THE SOCIAL AND SPECIAL EFFECTS OF SITING A LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY IN RURAL TEXAS

Steve H. Murdock
Rita R. Hamm
Department of Rural Sociology
Texas Agricultural Experiment Station
Texas A&M University System

ABSTRACT

As part of its assessment of the impacts of a low-level radioactive waste disposal facility in Hudspeth County, the Texas Low-Level Radioactive Waste Disposal Authority (TLLRWDA) sponsored an independent study of the social and special impacts of the facility. These impacts include "standard" social impacts (such as impacts on social structures and attitudes, values and perceptions) and "special" social impacts (such as fear, anxiety, concerns related to equity, the health of future generations, etc.). This paper reports the results of this study. Personal interviews with 71 community leaders and 96 randomly selected county residents were conducted during the summer of 1986. Leaders and residents were asked identical questions about the safety of low-level radioactive waste storage, about their levels of knowledge and the types of information and their sources of information on waste storage, about their concerns related to project siting, and about their preferences and concerns related to impact mitigation.

The results suggest that the major concern relates to the contamination of ground water, but that suspicion about the equity of the siting process and about the safe management of wastes is extensive, even among the most knowledgeable respondents. Mitigation concerns center on health and safety issues for residents and on potential forms of mitigation for governmental jurisdictions for leaders. Responses were similar for leaders and residents and for persons in different parts of the county.

Of the many potential impacts of siting a low-level radioactive waste disposal facility in Texas, the social effects are clearly among the most difficult to assess (1). This is both because a wide range of factors are usually included within the category of social effects and because many of these effects are difficult to measure and quantity. Both standard and special social effects can be seen as resulting from the siting of a project (2, 3, 4). Standard impacts are those associated with any major project, while special impacts result from the fact that a project is involved in managing substances that are potentially dangerous for extended periods of time.

For projects, such as a low-level radioactive waste disposal facility in which standard impacts are often limited, the special impacts may be particularly important. These include such effects as fear and anxiety about the project, concerns over the equity of being asked to host such a facility and concerns related to potential intergenerational effects and other long-term effects (2). In addition, it has become apparent that the way in which the siting of such projects is managed often has implications for the success of the siting process that are different than those associated with the siting process for other large-scale developments (5). Though difficult to assess, these standard and special social effects may be among the most important factors affecting project siting (6, 7).

In recognition of the consequences of such factors, the Texas Low Level Radioactive Waste Disposal Authority contracted with the Department of Rural Sociology in the Texas Agricultural Experiment Station in the Texas A&M University System to perform an assessment of the social and special effects of siting a low-level radioactive waste disposal facility in Texas. The department conducted an independent assessment of such impacts at alternative sites using a three-phase procedure. The siting area examined was Hudspeth County, Texas. Hudspeth County is a sparsely settled county in far West Texas. Its 1980 population was 2,728 and its estimated population in 1985 was 2,637. It has only one incorporated city (Dell City) and only three places (Dell City, Ft. Hancock and Sierra Blanca) of over 400 people. It had a population density of 0.6 persons per square mile in 1985. Nearly 60 percent of its population is of Hispanic origin. Its economy is based on ranching and irrigated agriculture.

In the Phase I analysis, the historical demographic, economic and social characteristics that are likely to affect the area's response to a radioactive waste disposal project were examined (8). Phases II and III of the study consisted of an (9) examination of data collected by personal interviews with community leaders and residents. These data examine key attitudinal, value and perceptual dimensions of siting a low-level nuclear waste disposal facility. The analysis of these data is the

focus of this paper and is among the most comprehensive analysis of such dimensions completed to date for a low-level radioactive waste disposal facility.

Throughout the analysis presented below, it should be recognized that this study was not intended to be an analysis of all of the socioeconomic impacts of the proposed low-level nuclear waste facility in Hudspeth County. Other analyses (10, 11) examined other socioeconomic impacts of the proposed project. This paper examines only the standard and special **social** impacts of the proposed project.

