	SJALC *	79901	evening
6	12/17/03	Aoy Elem	79901	daytime
7	5/7/04	City Hall	79901	unknown
8	5/25/04	Guillen Middle	79901	unknown
9	5/27/04	Vilas Elem	79902	evening
10	1/27/05	UTEP	79902	daytime
11	7/11/05-7/24/05	County Courthouse	79901	daytime
12	7/21/05	UTEP	79902	evening
13	2/8/06	TCEQ HQ in Austin	78711	daytime

*La Fe CC is the La Fe Cultural Center and SJALC is the San Jacinto Adult Learning Center.

Table 2. Mean percentage of children with elevated blood-lead levels as compared to median income and percentage of residents who speak Spanish by zip codes

Zip Code	Mean % with elevated BLL*	s	Median Income	% Spanish speakers
79901	6.14	0.024	$9,783	87%
79902	5.57	0.015	$23,018	71%
79903	3.14	0.012	$22,921	83%
79905	3.86	0.013	$17,723	91%
79912	1.43	0.009	$48,627	49%
79922	5.57	0.042	$61,599	49%
79930	3.14	0.007	$23,833	80%

* BLL is the blood lead level

Figure 6. Study area – El Paso County Zip Codes

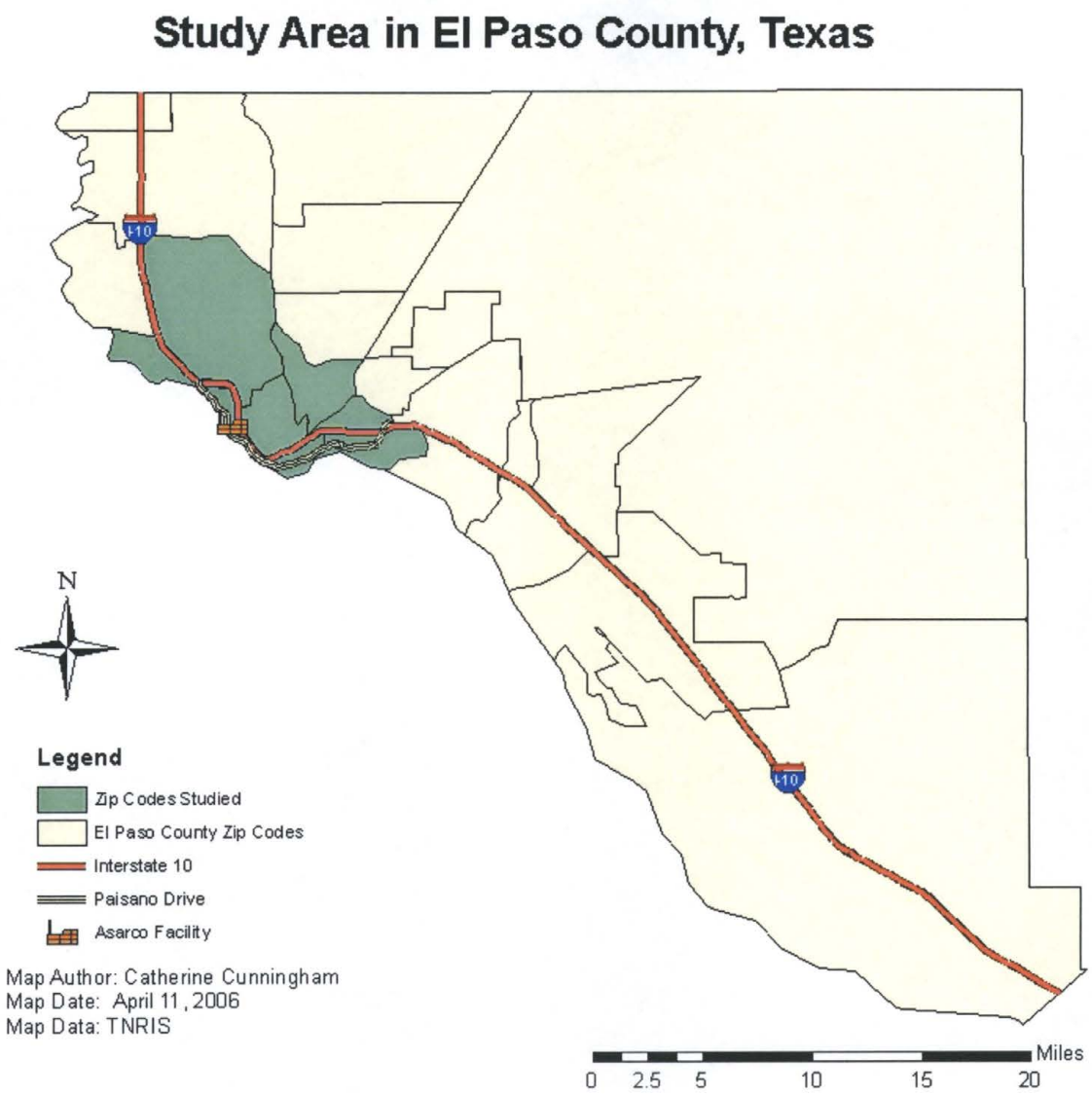
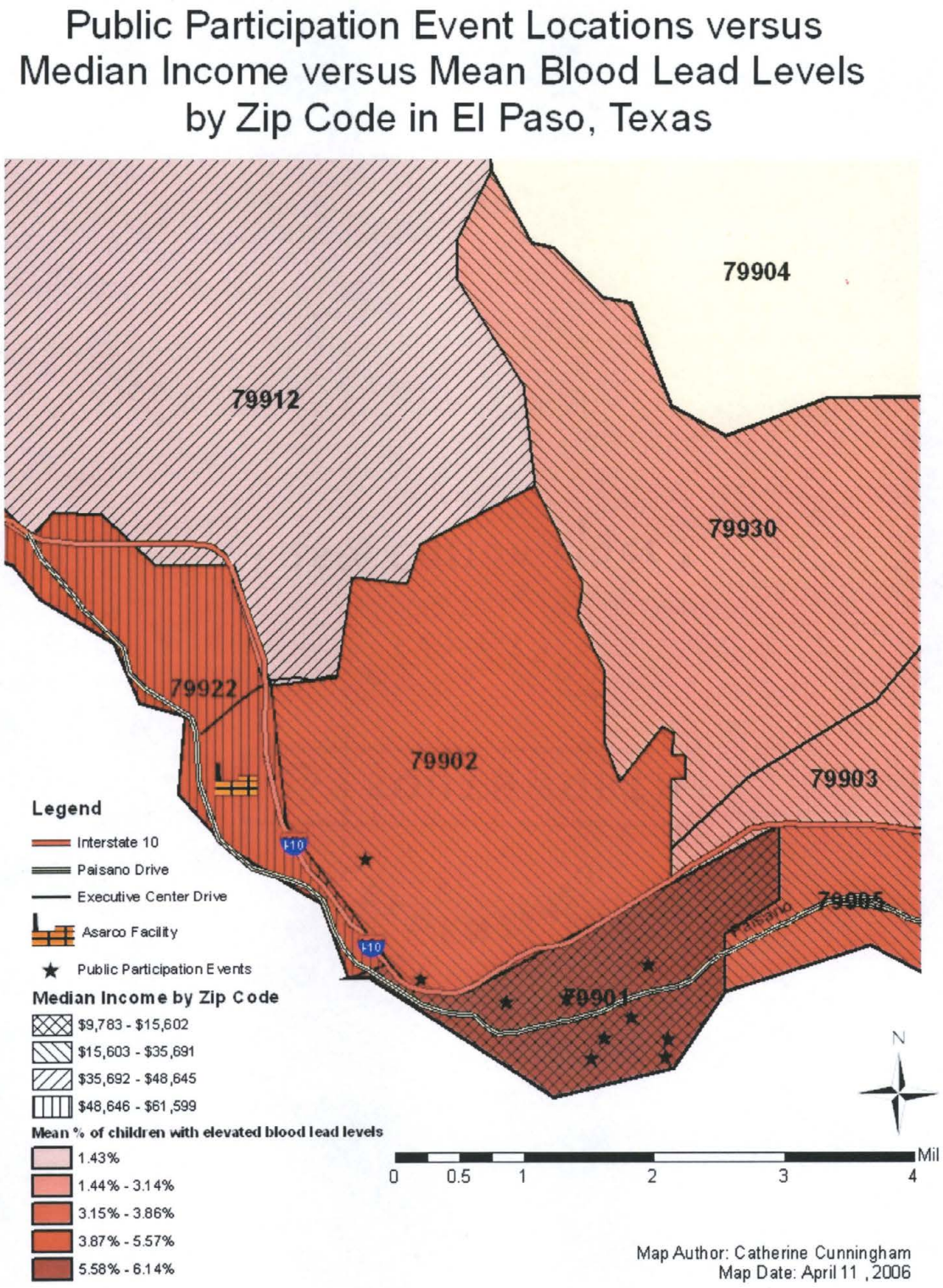


