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Major Sociocultural Impacts of the Yucca Mountain High-Level Nuclear Waste Repository on Nearby Rural Communities

by

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DISCLAIMER

The Nevada Agency for Nuclear Projects/Nuclear Waste Project Office was created by the Nevada Legislature to oversee federal high-level waste activities in the State. Since 1985, it has dealt largely with the U.S. Department of Energy's siting of a high-level nuclear waste repository at Yucca Mountain in southern Nevada. As part of its oversight role, NWPO has contracted for studies designed to assess the socioeconomic implications of a repository and of repository-related activities.

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EXECUTIVE SUMMARY

This report provides a summary of selected, potentially significant social and cultural impacts which have occurred, or which can be expected to occur, in four rural southern Nevada communities as a result of federal efforts to site a high-level nuclear waste repository at Yucca Mountain, Nevada. During 1986-90, research was conducted in a total of nine rural study areas: Amargosa Valley, Beatty, Pahrump and Tonopah in Nye County; Goldfield in Esmeralda County; Indian Springs and Mesquite in Clark County; and Alamo and the Caliente/Pioche area in Lincoln County. The focus here is upon the extant and potential future socio-cultural impacts in Amargosa Valley, Beatty, Pahrump and Indian Springs, the four Nevada communities nearest to Yucca Mountain. Due in part to their proximity to the repository site, these communities are potentially vulnerable to a wide variety of "standard" socioeconomic and sociocultural effects associated with the construction and operation of an extremely large and complex facility such as the proposed repository. In addition, their proximity to both the repository and to probable nuclear waste transportation corridors may increase the potential for certain "special" effects related to both real and perceived risks of handling and storing high-level radioactive waste materials.

Data collected thus far suggests that the repository program has had only limited impacts on social and cultural conditions in the four study communities. Insofar as the project remains in a preliminary planning and site analysis phase, it is not surprising

that few impacts have been observed. Furthermore, the Yucca Mountain project has not generated any meaningful level of economic, demographic, fiscal or public service impacts in the surrounding rural communities. Thus, none of the social disruptions and structural alterations so often observed in other communities affected by growth from large-scale construction projects are evident. In the absence of repository-induced population growth, the generally anticipated impacts on levels of community satisfaction, social integration and participation, and social deviance and disorder have simply not been manifest.

For similar reasons, some of the "special" effects that might be expected to arise in response to a project involving storage of dangerous radioactive wastes have been minor or have failed to materialize altogether. To varying degrees residents of the four study communities perceive potential risks associated with the repository, although the levels of risk concern are generally lower than those reported by residents of the Las Vegas urban area or in more distant rural study communities such as Goldfield, Mesquite, Alamo and Caliente.

Perceptions of risk and possible associated "stigma" effects have apparently been attenuated by the fact that for many area residents the repository remains a vaguely defined proposal which implies obscure activities and consequences at some future, but unspecified date. So, after several years of public knowledge of the project, the Yucca Mountain repository remains a phantom project.

In the absence of concrete construction activities or even

firm and publicly known plans and schedules, many residents find little reason to focus much attention or concern on possible personal or community impacts of the repository. Thus, potential pre-development impacts such as local opposition, conflict and deteriorating community satisfaction that might be expected to result from the repository siting process have not been highly evident.

The current atmosphere of minimal impacts and limited concern about or negative response to the repository is especially prevalent in Amargosa Valley and Beatty, the two communities located nearest to Yucca Mountain. Both of these communities have a history of economic instability linked to their long-term and continuing dependency on the mining industry. Most residents in these two towns appear to view the proposed repository as a source of new jobs and increased economic vitality for their communities. Relatively few residents in Amargosa Valley and Beatty express high levels of concern or fear about repository risks, and there appear to be no meaningful adverse effects on community satisfaction or levels of social integration and participation.

In contrast, Indian Springs and Pahrump residents exhibit noticeably higher levels of concern about repository-related risks and other potential socioeconomic effects. In recent years both of these communities have experienced growth, and both currently enjoy relatively stable economic conditions. Although residents of Pahrump and Indian Springs anticipate that their communities will reap economic benefits from the repository, these expectations are less than those observed in Amargosa Valley and Pahrump and

apparently do not outweigh risk-related concerns as is the case in Amargosa Valley and Beatty.

The most obvious impact of the repository program to date involves political conflicts that have embroiled local, county, state and federal government entities. The result has been expressions of anger, distrust, dissatisfaction and dismay among rural community residents. Surprisingly, the repository project has not generated a great deal of intercommunity or intracommunity conflict. This is probably because there have been few overt community changes which can be linked to the repository. However, residents express high levels of concern about the ability of the federal government to safely and effectively manage the repository, and tend to believe that the federal government cannot be trusted to provide honest, accurate information about the repository or other nuclear projects, e.g., NTS.

Residents also seem to possess a sense of powerlessness to alter or influence federal agency decisions, including decisions regarding the repository. At the same time, residents also express disdain over state actions and responses to the repository. Many also question the efficacy of state efforts to block repository development. In addition, there is a perception that the state has and will divert repository impact-alleviation funds away from rural impact areas toward the politically powerful urban areas of Las Vegas and Reno.

Although the sociocultural impacts to date have been limited in the four study communities, each remains vulnerable to future disruptions, standard effects associated with construction and

operation, as well as the special effects linked to the risks of waste transportation and storage. Intracommunity and intercommunity conflict could emerge as a result of problems generated by repository-induced population growth, allocation of impact alleviation funds, and concerns about repository risks. Dissatisfaction may also become widespread if the repository fails to produce expected local economic benefits, or if repository accidents or operations problems generate heightened risk perceptions or stigmatization of nearby communities.

INTRODUCTION

Focus of Report

The proposed Yucca Mountain High-Level Nuclear Waste Repository has the potential to generate a broad array of socioeconomic impacts in both urban and rural communities of southern Nevada. This report provides a summary of selected, potentially significant social and cultural impacts that have already occurred or might reasonably be expected to arise in the four Nevada communities located nearest the Yucca Mountain site: Amargosa Valley, Beatty, Indian Springs and Pahrump.

The focus of the report is upon local residents' perceptions of the proposed repository and risk-related concerns, as well as actual or potential repository impacts on established community social structures. In particular, attention is directed to actual and potential effects on community social integration and involvement, community conflict, and levels of community and personal satisfaction.

This summary of repository impacts on social conditions in the four selected study communities is based on research conducted by Rocky Mountain Social Science (RMSS) during 1986-90, under contract with Mountain West Research[1] (MWR) and the Nevada Nuclear Waste Projects Office (NWPO). The assessment draws upon, but does not duplicate, information presented in a series of previous reports and papers documenting social and cultural conditions in rural, southern Nevada communities (Krannich and Little, 1987a, 1987b,

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[1]Mountain West Research was recently purchased by and the name changed to Coopers and Lybrand.

1987c, 1987d, 1987e, 1988, 1989a, 1989b, 1989c; Little and Krannich, 1987a, 1987b, 1987c, 1987d; Endter, Little and Krannich, 1988a, 1988b, 1988c; Trend, Little and Krannich, 1988a, 1988b, 1988c; Cramer, Krannich and Rhea, 1989; Richards and Krannich, 1989; Cramer, 1990).[2]

Data Sources

Study Communities

Four communities are examined in this report. Amargosa Valley, Beatty and Pahrump are all located in southern Nye County. The fourth community, Indian Springs, is located in northwestern Clark County. These four communities are a subset of communities which have been examined through a series of studies focusing on social and cultural consequences of the repository for rural communities in southern Nevada. Although other communities[3] were studied during the course of this research, they are not included in these analyses.

The focus on only four communities for this research is based on several factors. First, budget and time constraints made it impractical to attempt a detailed summary of major findings for all nine of the rural study sites. Also, the types of data collected and level of research effort varied substantially across the study

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[2]Interested readers are referred to these earlier reports and papers for additional information not included herein.

[3]These other communities are Tonopah in Nye County, Goldfield in Esmeralda County, Mesquite in Clark County, and Alamo and the Caliente-Pioche area in Lincoln County. The Alamo study also included other communities in the Pahranagat Valley.

communities. The most complete array of data are available for Amargosa Valley, Beatty, Pahrump, Indian Springs, and the Caliente area, providing the researchers with a higher degree of confidence in the data base and impact projections for these communities. Finally, the four communities examined in this report are located nearest to Yucca Mountain and may therefore be expected to experience a broader range of social and cultural impacts from the repository than might be the case in the more distant study communities. Consequently, an evaluation of repository effects in Amargosa Valley, Beatty, Pahrump and Indian Springs should provide a useful first step in understanding some of the more important types of impacts that may arise in other southern Nevada rural communities.

All four of these communities are within reasonable commuting distance of the proposed Yucca Mountain site. Highway distances from the repository site are approximately 17 miles for Amargosa Valley, 45 miles for Beatty, 61 miles for Pahrump, and 61 miles for Indian Springs. Unlike the urban Las Vegas area, these communities all have relatively small populations and possess limited infrastructures. These features make them especially susceptible to a variety of "standard" impacts that could arise as a result of potentially high levels of work-related inmigration associated with site characterization, construction, and operation of the proposed repository.

In addition, the proximity of these communities to the repository site may increase the potential for certain "special"

effects related to both real and perceived risks of handling and storing high-level radioactive waste materials. This potential for risk-related impacts on social and cultural structures is heightened by the fact that each of these communities is located on one or more of the rail lines corridors or highways that have been considered by the U.S. Department of Energy (DOE) as candidate nuclear waste transportation routes. Although DOE has yet to announce the actual waste transportation routes to be utilized should the repository become operational, waste transportation concerns have been identified as important in all four of these study communities.

Description of Data Sources

The data base for assessing repository impacts on Amargosa Valley, Beatty, Pahrump and Indian Springs is based on several major research activities and data collection efforts undertaken between 1986 and 1990. Throughout the study period, RMSS has periodically reviewed major newspaper articles drawn from the Las Vegas Review-Journal, the Gateway Gazette, the Pahrump Valley Times, and assorted other local and regional newspapers. This has allowed the researchers to maintain some degree of familiarity with current issues and events in the study area, even during periods when field research activities were not in progress.

In addition, RMSS has undertaken several field research efforts to collect community-specific data on social and cultural conditions. In the first major data collection effort, RMSS senior

scientists conducted a series of key informant interviews with a wide variety of local residents in each of the study communities. These interviews began in October, 1986 and continued on a periodic basis through May, 1988. Altogether, a combined total of over 200 individual interviews were conducted in Amargosa Valley, Beatty, Pahrump and Indian Springs. Those contacted included local business owners, operators, and employees; elected and appointed community and county officials; public safety agency personnel; school system administrators and teachers; library personnel; ranchers; contractors; senior citizens; and a broad range of other local residents identified as knowledgeable about various community issues and conditions. These data, supplemented by various types of available information such as historical documents and agency data, provided a basis for describing the baseline social structure of the study communities. Major results of the initial phase of the key informant interviews are summarized in a series of reports submitted to the NWPO in June, 1987 (Krannich and Little, 1987a, 1987b, 1987c, 1987d, 1987e; Little and Krannich, 1987a, 1987b, 1987c, 1987d).

A second major data collection effort involved ethnographic field research in six of the rural study communities from September, 1987 through June, 1988. Trained field workers with doctoral degrees in cultural anthropology resided in the six study areas as follows: Beatty and Caliente from mid-September through December, 1987; Amargosa Valley and Pahranagat Valley from January to mid-March, 1988; and Pahrump and Indian Springs from late March

through mid-June, 1988. While in the field the anthropologists conducted interviews; attended and observed community activities and functions; and documented community social structures, activities and processes, and individual attitudes and perceptions. Although the field workers resided only two months in each community, ethnographic data collection continued in all study communities throughout this study period. That is, while the researcher was actually in residence in one community, he or she visited the other communities on a regular basis, usually every week. Major findings derived from the ethnographic field research, supplemented by data from the second phase of RMSS key informant interviews, are reported in a series of reports submitted to NWPO in late 1988 (Endter, Little and Krannich, 1988a, 1988b, 1988c; Trend, Little and Krannich, 1988a, 1988b, 1988c).

A third major data collection activity involved the use of standardized self-completion surveys administered to representative samples of adult residents in seven southern Nevada rural study communities: Amargosa Valley, Beatty, Pahrump, Indian Springs, Mesquite, and Caliente in 1988, and Goldfield in 1989. The survey addressed a number of major issues including respondents' sociodemographic characteristics, community involvement and social integration, community and personal satisfaction, community value orientations, trust in government, trust in science, orientations toward hazardous facilities and activities, and orientations toward the proposed Yucca Mountain nuclear waste repository. Questionnaires were administered via a personal drop-off/pick-up

method to 132 Amargosa Valley residents, 152 Beatty residents, 220 Pahrump residents, and 152 residents of Indian Springs during March through May, 1988. Major survey results have been summarized in two reports submitted to NWPO (Krannich and Little, 1989a; 1989b), as well as in several professional papers prepared by members of the RMSS research team (Krannich and Little, 1988, 1989c; Cramer, Krannich and Rhea, 1989; Richards and Krannich, 1989; Cramer, 1990; Cramer and Bourke, 1990).

Limitations

The sociocultural data base for this study is substantial and multifaceted. During the course of the past four years the RMSS senior scientists and their associates have developed considerable insight into the social structures of these communities, providing a solid foundation for developing analyses of local sociocultural conditions and repository impacts.

At the same time, it is important to note several significant limitations to the research effort that constrain the degree of confidence with which repository impacts can be evaluated. First, the actual design, configuration and development time frame for the repository remain only vaguely defined. As a result, attempts to project impacts are based on an extremely tenuous, and potentially inaccurate, project description. This affects both the investigators' ability to assess potential impacts and the nature of area residents' reactions to the proposed project.

A second important limitation is that initial data collection efforts occurred several years after the federal government had

announced consideration of Yucca Mountain as a candidate repository site. As a result, the study team could not collect true baseline data, a restriction which can contribute to serious misinterpretations of the nature, extent and timing of certain project impacts (see Brown, Geertsen and Krannich, 1989).

Another serious limitation involves the substantial gap in data collection efforts that has occurred during the past two years. With the exception of the June, 1989 survey of residents in Goldfield (Esmeralda County), RMSS has not been involved in any field collection of data in the study communities since June, 1988. During the past two years the only other new data collection efforts pursued by RMSS have involved a limited (and unfunded) attempt to maintain familiarity with study area conditions and events through periodic review of newspaper articles. As a result, the data base does not allow for an assessment of changes in community sociocultural conditions or repository-induced impacts that may have occurred since mid-1988. The discussion of community conditions and impacts presented in this report is therefore limited for the most part to our understanding of the situation as it existed only up to June of 1988.

A fourth major limitation is linked to project funding constraints that have resulted in only limited support for analyses of relationships involving certain key variables in the data set. Most notably, RMSS has yet to undertake a comprehensive analysis of relationships between various sociocultural variables (e.g., community integration and participation, community satisfaction,

community value orientations, trust in government, trust in science, and sociodemographic characteristics of residents) and local residents' perceptions of risks associated with repository development and operation. While some unfunded analyses have explored these issues, further data analysis efforts would be necessary to fully explicate the nature of and reasons for interrelationships involving these factors.

With these limitations in mind, the remainder of this report is presented as a summary of some of the more important findings regarding the nature and extent of repository-induced sociocultural impacts in the four selected study communities.

AMARGOSA VALLEY

Community Context

Political Geography

The unincorporated town of Amargosa Valley[4] is located in southern Nye County, approximately 77 air miles or 86 highway miles northwest of Las Vegas. The particular form of town government used in Amargosa Valley is a citizens' advisory council with members appointed by the Nye County Board of Commissioners. Although all decision-making authority ultimately rests with the commissioners, in practice the advisory council makes recommendations to them, recommendations which are generally followed.

Amargosa Valley is the community closest to the proposed repository. It is literally almost in the shadow of Yucca Mountain, lying just 16 air or 17 highway miles from the site. Indeed, if past efforts to expand the town's boundaries are renewed, part of the repository site could actually be included in Amargosa Valley.

Pahrump (Nye County) lies 44 miles to the southeast; Beatty (Nye County), 29 miles to the northwest; and Indian Springs (Clark County), 44 miles to the east.[5] Like the other southern Nye County

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[4]Gabbs is the only incorporated town in Nye County. Even Tonopah, the county seat, is unincorporated.

[5]These mileage figures are to the junction of U.S. Highway 95 and State Highway 373 at Lathrop Wells which is now designated on Nevada's Department of Transportation highway maps as Amargosa Valley.

communities, Amargosa Valley is far removed (about 120 miles away) from the county seat in Tonopah.

Amargosa Valley includes approximately 550 square miles of the Amargosa Desert. To live in Amargosa Valley is to live in wind-blown geographic isolation as there are only a few more than 600[6] individuals dispersed over approximately 320,000 acres. Small clusters of residences are scattered within the town's boundaries.

It would be a mistake, however, to conclude, as passersby often do, that Amargosa Valley is not a community. In many respects, there is greater cohesiveness here than can be found in Beatty which is more readily identifiable as a town.[7] However, unlike most other Nye County[8] towns, Amargosa Valley has no well-defined town center consisting of commercial establishments. It appears to have no beginning, middle or end. The closest thing to a traditional town center or downtown is the cluster of public buildings consisting of a grade school, a "multi-purpose" building (or community center),[9] a library, a sheriff's substation, and a volunteer fire department building.

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[6]Survey data collected in 1988 indicate a population of 604 residents, 96 of which are of Hispanic origin.

[7]Townspeople often speculate that the closure of American Borate Company's mill and the concomitant loss of residents brought the remaining residents closer together.

[8]Pahrump shares some of these same characteristics but appears to be growing into a more traditional town.

[9]An earlier community center constructed with volunteer labor is located about two miles east of the current center.

Socioeconomics

Early history. Prior to European exploration in the early 1800s, the area was solely occupied by Southern Paiutes and Western Shoshones. Even though agriculture was established by the beginning of the twentieth century, serious settlement did not begin until the 1950s and 60s. The lure of low-cost land obtainable through the Desert Entry Act brought some of the now more established families to the Amargosa Valley. All too often, however, homesteaders found the requirements of the Desert Entry Act impossible to satisfy, and some of the first arrivals--perhaps even most of them--did not remain.

The difficulty for many was "proving up" their free land. Improvements had to be made and crops, predominantly alfalfa and cotton,[10] had to be harvested prior to obtaining title to the desert homesteads. At times, the desert seemed to soak up the homesteaders' money like a dry sponge. Irrigating the parched landscape proved to be a formidable and expensive task since water lies deep beneath the surface in most parts of the valley and electricity essential for pumping did not arrive in the valley until the 1960s.[11] In many cases, the land of those who left reverted back to sagebrush and creosote bush. Today these areas again look like virgin desert.

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[10]Part of cotton's appeal as crop was the federal agricultural subsidy attached to it.

[11]A cooperative now supplies power to the valley. In the early days, there was a running competition between REA and Nevada Power to see who would supply electricity to the area. This resulted in two sets of power lines and several minor incidents of sabotage.

Current economics. Today, Amargosa Valley stays alive on a mixture of income from both the public and private sectors: mining, agriculture, tourism, the nuclear industry and government. Even though agriculture provided the stimulus for initial settlement, geographic isolation and the attendant transportation costs combined with increasing costs of irrigation pumping[12] have practically eliminated commercial agriculture in Amargosa Valley. Perhaps the most promising agricultural venture in the valley at the present time is a turf farm. However, recent plantings of pistachios and a new strain of peach may yet prove profitable.

County funds for the library, school, fire, sheriff's and road departments contribute to the local economy. Other government salaries and wages come from federal and contract workers who are employed at the Nevada Test Site (NTS) headquartered in Mercury[13]. NTS workers residing in Amargosa Valley are a mere handful, probably numbering fewer than a dozen.

The true wealth of the area has come from minerals. Until recently, the main employers in the valley were two mine/mill operations, American Borate Company (ABC) and International Mineral Ventures (IMV). The former was a source of colemanite, a mineral

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[12]Increasing fuel costs and a dropping water table have combined to make pumping too expensive. One informant indicated that electric rates for pumping increased from $.018 to $.04226 per kilowatt hour.

[13]The daily commute to Mercury is about 56 miles. However, an Amargosa Valley resident might live miles from our measuring spot at Lathrop Wells and may have to travel well beyond Mercury to his/her NTS work site as well. The round trip from Mercury to the outskirts of Las Vegas is 130 miles.

used in glass manufacturing. The latter is a producer of bentonite, a clay-like material used to line underground boreholes and as a fire retardant in fighting forest fires.