METHODOLOGY

A social impact analysis can utilize a number of alternative impact assessment methods (3, 4) but the most common methods used are those of secondary data analysis, participant observation analysis and survey analysis. Of these methods the most often used form of social impact assessment is the use of leader and resident surveys. Surveys of leaders are conducted to obtain information from those persons likely to determine community actions during the process of facility siting, construction and operation. Surveys with residents are intended to obtain information from a representative cross-section of persons in the community including those who may not be active in leading community affairs. For the study reported here personal interviews were conducted with both leaders and a random sample of county residents. Leader surveys were completed using a snowball sampling technique. The survey of community residents was conducted using personal interviews with a random sample of county residents obtained from property tax records. Interviews were completed with 71 adult (18 yrs of age or older) leaders and 96 adult residents using a common research instrument (in English and Spanish) during May through August of 1986.

The questionnaire contained a large number of items related to the siting of a low-level nuclear waste storage facility as well as items about the area. Thus, it addressed such issues as the relative danger of a low-level waste facility, the relative importance of the low-level waste disposal problem, perceptions of the community and satisfaction with the community, knowledge of sources of low-level wastes, waste facilities, and information sources for such knowledge, attitudes toward waste issues, the perceived effects of the facility on the county and different groups in the county, preferences regarding mitigation including what should be mitigated and by whom, the level of opposition or support for the project, evaluations of alternative sites and general sociodemographic information on the respondent and the respondent's household. Although no single questionnaire can address all of the relevant issues related to a complex issue such as low-level waste facility siting, we believe the questionnaire addressed a relatively comprehensive set of the key issues related to such a project. The data from the surveys were analyzed using standard descriptive (*chi-square*) and regression forms of analysis.

Although too extensive to be shown in table form here, the data for the total sample of respondents generally showed that respondents wish to avoid living in close proximity to major developments, particularly those with a potential for environmental or other types of negative effects. Over 34 percent would not find it acceptable to live at any distance (even more than 100 miles) from a chemical disposal plant, over 20 percent find such a proximity objectionable for a chemical plant, 42 percent for a nuclear power plant, 30 percent for a missile site, 50 percent for a low-level radioactive waste disposal facility, and 57 percent for a high-level nuclear waste disposal facility. Thus, only high-level nuclear waste facilities are seen as less desirable by this measure than a low-level waste facility. In general, however, respondents wish to live distant from developments of nearly any kind.

When respondents were asked to evaluate the relative importance of the low-level waste storage problem compared to other major environmental issues, respondents tended to rate the storage of high-level wastes as the most important problem (38 percent ranked it as the most important concern), followed by preservation of farmland (25 percent rated it as the most important), and then by reduction of water pollution (24 percent rated this issue as number 1). Only 4 percent of respondents rated low-level nuclear waste disposal as the most important environmental issue facing the State. We also assessed respondents' levels of knowledge about low-level waste siting and the sources of such knowledge. The results show that over 37 percent of the respondents were not aware of any of the proposed sites for the low-level waste facility, and an additional 12 percent were aware of only one of the four site areas. When those who were aware of one or more of the proposed sites were asked to indicate the source of their information, the most often noted source was informal information (38.5 percent), followed by the local newspaper (27 percent), outside media (over 22 percent), other formal sources (such as leaders) in the county (21 percent), and the Texas Low-Level Radioactive Waste Disposal Authority (18 percent). It appears that informal rather than formal sources have been the major sources of local information on the project.

On the other hand, when respondents were asked how much they had read or heard about the proposal to construct a facility, over 80 percent indicated that they had read or heard a great deal or some about the project and again informal sources, followed by the local and outside media were the most often noted sources of information. We also asked about respondents' evaluation of the appearance of a low-level waste facility and the specific things respondents had heard about the facility. Nearly equal proportions felt the facility would detract from their appreciation of the area in which it was located or felt that it would have no effect on their appreciation of the area. Many noted that the appearance of the facility was not the important issue and when asked what they had heard about the facility, over 60 percent suggested that they had heard that the facility would cause extensive environmental damage or have other negative effects or that their area was technically unsuited for the facility.