Figure 7. Public participation event locations vs. median income vs. mean percentage of children with elevated blood-lead levels by zip code



The data suggest that those who were most highly affected were well included in the processes of public participation. However, because this zip code also corresponds with downtown El Paso, it is difficult to determine whether or not the location was specifically chosen for inclusion of the affected population in public participation events, or whether the events were held in downtown for to convenience, appropriate space, and proximity to city institutions such as City Hall, and the county courthouse.

One aspect of note seen on the GIS output (Figure 7) is the median income of residents of zip code 79922, which includes the Asarco smelter. Considering the income of the surrounding zip codes, and the proximity to the smelter, it might at first appear strange that residents would have such a high median income; however, the map does not show that the majority of the zip code stretches to the west from the smelter, and there are no residences between the smelter and the 79901 zip code.

Another aspect of this component studied was the time of day, used to determine accessibility by parents of young children. Of the thirteen events, 60% (6) were held during the day in the middle of the week. In contrast, 40% (4) were held during the evening or on the weekend. The fact that a disproportionate number of events were held during the day in the middle of the week alienates working parents who might otherwise be able to attend. There were three events for which there was not enough information available to determine the time of day in which the event was held.

Inclusion of Value-Based Testimony

I conducted basic statistical analyses to determine how well value-based testimony was included in each event. Four possible responses to the question of the

inclusion of value-based testimony existed. An answer of "no" indicates that the event was conducted simply as an information or educational event, informing the public of the risks presented by the hazard in question, or the process of soil remediation in the area. An answer of "yes" indicates that the community at large was permitted to participate in an open fashion, facilitating the inclusion of value-based testimony in the event. An answer of "limited" signifies that participation was limited, and was often relegated to lawyers representing the protestants or state representatives to speak on "behalf" of their constituents. Finally, an answer of "unknown" indicates that there was too little information regarding the event to sufficiently make a judgment as to the inclusion of value-based testimony in the event. In turn, the testimony could have provided some amount of "emotional or opinion-based testimony" given on behalf of the protestants by a qualified "expert" (See Table 3).

The statistics reveal that eight of the thirteen events (61.54%) did not include any public testimony, indicating that the majority of the events were educational/ informational events conducted by the EPA. Often times these events had no decision-making value, but rather their value lied in the fact that they helped the citizen population formulate an opinion regarding the hazard.

For two of the thirteen events (15.38%), there is not enough information to determine the inclusion of value-based testimony. Only one of the thirteen events (7.69%) actually includes what can be considered "open" value-based testimony. This event is the TCEQ hearing that took place on January 1, 2005, where the decision was made to allow a true public hearing period regarding the renewal of the permit.

Table 3. Public participation events regarding the Asarco smelter in El Paso, Texas

Event	Date	Location	Zip Code	Faciliator	Purpose	Value-Testimony
1	10/20/03	City Hall	79901	EPA	discussion	unknown
2	12/10/03	Alamo Elem	79901	EPA, TCEQ	education	no
3	12/11/03	Hart Elem	79901	EPA, TCEQ	education	no
4	12/13/03	La Fe CC *	79901	EPA, TCEQ	education	no
5	12/15/03	SJALC *	79901	EPA, TCEQ	education	no
6	12/17/03	Aoy Elem	79901	EPA, TCEQ	education	no
7	5/7/04	City Hall	79901	EPA, TCEQ, El Paso	discussion	unknown
8	5/25/04	Guillen Middle	79901	EPA	education	no
9	5/27/04	Vilas Elem	79902	EPA	education	no
10	1/27/05	UTEP	79902	TCEQ	discussion	yes
11	7/11/05-7/24/05	County Courthouse	79901	TCEQ	hearing	limited
12	7/21/05	UTEP	79902	EPA, TCEQ	education	no
13	2/8/06	TCEQ HQ in Austin	78711	TCEQ	hearing	limited

* La Fe CC is the La Fe Cultural Center and the SJALC is the San Jacinto Adult Learning Center.