Approximately four years ago, the ABC mine closed its operations, and the valley's prosperity and population evaporated. The closure resulted not only in loss of jobs but a departure of up to 40 percent[14] of the valley's population.

Needless to say, property values were severely depressed, or more accurately, land sales dried up as locals, reluctant to take a beating in the real estate market, held onto their land rather than selling it at a reduced price. The terminated workers' trailers have been hauled away or sold,[15] and the area now has "excess capacity." Subdivided land, much of it in the hands of speculators, sits idle.[16] Sun-faded signs advertise the seemingly bare, undeveloped desert land, offering "low monthly payments." These provide a poignant reminder of the former economic vitality of the community.

One of Amargosa Valley's basic economic problems is the lack of commercial infrastructure. There is simply no way to "capture"

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[14]Some knowledgeable informants estimate that the loss may have been as great as 50 percent.

[15]ABC re-purchased many of the trailers which they originally sold to their workers. These trailers have been sold and moved out of ABC's trailer park. Some of them have found their way to Beatty and are now housing miners and drillers working at the Bond Gold project in Rhyolite.

[16]The speculators are not necessarily outsiders looking to make a fast dollar. Some are long term locals who have hung on to their land even though it has been a struggle to farm it and to retain the water rights.

outside dollars. Travelers, tourists and truckers provide some income for a handful of valley residents, but there is no motel to retain visitors for extended periods.[17] The absence of a strong tourist industry is just one reason why Amargosa Valley languishes economically. A casino/bar and a convenience store/gas station near the California/Nevada state line cater to Death Valley tourists and provide employment for a few.[18] Employment is also available for some locals at the two gas stations, the two bars and the brothel[19] located at Lathrop Wells.[20]

Because of the absence of a well-developed commercial sector, Amargosa Valley is closely tied economically to Las Vegas and, to a lesser degree, Beatty for the purchase of both groceries and durable goods. Social frictions and a variety of political and ideological differences currently inhibit close economic ties with Pahrump.

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[17]Beatty and Pahrump both have large casino\motel complexes which attract travelers, tourists and truckers alike.

[18]Casino business was reportedly reduced by 80 percent as a result of the closing of American Borate Company's mill. A significant reduction in casino\restaurant employees followed the economic decline.

[19]The Valley of the Dolls brothel was formerly called the Shamrock. The murder of the previous owner marked the end of what is commonly referred to as the brothel wars (see Kasindorf, 1985).

[20]A small grocery store and a hardware store round out the commercial establishments. It should be noted that significant changes in the business organization of Amargosa Valley may have occurred since the last fieldwork in May of 1988.

Response to Repository

Perceptions of Project

Support\opposition. Ethnographic field data collected between 1986 and 1988 indicated widespread support among Amargosa Valley residents for the proposed repository at Yucca Mountain. Interviews and informal discussions with community leaders, business leaders, and rank-and-file residents, as well as observations made at community meetings and elsewhere, all lead to this conclusion (see Little and Krannich, 1987a; Trend, Little and Krannich, 1988a). One strong supporter of the repository perhaps best typified much of the community sentiment when he suggested that only a fool would oppose the project.

This is not to say that there was no opposition to the project. A number of informants noted their disapproval of the repository program and listed a variety of reasons. At least one repository opponent felt so strongly about it that s/he said his or her family would move from Amargosa Valley should the repository become a reality.

Repository supporters and opponents alike opined that almost everyone in the valley was in favor of repository. That is, everyone believed that nearly everyone else in Amargosa Valley was in agreement regarding the repository proposal. Perhaps this perception of extensive support for the project inhibited those who otherwise would have publicly voiced their opposition. This would explain a somewhat surprising phenomenon: among Amargosa Valley residents there was virtually no spontaneous discussion or local

debate associated with the repository. People seemed to feel that there was little to discuss and no reason to do so since attempting to sway another's opinion would be senseless. According to several informants, about the only time locals even discussed the proposed repository was when researchers, such as ourselves, brought up the issue or when there was a public forum organized to address repository-related topics. These perceptions of near-unanimous support for the repository successfully dampened expressions of opposition, with the result being that estimates of project support, by residents and researchers alike, were exaggerated.

Survey data collected in the spring of 1988 broadly supported the conclusions reached on the basis of ethnographic data. However, the evidence from the survey demonstrated that support was not nearly as unanimous as locals perceived it to be. Nevertheless, as we shall see, repository support in Amargosa Valley exceeded that observed in Beatty, Pahrump and Indian Springs.

Randomly selected survey respondents were asked on a self-completion questionnaire, "If you were able to make the final decision regarding the location of the nuclear waste repository at Yucca Mountain, would you build it there?"[21] Over 75 percent of those questioned indicated that they would do so, with 47 percent saying that they would "definitely" build it there and 28.4 percent

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[21]In 1988 over 96 percent of the Amargosa Valley respondents were aware of plans for a repository at Yucca Mountain. Similar proportions were discovered in all seven study communities except Mesquite where approximately 86 percent were aware of repository plans.

saying that they would "probably") build the repository at the proposed Nye county site. Fewer than 10 percent (8.8%) were definitely against and another 4.9 percent were probably against building the repository at Yucca Mountain (Krannich and Little, 1989b:269). Slightly less than 11 percent were undecided. It should be noted that approximately 43 percent of the responses were "probably would," "probably would not" and "undecided," leaving a large portion of the population in the position of potentially changing their minds about the project.

More recent, albeit imperfect, evidence suggests that support for the repository may have decreased somewhat in Amargosa Valley. At a recent hearing conducted by the Department of Energy (DOE) at the Amargosa Valley Community Center, approximately one-half of the speakers voiced opposition to the repository (Peterson, 1989). Not all of the speakers were residents of Amargosa Valley however, and hence reliable estimates of current support or opposition are difficult, if not impossible, to make. Nevertheless, such evidence must be considered in the absence of more up-to-date and scientifically valid information.

The relatively low level of opposition to the repository at the time of the survey is consistent with local beliefs that the benefits flowing from the repository would generally exceed the harm that might stem from it. Survey questions plumbed the issue in terms of both community and personal benefits. The distribution of responses to the both types of questions were very similar. More than 51 percent thought the repository would be beneficial to

both self and community while only slightly more than 11 percent of the respondents thought that the consequences would be harmful. Approximately one-third of the respondents said that the repository would bring equal benefits and harm (Krannich and Little, 1989b:263-264).[22]

While expecting numerous tangible benefits to flow from construction of the repository, locals frequently argue that, insofar as most of the ground surrounding Yucca Mountain has already been irradiated, there is no sense contaminating other ground by locating the repository elsewhere. Furthermore, the patriotism so apparent in Amargosa Valley comes to the surface in the form of arguments which are based on the notion that it is Nevada's and their patriotic duty to host the repository (see Little and Krannich, 1987a; Trend, Little and Krannich, 1988a).

Concern about risks. The ethnographic record suggests that Amargosa Valley residents are not terribly concerned about risks associated with the proposed repository. Residents provided several rationales for this apparent lack of concern. Informants frequently pointed to others' perceptions of risks as a result of lack of experience with things nuclear. Old-time residents have experienced a wide range of nuclear projects, from weapons to rocket testing. More importantly, perhaps, they generally believe that the scientists and technicians who will be dealing with the

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[22]This question, as well as most of the others, employees an 11-point scale which provides response categories from 0 to 10. The midpoint of the scale is 5.0. A response of 0 represents "Entirely Harmful" while 10 represents "Entirely Beneficial."

nuclear waste are well-trained and well-equipped to safely handle, store and process nuclear materials, whatever they are.[23]

Survey data are consistent with that obtained from ethnographic sources: residents generally perceive few risks. When asked if they believe that a nuclear waste repository would be safe, 88.3 percent answered in the affirmative, with 11.7 percent giving a negative response (Krannich and Little, 1989b:260). Responses to this question of repository safety were consistent with responses to a question about how far residents would prefer to live from a nuclear waste site. The median response was 25 miles, the approximate distance from the Amargosa Valley Community Center to the proposed site (Krannich and Little 1989b:242).[24] Survey respondents also supported the notion that underground storage was the best means for storing high-level nuclear waste with nearly 82 percent stating that underground storage is the preferred storage technique.

It follows that a majority of the respondents exhibited little concern over risks to public health and safety. Over 60 percent responded on the unconcerned side of the 11-point scale used to record answers to the question about this issue. The most frequent response was "Not at all Concerned" (26.2%) (Krannich and Little, 1989b:265). Similarly, when asked about their concerns over risks

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[23]There is a tendency among long-time residents of southern Nevada to treat all things nuclear in a rather cavalier manner. Many, if not most, appear to have little fear of or concern for the power of the atom.

[24]Research design and evidence provide no means for discounting the effect of actual distance from the site on preferred distance.

to water supplies, over 52 percent responded on the unconcerned side of the scale, although the mean approximated the scale's midpoint. This distribution of responses on the question addressing the risks associated with contamination of drinking water is somewhat surprising. During the ethnographic phase of the research, informants suggested that they were worried about the possible contamination of the underground Amargosa Valley River by the U.S. Ecology low-level nuclear repository near Beatty (Little and Krannich, 1987a; Trend, Little, and Krannich, 1989a). Rumors of leakage into the river were not uncommon, and it was asserted that high-level nuclear waste had been buried in Beatty's low-level repository. Why valley respondents were apparently more concerned with contamination from a low-level site than from the proposed high-level waste repository is unclear, although some have suggested that more care would be given to the waste at Yucca Mountain than is provided at U.S. Ecology's site.

In spite of the strong support for the repository, waste transportation to the site remained an issue of some concern (see Little and Krannich, 1987a; Trend, Little and Krannich, 1989a). Numerous ethnographic informants mentioned transportation of high-level radioactive materials as a source of serious concern. However, when asked on the questionnaire if waste could be transported safely, 86 percent of those sampled answered affirmatively. Only 14 percent stated that they did not believe it could be done safely. Responses to two other questions, however, cloud this apparently clear indication of an absence of perceived

risks associated with the transportation of nuclear materials. The first of these questions asked respondents the extent to which they agreed or disagreed with the statement: "I have a hard time believing anyone who tries to tell me that transportation of hazardous materials is safe." The mean response (5.0) was half-way between strongly agree and strongly disagree.[25] A similar response pattern was obtained on a question asking respondents to agree or disagree with the statement: "Accidents involving the transportation of hazardous materials are inevitable." In this instance, 41.4 percent agreed to one degree or another with the statement, while 33.8 percent disagreed. Nearly 25 percent neither agreed nor disagreed (Krannich and Little, 1989b:247,249).[26]

There is no simple way to resolve this apparent contradiction. One can simply note that there is more perceived risk from transportation than is indicated by the responses to the first transportation question. In any event, it is reasonable to suggest that more risk is perceived with the transportation of high-level nuclear waste than to public health and contamination of water supplies. This conclusion is supported by responses to a question regarding the transportation of nuclear waste materials through highly populated areas. Fewer than 20 percent of survey respondents thought that transportation of nuclear waste through highly populated areas should be allowed, while 62.5 percent

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[25]The mean of 5.0 corresponded exactly with the midpoint of the 11-point scale.

[26]The mean response was 5.4 on a scale ranging from 0 to 10.

thought that nuclear waste material should not be transported through such areas (Krannich and Little, 1989,b:248).

Economic effects. In addition to patriotic reasons for supporting the repository, economic rationales were foremost with many Amargosa Valley residents. Given the economic downturn prompted by the closure of ABC, it is not surprising that economics looms large in the psyches of many valley residents. Not only do informants believe that locals will be able to obtain well-paying jobs at the repository, they believe that it will also bring in new residents. Both of these expected effects are viewed favorably by residents, but there is some fear that Las Vegas will steal these advantages. Conventional wisdom is that Las Vegas can capture the lion's share of the economic benefits of the repository by luring new workers with readily available and better housing and with subsidized transportation to and from the site. The latter is a source of concern and possible future contention among many Amargosa Valley residents.

Even with concerns of competition from Las Vegas, respondents expect these desired and desirable inmigrants to purchase some of the real estate holdings of those residents who remained when the bust followed the ABC boom. In addition, current residents anticipate an increased demand for goods and services by inmigrants. Many expect (and hope) that, under this scenario, entrepreneurs would race to reopen vacant retail outlets (see Little & Krannich, 1987a; Trend, Little and Krannich, 1988a). For example, during the peak of ABC's activities, a new shopping center

containing a grocery store, auto parts store, laundromat, grocery store, restaurant and bar all served the growing population. These businesses, along with a nearby apartment complex, are now boarded up awaiting a reason to reopen. Residents hope that repository-induced growth would provide the stimulus for such events to occur.

Many residents also hope that the repository would bring a variety of government programs which would benefit local coffers. Many expect, and deem it only just, that Amargosa Valley would be the recipient of grants-equal-to-taxes (GETT) designed to offset community costs incurred due to inmigration (Little and Krannich, 1987a). Others hope that the federal government would retire the tax burdens undertaken during ABC's heyday in order to build community infrastructure to match population growth.[27]

A similar picture is painted by the survey data. A majority of the respondents were dissatisfied with local opportunities to obtain good jobs. Only five percent of those who returned the questionnaire were satisfied with the availability of good jobs, and approximately 90 percent were dissatisfied (Krannich and Little, 1989b:186).[28] Implicit in the dissatisfaction with the availability of good jobs is dissatisfaction with opportunities to earn an adequate income. While somewhat more satisfied with opportunities for adequate earnings than with job availability, only 18 percent were in any way satisfied with their ability to

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[27]Amargosa's current tax rate is among the highest in the state and approaches the legal maximum.

[28]On a scale from 0 to 10, with 0 indicating complete dissatisfaction, the mean score was 2.3.

earn an adequate income, and 69 percent were dissatisfied (Krannich and Little, 1989:187).[29]

As might be expected, respondents said that it was very important to increase the economic opportunities in Amargosa Valley. Fully 54.5 percent responded that improving economic opportunities was extremely important while just 1.5 percent of the respondents stated that improving it was unimportant (Krannich and Little, 1989b:209). Finally, Amargosa Valley respondents believed that the repository would bring economic benefits to the valley. Almost 78 percent believed that the repository would be beneficial at least to some extent to Amargosa Valley's economy, with nearly 45 percent thinking that construction of the repository would be entirely beneficial. This is in contrast to just over 8 percent who responded that the effects of the repository on the local economy would be harmful and slightly over 14 percent who thought that the benefits and harm would be equal. Even though the repository program has generated few economic benefits to date, the anticipation of such benefits appears to be a primary motivator in the minds of valley residents.

Government management. While Amargosa Valley residents generally support the proposed repository program at Yucca Mountain, they question the equity of the federal government's selection process and its ability to manage the program effectively and safely. While not as pronounced as in Beatty, Amargosa Valley

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[29]The mean score on this question was 3.3, where 0 represented complete dissatisfaction and 5.0 represented a neutral response.

residents suffer a degree of fatalism in the face of the federal government, due in part to the fact that most of Nye County (98%) is federally owned. Some informants expressed the view that they might as well make the best bargain for the repository, that is get the maximum amount of federal aid and support, because the repository was going to be located at Yucca Mountain regardless of local wishes. Passage of the Nuclear Waste Policy Act Amendments of 1987, which eliminated requirements for siting a second repository in the east and eliminated sites in Texas and Washington from further consideration, merely reinforced this fatalism.[30] Some Amargosa Valley residents questioned the fairness of shipping all of the country's nuclear waste to Nevada.

Despite the questions raised regarding fairness of selection, survey data show that Amargosa Valley respondents were somewhat favorable in their views regarding the fairness of the repository site selection process. Only 22.9 percent of survey respondents thought that the process was unfair, while 15.9 percent were uncertain. The remainder (61.5%) thought that the site selection process was, to some extent, fair. No other study community thought the process was as fair as residents of Amargosa Valley (Krannich and Little, 1989b:268).

Survey data illustrate the attitude of distrust of federal governmental policies. A general question concerning trust asked respondents, "How often do you think you can trust the federal

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[30]The amendment is typically referred to as the "Screw Nevada Bill."

government in Washington to do what is right?" Only about 22 percent thought that the federal government did what was right more often than not. Only Caliente and Goldfield had greater mistrust in the federal government (Krannich and Little, 1989b:217)

Similar levels of mistrust were recorded for state government, with county and local governments faring somewhat better (Krannich and Little 1989b:185-187). An index of global trust in government (all levels) reflected a distrust of government in general. The mean score for Amargosa was 4.4 on a scale where 0 represents no trust and 10 represents very high trust (Krannich and Little 1989a:140).

In spite of this general distrust in government's ability to do what is right, 47.1 percent of Amargosa Valley residents had some degree of confidence in the federal government's ability to provide honest and accurate information about nuclear programs. Thirty-four percent were not confident (Krannich and Little, 1989b:262). The mean score, however, was barely greater than the scale midpoint (5.3), suggesting that the typical respondent was uncertain. Only Beatty had greater confidence in the federal government's ability to provide honest and accurate information.

Satisfaction

Personal and community satisfaction. Ethnographic data suggested that by-and-large, Amargosa Valley residents were fairly satisfied with their personal lives and the community. Survey data confirm this finding. Residents were asked to indicate the extent to which they were satisfied with their community as a place to

live. With a score of 10 representing complete satisfaction, the mean score was 8.3, making residents of Amargosa Valley the most satisfied of any of the study communities (Krannich and Little, 1989a:72). The perceived friendliness of the residents appears to contribute a significant amount to community satisfaction, for as we have already seen, there is general dissatisfaction with job availability and wages. Interestingly, dissatisfaction with the latter two issues has not drastically decreased the level of global satisfaction.

Personal satisfaction was only slightly lower than community satisfaction. The mean response was 7.7 where a score of 10 represented complete satisfaction. Only 5 percent of the survey respondents expressed any degree of dissatisfaction with their personal lives at the time of the survey. Over 20 percent indicated that they were completely satisfied (Krannich and Little, 1989b:203)

The available evidence suggests that the repository program has had little or no effect upon the levels of personal and community satisfaction in Amargosa Valley. However, expectations about the future consequences of the repository could improve perceptions of both community and personal satisfaction. For a majority of the respondents the repository represents a golden future and a brighter economic horizon.

The available data, unfortunately, do not provide solid grounds for assessing the importance of such anticipatory effects, but it is possible for the anticipatory effects to exceed the

changes that actually accompany development (see Brown, Geertsen and Krannich, 1989). Because Amargosa Valley residents place such great stock in anticipated economic benefits associated with the repository, it is likely that the impacts on personal and community satisfaction have been significant.

Participation/Integration

Just prior to ABC's closing in 1986, the level of community integration in Amargosa Valley was probably at it lowest level. It was certainly below today's level. At that time, the degree of transiency in the community was considerably greater than it is today. People moved into Amargosa Valley pursuing employment at ABC and left when better offers materialized or the harshness of the desert climate drove them away. Some residents had insufficient time to get to know their neighbors, while others were uninterested or unwilling to get to know them. Thus, the "density of acquaintanceship" (Freudenburg, 1986) was low. According to informants, a shared sense of "family" that existed prior to development of ABC was lost during the period of economic growth. With the closing of ABC and the loss of the more transient population, Amargosa Valley has rekindled its sense of community (Little and Krannich, 1987a; Trend, Little and Krannich, 1988a).

Questionnaire data also suggest that there is a fair amount of social integration in Amargosa Valley. Survey respondents

estimated that on average they knew approximately 65 percent of the other local residents (Krannich and Little, 1989b:89).[31]

Even though Amargosa Valley appears fairly well integrated, participation in formal organizations is low, but this is in part the result of small population numbers and few organizations. Nevertheless, valley residents are, on average, active in slightly more than one formal organization (Krannich and Little, 1989a:13). While their participation on community boards and committees is generally limited, residents' attendance at town advisory council meetings is relatively high. Twenty-six percent of the survey respondents stated that they regularly attend town advisory council meetings. All of the other study communities reported lower percentages of regular attendees (Krannich and Little, 1989b:153).

To date, the Yucca Mountain repository proposal has generated few effects on Amargosa Valley community participation and integration. Repository-induced demographic changes have been almost totally lacking and the effects of large-scale inmigration are therefore missing (see Berry, Greider and Krannich, 1990; Freudenburg, 1986; Krannich and Greider, 1984; Little, 1977).[32] Furthermore, no new voluntary organizations have been formed to promote or curb the proposed repository. The fact that the

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[31]Continued research on this topic is necessary before comparative interpretations of such estimates can be established. However, population size will certainly affect any interpretation.

[32]Recent population increases do not appear to be responses to activities associated with the repository (see Thurlow, 1990).

repository has not emerged as a focus for public discussion or debate probably explains the lack of such organizations.