Finally, respondents were asked to determine the amount of wastes produced by various activities and facilities. The results for this item indicate that a majority of respondents were knowledgeable about the sources of wastes, correctly identifying sources such as medical research, nuclear power plants and similar facilities and activities as major sources of wastes and activities and facilities such as coal mines, and gas and oil-fired power plants as minor sources of low-level nuclear wastes. Other survey questionnaire items examined respondents' perceptions of threat from various events, both before and after

the siting of the facility, and their perceptions of the equity, safety and technological reliability of siting and other similar governmental processes. The results indicate that respondents perceived that the siting of a facility would increase the threats from several of the sources. Respondents were asked to evaluate various threatening events both with and without the facility. A comparison of the perceptions of threat from these evaluations, reveals that the perceptions of threat are generally greater with the facility. A comparison of means (not shown) indicated that of the 15 common items in the comparisons, 11 were perceived as being a greater threat after the siting of the facility than before. The largest differences are in perceived threats from radiation exposure and water pollution with the postsiting scores being substantially and significantly (when means are statistically compared) higher than presiting scores.

Respondents generally do not believe that the siting of low-level waste facilities can be done safely or that technology in general is available to safely handle problems such as waste storage. When the 20 items that asked for evaluative responses (of the ability of existing technology and management agencies to manage wastes) were examined, the results indicate that for 14 of these items, the majority of respondents gave an answer that indicated that they did not trust the siting process, did not believe in the equity of the process nor believe that existing technology was sufficient to safely contain waste products. Interestingly, however, the results suggest that such distrust may not be limited to low-level nuclear waste facilities. Thus, over 50 percent of respondents indicated that low-level wastes were no more of a risk than other modern hazards. This suggests that respondents have a general lack of trust in the technology available to protect the environment. The responses suggest that respondents in Hudspeth County have perceptions of threats related to the project that are specific to certain perceived characteristics of the project (e.g., radiation exposure and effects on water) but that they tend not to trust technology and the siting process for undesirable projects in general.

We also asked respondents to indicate their perceptions of the impacts of the low-level radioactive waste disposal facility on specific aspects, and on specific groups, in their community and to indicate which groups and aspects would be most positively and negatively impacted by the facility.

When respondents were asked to evaluate the effects of the project on various aspects of their community and county, a majority perceived that the project would have largely negative effects. Thus, over 50 percent indicated that the project would have bad or very bad effects on the quality of air, the quality of water, the use of agricultural lands, the natural beauty of the area, tourism, land values, the personal safety of community residents, public health, the community as a place to raise children, the community as a whole, and their life as a whole. For several other items such as taxes, the cost of living, people's involvement in the community, law enforcement, recreational facilities, the use of recreational lands, and the community's economic growth, although the modal response was that the project would have no effect, the percentage of responses in the negative categories exceeded those in the two positive categories. The dimensions in which the project was perceived to have the most positive impacts were in the areas of local business, medical service, employment opportunities, and the community's economic growth for which over 30 percent of the respondents for each item said the project would have good or very good effects on the community.

When respondents were asked to evaluate the effects of the project on various groups in the community, 50 percent or more indicated that they believed the project would have negative or very negative impacts on all groups (women, men, young and old people, business and farm residents, etc.), except the unemployed, migrant workers and undocumented workers. The groups believed to be the most negatively impacted were farmers and ranchers (over 76 percent of the respondents indicated that they would be negatively or very negatively impacted), property owners (over 67 percent indicated they would be negatively or very negatively impacted), and long-time residents (over 62 percent indicated they would be negatively or very negatively impacted). Respondents' perceptions of the most negative and positive impacts reflect their generally negative perceptions of the impacts of the project. Thus, when asked to list the most negative impacts, the respondents tended to note risks of radiation exposure, water contamination and general negative environmental effects. Few respondents would list even a single positive impact on the community. For perceived impacts on groups within the community, those perceived as likely to be most positively and negatively impacted were the same as those described above, with farmers and ranchers and land owners being seen as negatively impacted and the unemployed and undocumented aliens being seen as most likely to benefit from the project.

We also examined respondents' perceptions of who should manage specific aspects of the project, who should be compensated for impacts from the project and who should pay for such compensation. The results clearly show that a majority of the respondents believe that nearly all parts of the siting process and management of the facility should be a State responsibility. Thus, over 50 percent of all respondents believe that the State should have the responsibility for determining the technical soundness of the site for the facility, constructing and operating the facility, maintaining the facility, monitoring the health of workers and residents, transporting the wastes to the facility, and providing security for the facility. Only for the final selection of the site do less than 50 percent of the respondents believe that the State should have responsibility. For this item 48 percent believe the State should have the responsibility, while 36 percent believe that it should be in the hands of local governments. Overall, there is a strong perception that low-level nuclear waste facility siting is a State responsibility.