Finally, two of the thirteen events (15.38%) provided an opportunity for limited public testimony. These events are the official public hearings. The first event was during the official hearing period, from July 11-24, 2005. The second occurred February 8, 2006 in Austin, Texas where the official decision was to be issued by the commissioners, but was delayed for further consideration. Value-based testimony was allowed in public participation events throughout the process of re-permitting the Asarco smelter only 27.3% of the time after combining the results of all participation events with sufficient information.

Based on direct observation of a hearing that occurred on February 8, 2006 at the TCEQ headquarters in Austin, value-based testimony was allowed in a limited fashion with state Senator Elliot Shapleigh, El Paso mayor, Joe Wary, and the Sierra Club and ACORN (Association of Community Organizations for Reform Now) lawyers presenting most of the testimony on behalf of the "public." A vague attempt at including value-based opinion occurred as the form of a public opinion worksheet (Figure 8). However, this form was never discussed throughout the hearing, and no mention was made of how the forms would be evaluated and considered.

Figure 8. Public opinion form collected by TCEQ at the February 8, 2006 hearing in Austin, Texas.

AGENDA DATE: 02/08/2006

PLEASE WRITE LEGIBLY

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
PUBLIC PARTICIPATION FORM
(Please complete this form if you wish to speak during the meeting, or to have your attendance recorded.)

Title of matter for which you are registering:
Asarco, Incorporated; TCEQ Docket No. 2004-0049-AIR Item #: 1
(From the caption listed on the Agenda)

Name:			Occupation:
Mailing Address:			
City:	State:	Zip Code:	Daytime Phone:

Whom do you represent? (If other than yourself, give their name, mailing address, and daytime phone number.)

Name: _____

_____

Address City/State/Zip Daytime Phone

Do you think the Commission should approve the application/order/rule or other matter under consideration?
☐ Yes ☐ No ☐ Commentor or observer - not for or against

Do you wish to speak during the meeting?
☐ Yes ☐ No ☐ No, unless the Commission wishes to ask me questions.

Establishing Legitimacy

From the analysis of *El Paso Times* reports and direct observation, I discovered several findings relating to the public's view of the processes of public participation. Letters to the editor and messaging from protestors appearing in newspaper articles reveal three prevalent sentiments relating to the process. Direct observation of the public participation event held on February 8, 2006 at TCEQ headquarters in Austin, Texas revealed the public's view specifically regarding the state environmental regulatory agency.

Analysis of articles and letters to the editor appearing in the *El Paso Times* highlight several key issues relating to the public's perception of the processes of public participation. Those in support of re-permitting of the smelter contested that the smelter would return long-overdue high paying jobs to the El Paso economy (*El Paso Times* 27 July 2004, 27 January 2005, 18 February 2005). Interestingly, all of those who wrote in to commend Asarco for providing jobs were men, those most likely to benefit from the jobs created by the re-opening of the smelter.

Three themes emerged from the letters written by those against the re-permitting of the smelter or those with a complaint regarding the re-permitting process itself. First, many of the community members felt that there was not enough information given to make an informed decision (*El Paso Times* 8 May 2004, 15 June 2004, 16 June 2004, 26 June 2005, 19 July 2005). Statements such as Natasha S. Davis' reveal a desire for more information – "please help bring to light pertinent information to our community that will help people understand the possible terrible consequences and effects of Asarco's return" (*El Paso Times* 16 June 2004). Statements such as these support my assertion below that

the three levels of government involved did a poor job of communicating the risks involved with the smelter.

The second theme that emerged from the analysis of letters to the editor was that citizens wanted to participate more fully in the decision-making process. This manifested itself in the form of advocating for the public hearing that eventually took place July 11-24, 2005. More than a year before the hearing took place, citizens wrote to the *El Paso Times* expressing the desire to "speak out against Asarco reopening in El Paso," and that "the people need city representatives to hear their concerns about Asarco" (*El Paso Times* 14 June 2004). Others said "a public hearing on the permit request should be conducted by the TCEQ so El Pasoans can express their concerns, opposition, and misgivings about allowing Asarco to reopen" (*El Paso Times* 15 June 2004), and finally that "the city should seek a public hearing as part of Asarco's permitting process because people need to be heard on issues that affect the community" (*El Paso Times* 18 June 2004). Other letters to the editor expressed the same desire for increased participation and advocacy of the public hearing to take place in order that community views regarding the smelter could be aired (*El Paso Times* 19 June 2004, 26 July 2004).