Only one new community organization, the Amargosa Valley Nuclear Waste Committee, has been created in response to events associated with the Yucca Mountain repository. Members on this committee are appointed by the town advisory council. Up through the end of data collection in 1988, the group had met only infrequently, and the discussions had generated little serious debate. Committee interest was, for the most part, focused on obtaining information about what was going on in regard to the repository. Occasionally members of this committee attended regional or national meetings designed to inform local officials about nuclear issues. Participation at committee meetings by community residents who were not on the committee was typically lacking.

Perhaps the only effect the repository program has had on the integration and participation of Amargosa Valley residents has been the limited number of information dissemination meetings involving DOE, state and county representatives. Community attendance at these meetings has been moderate.

Conflict

Intracommunity conflict. For the most part, Amargosa Valley is a community with little internal factionalism or overt conflict. Ordinarily disputes, such as the park/library conflict that arose in 1987-88, are relatively short-lived and ruffled feathers quickly smoothed (see Bird, 1989; Trend, Little and Krannich, 1989a). To

date, repository induced conflict has not been evident. In fact, as we have seen, the repository is generally not even a topic of conversation.

Even though Amargosa Valley has denizens who prefer that the proposed facility not be built at Yucca Mountain, overt discord from them has not become a reality. Three factors seem to explain this dearth of intracommunity controversy over the proposed repository. First, the closure of ABC placed the community under severe economic hardship, and new industries which could replace the lost jobs have not materialized. As a result, the repository is viewed by many as the sought-after revenue source by which the community can remove itself from the economic mire which has bound it for the past four years.

Second, at the time of both ethnographic and survey research in Amargosa Valley the prevailing perception was that virtually every valley inhabitant was in favor of the project. As a result of this perception of near unanimity, repository adversaries were constrained from speaking publicly (see Trend, Little and Krannich, 1988a). Few opponents wished to be identified as possessing beliefs and attitudes which they believed would be viewed by their neighbors as being beyond the pale. Simultaneously, this same perception of community solidarity provided repository allies with little or no motivation to talk about the nuclear waste facility. In such a social milieu opponents and proponents alike remain mute on the issue. In the absence of dialogue concerning the

repository, it is difficult for intracommunity conflict to be initiated or augmented.

Third, activities associated with the Yucca Mountain project have not generated a large-scale inmigration of workers so typical of resource-related developments. In the absence of demands for housing, schools, roads, water/sewer systems and other infrastructural elements, Amargosa Valley has not faced the problems typically encountered with large inmigrations of workers and the ensuing conflicts (Gold, 1986; Little and Greider, 1983; Greider and Little, 1988; Krannich 1990).

Intercommunity conflict. Even though there is a virtual absence of serious intracommunity conflicts, there are, nevertheless, at least two serious intercommunity conflicts that have affected Amargosa Valley in recent months. A conflict with Las Vegas is emerging over water rights in Amargosa Valley. Clark County, in what is being called the "Las Vegas Water Grab," has filed 32 well applications for unappropriated water in Nye County. Pahrump, Ash Meadows and Amargosa Valley residents have every reason to be concerned about the ownership of water in the Carbonate Aquifer which underlies parts of Amargosa Valley (Gateway Gazette, 1990).

While Amargosa Valley and Pahrump may be temporarily united by the emerging water issue, residents of Amargosa Valley are generally suspicious of the political motives of their ambitious neighbors in Pahrump. Some valley residents so dislike Pahrump that even when goods are available there, they travel the extra

distance to Las Vegas rather than buy from Pahrump merchants. On-going and recent hostilities have centered upon a new road which originally was to have linked Amargosa Valley and Pahrump, giving valley residents easier access to Pahrump's greater array of goods and services. With urging from Pahrumps' influentials, plans for the road were temporarily changed, moving the road south to Death Valley Junction, providing a route for tourists but completely bypassing Amargosa Valley. This change of plans caused great consternation in the valley. Amargosa Valley residents accused Pahrump of being motivated solely by unadorned greed. Last fall the county commissioners again changed their minds and routed the road back through Amargosa Valley, satisfying the desires of the latter while frustrating the former (Thurlow, 1989).

Perhaps the only intercommunity conflict stimulated by events associated with the repository followed the attempt, guided by citizens from Pahrump, to split Nye county on an east-west axis. Conventional wisdom has it that the goal of the county split was to obtain a greater share of the repository-related monies which were anticipated to flow into nearby communities and counties. As the largest town in the county, Pahrump was touted as the county seat of the new county and, as such, would control a lion's share of any revenues doled out by the federal government.

Government. Amargosa Valley, like other southern Nye County communities, is periodically at odds with the political leadership centered in Tonopah. The allocation of road funds by the board of county commissioners is a recurring source of hostility and

conflict. It is often alleged that Pahrump gets preferential treatment to the detriment of Amargosa Valley. Threats and/or actual reductions of law enforcement personnel stationed in the valley is yet another source of dissension with county management.

State government is also the focus of periodic anger. The issuance or non-issuance of well permits is an ongoing source of conflict between the state government and Amargosa Valley, with some locals contending that the State Water Engineer is responsible for the demise of agriculture in Amargosa Valley. To date, the only local-state conflict following directly from the repository program concerns the passage of Assembly Bill 756 (since overturned). This legislative action created Bullfrog County, a personless political entity which would have received federal monies earmarked by the Nuclear Waste Policy Act for the adjacent political jurisdiction (i.e., Nye County). The creation of such a county would have allowed the state legislature to control these funds. Amargosa Valley residents viewed the bill as unfair in the extreme and nothing more or less than legalized theft since Bullfrog County would have confiscated funds intended to mitigate impacts on those communities nearest the proposed repository.

Anticipated Consequences of the Repository

Perceptions of the Project

Support/opposition. As already noted, the repository proposal has stimulated no organized groups actively supporting or opposing the Yucca Mountain siting, even though partisans on both sides of

the issue reside in Amargosa Valley. However, this could change once firm plans for the project are announced and/or construction activities are initiated. At the present time individual conceptions of the repository remain, of necessity, vague and fuzzy. Once concrete plans are publicized, however, factions could be mobilized to promote or contest plans, just as events during the construction or operations phase could alter the present political balance.

Currently the repository represents a much anticipated economic salvation for many Amargosa Valley residents, and several events could mobilize valley residents in the future. Given the anticipated economic value attached to the repository by many residents, some local protest would likely emerge should site characterization be discontinued. For these same reasons, anything in the plans that might discourage construction or operations personnel from living in Amargosa Valley (e.g., subsidized transportation or worker housing located elsewhere) would be immediately and strongly protested. Such a protest would come from those counting on inmigrants to purchase homesites and encourage the development of an expanded commercial structure in Amargosa Valley.

Given the strong economic benefits envisioned by valley residents, it is extremely unlikely that a flow of inmigrants could cause much concern among locals, at least initially. Even in the face of continuing population growth (Thurlow, 1990), the likelihood that population growth attributable to the repository

would outstrip Amargosa Valley's desire for economic development is slim. However, even in the face of so much available land, rapid and large-scale population growth could quickly overpower the existing infrastructure, resulting in conflict and dissatisfaction as evidenced in other boom towns (see Little 1977; Murdock and Leistritz, 1979). However, Amargosa Valley's population would accept the stress and strain of rapid growth with far more equanimity and grace than most because economic and population growth is what the majority wants most.

A change of attitudes toward the repository, from positive to negative, could come about for several other reasons. If threats to local groundwater were to become evident, those already in opposition to the project would be activated and they in turn would attempt to recruit those who are uncommitted or who were heretofore supporters. Insofar as the potential for groundwater contamination has been an area of local concern related to U.S. Ecology's low-level waste facility near Beatty, it is not unreasonable to anticipate that potential threats emanating from Yucca Mountain would elicit a strong response from local residents.

Concern about risks. As we have seen, Amargosa Valley residents perceive few risks from the proposed repository. Because of satisfactory experiences with a variety of NTS activities, the risk perception shadows cast on the community are either positive or neutral, but certainly not negative (see Stoffel et al., 1988; Krannich and Little, 1989c). Furthermore, expectations of economic benefits apparently tend to attenuate concerns about

repository risks (Krannich and Little, 1989c; Cramer, 1990; Richards and Krannich, 1989).

The perception of risks will undoubtedly increase somewhat as the repository becomes more concrete, when more specific information becomes available, or when construction activities actually begin. With a greater focus on the concrete details of the project, it follows that there will be some new concerns brought to light or old concerns magnified. Additionally, as plans for the repository progress, media attention will increase and the essentially urban point-of-view of regional and national media will be brought to these rural residents. The fears and concerns of lay and scientific commentators alike will be aired.

Perhaps more importantly, inmigrants following the promises of employment and high wages will alter the composition of Amargosa Valley's population. These new workers, many of whom will be unfamiliar and perhaps uncomfortable with things nuclear, will most likely perceive greater risks from the repository than do long-term residents (see Endter, Little and Krannich, 1988c). Even dependency upon the project for employment will not be able to totally eradicate their concerns, nor will the fact that they reside near the repository.

Should major accidents occur and significant problems arise at the site, the perception of risks will rise accordingly. Insofar as there is already some concern about the transportation of nuclear waste, highway or rail accidents will undoubtedly significantly increase risk perceptions. Similarly, if threats or damage to

valley water supplies should be discovered, risk perceptions would increase and community protests would be immediately mobilized.

Economic effects. It is clear that Amargosa Valley residents anticipate significant economic benefits to follow from repository construction and operation. Both direct and indirect economic gains are anticipated: the former in the form of jobs and real estate development, the latter in terms of increased commercial activity. Even though it is presently impossible to reasonably estimate the size of these gains, especially in the absence of specific and detailed repository plans, there can be no doubt that some gains will be realized. There are many underemployed and unemployed people in the valley who would jump at a chance for a well-paying job. Young adults would be especially interested in jobs at the site.

Insofar as Amargosa Valley is the community nearest the repository, some workers will undoubtedly opt to live there. The availability of property, if not housing, and the friendliness of the people will appeal to some. The harshness of the desert climate and the absence of necessities as well as the amenities of urban dwelling will deter many, if not most. Should government agencies involved in repository planning and impact mitigation programs provide financial incentives to workers which encourage them to reside in Las Vegas or rural areas other than Amargosa Valley, the number of workers moving into the area and the development of community services will be reduced.

Government management. The extent to which government management alters perceptions of the project will be determined by the nature and extent of problems encountered in the course of repository development and operation. In the absence of major difficulties there is every reason to believe that Amargosa Valley residents will retain their generally positive perceptions of the repository and of the ability of government agencies to manage it responsibly and safely. Serious accidents or problems involving construction, on-site operation, or waste transportation however will alter the current perceptions.

A more likely source of difficulty stems from the question of the possible extent of economic and demographic effects in Amargosa Valley. Should expectations of inmigration and job availability go unfulfilled, support for the repository would be decreased and dissatisfaction with agencies responsible for repository planning and management would increase.

Satisfaction

It is highly unlikely that repository standard effects will create a deterioration in community or personal satisfaction among Amargosa Valley residents. They generally desire a reasonable amount of growth, and extreme growth appears unlikely at this time. However, should population growth exceed their expectations, satisfaction could experience a significant decline. Amargosa Valley residents, while possessing a sense of community, demand "elbow room." They like their neighbors to remain some distance

away. Only if growth rates were extremely high would population growth destabilize the community in a fashion well-documented in the boom town literature (see Krannich and Greider, 1990; Brown, Geertsen and Krannich, 1989; Freudenburg, 1986; Little, 1977).

Personal and community satisfaction could deteriorate rapidly should there be radioactive contamination as a result of repository activities. Amargosa Valley's residents are very fond of their desert environment, including the animals that live there. Any harm to this environment would lead to a serious deterioration of personal and community satisfaction.

Participation/Integration

Significant population growth would most likely have undesirable consequences for individual integration and participation in community affairs. Ethnographic data suggest that population growth associated with expansion of the ABC workforce during the early 1980s decreased the general level of integration and participation. At the present time, however, Amargosa Valley demonstrates a moderately high degree of density of acquaintanceship and community participation, along with a high degree of mutual support and aid. Rapid population growth would make integration of new residents difficult and new social groupings, both formal and informal, inevitable.

Repository problems would undoubtedly exacerbate problems of community integration. Radioactive spills or other such difficulties would likely stimulate active protest among some local residents and possibly spawn the creation of new, local grassroots

social organizations to protest governmental activities. Those who might actively express concern and opposition would not only come in conflict with the government but also with other residents of Amargosa Valley who would remain supportive of the repository program.

Conflict

Intracommunity conflict. Even though little intracommunity conflict is currently evident in Amargosa Valley, there is a potential for repository-induced conflicts to emerge at some future time. Simple population increases by site construction workers have the potential for creating conflict as different attitudes and opinions are introduced into the community by the more urban-oriented workers. Depending upon the size and composition of the worker influx, current attitudes could come into conflict with the desires and wishes of the newcomers. Preferences for maintaining elbow room could give way, through democratic processes, to one-quarter acre lot subdivisions, water and sewer systems, and other changes in land use and development patterns. New demands upon community services would come into conflict with present anti-tax sentiments.

Nuclear waste spills or leakages would likely create other conflicts. If part of the community were mobilized to combat problems with the transportation or handling of nuclear waste, it is likely that some other part of the community would mobilize and come to the defense of the repository. To some extent, this conflict, like the one mention above would be between newcomers and

oldtimers. The former (excepting perhaps those employed at the repository) would most likely be lacking in experience with NTS and other things nuclear and less committed to business as usual by DOE or its contractors.

Intercommunity conflicts. Repository construction and operation would very likely aggravate extant intercommunity conflicts. Political battles with Tonopah and Pahrump would continue and intensify. Pahrump and Amargosa Valley would both demand greater shares of tax revenues, claiming increases were necessary to meet the demands initiated by population growth. The competition would be intensified by the availability of federal funds, e.g., impact alleviation funds, which also would be controlled by the county. Beatty would probably be drawn into this competition for increased county funding. Depending upon the size and distribution of the available funds, it is not unreasonable to expect that Amargosa Valley, even with its general distaste for taxes and government, might opt to seek status as an incorporated city in order to make independent claims for mitigation assistance.

Government. As suggested in the previous section, Amargosa Valley would very likely come into increased conflict with the county government over the allocation of tax revenues and federal impact alleviation funds. Residents firmly believe that Pahrump already gets more than its fair share of the tax revenues, to the detriment of Amargosa Valley.

Given past history, it seems inevitable that there will be political battling with both Nye County and state governments over

repository-based funds. Distrust of Las Vegas' interests in water and development in southern Nevada will lead to confrontations with state government, especially if transportation accidents or water contamination become issues. In such an event the conflict will also engage the federal government. Demands will be made not only to increase repository and transportation safety, but for better and more efficient emergency response programs and perhaps financial compensation for nearby communities. The end result will be a complex web of conflict enmeshing various levels of state, county and local government, with the federal government at the center.

BEATTY

Community Context

Political Geography

Located at the junction of U.S. Highway 95 and State Route 374,[33] Beatty is approximately halfway between Las Vegas (115 miles) and Tonopah, the Nye County seat (92 miles). Similarly, it lies about halfway between Tonopah and Pahrump (73 miles), Nye County's largest community. The Yucca Mountain repository site is 15 air miles or 45 highway miles away.

Like most towns in Nevada, Beatty is unincorporated.[34] As such Beatty has limited taxing power and fiscal responsibility. Its five-member citizens' advisory council,[35] as well as a variety of other community-based boards, are "unofficially" elected by townspeople at a regular meeting of the Beatty Citizens' Advisory Council.[36] Following these elections, each member must be officially appointed to the council by the Nye County Board of Commissioners which meets bi-monthly in Tonopah. Technically, all decision making is in the hands of the commissioners and they need not be influenced by the recommendations of the town advisory

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[33]State Route 374 goes to Death Valley. For this reason, some refer to Beatty as Nevada's "Gateway to Death Valley."

[34]Gabbs is the only incorporated town in Nye County. Even Tonopah, the county seat, is unincorporated.

[35]Until 1988 this was a three-member advisory council.

[36]Beatty residents generally refer to the advisory council as the town board.

council. In practice, however, the advisory council's recommendations are followed to the letter unless there is a question about the legality of the recommendation.[37]

Unlike its nearest neighbor, Amargosa Valley, Beatty's town plat and community infrastructure conform closely to traditional notions of small towns. Even though not aligned on the cardinal points of the compass, the roads are laid out on a rectangular grid, and house and mobile home lots are urban-sized. In addition, Beatty's 1,101 residents reside within two or three square miles rather than the 550 square miles allocated to Amargosa Valley's 604 residents.[38]

Even though Beatty's land area is limited and private land scarce in Nye County, there is evidence of strip development on U.S. Highway 95,[39] with casino/motel complexes marking the community's outer boundaries. In spite of the beginnings of strip development, Beatty possesses a commercial center: the junction of U.S. Highway 95 and Nevada State Highway 374.

Socioeconomics

Early history. Prior to the first Euro-American visitor, the land surrounding Yucca Mountain and Beatty was inhabited primarily

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[37]Because of this, the Beatty Citizen's Advisory Council appears to have de facto, if not de jure, budgetary authority for the community.

[38]Population estimates are taken from a 1988 survey of the study communities.

[39]Indian Springs, Amargosa Valley and Beatty are all bisected by U.S. Highway 95.

by Western Shoshone people[40] and secondarily by Southern Paiutes (Rusco, Hamby and Fowler, 1986). Explorers and prospectors began arriving in the area in the 1850s and 1860s, and permanent Euro-American habitation began about 1872 when low-grade gold-bearing ore was discovered (Houghton, 1976; Paher, 1986). By the 1880s there were a number of Euro-American ranchers operating around the springs in the Oasis Valley, displacing the Western Shoshone inhabitants (see Rusco, Hamby and Fowler, 1986; Earl, 1986).

The Bullfrog Mining District was begun in 1904 with the discovery of gold in the Bullfrog Hills west of Beatty. Several towns, Amargosa, Bullfrog, Bonanza and Rhyolite, sprung up on the west side of the Bullfrog hills to support the mines. Even with no mine to call its own, Beatty's population growth and social development were dependent upon the mining activities of the Bullfrog Mining District, and by the fall of 1905 Beatty had a 23 room hotel, replete with costly furniture and fixtures, public and private club rooms, telephones and private baths (Paher, 1986:82).

Much of Beatty's prosperity was the result of its location on the "best-watered route between Goldfield and Las Vegas" (Weight and Weight, 1980:14). In addition to water, it had plentiful grass for livestock. Beatty's economic position in the area was further consolidated by the construction of three railroads which

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[40]The boundary separating the traditional use areas of the Western Shoshone and Southern Paiute is "in the Amargosa Desert between the present towns of Beatty and Pahrump" (Rusco, Hamby and Fowler, 1986:2).

intersected at Beatty.[41] The first railroad to arrive was the Las Vegas and Tonopah which was completed in October, 1906. The Bullfrog Goldfield link to the north was completed in April of 1907, and the Tonopah and Tidewater was finished in October of the same year. Thus Beatty was clearly established as the freighting center of the Bullfrog District (Paher, 1986).

Bullfrog, Amargosa,[42] Bonanza, Gold Center, Springdale, Cinnabar, Pioneer and Rhyolite are all gone, but Beatty remains. Beatty survived for several reasons. First, it had become a freighting and distribution point on the Tonopah and Tidewater Railroad, a line which continued to operate until 1940. Second, it was not totally dependent upon mining operations which ultimately depleted the profitable ores. Finally, Beatty survived because of the automobile. With increasing automobile traffic, the town soon found itself on a new road linking southern and northern Nevada: U.S. Highway 95 (see Hulse, 1965:186). Beatty thus retained its economic viability.

In the 1920s Beatty was a sleepy little village two days drive over unpaved roads from Reno. During this time Beatty's economy was dependent upon the railroad, highway travelers, agriculture and mining. With the advent of prohibition a new industry was introduced to Beatty, bootlegging. The industry flourished through

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[41]Actually the terminus for the Tonopah and Tidewater was at Gold Center, about 2 miles south of Beatty. The Tonopah and Tidewater Railroad used Bullfrog Goldfield Railroad track to reach Goldfield and Tonopah.

[42]This is not the same community as the present-day Amargosa Valley.

the 1930s. Mining activity persisted until about the beginning of World War II but then declined to a point of relatively low activity until recent years.

Current economics. The town of Beatty maintains a modicum of stability by means of a diversified economy. Most visibly, there are three, full-fledged casinos, each complete with associated restaurants and motels. Like most of the local service-oriented businesses, they are located along U.S. Highway 95, drawing sustenance from it. Casino and motel workers generally receive wages barely above the minimum and rely on tips to make ends meet.[43] In addition to the casinos, there are seven bars in Beatty which provide local employment.