When respondents were asked to indicate whether or not they believed various types of impacts should be compensated, in general, respondents tended to believe that compensation is appropriate. For example, over 80 percent believed compensation was appropriate for additional public protection services (e.g., fire and police), damage to public property, injury to residents and workers, monitoring of socioeconomic and safety effects, for community planning, damage to private property, and for pollution or environmental damage, less than 65 percent of the respondents believed there should be compensation in the form of loans for the expansion

of existing businesses or the establishment of new businesses, for loss of public access to public lands, or for living next to a low-level nuclear waste storage facility. When asked who should pay for these forms of compensation, a majority of respondents listed the State as the primary party responsible for compensation with the original waste producer being the next most often noted party who should assume financial responsibility.

Finally, we examined respondents' overall evaluations of the siting of the low-level waste facility and of the specific sites for the facility. In general, when asked to indicate their level of support/opposition for the proposed sites, the respondents indicated opposition to all three sites within Hudspeth County. The proximity of a site to respondents' residences was a consideration in their evaluation of its desirability. Thus when the responses of respondents in different residence areas (cities) were examined, it was evident that respondents were most opposed to the sites closest to their residence area. When reasons for supporting or opposing the site were given, it is clear that environmental concerns, proximity to the respondent's residence and the safety and suitability of the facility were the most often noted concerns for all sites, while those who favored any site tended to do so for economic reasons.

When asked to respond to the question of "if a vote was held today in your community on whether or not to build this disposal facility, would you vote yes to build the facility or would you vote no, not to build it?", over 72 percent of the respondents said they would vote no, 19 percent said they would vote yes and 9 percent were undecided. When asked why they would vote the way indicated, respondents noted largely environmental and technical suitability reasons for opposing the project, and those favoring the facility indicated largely economic development-related reasons.

Respondents were also asked to indicate if their were any "special" places or areas they would like to have avoided in facility siting. Respondents' answers to this question suggested that roughly 30 percent indicated that their was no particular area they wished to have avoided, 28 percent wished to have the watershed avoided, over 14 percent indicated the entire area should be avoided, and the remainder cited environmental and population-related factors.

An analysis of responses to respondents' preferences for the type of storage media for low-level wastes shows that the form of storage most often viewed as the best form of storage was above ground vaults with 35 percent of all respondents preferring this form of storage, followed by below ground cement canisters with 29 percent naming it as the most desirable form of storage. However, when mean choice values are examined (such means are not shown here), the form of storage with the lowest mean rank, indicating that it is generally most preferred when all possible orders of selection are examined, is below ground cement canisters, followed by below ground vaults, but the differences in means are not significant. This apparent disparity in findings results from the fact that responses to the above ground vaults option appear to be bipolar with 34 percent of respondents indicating that it was the least preferred option (compared to 35 percent who indicated it was the best option). Overall, then, the respondents appear to favor a variety of forms of storage with no clear choice of forms.

Respondents were also asked to evaluate how likely it would be that a low-level facility would have an accident serious enough to endanger the environment or residents of the siting area and what actions might be taken to make the siting of such a facility in their area more acceptable to them and other persons in the area. Over 36 percent of the respondents thought that an accident was very likely and another 27 percent thought it was likely, while roughly 30 percent thought it was unlikely or very unlikely. Thus, a majority of respondents feel that an accident is likely to occur if a facility is located in their area. When asked what things might be done to make such a project more acceptable to them, 38 percent said the implementation of thorough safety procedures would increase its acceptability, 21 percent indicated that the provision of additional information would increase its acceptability, and nearly 5 percent indicated that adequate compensation would improve its acceptability. Over 32 percent indicated that nothing could be done to make the site more acceptable to them.