The last theme revealed from the analysis of letters to the editor is the view that the city government should represent the community in the fight for or against the Asarco permit. Those who chose to write in to the editor often mandated that the city holds a responsibility to the community to represent its citizens in instances of public participation and express community sentiments on the matter. Letters often expressed feelings similar to those expressed in this written in June of 2004 that "people depend on their city representatives to protect the health and interests of this city" (*El Paso Times* 14

June 2004). Oftentimes community members wanted to remind the city government that they were elected "to work for the entire population, assuring that the neighborhoods, not just the land developers and builders, are their foremost priority" (*El Paso Times* 30 July 2004). Many other citizens also wrote in to express their concern that the city was not doing a good job of "representing the public," throughout the process to re-permit the Asarco smelter (*El Paso Times* 16 June 2004, 23 June 2004, 31 July 2004, Meritz 20 January 2005).

It should be noted that newspapers do choose the letters to the editor that they print, and that it could be possible that letters appearing in the *El Paso* Times could represent a bias that parallels the views of the editors. Therefore, this analysis should not be taken to represent a definitive statement of public opinion. As stated in the previous chapter, this analysis would be made stronger by interviews with the public at large to determine their feelings of legitimacy towards the processes of public participation; however, due to time constraints that was not possible at this juncture. However, future research regarding the public's perception of public participation processes should consider including some form of survey/interview data in order to gain a more holistic picture. This analysis however, represents the next best tool at my disposal for evaluating public opinion in that it is examining letters written by community members at large regarding the process.

One way in which this analysis can be strengthened is through direct observation of public participation events. At a public hearing held February 8, 2006 in Austin, I discovered that the public in attendance found the process to be arduous and the TCEQ to be an ineffective bureaucracy. For a hearing in which the TCEQ was to issue their final

verdict regarding the four-year Asarco case, more than 150 El Pasoans (mostly women) traveled more than 600 miles to Austin to hear the decision.

After three hours without a break and hearing from a variety of public officials including Texas Senator Elliot Shapleigh, the mayor of neighboring Sunland Park, New Mexico, and several representatives from Mexico, and Asarco itself, all parties involved were told that they would have to wait another seven months for a decision from TCEQ commissioners. This decision sparked outrage from community members who had traveled more than 600 miles (something emphasized by many who chose to shout out after the decision was made) to attend the event. In short, the forms they filled out were never taken into consideration and they felt frustrated and bewildered. After the decision had been made and the meeting adjourned, many people shouted out things such as "All politicians are scum!" and "This is the biggest bureaucracy I've ever seen!" and "You are incompetent!" "Shame! Shame on you!" all in the direction of the commissioners often accompanied by a wag of the finger. These feelings of frustration and anger led me to conclude that the public found the process to be ineffective and inefficient.

Governmental Transparency

I was able to better understand how transparently governmental agencies operated throughout the re-permitting process by comparing the information available to the general public with information disclosed in documents obtained through the FoIA. I sought information regarding the process and the hazards of the smelter at each of the concerned government agencies' websites as any average citizen would.

The EPA website was the most informative, in that it had any amount of information regarding the smelter. Neither the TCEQ nor the City of El Paso websites had relevant or useful information regarding the smelter, and none of the websites I examined presented any information relating to the re-permitting process or the compliance history of the smelter. Therefore, there were no specific opportunities for public involvement listed or mentioned on any of the three government agency websites. The most interesting bit of information found on all websites was the TCEQ Environmental Equity webpage where they state that environmental inequity is often a problem of perception rather than actual problem that exists in Texas, stating that "low-income and minority communities often believe that they are burdened with a disproportionate share of environmental risks" (Texas Commission for Environmental Quality 2006). By stating that "environmental justice" issues are a problem of perception and lack of education, the TCEQ reflects a pejorative attitude, possibly alienating those communities who, in this case, are most affected by the hazards presented by the smelter. The EPA on the other hand, chooses to recognize issues of environmental justice by stating that "minority and/or low-income communities frequently may be exposed disproportionately to environmental harms and risks" (U.S. EPA 2005).