A second part of the economy is comprised of the defense-related industries.[44] This includes the many subcontractors involved at the Nevada Test Site (NTS) and the Nellis Air Force Base radar installation at Tolicha Peak. Employees in the defense industry tend to be comparatively skilled and well-educated, and as a rule, maintain low visibility in the community.[45]

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[43]The liquor, gaming, and brothel industries are well regulated. Anyone employed by one of these establishments must have a background check and be finger printed before a sheriff's card can be issued. The precise requirements for retaining the card vary according to the job. The most stringent requirements apply to prostitutes who must renew their registration quarterly. They are required to have weekly health checks and once-a-month blood tests for AIDS antibodies.

[44]There are those who would argue that this type of employment should rightly be classified as public sector.

[45]Many of these reside during the week in Beatty but maintain a primary home for wives and children in Las Vegas, going home on weekends and holidays.

The mining industry constitutes a third segment of the local economy. Mining has recently undergone an expansion with the purchase of the "ghost town" of Rhyolite by the Bond Gold Bullfrog Inc.[46] As of 1988 the company's gold/silver operation[47] was projected to employ perhaps as many as 225 people during the operation phase. In fact, as of October 1989, 300 persons were employed at the mine (Bozanic, 1989). The proposed mine complements existing gold mines in the area such as the Gold Bar and the Crowell, or "Daisy," mines, the latter of which produces fluorspar.[48] Mining-related growth resulted in an increase from 666 residents in 1980 to an estimated 1,589 by 1988 (MWR, 1989).

Small non-governmental providers of goods and services make up a fourth segment of the local economy. These include: two small grocery stores, several motels and restaurants, a fuel distributor, several gasoline stations, and a cable TV company. Except for the gas stations, which tend to be leased from large corporations, most Beatty businesses are small and locally owned. The retail sector of the local economy points to the limits of Beatty's diversification. With Las Vegas being about two and a half to three hours away, Beatty stores are modest operations that serve "forgot something" needs, whether the patron be a tourist or

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[46]Formerly St. Joe Gold Corporation

[47]Bullfrog/Montgomery-Shoshone Project

[48]Fluorspar is used in steel manufacturing. The decline of domestic steel production has paralleled a slackening of operations at the Daisy mine since it does not produce in enough volume to justify exporting its product overseas.

a local. In contrast, the local casinos are full-sized operations that have reportedly made millionaires out of their owners.

The fifth part of the local economy is actually a residual and is typically classified as the public sector. It consists of providers of public services such as police and fire protection, health services and education. Beatty houses the local Justice Court, Sheriff's Substation, and jail. In addition, the town has a library, a volunteer fire department (with one full-time paid employee), a medical clinic (with a physician's assistant) and a school system that includes all grades, K-12.

Response to Repository

Perceptions of Project

Support/opposition. "It is hard to find anyone in Beatty who is openly opposed to the nuclear power, nuclear energy, or the nuclear repository" (Trend, Little and Krannich, 1987b:54).[49] In this regard residents of Beatty are very much like their neighbors in Amargosa Valley. Field data collected between 1986 and 1988 indicated that the proposed Yucca Mountain repository had broad-based support in Beatty, just as it had in Amargosa Valley.[50] Structured interviews, informal discussions and overheard

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[49]Throughout southern Nye County there is a tendency for residents to treat all things nuclear as roughly equivalent. Questions on one nuclear topic are apt to elicit responses on several nuclear topics.

[50]The attitudes, beliefs and perceptions of Beatty and Amargosa Valley residents are indistinguishable on many topics.

conversations all pointed in this direction (see Little and Krannich, 1987b; Trend, Little and Krannich, 1988b).

While there are several motivations for Beatty respondents' pro-nuclear stance, the primary factor appears to be economic, although it may not be as important a factor in Beatty as it is in Amargosa Valley. Recent governmental spending at the Tolicha Peak radar station had eased local economic anxiety to some extent, but at the time of data collection the mine enterprises by Bond Gold Bullfrog Inc. at Rhyolite and U.S. Nevada Gold Search Joint Ventures (USNGS) were not yet wage-paying realities (Bozanic, 1990; Henderson, 1989; Gateway Gazette, 1989a, 1989b). Several informants revealed a desire to maintain the moderate growth Beatty had experienced over the past few years. To do so requires a continually expanding economic base, and virtually everyone in Beatty is in favor of economic development.

Patriotism, here as well as in Amargosa Valley, provided yet another rationale for supporting the repository. That is, many felt that it was the patriotic duty of Nevadans to host the facility. However, this justification created a dilemma. How does Nevada fulfill its patriotic obligations while at the same time not being pushed around? Even supporters of the repository held some resentment about Nevada taking the waste created in other states (Trend, Little and Krannich, 1988b).

Opponents to the repository, as well as other things nuclear, (e.g., NTS) were alive and well in Beatty. They were reluctant, however, to make public pronouncements regarding their opposition.

Those opposed to the repository appear to have been disproportionately young women of childbearing age. The rationale for their opposition was generally based upon their fears for the safety of their children and grandchildren (Trend, Little and Krannich, 1988b).

In the absence of unanimity regarding the desirability of the repository, it is somewhat surprising to note that proponents and opponents alike agree that Yucca Mountain is the appropriate place for storing nuclear waste. Most believe that the land has been irradiated off and on for the past 40 years. Because of this, the area is perceived as unsuitable for other uses, even if it were not part of NTS. One informant suggested that it would be a shame to take nuclear waste to a "clean" place when Yucca Mountain is already "dirty" (Little and Krannich, 1987a).

Just as in Amargosa Valley, the proposed repository at Yucca Mountain was not a common topic of conversation, even though 96.3 percent of the respondents were aware of plans for the repository (Krannich and Little 1989b:211). The belief by supporters that there was near consensus, coupled with the perception that the repository would bring needed employment, appears to have dampened interest and thus conversation about the repository. Opponents of the repository were disinclined to be identified as such. Besides, to speak out against the repository is to speak against economic development, and virtually everyone in Beatty is in favor of economic development. In any event, a conversation maker the repository was not.

The survey data collected in the spring of 1988 did not contradict the ethnographic data, even though there were some minor differences. A questionnaire item asked the randomly selected adults in Beatty: "If you were able to make the final decision regarding the location of the nuclear waste repository at Yucca Mountain, would you build it there?" Slightly more than 45 percent of the 106 queried said that they "definitely" would, while an additional 28.3 percent stated that they "probably" would. Just 13.2 percent said they probably or definitely would not build the repository at Yucca Mountain, and the remaining 13.2 percent were undecided.[51] Approximately 73 percent were in favor of the repository (Krannich and Little, 1989b:269). It should be noted that over 47 percent of the respondents gave answers ("probably" and "uncertain") which are susceptible to change.

The strong support for the repository exhibited in Beatty is consistent with residents' perceptions of the consequences of the repository. One question asked whether the effects of the repository would be harmful or beneficial for the respondent. Over 58 percent gave answers on the beneficial side of the scale, although only 11.7 percent thought that the consequences would be entirely beneficial. Just 19.5 percent responded that the consequences would be personally harmful to some degree. The remaining 22.1 percent were undecided (Krannich and Little, 1989b:264).

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[51]The distribution of answers very closely approximates the distribution of responses obtained in Amargosa Valley.

A similar question focused upon the consequences for the community. Far more respondents (36.1%) were undecided about the ultimate consequences of the repository for their community than for their personal lives.[52] Correspondingly, fewer believed that the consequences would be either harmful or beneficial. In spite of the large proportion who were undecided, 47.5 percent believed that, overall, the consequences for the community would be beneficial (Krannich and Little, 1989b:264).

Concern about risks. Occupants of Beatty, by and large, either ignore potential repository risks or do not perceive them at all. Those risks which they do perceive tend to be treated lightly. The ethnographic record provided several rationales for the apparent lack of concern. Beattyites typically believe that the dangers most people associate with radioactivity have been overstated. They will point out that they are used to it, although several confessed to having been frightened by things nuclear when they first arrived in Beatty. Some suggested that a DOE-sponsored tour of NTS allayed their fears. Others, or members of their family, have been employed with weapons testing at NTS, and some were in Beatty when atmospheric testing was still being conducted. Furthermore, most believe that the scientists and technicians are competent and the repository would therefore be safe. All-in-all, time spent near nuclear activities seems to lessen the perceptions of risks.

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[52]These results suggest that it is easier to conceptualize a future state of affairs for one's self than it is to anticipate a future for the more abstract notion of community.

The survey data collected in 1988 support the conclusions reached from the ethnographic data. When asked, 90.4 percent stated that they thought the repository would be safe (Krannich and Little, 1989b:260). This is an even higher percentage than the percentage obtained in Amargosa Valley. Only 9.6 percent believed that the repository would be unsafe. Not only did most respondents believe that the repository was safe, 76.3 percent felt that underground storage was the best storage method for nuclear waste (Krannich and Little, 1989b:259).

Beatty residents' responses to the safety question are consistent with their responses to a question on how far they would prefer to live from a nuclear repository. The median distance reported was 20 miles, and Beatty is only 18 air miles from the proposed site (Krannich and Little, 1989b:242). They perceive few risks and are willing to back up their beliefs with their willingness to reside near the repository. It should be pointed out the residents in Beatty and Amargosa Valley were willing to live much closer to a nuclear repository than the respondents in Pahrump (100 miles) and Indian Springs (50 miles). By now it should come as no shock that Beatty residents are generally unconcerned about any public health and safety risks arising from construction of the repository. Nearly 26 percent were "Not at all concerned" about such risks (Krannich and Little, 1989b:265). The mean response was 3.3, where 0 indicated a total lack of concern and 10 extreme concern. Slightly more than 20 percent gave responses above the midpoint of the concern scale, suggesting

moderate to extreme concern, while 54.3 percent scored below the midpoint, suggesting low to no concern.

Similarly, when asked how concerned they were that the repository might contaminate water supplies, 56.9 responded on the not concerned side of the scale. Just over 27 percent gave responses on the concerned half of the scale, and 15.9 percent responded at the midpoint (5.0) of the scale which indicates ambivalence.

The only commonly perceived risk associated with the repository involved transportation of nuclear waste to the repository. Unfortunately, the survey evidence is somewhat difficult to interpret. When asked the rather simple and straightforward question, "Do you think that nuclear wastes could be transported to the repository in a way that would be acceptably safe?" 87.5 percent answered "yes." However, when asked to respond to the statement, "I have a hard time believing anyone who tries to tell me that transportation of hazardous materials is safe," 44.3 percent of the respondents disagreed to some extent with the statement. Approximately 20 percent were ambivalent, and 34.9 percent tended to agree with the statement. The mean score of 4.9 indicated slight disagreement with the statement (Krannich and Little, 1989b: 249). Thus, over one-third of the respondents did not believe that the transportation of hazardous materials, including radioactive waste, was safe.

A comparable statement, "Accidents involving the transportation of hazardous materials are inevitable," invoked a

pattern of responses indicative of less trust in our ability to transport nuclear waste. Nearly 50 percent (47.2%) gave responses supporting the notion that accidents are inevitable, while only 31.1 percent discounted such a notion. The remaining 21.7 percent were ambivalent about it (Krannich and Little, 1989b:247).

It is thus clear that a sizable portion of Beatty residents have serious reservations about the safety of transporting hazardous materials. At best they think that current practices are only reasonably safe (Krannich and Little, 1989b:250). Not only is this evident in the results just discussed, but it is also reflected in responses to a question regarding the transportation of nuclear waste through highly populated areas. Nearly 70 percent agreed with the statement, "Hazardous materials should not be transported through highly populated areas." The mean score was 7.2, where 10 represented "strongly agree". Just 18.6 percent gave responses which were on the "disagree" side of the scale. Beatty respondents, then, are clearly more concerned about the transportation of nuclear waste than they are about the risks to health and safety from the storage of these wastes.

Economic effects. While patriotism was often espoused as the reason for supporting the Yucca Mountain project, economic reasons were the most frequently cited rationales. The pro-nuclear stance is to some extent due to the hope that local residents will obtain jobs and that the local economy will receive some benefits (Trend, Little and Krannich, 1988b).

Among some of Beatty's population, the desire for economic growth is coupled to population growth. Population growth does not seem to be desired for its own sake, if at all, and many are very much opposed to growth. Rather, it represents an ability to have the critical necessary for Beatty to sustain some amenities; e.g., a grocery store, doctor, dentist, pharmacy, and bowling alley (see Little and Krannich, 1987b; Griffith, 1988).

Some of those who hope and believe that economic benefits will come to Beatty also think that profiteering will be the likely outcome of any large-scale migration. High housing costs is a typical illustration. Other residents are not quite so optimistic as those who expect jobs nor so pessimistic as those who expect inflation and price gouging. This latter group believes that few, if any, jobs will go to locals. They anticipate that most of the jobs and other economic benefits will go to Las Vegans or other outsiders (Little and Krannich, 1987b).

Again, survey data reinforce conclusions reached from the ethnographic data. While jobs stemming from the repository are important, they are not nearly so important here as they are in Amargosa Valley. When asked if they were satisfied with the availability of good jobs in Beatty, 38.5 percent were more or less satisfied, while 43.2 percent were more or less dissatisfied. As a result of this distribution, the mean score was 5.0 on an 11-point scale. Only about 10 percent were highly dissatisfied and a similar proportion were highly satisfied (Krannich and Little, 1989b:186).

A similar question was asked about the degree of satisfaction Beatty residents experience in regard to their ability to earn an adequate income. In this instance 49 percent scored on the satisfied end of the scale, while 34.5 percent responded with scores which represented dissatisfaction. The mean score was 5.6, indicating slightly more satisfaction than dissatisfaction (Krannich and Little, 1989b:187).

Beatty residents were even more satisfied when they were asked a more general economic question: ". . . how satisfied are you with our present economic situation these days?" Only 15.3 percent gave dissatisfied responses. In contrast, 68.6 percent said that they were more or less satisfied. The mean score on this question was 6.7, demonstrating a fair degree of satisfaction with their present economic situation (Krannich and Little, 1989b:204).

Even though the responses to these last three questions show a reasonable amount of satisfaction with personal economic matters, this does not imply that economic development is not important. Responses to a question about the importance of increasing economic opportunities in Beatty demonstrated that virtually no one thought that it was an unimportant issue. In fact, 88.7 percent thought it important, and 50 percent responded with a score of 10, "Extremely Important." The mean was 8.6 (Krannich and Little, 1989b:209). While they may not desire jobs for themselves, Beattyites think that it is important for others in town to have economic opportunities.

All of this demonstrates that economic factors are important for Beatty residents, and the repository represents an economic opportunity. When respondents were asked if the economic effects of the repository on Beatty would be harmful or beneficial, only 5 percent suggested that it would be in any way harmful, and 17.2 percent thought that the benefit and harm would be equal. Nearly 78 percent stated that the economic effects of the repository would be beneficial. Over 30 percent thought that the consequences would be "Entirely Beneficial," a scale value of 10. The mean for all scores was 7.8.

To date the repository program has brought few economic benefits to Beatty. DOE established an information office in the town in the spring of 1988. A part-time employee staffs the office, handing out literature and showing videos. The employee's wages and lease monies, the only economic impacts of the office, are relatively insignificant. Limited amounts of repository-related funding have been channeled to the town from Nye County in order to support travel by members of Beatty's Nuclear Waste Advisory Board to meetings regarding nuclear waste disposal.

Government management. At the same time that they support the proposed repository, there is a strong feeling among some Beatty residents that the federal government can do nothing right. Furthermore they assert that the federal government routinely lies about events at NTS, Nellis Air Force Range and Tonopah Test Range. More importantly, many believe that the decision to place the repository at Yucca Mountain was made long before it became obvious

with the passage of the Amendments to the Nuclear Waste Policy Act. For these Beattyites, site characterization was a charade to satisfy legal requirements and to placate the public.

Passage of the Amendments merely reinforced the sense of fatalism so evident in Beatty. Residents were resigned to the notion that the federal government was going to do whatever it wanted regardless of scientific findings or local desires (Little and Krannich, 1987b). This sense of helplessness helps explain both the resentment of Nevada being forced to accept radioactive waste from throughout the U.S. and the lack of conversation about the repository. For many the attitude is: if you have no control over it, why talk about it?

Survey data confirm this ethnographically observed distrust of the federal government. When asked how often residents thought they could "trust the federal government in Washington to do what is right," 39.3 percent gave responses which demonstrated an absence of trust. An approximately equal percentage (33.7%) indicated that they generally trusted the federal government. Overall then, Beatty residents distrusted the federal government slightly more than they trusted it (Krannich and Little, 1989b:217).

Even though there was considerable distrust regarding the federal government's ability or willingness to do what is right, the tendency was for Beatty residents to believe that federal agencies generally provide accurate and honest information about nuclear programs. A relative absence of confidence in agency

honesty and accuracy was expressed by 26.1 percent of the respondents, while 53.2 percent gave responses which suggested a degree of confidence. Over 20 percent were ambivalent (Krannich and Little, 1989b:262). Beatty's mean score of 5.7 was the highest of any of the seven study communities.

Even though Beatty demonstrated considerable distrust of federal agencies, respondents generally felt that the site selection process was fair, with a majority (57.8%) indicating that the selection process was more or less fair. More than 23 percent classified the process as unfair, while 19.2 percent were ambivalent. The category receiving the greatest response (26%) was "Completely Fair" (Krannich and Little, 1989b:268). Only in Amargosa Valley did more residents think that the process was fair. This result is somewhat surprising given the sense of futility in the face of federal bureaucracy observed during the ethnographic fieldwork. Perhaps a judgment of a fair site selection process is a means of reducing the level of cognitive dissonance.

Questions intended to ascertain the level of trust placed in state, county and local governments were also asked of Beatty respondents. Levels of distrust for state and county government were roughly equivalent to those obtained for the federal government. Only local government fared noticeably better. Almost one-half of the respondents found local government trustworthy to do what is right. Nevertheless, 31.5 percent distrusted even local government to one extent or another (Krannich and Little, 1989b:218-220).

Satisfaction

All things considered, Beatty residents were relatively well-satisfied with their lives and their community during the period when ethnographic fieldwork was conducted. They see their town as a slow-paced town with plenty of wide-open spaces. Beatty is generally thought to be a good place to raise children. Prior to the inmigrations stimulated by Ford Aerospace and Bond Gold, Beatty was a friendly place where everyone knew everyone. In some respects the whole town was like a family (Little and Krannich, 1987b). Certainly the regular patrons of each of the seven bars were like family, and important community events were staged in them (Trend, Little and Krannich, 1988b).

Survey data reflect this general satisfaction Beattyites feel for the town. A question tapping global satisfaction with the town reveals that 73.5 percent of the respondents were more or less happy with Beatty. Where a score of 10 represented "Completely Satisfied," the mean score was 7.1. Only 14.2 percent were dissatisfied with the town (Krannich and Little, 1989a:72).

Responses to questions on satisfaction with the community as a place to raise children and the friendliness of the residents appear to contribute to global satisfaction. The mean satisfaction score for Beatty as a place to raise a family was 6.6, the lowest of the seven study sites, while the mean satisfaction score on the friendliness of the people was 7.9 (Krannich and Little, 1989b:185). On both of these 11-point scales, a 10 represented "Completely Satisfied." Low satisfaction scores on many community

service issues do not appear to have negatively effected the global satisfaction scores (see Krannich and Little, 1989a; 1989b:160-162).

Personal satisfaction was slightly higher among Beatty residents than community satisfaction. The mean score for the latter was 7.7 (vs. 7.1 for the former) which suggests a fair degree of personal satisfaction. Only 4.8 percent of the respondents provided answers which specified any degree of dissatisfaction. Satisfaction with their own lives was indicated by 81.9 percent of the respondents. Nineteen percent of the respondents reported that they were "Completely Satisfied."

The combined ethnographic and survey data suggest that the repository program has yet to have significant impacts upon personal or community satisfaction. While expectations may make the future appear brighter than today, the consequences of an anticipated future are not so obvious as in Amargosa Valley. Beatty has maintained a stable economy for most of this century, and federal projects and new mining operations reduce feelings of economic desperation which seem to dominate repository perceptions in Amargosa Valley. Unfortunately, available data provide no sound evidence for validly assessing anticipatory effects.

Participation/Integration

Ethnographic and historical evidence suggest that over the years Beatty has maintained a relatively high level of social integration (see Trend, Little and Krannich, 1988b). Until recently, everyone felt that they knew everyone else, so the

density of acquaintanceship was probably very high.[53] Many viewed Beatty as a big family. However, community integration has deteriorated somewhat with the introduction of Ford Aerospace personnel into the town (see Little and Krannich 1987b).[54] Inmigrants drawn by employment with Bond Gold and USNGS have undoubtedly weakened community integration. The newcomers will know practically no one and the proportion of residents known to oldtimers will shrink.