Overall, then, a majority of the respondents indicate general opposition to each of the three sites in Hudspeth County. A majority would vote against the project if such a possibility existed and most believe that a serious accident is very likely or likely if a facility is built in their area. Respondents see several alternative storage options as nearly equally desirable. Respondents tend to believe that additional attention to the implementation of safety procedures and the provision of additional information could make the facility more acceptable to them.

Analysis of the items noted above was also completed controlling for leadership and resident status, and city of residence. In general, such factors had little effect on respondents' perceptions indicating that responses to the project were quite pervasive across the county and among both residents and leaders in the county.

Although the results reported above indicated quite pervasive responses (across leadership status and residence categories), it was also desirable to examine the extent to which respondent's characteristic may have determined their responses. This is important programatically because if people with different characteristics (e.g. persons of different ages, income levels, etc.) vary in their responses to siting issues then it may be possible to develop information or other programs aimed at specific groups. From an empirical standpoint if taking such characteristics into account does not allow one to predict responses more accurately then, given the strong patterns of responses noted above, it suggests that responses are pervasive across such characteristics. Such a finding thus further indicates that perceptions concerning siting issues are consistent across different types of persons within the siting area. To assess these concerns both descriptive and regression based techniques were employed.

As a means of examining the extent to which responses to key siting issues are related to respondent characteristics, phi values and chi-square statistics for various crosstabulations (in which multi-item variables were combined into summated scales and dicotomized at the median) were completed. Of the 384 crosstabulations examined, 66 interrelationships, or 17.2 percent of all interrelationships, were statistically significant.

Thus, only a small percentage of such relationships indicate that social, demographic and other similar characteristics explain respondents' patterns of response to siting issues. In addition, in a majority of the significant relationships, the phi values were low suggesting that the relationships, even when statistically significant, were often weak.

In addition, of the 66 significant relationships between the independent and dependent variables, 26 are found for just 3 of the 16 dependent variables--awareness of the location, knowledge of the facility, and knowledge of sources of wastes. The remaining significant relationships are scattered among the dependent variables. Even more noticeable was the fact that few of the variables most clearly indicative of an overall evaluation of siting issues (such as the questions related to voting on the site, the likelihood of an accident at the site and the level of support for alternative sites within the County) showed significant relationships to the independent variables.

Overall, then, the descriptive findings suggest that few significant and substantial (in terms of magnitude) relationships exist between social, economic, demographic and perceptual variables and siting issues. The majority of significant relationships are related to knowledge of the facility and relatively few to the key issues of opposition or support for the project. Such a finding, coupled with the strong negative perceptions of the project noted above, suggests that the level of opposition to the project is pervasive among population groups in Hudspeth County.

Ordinary Least Squares (OLS) and stepwise regression procedures were also utilized to examine the relationships. Two separate sets of regressions are examined in Table I. One set examines the effects of various siting issue perspectives and social, economic and demographic variables on other siting issues. An examination of these regressions allows us to determine the extent to which the complex of factors assessed in the survey determine respondents' responses to siting issues.

The second set of regressions examines a smaller set of independent variables. Excluded from this set of regression models are variables that are themselves potential indicators of facility siting concerns. In the regressions on the reduced set of variables, only the effects of standard social, economic and demographic variables on siting issue concerns are examined. This set of regression models allows one to identify the extent to which respondents' characteristics alone, rather than their specific perspectives related to facility siting and their characteristics jointly, may be determining their responses on key siting issues. For both sets of models data for the first three explanatory variables entered in the stepwise model, the total number of all variables entered in the stepwise procedure and the total R^2 are presented in Table I.

Panel A of Table I shows the results of the regressions for the models showing the effects of siting issue perspectives and social, economic and demographic variables on other selected siting issues. Overall these models explain moderate levels of variation in the dependent variables. The R^2 values range from 5 percent of the variation being explained for the issues related to responsibility for siting to 62 percent for the question related to the likelihood of an accident. There is thus substantial variation in the level to which the responses of respondents can be explained by the variables included in the analysis.

In general the data in panel A of Table I indicate that a combination of siting concerns and social, demographic and economic variables explain a moderate proportion of the variation in the dependent variables that reflect other siting-area concerns. In fact, the results for these models largely suggest that the variables reflecting responses to different dimensions of concerns regarding the relative safety and siting of facilities reflect a pattern that is pervasive across respondent groups. This pattern is one largely reflective of negativity toward the siting process.