The EPA website (U.S. EPA, Region 6. presented information relating to the hazards presented by the smelter and information regarding the potential for the site in question to become part of the National Priorities Listing and/or a Superfund site. It also gave a table of several government reports and documents from different agencies, including the TDH (now the Texas DSHS). The information presented in this table however was disjointed and poorly organized. There was no explanation as to the

purpose of the information, nor was it "translated" into non-scientific jargon. The majority of the information available on this website was presented in a sloppy manner and did not appear to be intended for comprehension by the general public.

Another issue with all websites was the lack of information in Spanish. According to the 2000 Census, in all areas heavily affected by the smelter (i.e., where more than five percent of the children exhibit above normal blood lead levels) at least fifty percent of the residents speak Spanish (U.S. Bureau of the Census).

Though the TCEQ and City of El Paso websites had some Spanish-language pages neither had information relating to the Asarco smelter and the processes of public participation (as to be expected as there was none in English). The EPA website allowed users to read educational materials from the Texas Department of Health, which were both in English and Spanish; however, since the EPA website was in English, Spanish-speakers would most likely not be able to navigate to these Spanish-language pages.

After reviewing the websites thoroughly, I analyzed the FoIA documents to compare the known information to the available information. This analysis highlighted several issues where the government agencies were not forthcoming to the general public regarding the smelter including a lack of inter-agency agreement, inadequately communicated health risks, and a complete lack of communication regarding the compliance history of the smelter.

First, there appeared to be very little agreement about what level of lead (Pb) in the soil presented a hazard to human health. Despite the fact that the federal thresholds are 500ppm, the EPA and the TCEQ have considered changing the limit in El Paso to 664ppm (Rauscher 2004, Uribe 26 July 2004), stating that the number is flexible

depending on both bioavailability and natural soil conditions. Conveniently, this allows the EPA to cut 296 homes from the soil remediation program (Washington-Valdez 26 May 2004).

Unfortunately, other EPA reports state that the lead did not naturally occur in high levels in El Paso soils (U.S. EPA 2003), and that "many of the site residential properties have desert-type landscaping with large amounts of exposed soil...[resulting in] potential inhalation exposures...during frequent high wind events" (Knudson 2003, p 5). Thus, the information appearing in the FoIA documents appears to not only contradict the levels set by the EPA locally, but there also seems to be little agreement as to what constitutes an safe soil-lead level. Many EPA and TCEQ documents claims that safe lead levels should be no higher than 500ppm, but in other documents, policymakers seem unconcerned with levels under 1500ppm (§350.76(c) 17 September 1999, U.S. EPA May 13, 2003, U.S. EPA October 2, 2003).

Second, the information on the websites and in newspaper articles points to little concern for health problems associated with the smelter. At most, the information put forth by the EPA website is ambiguous and contradictory. For example, the EPA website states that "the risks associated with [the El Paso] soils would not be considered an 'imminent health risk.' However, federal, state and city/county health agencies all agree that residential soil lead levels over 500 milligrams per kilogram (mg/kg), and residential soil arsenic levels over 46 mg/kg could pose an unacceptable level of risk to children in the 1 to 6 year age range" (U.S. EPA – Region 6, FAQs). This contradictory statement gives no information whatsoever and does not answer the question at hand. The only educational materials available are found through a link to a PDF document made

available by TDH. These documents also give very little concrete information regarding the smelter with public health statements such as "soil lead probably contributes to elevated blood lead levels of El Paso children," and that elevated lead levels in soil "could pose an unacceptable public health hazard to children" (TDH May 2004, TDH July 2002).

Documents acquired through the FoIA however, give a different picture of the situation. Statements such as the following portray the situation in a more serious light: the soil is a "public health hazard," that "may present an imminent and substantial endangerment to public health" and that "the contamination in the soil and ground water is a human health and environmental concern to...the EPA," and finally, that remedial actions should be taken as soon as possible in order to "avoid a foreseeable threat to human health" (Fischer 2002, Cooke 2002, Knudson 2003).

Third, none of the websites or newspaper articles discuss the compliance history of the smelter - whether the smelter had a clean record or a spotty record of environmental compliance. This information would likely be useful to the public in making the decision to support or not support the re-permitting of the Asarco smelter in El Paso, Texas.