Community participation in formal organizations has traditionally been low in Beatty. Meetings of the various town boards are sparsely attended unless an important topic is on the agenda; e.g., repairing or maintaining the TV translator station. Given Beatty's political structure and the strong preference for low taxes, the town has always depended on volunteerism. Unfortunately, there are too many needs and too few volunteers. Some individuals are members of more than one board, while others change their board memberships as interests shift (see Trend, Little and Krannich, 1988b). Population growth can only exacerbate the problem, for volunteerism works best when there exists a strong sense of commitment to the community, and such commitments require time to develop. Newcomers are unlikely to possess such commitment to Beatty.

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[53]Relatively high levels of integration do not negate or deny Beatty's philosophical leanings toward individualism or the "live and let live" maxim which seems to govern day-to-day activities.

[54]Informants indicated in 1987 that Ford Aerospace people were community-minded and cooperative, even if not well-integrated.

Questionnaire data supports the conclusion that Beatty exhibited a significant degree of integration. When asked the percent of the population known to the respondent, the mean response was 56.2 percent. While this is substantially below the proportion estimated to be known by Amargosa residents (65.6%), it significantly exceeds the average estimates obtained in Pahrump and Indian Springs (Krannich and Little, 1989b:89). Population increases which began to emerge in 1988 undoubtedly decreased the density of acquaintanceship.

Even though reasonably well-integrated, the questionnaire data shows that participation in formal organizations remains low. Just as in Amargosa Valley, Beatty residents are, on average, active in slightly more than one formal organization (Krannich and Little, 1989a:13). In spite of their relatively low participation in formal organizations, Beatty residents maintain a reasonable rate of attendance at town advisory council meetings, with 13.5 percent stating that they regularly attend such meetings (Krannich and Little, 1989b:153). However, their membership on and/or attendance at other types of boards or committees was not nearly so regular (see Krannich and Little, 1989b:155-170).

The proposed Yucca Mountain repository has generated few effects on social participation and integration in Beatty to date. Repository activities have stimulated few, if any, demographic shifts in the town. In the absence of large-scale inmigration there have been none of the changes which typically follow from such inmigrations (see Berry, Greider and Krannich, 1990;

Freudenburg, 1986; Krannich and Greider, 1984; Little, 1977). Neither have there been any new voluntary organizations formed in Beatty as a result of the repository. Were the repository a source of contention, one or more voluntary organizations would have undoubtedly emerged.

The Beatty Nuclear Waste Advisory Committee is the only obvious addition to the social structure of the town which has been stimulated by repository activities. Members are appointed by the town advisory council. Through the fall of 1988, meetings of the committee were irregular and attendance was spotty. The committee had not emerged as an important public forum prior to the end of data collection. DOE funds are occasionally provided to send members of this committee on site visits to nuclear facilities or to attend nuclear waste management meetings.

DOE periodically organizes meetings throughout southern Nye County with the intent of disseminating information regarding the repository. Representatives of DOE, state and/or county government generally attend. These meetings are fairly well-attended by locals and may represent the only alteration to community participation which can be attributed to the repository.

Conflict

Intracommunity conflict. Unlike their more contentious neighbors to the south (i.e., Pahrump), Beatty is generally not marred by internal conflicts. Perhaps the most serious conflict in recent times was presided over by Beatty's Television Board, which was seeking solutions to poor television reception. A degree of

acrimony emerged, and young seemed pitted against old over the spending of tax monies. In the scheme of things this was certainly a trivial issue, and participants have probably forgotten the entire episode (Trend, Little and Krannich, 1988b).

Conflict over the construction and operation of the repository has not as yet emerged, in spite of the fact that a relatively significant minority of the population is opposed to the repository. Others, while not opposed to the repository project in general, are concerned over potential water contamination or transportation accidents. However, the peace remains.

There appear to be several reasons for this. First, even though economic needs are not primary due to the presence of Ford Aerospace and the various mining ventures, Beatty residents still place economic development high on their list of priorities and the repository certainly spells development. Second, the perception that hosting the repository is a patriotic duty makes dissent difficult, if not impossible, for those who otherwise oppose it. Overtly opposing the repository would likely be seen by supporters as both anti-development and un-American. Even the staunchest opponent would flinch at the prospect of being so labeled in a community where development and patriotism are both so important. Third, repository activities have not spawned events which typical citizens might find objectionable. There has been no mass inmigration of construction workers which might disrupt the orderly routines of Beatty and threaten its infrastructure and social structure. Nor have there been known escapes of radioactive

materials into the local environment which have threatened the health and well-being of Beatty residents. Finally, so little is known about the concrete form and structure of the repository that it is difficult to conceptualize it in such a manner as to be able to visualize the types of events which might follow from its completion. Without a vision of the future, it is somewhat difficult to disagree with someone about it.

Intercommunity conflict. While serious intracommunity conflicts in Beatty are largely lacking, there are nonetheless potential new and ongoing intercommunity conflicts. Beatty may find itself in a political battle with Las Vegas over unappropriated groundwater. Clark County's filing on 32 wells in Nye County is apt the create hostility and political controversy as Beatty, along with other Nye County communities, seek to protect their water (Gateway Gazette, 1990). Without water they know that they cannot grow, any more than Las Vegas can. The bottom line of the battle will be "Who gets to grow?"

The only repository-induced intercommunity conflict is with Pahrump. Over the years Beatty has frequently found itself in conflict with Pahrump over the latter's political aspirations. Recently Beatty was dismayed over Pahrump's attempts to split Nye County on an east-west axis, placing Beatty in the southern portion. Pahrump, with the largest population, would be the county seat. The attempt was viewed by Beatty residents as more than a simple power grab by Pahrump attempting to extract itself from the political influences of arch-enemy Tonopah. The new county would

have been eligible to receive federal repository impact assistance funds as an adjacent political unit. Thus, Pahrump rather than Tonopah was anticipated to gain control of a significant portion of the federal largess. In the scheme of things, most Beatty residents preferred to remain under the political control of Tonopah. "Better the devil you know" was their feeling (Trend, Little and Krannich, 1989b).

Government. Beatty, like Amargosa Valley and Pahrump, periodically finds itself in a political contest with the powers in Tonopah. The allocation of road funds is frequently a source of contention. In these political battles, it is sometimes asserted that Pahrump is receiving more than its fair share of tax revenues.

Beatty finds itself regularly at odds with state government and its agencies. A major source of conflict, and one that was incited by the proposed repository, centered about the creation of Bullfrog County in 1987. This personless political entity which surrounded the repository site was created by the state legislature (AB-756). The obvious goal of the legislation (since overturned) was for the state to capture federal funds which are intended for nearby political jurisdictions. The new county, controlled by a legislative committee would thus control these precious federal funds. Many Beatty residents were outraged and viewed the action by the state government as theft, pure and simple, as well as a violation of democratic principles (see Trend, Little and Krannich, 1989b).

While not all of the distrust in state government can be attributed to the Bullfrog County fiasco, some of it must be laid to rest there. Survey results indicate that there is significant distrust in state government on the part of Beatty residents. When asked, "How often do you think you can trust the Nevada state government in Carson City to do what is right," approximately 33 percent gave answers registering varying degrees of distrust. Another one-third (34.6%) gave answers which indicated ambivalence, and 31.8 percent provided answers indicating trust (Krannich and Little 1989b:218).

Anticipated Consequences of the Repository[55]

Perceptions of the Project

Support/opposition. Though would-be protagonists and antagonists both reside in Beatty, repository plans and activities have thus far promoted neither conflict nor organizations dedicated to repository issues. It is unlikely that alterations in the current balance of support/opposition will surface until firm repository plans are announced to the public or until concrete actions are taken.

It appears that current conceptions of the repository by denizens of Beatty are vague and unfocused. An analog to NTS probably determines the conceptions of many. This is not

[55]Because of the strong similarities between Beatty and Amargosa Valley, much of what is included in this section has been discussed in somewhat greater deal in the section on Amargosa Valley.

surprising given that concrete and detailed plans are not currently available for public perusal. Levels of support and opposition could change, however, should DOE instigate positive physical action or provide the public with a detailed schedule of construction activities. The repository remains, for the moment, an economic promise and will remain so until events challenge that promise.

There are several events which would likely alter the current balance. Should a decision be made not to continue with the project, protesters would immediately mobilize to protest the action. These groups, containing only a fraction of all Beatty's repository supporters, would alter the extant social structure. However, the creation of a protest group would probably not alter the proportion of those in support of or opposition to the repository. Most vocal among them would undoubtedly be those with a strong stake in the economic future: retail tradespersons and those with local real estate interests.

Should government contracts or union hiring practices discourage or inhibit locals from obtaining employment at the site, it seems probable that protests would be organized locally, and new protest organizations might emerge. State and county political pressures would also be brought to bear at the behest of the local burghers. Under such circumstances, there would probably be a net loss in support for the repository program (DOE) in particular and the federal government in general.

Repository or transportation accidents would also cause a loss of support and perhaps the creation of protest organizations. Opponents of the repository would likely form the nucleus of such groups, recruiting those formerly in favor of the project where and whenever possible. Should there be accidents involving the escape of nuclear wastes from their containment vessels, serious protests and protest organizations would almost certainly develop. If these spills were to constitute a threat to groundwater sources, these protests would likely escalate to extremely high levels, perhaps even to the level of calling for the closure of the repository. Many locals would probably then affiliate with outside anti-nuclear groups in order to gain political advantage and national media attention.

Large and rapid population growth in the immediate future could also create loud protests and loss of support for the repository program. Beatty's infrastructure has already been challenged by the influx of workers for the Bond Gold and USNGS mining operations. In fact, telephone hookups in Beatty increased by 14 percent over the past year (Thurlow, 1990), a significant growth pattern by any standard. If repository actions added to the already swollen population, the problems created could be devastating for social health of the community. Under such circumstances opposition to the repository, or at least the federal government, would increase dramatically, as would protest organizations (see Murdock and Leistritz, 1979; Little, 1977). Even if the community infrastructure could successfully cope with

a large influx of workers, support for the repository would shrink. Some residents are opposed to any population growth. More importantly, over one-third of Beatty's population thinks it is somewhat important to limit population growth (Krannich and Little, 1989b:213)

Concern about risks. Both Amargosa Valley and Beatty residents perceive few risks emanating from the proposed repository. Furthermore, satisfactory experiences with NTS provide for positive or neutral expectations for the repository's future (see Stoffel et al., 1988; Krannich and Little, 1989c).

However, in spite of the generally favorable orientation to the repository, perceptions of risks will increase as plans become known and concrete activities begin at the construction site. Nothing negative need occur for perceptions of risk to increase, at least minimally. As the populace becomes aware of repository details, additional causes for the perception of risks appear inevitable. Additionally, regional and national media will air the views and concerns of both scientists and critics of the repository. It is highly unlikely that residents of Beatty, especially recent inmigrants, will be immune to the risk concerns broadcast from generally trusted news sources.

A major nuclear accident at the site or on a railway or highway would undoubtedly lead to a new and increased evaluation of the degree of risks. Such an event would bring home the reality of the abstract probabilities so blithely quoted by scientists and representatives of DOE. With an accident, residents would realize

that the probability of an accident had just become 100 percent. If the accident involved the escape of radioactive materials into the atmosphere, the increased perception of risks would be even higher. Unfortunately, there are no current means for estimating the quantitative or qualitative changes in risk perceptions that would occur under such conditions.

Economic effects. Beatty residents are anticipating both direct (jobs) and indirect (retail services) benefits from the repository. However, while their expectations are lower and less important than those observed in Amargosa Valley, the expectations may be just as far from the reality. Given Beatty's location relative to the repository, and given the established infrastructure and townlike appearance, the community may receive a greater economic impact than residents anticipate. While private property is at a premium, Beatty-sized lots will provide for numerous trailers on the available land. Too, Beatty may be able to obtain BLM land adjacent to the town to accommodate growth. Some residents are already worried that a boom would bring profiteering by local residents. Should sudden and overly large economic benefits overwhelm Beatty -- that is, change their positive perceptions of their neighbors and town -- there could actually be a decrease in repository support.

Government management. Problems at the site and on transportation routes will largely determine the ways in which local residents perceive the government at its role in repository management. With serious accidents, government agencies will

probably be viewed in an increasingly negative light. Additionally, the extent to which government influences the economic development experienced in Beatty will also affect perceptions. Some residents fear, as they do in Amargosa Valley, that state or federal agencies will encourage workers to establish permanent residences in Las Vegas. Others anticipate that hiring will take place in Las Vegas, thereby depriving local residents of access to desired jobs. If government entities -- county, state or federal -- make no attempt to insure employment for qualified Beatty residents, support for the repository will decrease. Camps at the site or weekly commuters between Beatty and Las Vegas will likely diminish repository support. If economic growth either exceeds expectations or does not meet economic expectations, positive perceptions (i.e., support) of the repository will also decrease.

Satisfaction

Beatty's proximity to the repository and developed infrastructure makes it highly probable that a significant number of repository workers will reside there. Even if current gold mining and processing activities were terminated, it is likely that the population influx will stress Beatty's infrastructure and social structure. Insofar as a significant portion of the population desires only limited population growth, excessive growth, by their standards, can only lead to increased personal and community dissatisfaction.

Improved job availability, increased wages and improved retail services will moderate the degree of increased dissatisfaction, but it would probably not eliminate it entirely. Increases in population certainly represent a threat to extant value structures, and Beatty residents are strongly committed to maintaining their existing ways of life and values (Krannich and Little, 1989b:208). There is a reasonable probability that population increases will be so great as to destabilize the community in a manner well-documented in the boom town literature (see, Krannich and Greider, 1990; Brown, Geertsen and Krannich, 1989; Freudenburg, 1986; Gold, 1986; Little, 1977).

Participation/Integration

Significant population growth would undoubtedly alter the current participation and integration levels in Beatty. The larger the population, the more difficult it becomes to know community members. As population numbers increase, density of acquaintanceship decreases. Volunteerism is replaced by formal bureaucracies and small towns take on the accoutrements of urban America.

Integration, in any community, requires time. Newcomers must get to know both long-time residents as well as other newcomers. They must become involved with them in routine activities, discovering shared interests, hopes and dreams. Long-time residents must get to know the newcomers, learning to understand and accept the new values and perspectives which these largely urban newcomers bring with them. Throughout this process,

conflicts and clashes are inevitable and integration must suffer. Only time can create an amalgam incorporating old and new elements into a "new" community.

Accidents with the repository program can only accentuate the problems of integration and participation associated with population growth. Radioactive spills and other such difficulties would undoubtedly create community splits, as some residents protested the mistakes, while others defended the repository. Such splits would often correlate with length of residence. Newcomers with lesser commitments to Beatty would be more inclined to move rather than be exposed to risks posed by the repository and perhaps would be unwilling to fight for improved conditions. Long-time residents would be more inclined to rationalize their continuing residence in Beatty and more inclined to fight for improved conditions. The net result would be decreased social integration.

Conflict

Intracommunity conflict. While Beatty currently has little intracommunity conflict, the potential for repository-induced conflicts is, nonetheless, present. As we have just seen, conflicts between long-time residents and newcomers are likely in the event of nuclear accidents or spills.

Conflicts over community government, tax dollar spending and value differences are all possible when new workers arrive in Beatty and set up residences. Value conflicts are probable for two reasons. First, inmigrants will generally bring with them an urban view of life, a view not totally congruent with the value structure

of contemporary Beatty. Second, current residents have a rather strong desire to maintain their current values and way of life. Conflict appears inevitable.

Intercommunity conflict. Extant intercommunity conflicts would probably be exaggerated by the construction and operation of the repository. Beatty and Pahrump would be in constant competition for their fair shares of both the increased tax revenues and any federal monies made available to impacted communities. Should groundwater be contaminated, Beatty might be forced into legal battles with Clark County to recover any water potentially lost through the current "Las Vegas water grab" attempt.

Government. Conflicts with Pahrump and Clark County ultimately lead to conflicts with state government. The allocations of taxes and impacts will determine the extent of the conflicts. Unfortunately, even judicious splits are likely to create dissatisfaction, with no one pleased with the allocations. The greater the dissatisfaction with the allocations, the greater the dissatisfaction with the repository. Past history suggests that conflicts with county and state government over economic issues are inevitable.

Transportation and operation accidents at the repository will likely create conflict with the federal government, which in turn will decrease support and satisfaction with the repository. Out of accidents will come demands for better emergency response programs, more personnel for these as well as related support programs (e.g.,

police), and better oversight by federal, state and county agencies. Without a doubt, the federal government will be at the center of these complex conflicts.

PAHRUMP

Community Context

Political Geography

This unincorporated town[56] is located in the Pahrump Valley in the southernmost tip of Nye County. Unlike Amargosa Valley and Beatty which are also unincorporated, Pahrump is governed by an elected town board (see Nevada Revised Statutes). This five-member panel can enact ordinances and take a variety of other actions which do not require approval by the county commissioners.[57] Pahrump lies 63 miles east of Las Vegas, 45 miles southwest of Mercury, 44 miles southeast of Amargosa Valley and 164 miles southeast of Tonopah, the county seat. The proposed high-level nuclear waste repository at Yucca Mountain is only 55 air or 61 road miles away.

The Pahrump Valley is approximately 42 miles long and 15 miles wide, containing 1,050 square miles[58], most of which are nearly devoid of human inhabitants. The town itself includes about 364 square miles of the valley (Pahrump Chamber of Commerce, 1985/86)

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[56]Gabbs is the only incorporated town in Nye County. Even Tonopah, the county seat, is unincorporated.

[57]In 1985, Senate Bill 463 (SB-463) gave communities with a town board form of governance considerable political autonomy and power by granting them authority over local planning ordinances. However, SB-463 was overturned by the Nevada Supreme Court in 1988.

[58]Whereas only 2 percent of Nye County's 18,000 square miles is owned by the private sector with 98 percent being owned by the federal government (Walters Engineering and Chilton Engineering, 1972:53), approximately 50 percent of the Pahrump Valley is privately owned (Cooperative Extension Service, 1976:3).

and was inhabited by just under 6,300 residents in 1988.[59] It is the largest town in Nye County, exceeding even the county seat in population, a fact which is often a source of contention when Pahrumpian desires are ignored or denied by the county commissioners.

At the present time Pahrump is a fill-in-the-blanks real estate development, where most of the subdivided lots remain unimproved and many will stay that way. A boom town, Pahrump has increased in size five-fold during the past decade, and most of its residents and real estate investors clamor for more growth and prosperity. They see their town as having the best of two worlds: small town serenity and security with big city convenience in nearby Las Vegas. Numerous residents are daily commuters to NTS or Las Vegas.

It has not always been thus in Pahrump. Initially the settlement was an agricultural valley populated by a handful of ranchers, some alfalfa and cotton farmers, and a few individuals who either wanted to get away from Las Vegas or had a vision of what Pahrump Valley might become. Some residents in their early thirties were members of the first graduating class of Pahrump Valley High School, and these same people witnessed the arrival of electric power during the 1960s. Even as late as 1970, the town had fewer than 1000 people, and in 1980, Pahrump's population was still less than 1500. Thus, the truly significant population

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[59]Survey data collected in 1988 indicate a population of 6,294. However, the probability of continuing growth since that time makes that estimate extremely conservative.

growth has been of recent vintage, and Pahrump Valley is no longer the isolated agricultural hinterland it once was. In contrast to Amargosa Valley and Beatty, Pahrump already has in place much of the infrastructure necessary to accommodate a continuing population influx.

The complaints heard from Pahrump residents about their town are different from those that Beatty and Amargosa Valley residents have about their communities. Pahrumpians almost seem to want to compete with Las Vegas economically and socially and all of Nye County politically.

Socioeconomics

Early history. By the late 1700s Spanish-American explorers were traveling through the valley, and by the 1820s the Old Spanish Trail through Pahrump had become a frequently traveled route to California. Prior to the arrival of Anglo[60] settlers in the middle of the nineteenth century, the Pahrump Valley was occupied solely by Southern Paiute Indians.[61] The initial economic development by non-Indians of the Pahrump Valley was predicated upon a need for food and supplies by travelers on their way to the California gold fields. By 1876 ranching and farming were firmly established in the Pahrump Valley (Lingenfelter, 1986). By the end of the 19th century Pahrump Valley was devoted to commercial

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[60]Anglos are persons of European descent who are not native Spanish speakers.

[61]The permeable boundary separating Southern Paiute and Western Shoshone lies to the north in Amargosa Valley between Beatty and Pahrump (Rusco, Hamby and Fowler, 1986).

farming of cotton, alfalfa, barley, melons and mint, and cattle ranching was significant.