Panel B of Table I presents a summary of the second set of regression models. In these models the independent variables examined have been reduced to the key social, economic and demographic variables, with variables measuring other siting issue concerns being eliminated from the set of independent variables. An examination of these models, and a comparison of them relative to the preceding models, provides an indication of the extent to which the characteristics of individuals, rather than perceptions of other dimensions of the siting of a facility, are affecting respondents' patterns of response.

An examination of the models presented in panel B of Table I shows that in all cases the percent of explained variation is smaller than for the comparison models which included responses to other siting issues. In fact, for most models, the percent of explained variation in the reduced models is one-half to one-fourth of the R^2 for the comparison model. Thus, it is evident that social, economic and demographic variables are of limited utility in explaining respondents' responses on key siting-issue questions. When compared with the models which also used responses to other siting issues as independent variables (see the panel A of Table I), it is evident that social, economic and demographic variables are generally not the key determinants of siting-issue concerns.

The data in this table do reveal, however, several relationships among social, economic and demographic variables and siting concerns that are important to identify. Among the variables of significance in several of these models (as indicated in the result of the stepwise models) are age, race/ethnicity, sex, ownership of land near proposed sites and of farmland, leadership status, education, community satisfaction, occupation and residence in specific cities.

In general, these relationships indicate that younger persons in the county are likely to be better informed about the project, more fearful of its effects and more strongly opposed to the project than older persons. Females tend to be less well informed about the project than males but more fearful of the project's effects and more strongly in opposition to the project than males. Hispanics tend to be less well informed about the sources of waste than Anglos, but are more likely than Anglos to oppose the project, and to believe it will have negative impacts on aspects of the community and on community groups. Ownership of land and of farm/ranch lands tends to lead to higher levels of knowledge and to very high levels of opposition to the project. Leaders tend to be better informed about the project than nonleaders,

TABLE I

SUMMARY OF SELECTED RESULTS FOR MODELS SHOWING REGRESSIONS OF RESPONSES TO SELECTED SITING ISSUES ON RESPONDENT'S CHARACTERISTICS AND RESPONSES TO OTHER SITING ISSUES

Dependent Variable in Model	Name and Unstandardized Coefficients for 3 Most Important Variables* Variable 1	Variable 2	Variable 3	Number of Variables Entering Stepwise Regression Equation	Adjusted R^2 (OLS Model)
Panel A: Models Showing Effects of Social, Economic, Demographic and Other Perspectives on Selected Siting Issue Responses (there were 41 independent variables in each model; reference categories for dummy variables shown in parenthesis)					
Perception of Threat	Oppos/Support Site C -4.53	Effects on Groups 0.44	City of Res. (1=Dell City) -9.15	16	0.38
Awareness of Location	Know Sources -0.05	Age 0.00	Effects on Groups -0.01	6	0.18
Previous Knowledge	Race/Ethnicity (1=Hispanic) 0.08	Oppos/Support Site D 0.08	Leader status (1=leader) -0.14	9	0.21
Knowledge of Sources	Race/Ethnicity (1=Hispanic) -2.65	Age -0.06	Awareness locations -2.00	14	0.41
Percep. of Threat with Facility	Effect on community 0.05	Oppos/Support Site A -3.24	Responsibility for siting 0.41	13	0.37
Faith in Tech.	Effects on community 0.17	Area appreciation -2.57	Occupation 0.01	6	0.48
Effects on Community	Faith in Tech. 0.47	Oppos/Support Site C 0.27	Threat with Facility 0.17	11	0.49
Effects on Groups	Faith in Tech. 0.26	Oppos/Support Site D -2.44	Threat with Facility 0.15	14	0.49
Responsibility for Siting	Perceptions of threat 0.03	Race/Ethnicity (1=Hispanic) -1.64	Own lot (1=yes) -1.57	6	0.05
Support for Compensation	Effect on community 0.02	Acres in Farm 0.00	Own lot (1=yes) -0.95	10	0.32
Vote on Project	Oppos/Support Site C -0.13	Knowledge of facility 0.22	Faith in Tech. 0.01	4	0.06
Likelihood of Accident	Vote 'no' -1.23	Oppos/Support Site C 0.20	Faith in tech. -0.30	15	0.62
Panel B: Models Showing Effects of Social, Economic and Demographic Variables only on Selected Siting Issue Responses (there were 24 independent variables in each model; reference categories for dummy variables shown in parenthesis)					
Sex (1=male) -10.44	Age -0.21	Own farm (1=yes) 11.91		5	0.14
Own farm (1=yes) -0.13	City of Res. (1=Dell City) -0.17	Persons in household 0.03		6	0.11
Race/Ethnicity (1=Hispanic) 0.10	Leader status (1=leader) -0.12	Own lot (1=yes) -0.16		5	0.13
Race/Ethnicity (1=Hispanic) -3.06	Age -0.06	Sex (1=male) 1.43		9	0.31
Respondent's years of education 0.17	Sex (1=male) -4.17	Sites near land used (1=yes) 3.33		5	0.07
Occupation 0.01	Community satisfaction 0.39	Own farm (1=yes) 7.20		9	0.15
Community satisfaction 0.63	Sex (1=male) 7.17	Sites near land owned (1=yes) 4.89		6	0.11
Sex (1=male) -8.11	Community satisfaction 0.40	Sites near land owned (1=yes) 2.51		6	0.11
Sites near land owned (1=yes) 2.20	Own lot (1=yes) -2.54	Sex (1=male) -1.15		5	0.06
Race/Ethnicity (1=Hispanic) 0.89	Acres in Farm -0.00	Community satisfaction 0.11		7	0.14
Sites near land used (1=yes) 0.20	Occupation 0.00	---		2	0.01
Sex (1=male) 0.76	Community satisfaction -0.06	Sites near land owned (1=yes) -0.37		8	0.16