On October 27, 2005, after the official public hearing period, the two Administrative Legal Judges (ALJs) for the State of Texas, in recommending a decision to the TCEQ, stated that the company could not prove that it had been in full compliance with environmental regulations for the last five years of operation of the El Paso facility (Texas 2005). After thoroughly reviewing the compliance history of the smelter, the judges felt that the smelter received too many notice of violations (NOVs) to warrant

TCEQ's approval of the air permit renewal (Texas 2005). Though this information was considered in the decision to re-permit the Asarco smelter, it was never given to the public in order that citizens might use the information to form their opinion to support or not support the permit.

The ruling by the ALJs and the TCEQ documents acquired through the FoIA act reveal several environmental infractions on the part of the company that could affect public health and public perception of the facility. Inspection summaries by the TCEQ reveal a wide array of violations on the part of the company beginning in 1994. These violations include groundwater contamination, illegal wastewater management, incorrect labeling of hazardous waste, unsafe working conditions, failure to notify authorities of new activity, failure to maintain records, exceeding permitted emission levels, and illegally and inadequately storing and treating hazardous waste (Sadlier 1995, TNRCC 1996, McMillan 1997, Texas 2005).

The above results reveal several key deficiencies in the application of public participation relating to the component of governmental transparency. From these results, I conclude that the EPA was the most informative agency involved in the process, and that information in Spanish was almost non-existent, that that the risks involved in the smelter were not well-communicated, the compliance history of the smelter was not available, and that no information whatsoever was available regarding the process to re-permit the smelter.

CHAPTER 5

CONCLUSIONS

The purpose of this research was two-fold: to develop a tool by which other case studies can be analyzed, and to use my framework to analyze public participation in the re-permitting process of the Asarco smelter in El Paso, Texas. I conclude that the three levels of government involved in the decision-making process – The City of El Paso, the TCEQ, and the EPA – did a mediocre job at conducting public participation. Though there is no "measurable" outcome, no statistical technique, or a numerical scale by which to determine the effectiveness of public participation, a mixed-methods approach, (that is reproducible not only for my case in study, but is also applicable to other cases) incorporated both quantitative and qualitative techniques led me to the above stated conclusion.

Using the four key components as "tests of success," the process appeared to "pass" only one of the tests: that of involving those most affected. However, as was mentioned earlier, it cannot be determined if the public participation events occurred in the zip code most highly affected due to true intent on the part of public officials, or whether it conveniently coincided with the location of downtown, El Paso. It is also

worth noting in reference to the issue of environmental justice that low-income communities shared an disproportionate amount of the burden of the environmental health risks produced by the smelter as those most highly affected lived in a zip where the median income fell well below national poverty standards and had an extremely high percentage of Spanish-speaking residents.

If one were to apply the word "tests" in analyzing each of the four key components of public participation, it could effectively be said that the process to re-permit the Asarco smelter failed the other three portions of the test. The public was not well consulted in terms of opinion to re-permit the smelter. Communities appeared to find the process tedious and full of "red-tape," and desired to have greater involvement in the process itself. Finally, due to interagency bickering and bureaucracy, the risks presented by the hazard were not effectively communicated, the compliance history of the smelter was not revealed, and the public was not well informed about the process of public participation or the of the re-permitting process itself.

Lastly, I would like to once again revisit the EPA question, which formed the basis of the research question for this thesis: "What major factors contributed to the success or shortcomings of the stakeholder involvement/public participation effort?" (U.S. EPA 2001, p22). In answering the EPA's question of how effective this attempt at public participation was, I would conclude that it was not very effective, not well-planned, and not well-executed (Figure 8). This form was created to garner public opinion, pass as public participation, but in the end was confusing and was never utilized in the decision-making process as the entire process seemed to implode on itself with TCEQ deciding to further delay a decision on the permit renewal.

If future public participation processes are carried out as described above and result in similar outcomes, this could increase resentment towards government agencies creating a hostile atmosphere for future attempts at public participation. By not conducting the process in an open, informative, and inclusive manner, concerned government agencies are in effect further marginalizing and disenfranchising these communities, ensuring that they will be less likely to participate in any future attempts at public participation.

Future Research

As mentioned in preceding chapters, this research would have been strengthened by the use of surveys and interviews with the public at large to determine their overall attitudes and desires regarding the specific public participation process. Future studies should consider implementing this tool in order to gain an even more holistic view of the process. This analysis however, represents the best tools currently at my disposal for evaluating the effectiveness of public participation, and can serve as a framework for other studies regarding public participation in the realm of environmental policy-making.

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