Current economics. Central to the twentieth century economic development of Pahrump Valley were the construction in 1954 of State Highway 160 (then State Route 16), the availability of water, and the proximity to Las Vegas. Without any one of these three factors, Pahrump would have probably remained a sparsely settled desert, just as it was a century ago. However, Highway 160, Pahrump Valley's link to Las Vegas, made it possible for people to move into the valley while residing within a reasonable commuting distance (one to one and one-half hours) of Las Vegas' jobs and city services. Despite the changes wrought by enhanced travel access and modern utilities, Pahrump remained a relatively quiet, rural, agricultural area through the 1960s.

Although Pahrump Valley is situated in the middle of a desert, the existence of a large aquifer underlying the valley made agricultural irrigation practical, and farming continued as an important economic activity into the early 1980s. The last cotton crop was harvested in 1982, a crop that once was sufficiently significant to warrant the only cotton gin in Nevada.[62]

During the 1970s real estate development began to replace agriculture as the primary economic activity. Large parcels of inexpensive, undeveloped, private land with agricultural water

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[62]Although the climate in Pahrump Valley is unlike that of the South, the area reportedly produced fine, long staple cotton. Cotton farming declined with the growth of Pahrump and with the end of government subsidies.

rights provided the prerequisites for creating thousands of residential lots, locally called "ranchettes."[63]

Purchases of major tracts of land and subsequent subdividing occurred in the 1960s after public power came to Pahrump Valley in 1963.[64] By the end of the decade Pahrump Valley was ripe for a Florida-style land boom. Subdividing and selling of land began in earnest after Preferred Equities Corporation (PEC), purchased the 10,500-acre Pahrump Ranch. They sold the first residential lots in 1970. At the present time Pahrump has over 100 registered subdivisions.[65]

There are probably more than 400 businesses currently operating in Pahrump.[66] The firms that abound include realty offices and service-oriented businesses. Virtually absent from Pahrump, however, is any manufacturing industry that could employ significant numbers of local residents at reasonable wages.

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[63]The notion of a five-acre ranchette is a curious fantasy. In most parts of Pahrump, if a lot is more than one net acre, one can drill a well, put in a septic tank, park a mobile home, and keep horses. Plenty of people do this, indulging in a bit of Old West, wide-open-spaces whimsy.

[64]Prior to that time, residents either lighted with lanterns and kept food in gas (propane) powered refrigerators or used electrical power produced by private generators. One early source of electrical power was the cotton gin. It used a total of three diesel generators, one of which could provide current while another was used as a backup and a third was in the shop.

[65]It should be noted that zoning laws in Pahrump must be considered lax by any standard. Conventional homes on lots next to mobile homes are not uncommon.

[66]According to the Pahrump Chamber of Commerce, there were approximately 400 businesses in 1985. Growth has undoubtedly increased the total in the past five years.

Indeed, a vitamin company is the only local manufacturer, and its jobs lie at the low end of the wage scale. Essentially, a secondary economy in which Pahrumpians take in each others' laundry seems to exist, while the primary economy depends on those who have jobs outside Pahrump itself--tourists, NTS workers, and those who commute to higher-paying jobs in Las Vegas.

The vast majority of the businesses have come in since 1981, with their growth paralleling the growth of the town. The relative absence of zoning restrictions in Pahrump results in many businesses being co-located with the owners' residences. Thus, the town has variety stores attached to double-wide trailers, a feed and tack store built on a horse fancier's acreage, and an auto repair shop built ten yards from the proprietor's back door. In fact, there is no true business district in Pahrump. It is as if the businesses that do exist were dropped as seeds from a high altitude and later sprouted in an almost random fashion. True, there is a modest commercial shopping center off Highway 160 towards the north end of town, but although some of the larger businesses are located there (e.g., a supermarket and the Saddle West Casino), it is unlikely that its total number of commercial establishments constitutes more than a small percentage of Pahrump businesses. The modest commercial center houses the town's motels and largest casino, those businesses most likely to cater to tourists.

Although tourist money is primarily captured by the motels and casinos, the local shops and two grocery stores (one of them a

small supermarket) manage to corral some of the outside dollars as well. However, Pahrump businesses must ultimately compete with Las Vegas, as close as an hour's drive away. Although, local merchants may have low overhead, they also have higher transportation costs and low volume. Hence, Pahrump businesses charge more for their products than do similar establishments in Las Vegas, where volume is higher and competition more intense. There is a limit, then, to what can and will be purchased locally. True, residents would like more conveniences and services close at hand but they don't want to pay premium prices for them, so they go to Las Vegas every week or two.

In essence, most Pahrump businesses seem to be of the type which require little capital investment and are oriented to the service sector. That is, there are automobile repair shops but no new car dealers; there are handy-man businesses but no heavy manufacturing. The skills are probably available in the valley, but the capital and leadership to pursue the development of industrial ventures appear lacking.

Response to Repository

Perceptions of Project

Support/opposition. For the most part, the proposed Yucca Mountain repository appears to have generated relatively little overt response among Pahrump residents (Krannich and Little, 1987e). While some residents have raised questions and expressed concerns regarding the project at public informational meetings

(see Gateway Gazette, April 1, 1988, page 18), the general impression gained through interviews with local residents and through observation of public meetings is that few residents are actively opposed to the project (Trend, Little and Krannich, 1988c).

This is not to say that there is no opposition. Interviews with a variety of local residents elicited views ranging from strong support for the project to strong opposition (Krannich and Little, 1987e; Trend, Little and Krannich, 1988c). Survey data support the observation that Pahrump residents "are divided as to the desirability of the repository project" (Krannich and Little, 1987e:47). However, the general impression gained from discussions with local residents is that support is more widespread than opposition, and when asked about their orientations toward the repository, most community leaders, particularly those involved in local business activities, express support for it (Trend, Little and Krannich, 1988c).

Despite no widespread public expression of either support or opposition, residents are generally quite aware of the repository proposal. Survey data indicate that over 97 percent of Pahrump residents knew that Yucca Mountain was being considered as a repository site. These same data indicate that 43% of Pahrump residents would "definitely" or "probably" build the repository at Yucca Mountain, while only 35% expressed opposition to repository development. Furthermore a majority (57%) of survey respondents indicated a belief that underground storage is the best approach to

safely disposing of high-level nuclear waste. However, a substantial minority remain unconvinced of the merits of underground storage. These survey results reinforce observations based on key informant and ethnographic studies regarding the mixed and wide-ranging orientations of residents toward the project.

Concerns about risks. Concerns about nuclear waste storage, public health and safety, ground water supplies, and nuclear waste transportation help to account for the fact that Pahrump residents are less supportive overall of the repository than are residents of Amargosa Valley, Beatty and Indian Springs. Slightly more than one third of Pahrump survey respondents (37%) indicated a belief that the repository would not be safe.

Survey data indicate fairly serious concerns about the potential for harmful effects on public health and safety. When asked to evaluate this issue on a scale ranging from 0 (not at all concerned) to 10 (extremely concerned), the most frequent response was "10." Almost one-half of the respondents selected a value on the "concerned" side of the scale midpoint. In contrast, only about one-third selected a value on the "unconcerned" end of the scale, and fewer than 15 percent indicated that they were "not at all concerned."

Among Pahrump residents, another major focus of concern is the possibility of radioactive contamination of underground water resources. Unlike some other southern Nevada communities, Pahrump lies above a relatively large and productive aquifer. At present, Pahrump and Nye County are actively attempting to prevent Clark

County from securing the rights to develop those water resources and divert them from the Pahrump Valley to the Las Vegas urban area (see Gateway Gazette, June 14, 1990, page 1; Pahrump Valley Times, June 8, 1990, page 1). Many area residents believe that this aquifer extends to and encompasses the Yucca Mountain area and that the repository is therefore a direct threat to the water supply (Krannich and Little, 1987e). This concern is clearly evidenced by survey data. On a scale ranging from 0 (not at all concerned) to 10 (extremely concerned), the mean response value in Pahrump was 6.7. This mean was exceeded only in Caliente and Mesquite. The most extreme scale value of 10 was far and away the most frequently selected response by Pahrump residents to this question, and nearly two-thirds selected a response on the "concerned" side of the scale.

Waste transportation is also a source of concern among some Pahrump residents (Trend, Little and Krannich, 1988c). Almost 37% of Pahrump respondents indicated a belief that waste could not be transported with acceptable safety. Although not located on one of the major highways designated as a potential route for truck shipment of nuclear waste to Yucca Mountain, one of the rail transportation routes under consideration by DOE would involve construction of a new rail spur through the Pahrump Valley (Pahrump Valley Times, May 6, 1988, page 1). Survey data indicate that Pahrump residents were more likely than residents of any of the other study communities to express a belief that hazardous waste should not be transported through populous areas. On a response

scale ranging from 0 to 10, nearly two thirds selected the highest value of 10, with a mean response value of 8.8 (Krannich and Little, 1989b:248). Pahrump residents appear to be substantially more concerned about waste transportation safety in general than are residents of Amargosa Valley, Beatty or Indian Springs. On a composite scale measuring perceived safety of waste transportation (with scores ranging from 0 to 40), the mean score for Pahrump survey respondents was 26.4 compared to scores of 20.0 to 21.9 in the other three communities (Cramer, Krannich and Rhea, 1989).

Economic effects. Unlike other study communities which have recently experienced episodes of economic instability or even sharp decline, Pahrump has experienced a sustained economic and demographic boom for the past decade. As a result, local residents tend not to view the repository as a source of economic salvation for themselves or the community as a whole. This is in sharp contrast to communities such as Amargosa Valley and Beatty. Nevertheless, Pahrump residents do consider it highly important to increase economic opportunities for locals (Krannich and Little, 1989b:209), and many believe that the repository would provide opportunities for residents to secure better jobs. Local entrepreneurs, in particular, appear especially bullish about the potential for the repository to enhance the business climate through increased local access to higher-wage positions or repository-related population growth (Trend, Little and Krannich, 1988c).

Survey data reveal that Pahrump residents are substantially more likely to anticipate positive economic effects from the repository than to expect negative economic impacts. Fewer than 15% of those responding to a question regarding repository effects on the local economy expected negative effects. On the other hand, over 60% indicated that they expect generally beneficial economic effects from the repository (Krannich and Little, 1989b:267). Although the repository program has not yet generated any noticeable economic effects in Pahrump, the anticipation of future economic benefits appears to be one important factor influencing the generally supportive stance of most local residents (Krannich and Little, 1989c).

Government management. Even though Pahrump residents tend to be generally supportive of the proposed Yucca Mountain repository, they express a variety of reservations about the fairness of the program and the ability of federal government agencies to manage it effectively and safely. One source of these reservations involves regional equity issues. For example, many respondents questioned the fairness of sending all of the nation's high-level nuclear waste to Nevada (Trend, Little and Krannich, 1988c). Although such questions were raised in all of the southern Nevada study communities, such sentiments appeared to be somewhat stronger in Pahrump than in Amargosa Valley, Beatty or Indian Springs. Even those generally supportive of the Yucca Mountain project frequently observed that the federal government will eventually "ram it [the repository] down our throats" regardless of local preferences

(Trend, Little and Krannich, 1988:42). Survey data show that Pahrump residents are slightly more likely to consider the Yucca Mountain site selection process unfair than to consider it fair (Krannich and Little, 1989b:268).

General trust in government is low in Pahrump, as it is in all of the rural study communities (Krannich and Little 1989a:139). Consistent with this is a tendency for residents to express reservations about governmental management of both existing nuclear programs and the proposed nuclear waste repository. However, very few Pahrump residents expressed the high levels of distrust and anger evident in "downwind" areas such as Caliente and Mesquite. These two communities, among others, were adversely affected by atmospheric nuclear testing in the 1950s and 1960s, whereas Pahrump was not. Nevertheless, residents of Pahrump are substantially less likely than residents in Amargosa Valley, Beatty or Indian Springs to express a belief that experience gained at NTS has resulted in safe procedures for handling nuclear materials. Pahrump residents are also more likely to believe that NTS activities will generate future health problems (Krannich and Little, 1989b:244-245). As noted in previous reports, however, such sentiments appear to be most prevalent among more recent in-migrants and those not economically dependent on NTS employment (Trend, Little and Krannich, 1988c).

Sentiments such as these appear to be linked to a general lack of confidence in federal agencies' abilities or willingness to provide the public with accurate information about nuclear

programs. Data derived from a survey question addressing this issue indicate that, on a scale ranging from 0 to 10, fewer than one-third of the respondents felt "confident," while over one-half of respondents expressed little or no confidence. This factor appears to be a major correlate of both repository risk perceptions and opposition to the repository among residents of rural, southern Nevada communities (Krannich and Little, 1989c:262).

Satisfaction

Personal and community satisfaction. In general, Pahrump residents express very high levels of satisfaction with their community and their personal life situations (Krannich and Little, 1989a, 1989b). However, high "global" satisfaction levels appear to be primarily a reflection of the fact that Pahrump residents are extremely satisfied with the local social context, described by many as generally pleasant and friendly (Trend, Little and Krannich, 1988c; Krannich and Little, 1989a). Residents also view the quality of public services and utilities in a generally positive manner, although to a somewhat lesser degree. In sharp contrast, there is considerable dissatisfaction with local economic development conditions and opportunities, as is also the case in the other rural study communities (Krannich and Little, 1989a:186-187).

Available evidence suggests that the repository program has had little effect on Pahrump residents' levels of satisfaction, at least through the data collection period. The continued rapid pace

of population growth (see Pahrump Valley Times, April 27, 1990, page 1) has, however, generated concerns about the need for improved land management and planning guidelines, as well as concerns about a deterioration of the local lifestyle, a lifestyle that is highly valued by local residents.[67] In any event, the repository program has not contributed in any meaningful way to the economic or demographic growth experienced in Pahrump in recent years or to growth-related shifts in satisfaction.

At the same time, residents' knowledge of the repository proposal and their expectations about its future effects may be linked to some subtle shifts in satisfaction levels. Although the data available provide only limited grounds for assessing the magnitude of such effects, research in other rural communities has documented that the "anticipatory" effects of a proposed project can be more substantial than the changes that accompany actual development and project operation (see Brown, Geertsen and Krannich, 1989). Key informant and ethnographic interviews suggest the likelihood that anticipatory impacts of the repository proposal will stimulate positive effects on satisfaction for some residents but negative effects for others.

In general, it appears that, because of the repository proposal, Pahrump residents who place great emphasis on the need for improved economic opportunities are likely to view the prognosis for their community as more positive. These residents,

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[67]As far as growth is consistent with Pahrump's value structure, many residents face a dilemma: lifestyle or growth.

for the most part entrepreneurs and those in construction trades, appear increasingly optimistic about the potential for the Yucca Mountain repository to generate new higher-wage jobs and growth-related opportunities.

In contrast, it is likely that a substantial number of local residents who are opposed to or concerned about the repository have experienced some subtle deterioration of their personal and community satisfaction as a result of the repository proposal. The high value placed on preservation of environmental quality by local residents (Krannich and Little, 1989b) suggests that anticipation of possible radioactive contamination from repository leakage and/or transportation accidents could be a source of such effects. In addition, anticipation that the repository may stimulate additional growth which detracts from valued lifestyles may contribute to a deterioration of community and personal satisfaction for these individuals.

Participation/Integration

Due to the size of its population and the rate of growth that has occurred during the past decade, Pahrump exhibits a much lower "density of acquaintanceship" than any of the other study communities. Participation in formal organizations is also low among most local residents, as is the case in all of the rural study communities (Krannich and Little, 1989a:13). Nevertheless, Pahrump residents generally perceive themselves to be well integrated into the social fabric of the community and express high

levels of commitment and attachment to the community (Krannich and Little, 1989a, 1989b).

At least through mid-1988 the Yucca Mountain repository proposal had generated only minimal effects on community integration and participation in Pahrump. Reviews of newspaper articles since that time suggest that this remains the case. In the absence of repository-induced demographic effects, the observed low level of acquaintanceship and limited community participation cannot be attributed to the repository (see Freudenburg, 1986; Krannich and Greider, 1984; Berry, Krannich and Greider, 1990).

The absence of important effects on social integration and participation is also due in part to the fact that the repository proposal has not emerged as a focus of public interest, debate, or action in Pahrump. This is reflected in the fact that no new voluntary organizations or coalitions of existing organizations have developed either in support of or opposition to the repository.

Only one new organization, a community nuclear waste committee, has been created in response to the Yucca Mountain proposal. This committee of approximately a half-dozen appointed residents was created in 1986 by the town board. During the course of data collection,[68] the nuclear waste committee met infrequently, and most meetings resulted in little or no participation by the general citizenry. Committee activities seemingly revolve around efforts to secure information on the current status of DOE planning

[68]Late 1986 through mid-1988

for the Yucca Mountain project, and attendance at various meetings and conferences to allow members to become better informed about the lower additional way. in which the repository project has had an infrequent and minor effect involving community participation is the several informational meetings held in Pahrump involving DOE representatives and/or county and local officials (Trend, Little and Krannich, 1988c). These meetings, some of which have been structured as part of the DOE information dissemination program, have drawn moderate numbers of residents.

Conflict

Intracommunity conflict. Pahrump is often depicted by local residents and residents of other Nye County communities as a contentious town (see Krannich and Little, 1987e; Trend, Little and Krannich, 1988c). Community members have been divided over a variety of issues during the study period, ranging from proposals to site a hazardous waste incinerator in the community, to proposals for incorporation of the community and splitting Nye County, to the hiring and firing practices of town officials.

However, even though Pahrump residents are divided in their support for and opposition to the proposed Yucca Mountain repository, there is little to suggest that those divergent views have generated conflict among local residents or organizations. All evidence suggests that the repository is not a topic of frequent discussion when local residents get together, nor is it a focus of attention in most public forums. The project appears not to have generated any of the existing internal divisiveness.

Neither have individuals withdrawn from public participation or personal networks, phenomena documented elsewhere when resource-related developments have spawned community controversy (Gold, 1986; Greider and Little, 1988; Krannich, 1990). To the degree that residents are involved in community issues and controversies, their attention appears to be focused on more immediate matters such as local planning, zoning and land development issues, proposals for incorporation, management of television translator services, and development of water resources. For many, the Yucca Mountain repository seems to be a rather nebulous, distant and uncertain proposal that could affect the community sometime but not in the immediate future. As such, it generates less controversy among potential combatants than the more concrete and immediate matters confronting the community.

Intercommunity conflict. As Nye County's largest and fastest-growing community, Pahrump has come to wield increasing political influence in the county during the past several years (Trend, Little and Krannich, 1988c) and has actively challenged the traditional base of county political power in Tonopah. The most notable challenge came in the form of its temporarily-successful bid, via SB 463, to secure increased autonomy over local planning and subdivision approval. In addition, Pahrump has been the locus of efforts to pursue the north-south division of Nye County into two separate counties. More recently there have been renewed efforts to pursue incorporation (see Pahrump Valley Times, April 13, 1990, page 1). The town is perceived as politically ambitious

in other Nye County communities, and residents of those other communities often express distrust and disdain for Pahrump, which they view as overly competitive and combative.

One specific episode of such inter-community conflict involved tensions between Pahrump and Amargosa Valley over the designation of a route for a new paved road through the Ash Meadows area separating the communities. Originally the road was planned to connect the towns, providing Amargosa Valley residents with much easier access to the services and facilities available in Pahrump. However, Pahrump community leaders and influentials fought unsuccessfully for an alternative route that would run from Pahrump to Death Valley Junction near the California-Nevada border, enhancing the potential for tourist traffic through Pahrump while effectively bypassing Amargosa Valley (see Pahrump Valley Times, August 18, 1989, page 1). Residents of Amargosa Valley have expressed considerable bitterness over this episode, which they view as reflecting the greediness of Pahrump and its ability to influence decisions in a way that has negative effects on other Nye County communities.

Other episodes of conflict involving Pahrump and other communities have primarily revolved around ongoing tensions with the county-based government in Tonopah over land development and planning issues. Since SB-463 was declared unconstitutional by the Nevada Supreme Court in 1988, the community has had repeated battles with the county government over subdivision approval and related land development matters (see Pahrump Valley Times, May 6,

1988, page 1; May 25, 1990, page 12). Provision of various county-controlled services in Pahrump have also created friction with the political powers in Tonopah.

To date, the Yucca Mountain repository project has not been a focal point of serious tensions or overt conflicts between Pahrump and other communities in the area. Some members of the community nuclear waste committee and the town board, however, have complained that the town has received an inadequate share of repository program funds allocated to the county. In addition, evidence secured through key informant and ethnographic research suggests that the repository proposal has had some influence on the evolution of more general intercommunity conflict episodes. Specifically, the effort to split Nye County was, according to some informants, partially motivated by a belief that Pahrump could secure an increased share of repository-related funds if it was the county seat of a newly-formed county. Although the effort to split the county is no longer being actively pursued, similar motives may be involved in renewed local efforts to incorporate Pahrump.