*As indicated by order of entrance into stepwise regression using 0.15 level of significance as criteria for entrance.

to have higher levels of fear concerning the project and to be more strongly opposed to the project at each of the alternative sites than nonleaders (residents). Respondents' occupational and educational levels show persons in professional and higher status occupations, and those with higher levels of education, to be better informed and more strongly opposed to the project than less well educated persons and those in lower status occupations. Persons with higher levels of satisfaction with the community and with community services are better informed and more strongly opposed to the project than those with lower levels of satisfaction. Finally, the data suggest that residents of a city in the Northeastern part of the County perceived themselves to be better informed about the project, are more fearful of the effects of the project, and more strongly opposed to project siting than residents of the other two cities.

Overall, the data presented in Table I suggest that standard social, demographic and economic variables are of limited utility in explaining the high levels of opposition to the project. In fact, whereas many analyses of technology-based facilities suggest that persons with higher levels of knowledge, higher levels of education and leaders are among those most supportive and least fearful of technology-based projects (2), the data reported here suggest that social, demographic and economic variables as a whole are not strongly related to the level of support/opposition to the project, but that in cases where significant relationships exist, they are opposite to those found in relation to general technology projects. Overall, then, these data suggest that the largely negative perceptions of the project noted above are pervasive across groups in Hudspeth County with widely different social, economic and demographic characteristics, and that relationships found between such characteristics and concerns related to key siting issues suggest that it is the best informed, the best educated and those exerting leadership in the County who are most strongly opposed to the project.

SUMMARY AND CONCLUSIONS

When taken as a whole, then, the findings show a consistent pattern of negative responses to the potential siting of a low-level radioactive disposal facility among residents and leaders in Hudspeth County. Respondents in the county, no matter what their characteristics, generally do not want the facility placed in their county because they believe it will negatively impact the environment of the area, contaminate the water supply, will not provide benefits adequate to offset the potential damage it may cause and will be likely to result in an accident that will lead to contamination of the environment. This response is sufficiently pervasive so as to suggest that the siting of such a facility in Hudspeth County is unlikely to be voluntarily accepted by residents of the county. If a decision to site such a facility in Hudspeth County is made, then the results further suggest that mitigation activities aimed at improving economic opportunities in the county, coupled with increased information on the project and local involvement in the implementation of additional safety provisions for the facility may assist in addressing some of the concerns of the people of Hudspeth County.

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