Government. In addition to the conflict between Pahrump and other political entities within Nye County, there have been several episodes reflecting tensions and occasional conflict between the community and political entities outside of the county. Several relatively recent instances, which appear unrelated to the repository proposal, include negative local reaction to state efforts to restrict future land division in Pahrump on the basis of concerns about possible water contamination from individual septic

systems (see Pahrump Valley Times, May 25, 1990, page 12) and the more recent announcement of Clark County's efforts to secure and transfer water resources from Nye, Lincoln and White Pine counties (see Pahrump Valley Times, June 8, 1990, page 1).

The one noteworthy repository-induced impact involving relations between the community and external government entities involved the short-lived creation of the unpopulated Bullfrog County by the State of Nevada. As was the case throughout the rural study communities, Pahrump residents and leaders perceived the creation of Bullfrog County as an attempt by the State, and in particular by Las Vegas/Clark County interests, to gain control over current and potential federal funding allocations that would be available to the county containing the repository site. Although the Bullfrog County legislation was eventually declared unconstitutional, this episode undoubtedly contributed to the generally low levels of trust in state government evident among residents of Pahrump and other rural study communities (Krannich and Little, 1988:218).

Anticipated Consequences of the Repository

Perceptions of Project

Support/opposition. As noted previously, the repository proposal has thus far not stimulated any mobilization of Pahrump residents or organizations in support or opposition of the project. However, there is reason to expect that the situation could change quickly if and when firm decisions are made to proceed with project

construction activities, especially if those activities include development of a railroad spur through Pahrump to transport nuclear waste to Yucca Mountain.

Previous proposals to site a hazardous waste incinerator in Pahrump and a low-level nuclear waste facility at a site in California within the Pahrump Valley generated active opposition among local residents (see Krannich and Little, 1987e). Local informants suggest that the segment of the local population which currently expresses opposition to the repository would be very likely to mobilize and become actively opposed to the project if it becomes a more concrete reality. This would seem especially likely if a waste transportation route is located in or near to Pahrump since residents of the community express high levels of concern over transportation-related risks.

Some growth-oriented residents have expressed support for development of a waste transportation rail spur on the assumption that it might improve shipping access to the community and enhance the potential for local industrial developments (Trend, Little and Krannich, 1988c). However, that support would quickly evaporate if a new rail spur was not open to commercial use. Moreover, if transportation accidents were to fuel already extant local concerns about the potential for environmental contamination and health risks, serious opposition could develop. Local business leaders, even those who support the repository proposal, have expressed concerns that problems with the nuclear waste program could bring a halt to the community's rapid economic and demographic

growth. More than a few residents appear concerned that real or perceived risks associated with repository operation or transportation could generate a stigma effect that would make the community less attractive to potential inmigrants and tourists alike (see Edelstein, 1988; Slovic, Layman and Kraus, 1989). If such effects materialized, a considerably broader range of residents would likely become strident in their opposition to the repository. In contrast, if repository development did not involve a waste transportation corridor through Pahrump, mobilization of local opposition would appear less likely, particularly in the absence of major waste shipment or waste storage problems.

Under certain circumstances local opposition could also be stimulated by project-induced standard effects. Projections developed by members of the Mountain West study team (Mountain West Research, 1989) suggest a potential for substantial repository-induced population growth in Pahrump. In a sense such growth would simply represent an acceleration of trends that are already well-established, and could be consistent with the value orientations of most local residents. Growth-induced standard effects of the repository would seem unlikely to stimulate increased or highly mobilized opposition in Pahrump, so long as the growth is accompanied by a commensurate expansion of community facilities and services. However, if repository-induced growth occurs simultaneously with a period of very rapid baseline growth such as has occurred in Pahrump during much of the 1980s, infrastructure shortfalls and the social, economic and political problems

associated with contemporary boom towns (Murdock and Leistritz, 1979) could easily generate heightened dissatisfaction and opposition to the project.

Concern about risks. As is the case in other Nye County communities, Pahrump residents' perceptions of potential repository risks are influenced by the "risk perception shadows" of existing military nuclear weapons testing programs at NTS (see Stoffel et al., 1988; Krannich and Little, 1989c). Most residents seem relatively confident that NTS activities provide much-needed high-paying jobs for many local residents while posing little danger for Pahrump (Trend, Little and Krannich, 1988c). Nevertheless, risk concerns are higher in Pahrump than the other three study sites, apparently reflecting the views of newer residents who remain relatively dubious about the safety of programs involving radioactive materials.

Development of the high-level nuclear waste repository would likely stimulate some increase in local levels of concern about nuclear hazards and risks, simply because the project would be something new, different, and a likely focus of urban-based protest and media scrutiny. If repository facilities remain distant and are perceived as relatively benign, such concerns would probably fade quickly. In contrast, risk concerns would become substantially more acute in Pahrump if waste are transported through the community, as noted above. The occurrence of major accidents or problems with repository operations would create much

higher levels of concern, especially if residents had reason to fear adverse effects on local health and safety.

Economic effects. Pahrump residents generally expect that the repository would generate increased economic opportunities involving both direct employment and increased business activities. Although the magnitude of such effects remains uncertain in the absence of definitive data on the repository, projections developed by members of the Mountain West study team suggest that such expectations are likely to be realized (Mountain West Research, 1989). The potential for realization of some anticipated economic benefits, such as increased industrial development linked to rail spur development, appears considerably less certain. Nevertheless, the potential "standard" economic effects of the repository are likely to be consistent with the hopes and expectations of most residents, so long as they do not produce unmanageable rates of population growth.

Such generally positive future perceptions of the economic effects of the repository would be dramatically undermined if, rather than inducing economic expansion, the project induced stagnation or decline. Specifically, levels of concern about economic consequences would rise sharply if accidents or repository mismanagement resulted in stigma effects sufficient to cause a significant decline in the anticipated baseline demographic growth and economic expansion of Pahrump.

Government management. In the absence of major problems with repository construction or operations, the repository program is

not likely to have major effects on local perceptions of the adequacy of federally-managed nuclear programs. Those who are inherently concerned about the dangers of handling and transporting radioactive materials will likely remain concerned about the ability of government agencies to ensure public safety. On the other hand, those who discount such dangers and who argue that nuclear programs are safe and well-managed will probably retain those beliefs. However, any major accident or even a series of relatively minor, low-risk problems would likely contribute to increased distrust of and dissatisfaction with the agencies responsible for repository activities.

Satisfaction

Repository standard effects are unlikely to generate significant adverse effects on the levels of personal and community satisfaction exhibited by Pahrump residents as long as growth rates do not become excessive. Residents are accustomed to and generally very supportive of additional population growth and economic expansion. For a large segment of local residents, the potential economic growth and employment benefits of the repository would contribute to enhanced satisfaction levels. Unless baseline growth rates are extremely high, repository-induced population growth, while of potentially substantial magnitude, would be unlikely to generate the types of social disruption evidenced in a number of recent "boom town" settings where rapid change affected previously stable communities (see Williams et al., 1960; Freudenburg, 1986;

Krannich and Greider, 1990; Brown, Geertsen and Krannich, 1989). However, satisfaction with community services could be adversely affected if repository-induced growth should exceed the rate of expansion of public and private service provision and if impact mitigation efforts are inadequate to resolve such service shortfalls.

Community satisfaction could, however, be affected very adversely by risk-related project effects. Local residents place great value on and derive considerable satisfaction from the environmental qualities of the Pahrump Valley. Consequently, any real or perceived radioactive contamination linked to repository activities would have an adverse effect on satisfaction levels. Similarly, dissatisfaction would result from any stigma-related declines in community growth and economic activities.

Participation/Integration

The recent pattern of rapid growth and increased heterogeneity of the community suggests that repository-induced growth would not have major effects on residents' degrees of social integration and participation, particularly since the community does not display the high levels of acquaintanceship, informal affiliation, mutual support, or community involvement and participation often exhibited in smaller, more stable rural communities.

Mobilization of local opposition stimulated by actual development and operation of the repository could result in the development of and local participation in new grass-roots organizations. Such organizations might emerge within Pahrump

itself, although it is at least equally likely that locals actively opposed to the project would affiliate with and participate in the activities of groups organized in urban areas in or out of the region. If the repository configuration does not involve a waste transportation route through Pahrump and if there are no major accidents or problems associated with repository operation, such effects on local participation would likely be short-lived.

Conflict

Intracommunity conflict. Future impacts of repository construction and operation would likely include some increase in the degree of internal conflict in Pahrump. This is a likely outcome if only because residents currently express a considerable difference of opinions about the desirability and safety of the project. At present, those differences remain nascent because the project remains tentative in the minds of many local residents. However, if, as suggested earlier, project implementation results in mobilization and activation of local opponents, those individuals will likely clash with other residents who express strong support for the project.

Intercommunity conflict. Repository development is likely to exacerbate the already considerable degree of tension that characterizes relations between Pahrump and the Nye County government, as well as relations with other Nye County communities. Under the circumstances of present political jurisdictions, Nye County would be the recipient of and would exert control over any impact mitigation monies or other federally-allocated funds

designated for the political jurisdiction encompassing the Yucca Mountain site.

It seems very likely that the availability of such funds would spawn increased conflict over funding allocations to individual Nye County communities when those allocations are controlled by the county government centered in Tonopah. Already-strained relationships between Pahrump and the county would almost inevitably become more contentious under such circumstances, especially given the prevailing belief among Pahrump residents and leaders that the county fails to return a "fair share" of revenues to the community. In addition, relations with other communities such as Beatty and Amargosa Valley would likely suffer since residents of those communities already tend to believe that Pahrump is out to take all that it can, regardless of any negative repercussions for its neighbors.

Government. In addition to conflict involving other political jurisdictions in Nye County, implementation of the repository project is likely to result in heightened conflicts and tensions between Pahrump (as well as the rest of Nye County) and larger extralocal government entities. Residents of southern Nevada's rural communities, including Pahrump, are distrustful of Clark County and Las Vegas interests, which they believe will try to control most repository impact mitigation funds. Locals believe that impact funds should be directed toward rural areas proximate to Yucca Mountain.

Given events which have transpired prior to actual repository development, it seems almost inevitable that there will be political squabbling among state, county and local governments over access to and use of repository-based monies. Such conflict would pit Pahrump against other communities, counties, and state government agencies vying for such resources.

Conflict between the community and external governmental units could also arise in response to risk concerns, especially if the transportation corridor passing through Pahrump is included in the final project configuration. Community demands for improved safety services and emergency response programs could be directed at county, state and federal agencies, and discrepancies between local expectations for such services and actual implementation of safety programs would be a source of conflict. Such conflict would become increasingly contentious if accidents were to occur in or near to the community.

INDIAN SPRINGS

Community Context

Political Geography

Indian Springs[69] is just 43 miles northwest of Las Vegas on U.S. Highway 95 on the eastern edge of Clark county. The town is geographically compact, consisting of 510 housing units (most of them mobile homes[70]) on approximately 620 acres, with an estimated population of approximately 1200.[71]

The proposed Yucca Mountain high-level nuclear waste repository site is 61 road or 50 air miles from Indian Springs. Amargosa Valley is 43 miles to the northwest while Beatty is 72 miles in the same direction. Pahrump is 97 miles to the southwest. The town lies adjacent to two military installations: Indian Springs Air Force Base[72] and the Indian Springs Gunnery Range. The main entrance to the Nevada Test Site (NTS) at Mercury is only 20 miles to the northwest, and the state-operated Southern Desert Correctional Center is just 8 miles east of town.

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[69]In early periods, the area was referred to as Indian Creek.

[70]The Comprehensive Land Use Plan for Indian Springs, written in 1980, noted that only 15 to 20 of the 330 to 340 non-military dwelling units in the town (approximately 4.5% to 6%) were conventional housing structures, with the remainder consisting of mobile homes. Observations made by the researchers indicate that the number of conventional housing structures in Indian Springs has not increased since 1980.

[71]Survey data collected in 1988 indicate a population of 1,215.

[72]The telephone directory lists the base as Indian Springs Air Force Auxiliary Field, whereas local residents and the highway sign refer to it as the Indian Springs Air Force Base. We will follow the latter custom in this paper.

Indian Springs is presently an unincorporated town with a five-member town advisory board.[73] Although members are elected in a "preference election," they must be officially appointed by the Clark County Commissioners. The town board votes on issues of concern to local residents and presents its positions to the county commissioners in the form of recommendations. Thus, like Amargosa Valley and Beatty, the town is formally governed by its county commissioners and administered by various county departments and agencies. Even though Indian Springs is formally governed by the Clark County Commissioners, none of the commissioners are residents of Indian Springs. In fact, Indian Springs shares a county commission seat with areas of Las Vegas.

Over the years, when Indian Springs residents have demanded some attention, a few Clark County commissioners have responded to their specific but limited concerns. On the whole, however, Indian Springs has been treated with benign neglect by Clark County officials. Some Indian Springs residents who resent county authority do not mind the neglect as long as the county provides minimum services and leaves them alone.

However, because Indian Springs residents often have difficulty reaching internal consensus, the county commission has become a forum for continuing debate and ultimate resolution of divisive issues. Insofar as the Indian Springs Town Board has no

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[73]The town board of government was formed by the Clark County Board of County Commissioners in the 1970s. It should be noted that this town board form of government differs from that found in Pahrump and is similar to the town advisory council which governs Beatty (see Nevada Revised Statutes, 269.016, 269.024 and 269.576).

real authority, those who are not satisfied with its decisions have worked to convince the county commissioners to ignore the town board's recommendations. Going to the town board before presenting issues to the county commissioners has become a matter of courtesy and the county commissioners usually wait for its recommendation before making decisions, but working through the town board is not a necessity.

Socioeconomics

Early history. Until displacement by Anglos[74] in the late 1800s, Pueblo Indians and Southern Paiutes used the springs located at the edge of town for approximately 1,400 years. Archeological evidence suggests that Pueblo Indians may have used the area around Indian Springs for temporary campsites while migrating through the region on hunting and gathering trips. A small band of Southern Paiutes farmed[75] near the springs and traveled to the nearby Charleston Mountains to hunt game (Skelton, 1974).

Although the first Anglo settlement in the area of Indian Springs was for the purpose of ranching, early economic development in Indian Springs was dependent upon transportation. Because of the availability of water, this place was a stopover on the Mormon Road between Las Vegas and Los Angeles and was a freight and stagecoach stop on the route between Las Vegas and mining towns

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[74]Anglos are people of European descent who are not Spanish speakers.

[75]These Indians grew corn, beans and squash, probably planted along a creek or tended by a member of the band who stayed behind while others were in the mountains.

such as Beatty, Rhyolite, Goldfield and Tonopah. The Las Vegas and Tonopah Railroad followed the old stage coach route and, with the completion of the railroad in 1906, Indian Springs became one of the railroad's many stops. After World War II, the railroad was torn up and the Nevada Highway Department purchased the roadbed. It was later paved and became U.S. Highway 95 (Skelton, 1974).

The Anglo families who originally settled in Indian Springs engaged in some farming and ranching,[76] but over the years, their homesteads and ranches primarily provided water, supplies, and lodging for people passing through or visiting the area. A small business established near the road provided food, gas, and overnight accommodations. Guest cottages were built at Indian Springs Ranch where the ranch owners entertained friends, vacationers, weekenders, and divorce seekers. In 1940, the Indian Springs Ranch was purchased by a wealthy couple and became a colony for artists, writers, and intellectuals.

During and since World War II, Indian Springs has developed in relation to defense- and government-related employment at Nellis Air Force Base and the Nevada Test Site. Indian Springs Air Field and Indian Springs Bombing and Gunnery Range were established in the early 1940s and served as support facilities for Nellis AFB,[77]

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[76]During different periods, people have grown fruits, vegetables, wheat, alfalfa and pecans, and they have raised cattle, horses, hogs, chickens, and other animals in Indian Springs.

[77]When it was established in 1941, Nellis Air Force Base was called the Las Vegas Army Air Corps Gunnery School. The base went through two other names, the Las Vegas Army Air Field and the Las Vegas Air Force Base, before it was finally named Nellis Air Force Base. The present name is in honor of Lieutenant William Harrell

the mission of which was to train aerial gunners. When continental nuclear testing began at the nearby Nevada Test Site in 1951,[78] the community of Indian Springs became a boomtown and Indian Springs Air Force Base was given the primary function of supporting the Atomic Energy Commission. After the United States and the Soviet Union agreed to a voluntary moratorium on nuclear testing in 1958, growth and development in Indian Springs slowed for a few years, but it gained momentum again after the Soviet Union broke the moratorium in 1961 and the United States resumed nuclear testing. Indian Springs boomed again with the shift from above-ground to underground nuclear weapons testing in 1963 because many more workers are needed to drill and construct the underground tunnels in which the tests are conducted.

Current economics. Indian Springs still bears the marks of its heritage. People continue to travel through Indian Springs and, for many residents, it is a place from which they travel to other locations to work, shop, and recreate. Some residents of Indian Springs provide accommodations for people staying for shorter periods of time; however, many homesteads and ranches have been replaced by trailer parks and rental properties. The entire community remains dependent upon the defense industry economy which has become entrenched in southern Nevada.

Nellis, a 28-year old fighter pilot who was killed in action over Luxembourg on December 27, 1944, after flying 60 missions.

[78]At the time, this facility was called the Nevada Proving Ground. The name was changed to Nevada Test Site in 1955.

In particular, in recent years Indian Springs has remained economically dependent upon the Nevada Test Site and Nellis Air Force Base, which operates the Indian Springs Bombing and Gunnery Range and the Indian Springs Air Force Base. Operations at the Nevada Test Site have expanded over the years. In addition to being the nuclear weapons testing grounds, this facility is now the site of various defense-related research and development projects. Indian Springs Air Force Base has continued to support Nellis Air Force Base, providing emergency airfield recovery, maintaining nearly three million acres of bombing and gunnery ranges, handling Department of Defense special missions, and, now primarily, supporting the TAC (Tactical Air Command) fighter training program ("red flag" operations). The USAF Thunderbirds (air demonstration squadrons) practice at the Indian Springs Air Force Base. The base at Indian Springs has also supported operations at the Nevada Test Site and Tonopah Test Range.[79]

The majority of employed persons in Indian Springs work at the Nevada Test Site for various government subcontractors. While many are scientists, engineers, technicians, and consultants, the majority of people who work there are from mining, construction,

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[79]Military detachments at Indian Springs have provided airlift support to the Department of Energy and numerous other organizations which conduct operations at the Nevada Test Site. Their support has included providing airborne, closed-circuit television coverage of nuclear weapons tests, conducting air sampling to help determine whether radiation has escaped into the atmosphere, transporting personnel and equipment, and recovering rocket payloads and boosters on the Tonopah Test Range.

skilled trades, craft, and culinary unions. NTS also provides employment for security forces and transportation personnel.[80]

The Indian Springs Air Force Base is the second largest employer in the area, although recent changes in the operation of the base have reduced the total number of employees at the base and the number of employees residing in Indian Springs. For many years, Indian Springs Air Force Base was operated as a full-service military installation with military housing and a wide range of services and facilities provided for people assigned to the base and for their dependents. In the fall of 1987, however, a private company took over the operation of the base. Military personnel residing in Indian Springs were withdrawn, and the total number of people working at the base was greatly reduced.[81]

Much of the remaining employment in Indian Springs is also government-related. Employment with the State of Nevada comes from the Southern Nevada Correctional Center, the Nevada State Highway Patrol, and the Nevada Department of Transportation (highway maintenance). Clark County adds to the employment base of Indian

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[80]Quite often, ex-military personnel work as security guards at the Nevada Test Site as many of them already have government security clearances.

[81]The few remaining military personnel and most of the civilian force live in Las Vegas and commute to Indian Springs.

Springs through the schools[82] and the Las Vegas Metropolitan Police Department.[83]

Employment in the private sector is minor compared to government-related employment. The largest private employer in town is the owner of the Indian Springs Casino/Motel complex and the nearby Country Store. Other local businesses which provide employment to community residents include the gas station and convenience store, the Oasis bar/gas station/restaurant,[84] the Cactus Springs restaurant/bar/service station complex,[85] a small automotive repair shop, 11 mobile home parks and one RV park,[86] and the privately-owned water and sewer system.

Several factors define the present economic situation in Indian Springs. First, Indian Springs is not economically self-sufficient. Residents are highly oriented toward the Las Vegas metropolitan area for the provision of most goods and services. Indian Springs has no major shopping facilities and no banks, public laundromats, theaters, fast-food establishments, beauty parlors, drug stores, dentists, physicians, health clinics,

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[82]Most of the administrative and teaching personnel live in Las Vegas and commute daily to Indian Springs.

[83]Clark County law enforcement is handled by the Las Vegas Metropolitan Police Department except in Henderson, Boulder City, and North Las Vegas. The police department was formed in 1973 when the Las Vegas police and the county sheriff's department were consolidated into a single law enforcement agency under the direction of the county sheriff.

[84]The Oasis is commonly referred to as "the bar" or "Oasis."

[85]People refer to this business as "Cactus."

[86]These employ managers and handymen.

mortuaries or cemeteries. It is common for Indian Springs residents to travel the ninety-mile round trip to Las Vegas several times a week. This orientation toward Las Vegas is so strong that when people say they will be "in town," they mean they will be in Las Vegas.[87]

A second major factor in the economy of Indian Springs is its vulnerability over the years to fluctuations in employment at NTS. Shifts in the political mood in Washington D.C. have affected defense spending. This and the numerous strikes by NTS employees have impacted the Indian Springs economy in the past. Nevertheless, long-term employees at the Nevada Test Site, many of whom reside in Indian Springs, say that their jobs have gained some stability and security over the years. At present, the economy of Indian Springs is doing reasonably well.

Response to Repository

Perceptions of Project

Support/opposition. As noted above, the development of Indian Springs has been inextricably linked to the growth of employment opportunities at military installations and programs, particularly

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[87]Interviewees offered several explanations for this strong economic orientation toward Las Vegas. Some said Indian Springs is not a big enough town and is too close to Las Vegas to support additional businesses. Others said that local business people do not want the competition and have had the power to stop other businesses from locating there. Some long-term residents noted that there were a few more businesses and services in the past but thought that highway improvements, bigger homes with larger freezers, and car air conditioning had increased people's orientation toward Las Vegas.

NTS. This context has had considerable influence on Indian Springs residents' perceptions of the proposed Yucca Mountain high-level nuclear waste repository. Residents of the community are generally highly aware of and well-informed about federal nuclear programs and activities in southern Nevada. In fact, the proportion of Indian Springs survey respondents who indicated familiarity with the Yucca Mountain repository proposal was higher (97.5%) than in any of the other rural study communities.

For the most part, Indian Springs is a "pro-nuclear" town. Although some residents express sympathy for "downwinders" and atomic veterans, there is little expression of sentiment that nuclear weapons testing programs have adversely affected local residents (Endter, Little and Krannich, 1988c). Moreover, residents are generally convinced that current NTS activities are reasonably safe. Fewer than 10 percent of survey respondents felt that it is "extremely likely" that underground testing at NTS will cause future health problems for area residents, and only about 22 percent selected a response higher than the midpoint on a scale ranging from 0 (not at all likely) to 10 (extremely likely). Over 67 percent of survey respondents expressed agreement that experiences gained at NTS have resulted in the development of safe procedures for handling and processing radioactive materials (see Krannich and Little, 1989b: 244-245).

This tendency to view NTS and other federal nuclear programs as relatively benign is reflected in local views regarding the proposed repository. Nearly two-thirds (62.6%) of survey

respondents indicated a belief that underground storage is the best alternative for disposing of nuclear waste, and almost three-fourths (73.1%) believed that the proposed waste repository would be acceptably safe.

However, support for the repository at Yucca Mountain is not as high as might be expected given these views and the community's long-term economic dependence on federal nuclear programs. Many residents believe that the community is nearly unanimous in its support for repository development, and most key informants suggested that approximately 90 percent of residents were supportive (Krannich and Little, 1987c). However, more in-depth inquiries conducted during ethnographic research suggested that reservations about the project may be somewhat more widespread, particularly among those who do not have direct economic ties to NTS (Endter, Little and Krannich, 1988c).

Survey data bear out the suggestion that local residents hold mixed views of the proposed repository. Overall, only slightly more than one-half (54.3%) of survey respondents indicated that they either "definitely" or "probably" would choose to build the repository at Yucca Mountain; about 18 percent indicated uncertainty, and over one-fourth of local residents (27.6%) indicated that they "definitely" or "probably" would not build the repository. Thus, while support levels are somewhat higher than in Pahrump or in "downwind" study areas such as Caliente and Mesquite (see Krannich and Little, 1989b), Indian Springs residents are

considerably less supportive of the project than residents of Amargosa Valley or Beatty.

Concern about risks. Indian Springs residents often express a cavalier attitude about the degree of risk associated with working at or living near facilities where radioactive materials are handled, processed or stored (Krannich and Little, 1987c; Endter, Little and Krannich, 1988c). However, expressions of bravado regarding real or potential radioactive exposure appear to occur most frequently among those who work at NTS or those who feel pressured to project the prevailing community norm regarding risk concerns (see Endter, Little and Krannich, 1988c).

While risk concerns are not as high in Indian Springs as in Pahrump (or other rural study communities not examined in this report), they are considerably higher than in Amargosa Valley and Beatty. Over one-fourth (26.9%) of survey respondents in Indian Springs expressed a belief that the repository would not be safe. Similarly, approximately 26 percent felt that transportation of nuclear waste to Yucca Mountain could not be accomplished with an acceptable degree of safety.

Possible repository effects on the health and safety of local residents are a focus of substantial concern for a considerable minority of local residents. The most frequently selected answer to a survey question addressing this issue was a value of 10 on a scale ranging from 0 (not at all concerned) to 10 (extremely concerned); over 21 percent circled this response. Overall, nearly 42 percent of respondents selected an answer on the "concerned"

side of the scale midpoint value, while 49 percent of responses were on the "unconcerned" side of the scale (see Krannich and Little, 1989b:266).

These results suggest that, despite frequent assertions that residents are "used to" and generally unconcerned about nuclear activities and projects in southern Nevada, a substantial minority have a different perspective on the Yucca Mountain repository. Although there is a strong tendency for locals to view current NTS activities as relatively non-threatening, some residents of Indian Springs apparently view the Yucca Mountain repository in a qualitatively different light, and many consider it a more serious potential threat to community health and safety.

As is true in other rural study communities throughout southern Nevada, one factor that appears linked to this elevated concern about repository risks involves a belief that underground storage of radioactive materials may contaminate subsurface water reserves. On a scale ranging from 0 (not at all concerned) to 10 (extremely concerned), over one-fourth of Indian Springs survey respondents selected the highest response value, and nearly 44 percent were on the "concerned" side of the scale midpoint.

Another important dimension of local concern about repository safety involves concerns about possible waste transportation accidents. Indian Springs is bisected by U.S. Highway 95, which has been designated as a potential waste transportation route. In addition, some of the proposals for development of new railroad spurs to transport wastes to Yucca Mountain include a corridor

passing very near Indian Springs. Although general levels of concern about the safety of transporting hazardous materials are lower in Indian Springs than in Pahrump, they are higher than in Amargosa Valley or Beatty. On a composite scale measuring perceived safety of hazardous waste transportation (with scores ranging from 0 to 40), the mean scale value for Indian Spring respondents was 21.9, only slightly above the scale midpoint (Cramer, Rhea and Krannich, 1989). However, traffic safety and speed levels on Highway 95 are of major concern to local residents (Endter, Little and Krannich, 1988c). Interviews with some local residents, especially those involved in public safety positions, suggest that those concerns incorporate a view that the community is regularly threatened by the transportation of hazardous materials, including nuclear materials bound for NTS or the U.S. Ecology low-level waste facility near Beatty.

Economic effects. In general, Indian Springs residents appear to believe that the Yucca Mountain nuclear waste repository would provide economic benefits to their community. Expectations of job opportunities and increased employment stability and security appear to be among the more frequently-cited reasons for anticipating beneficial economic effects. Although NTS has provided many local residents with fairly high-paying jobs, the periodic fluctuations in NTS employment and the recent withdrawal of military personnel from the community have caused many residents to be especially enthused about the potential benefits of a long-term project such as the repository. Others suggest that local

benefits would come in the form of increased opportunities for local business development and related improvements in the range and variety of goods and services that might become locally available (see Endter, Little and Krannich, 1988c).

Survey data reinforce these observations. When asked about their perceptions of possible repository effects on local economic conditions, Indian Springs residents tended strongly to expect beneficial effects, with a mean response of 7.3 on a scale ranging from 0 (entirely harmful) to 10 (entirely beneficial). Over 30 percent of respondents selected the highest value of 10 (entirely beneficial). Overall, over 68 percent of responses were on the "beneficial" side of the scale midpoint, compared to just under 16 percent on the "harmful" side of the scale (Krannich and Little, 1989b:267).

Government management. As a community economically dependent upon federal government defense programs, Indian Springs has had more direct experience with the local consequences of federal decisions, policies and programs than is true of the other rural study communities. In general, residents of Indian Springs are highly patriotic and supportive of the federal presence in southern Nevada (Endter, Little and Krannich, 1988c). However, that support does not necessarily translate into high levels of confidence in government management of either existing programs or the proposed Yucca Mountain nuclear waste repository.

Local residents are generally distrustful of government entities (Krannich and Little, 1989a:140), including the federal

government (Krannich and Little, 1989b:217). This distrust is accompanied by a general dissatisfaction with the bureaucracy of the federal government and the inefficiency and waste which many believe to be characteristic of government-sponsored programs and projects (Endter, Little and Krannich, 1988c).

Residents frequently express concerns about the safety of Air Force training activities that pass over Indian Springs, observing that crashes in rather close proximity to the community are not infrequent. Repeated efforts by local residents to have flight routes changed have been unsuccessful, reinforcing local beliefs that the military and other federal government entities are not concerned about or responsive to local safety considerations.

Also contributing to low levels of confidence in government management capabilities are residents' observations about NTS operations. Although generally supportive of the NTS mission, many local residents express criticism of waste, inefficiency, and mismanagement at the test site.

Consistent with such beliefs is a pattern of general ambivalence about federal management of the high level nuclear waste repository program. Although many residents express confidence that the repository would be developed and operated in a competent and safe manner, others believe that the federal government is willing to ignore or even hide contradictory information that might call into question the safety of the Yucca Mountain site (Endter, Little and Krannich, 1988c).

Survey data collected in Indian Springs clearly reflect such divergent perspectives. Although about 46 percent of respondents considered the Yucca Mountain site selection generally fair, over one third (37.8%) considered it to be generally unfair (Krannich and Little, 1989b:268). When asked how confident they were that federal agencies would provide honest and accurate information about nuclear programs, respondents were about evenly split in the degree to which they expressed confidence or a lack of confidence. On a scale ranging from 0 (not at all confident) to 10 (extremely confident), the mean response value was 4.8, approximately the scale midpoint. Slightly over 43 percent of responses were on the "not confident" side of the scale midpoint, while 41 percent were on the "confident" side of the scale (Krannich and Little, 1989b:262).

Satisfaction

Personal and community satisfaction. Indian Springs residents generally express considerable satisfaction with their lives and their community. However, levels of overall or "global" community satisfaction tend to be somewhat lower than in other rural study communities, an observation which appears to be linked to a tendency for many residents to feel that the community is lacking in both local services and in the social cohesiveness evident in some other study communities (see Krannich and Little, 1989a:71-72). In addition, residents express fairly low satisfaction with local economic development conditions, despite the fact that many

hold fairly high-paying jobs and overall community income levels are notably higher than in other study communities (see Krannich and Little, 1989a; 1989b).

Our data suggest that the repository program has thus far not had any meaningful effects on levels of satisfaction experienced by Indian Springs residents. While some express frustration over the political nature of the repository siting process, most view the eventual development of the repository as inevitable and seem generally willing to accept the situation (see Endter, Little and Krannich, 1988c). Exceptions to this generalization would include the minority of residents who are opposed to the repository or who express high levels of concern about repository risks. For those residents, knowledge that the repository program is proceeding is probably a source of dissatisfaction, although it appears that any such effects have not been translated into dissatisfaction with the community itself.

Evidence suggests that the repository project has not contributed to either economic or demographic changes in Indian Springs during the study period. As a result, there have been no effects on satisfaction levels that might arise in response to actual shifts in developmental trends. However, there is reason to believe that there have been some "anticipatory" effects on levels of satisfaction associated with residents' expectations of future community conditions (see Brown, Geertsen and Krannich, 1989). Expectations of future increases in employment opportunities and possible expansion of the local availability of goods and services

may have generated heightened optimism among local residents. Although most residents are not enthused about large-scale population growth (Endter, Little and Krannich, 1988c), there is a general sense that the repository would not generate high levels of growth if only because of limited local availability of undeveloped land. At the same time, for many residents the prospect of enhanced employment and economic conditions is a source of increased satisfaction with the anticipated future trajectory of community development patterns.

Participation/integration. Indian Springs is not characterized by high levels of participation in local organizations or community affairs. This can be attributed in part to the relatively limited number of local voluntary organizations, the limited array of local government committees and boards, and a context of intracommunity political conflict which has caused some residents to withdraw from public involvement (see Endter, Little and Krannich, 1988c). Also, participation and community attachment are generally associated with length of residence (Kasarda and Janowitz, 1974), and Indian Springs has historically been a relatively "transient" community. Despite these conditions, Indian Springs residents generally perceive themselves as being at least moderately well-integrated into the community. However, perceived integration levels were lower in Indian Springs than in any of the other rural study communities (Krannich and Little, 1989a:15), reflecting the presence of a somewhat "rootless" population (Williams et al., 1960).

Available evidence suggests that, to date, the Yucca Mountain project has not resulted in either beneficial or negative effects on levels of social participation or community integration in Indian Springs. The project has not generated shifts in economic or demographic conditions that might result in increased presence of poorly-integrated new residents. Nor has it contributed to the development of new local organizations, either in support of or opposition to the repository, that might create additional opportunities for community involvement. Through the course of field research activities, Indian Springs, unlike the Nye County study communities, was not directly represented on any of the committees created by Clark County to respond to the possible impacts of the repository. As a result, there were no new participation opportunities linked to local community committees or boards devoted to repository issues.

In addition, the repository has not become a focus of community debate or controversy in Indian Springs. Indeed, through the course of field research, episodes of community controversy and debate appeared to focus only on matters of direct local concern that residents viewed as at least somewhat likely to be influenced by local response and action. As such, the repository neither added to nor reduced the existing factionalism and contentiousness that seems to influence local group identification as well as community participation patterns (Endter, Little and Krannich, 1988c).

Conflict

Intracommunity conflict. Indian Springs has a history of internal conflict over various issues related to land use, development proposals, and local governance. Divisive conflict arose during the late 1960s over a proposal to incorporate the community, and the local political climate has apparently remained relatively contentious since then. More recent conflict episodes have evolved in response to a proposal in the late 1970s for development of a nudist colony, development in 1982 of the Southern Desert Correctional Center eight miles east of the community, enforcement of zoning regulations established in 1980, and a proposal to secure a zoning variance for an automobile impound yard in 1988 (Endter, Little and Krannich, 1988c).

Despite this context of community division and conflict, the Yucca Mountain repository has not emerged as a focus of local contention or controversy. Residents appear for the most part not to consider the repository to be a community issue, but instead tend somewhat fatalistically to view the project as something which they can neither control or influence. Community concern and conflict tend to revolve around more concrete and immediate issues, while the Yucca Mountain repository remains only a vaguely defined [illegible] repository might be expected given the absence of unanimity among local residents over the array of risks and benefits that might result from the project. However, those who express reservations about or opposition to the repository have remained publicly silent, apparently due in part to perceptions

that the community is not an effective forum for airing those concerns. Also, there appears to be a belief among some that any expression of concern or opposition could result in their being ostracized, harassed and/or physically threatened by other residents who strongly support the repository proposal.

Intercommunity conflict. Indian Springs appears in many ways to be politically isolated from other communities in southern Nevada, including those in both Nye and Clark counties. The town does not compete with any of the Nye County study communities for fiscal resources, and its businesses are not large enough in number or level of trade to be viewed as threatening to establishments in relatively nearby rural communities such as Pahrump. Relations with other communities in Clark County also appear to be virtually absent. In part this reflects the fact that Indian Springs is all but overlooked in the context of political interactions among the larger urban communities of the Las Vegas metropolitan area.

Any conflict Indian Springs experiences with other communities revolves around relations between the town and county-level entities which represent an array of cities and towns in Clark County. The town is formally governed by the Clark County Commissioners, none of whom are residents of Indian Springs. In general, local residents characterize the relationship of the town and county as one of "benign neglect." For the most part the county supports recommendations made by the Indian Springs town board and provides minimal public services but otherwise leaves the community alone. Although some conflict has emerged periodically

over zoning regulations and the approval of variance requests, Indian Springs appears generally to be disengaged from political processes involving Clark County and other county communities (see Endter, Little and Krannich, 1988c).

During the course of field research, there was little to suggest that the Yucca Mountain repository project had altered this context of intercommunity relations. Indian Springs was not involved in or represented on any of the committees or commissions established by Clark County to review and direct county involvement in the repository program. Although some residents contacted during the course of key informant interviews made note of this, there was little expression of animosity or disappointment. Rather, most appeared to view this as just another example of "business as usual." In the absence of local expectations for representation in repository-related county programs or for allocations of repository program funding received by the county, there is little basis for contention or conflict to emerge.

Government. Conflict episodes involving Indian Springs and government entities outside of Clark County involve relations with both the State of Nevada and federal agencies. Conflicts involving state agencies include a bitter battle in the early 1980s over the decision to site the Southern Desert Correctional Center near Indian Spring, and more recent unsuccessful attempts to convince the Nevada Department of Transportation to implement increased traffic safety programs on the segment of Highway 95 passing through the town. Conflict involving federal government agencies

has primarily involved unsuccessful local efforts to have military aircraft flight paths relocated away from Indian Springs, as well as efforts to secure Bureau of Land Management (BLM) approval for additional land withdrawals to increase the amount of privately owned land in the town (Endter, Little and Krannich, 1988c).

To date no episodes of conflict between Indian Springs and either state or federal agencies have been linked to the proposed nuclear waste repository. Some residents of the community have expressed dismay over the federal government's approach to siting the project. Others have expressed dissatisfaction with state opposition to the repository proposal and dismay about the political turmoil evidenced by the creation of the short-lived Bullfrog County. However, such sentiments have not generated any overt community actions or responses that could be interpreted as a form of conflict with either state or federal agencies.

Anticipated Consequences of the Repository

Perceptions of Project

Support/opposition. As noted previously, the repository project has not yet resulted in active expressions of either support or opposition in Indian Springs. Moreover, there is little reason to anticipate that such mobilization will occur in Indian Springs in response to future repository development. Most residents view the eventual construction and operation of the repository as a foregone conclusion and a matter over which they can exert virtually no control. Federal efforts to pursue site

characterization and construction activities would appear unlikely to change those views or to stimulate either increased support or opposition among Indian Springs residents.

Shifts toward greater or lesser degrees of local support for the repository are more likely to occur during the course of operational activities. If repository operations are characterized by serious problems and related risks of environmental contamination or public health dangers, opposition would undoubtedly increase in Indian Springs, perhaps to the point that it would become publicly visible and mobilized. However, such response would be unlikely if accidents or problems were infrequent and relatively minor.

If the repository is operated without major problems or incidents,residents of Indian Springs are likely to come to terms with its presence rather quickly and to view it as a relatively benign activity, much as they currently view NTS programs. Thus, levels of concern and opposition would likely be reduced over time in the absence of events that might stimulate increased concerns about health and safety risks. At the same time, levels of support would be likely to expand if the repository does provide enhanced employment opportunities for people living in Indian Springs or if expectations for other local economic benefits, such as improved public or private services, are realized.

Indian Springs residents place considerable value on the "small town" context of the community and are generally not supportive of large-scale community growth (Endter, Little and

Krannich, 1988c; Krannich and Little, 1987c). As a result, opposition could increase if project standard effects include major population growth in the community. Given the limited expansion potential in Indian Springs, it appears unlikely under present circumstances that repository-induced in-migration could become so extensive as to generate heightened local opposition based on growth-related effects on community services or social and cultural conditions. This could change, however, if a redesignation of military housing units or a withdrawal of BLM lands were to allow large-scale growth to occur in Indian Springs.

As with repository development, Indian Springs residents seem generally resigned that nuclear waste will be transported through the community on Highway 95. They are already generally accustomed to the presence of heavy trucks hauling a variety of hazardous materials on the highway. Most appear convinced that transportation of high-level nuclear wastes would be more carefully controlled and, therefore, safer than the transportation of hazardous materials and low-level wastes that currently takes place (Endter, Little and Krannich, 1988c). Thus, levels of opposition are not likely to increase markedly even if the community is situated on a waste transportation corridor, so long as accidents do not occur frequently or in close proximity to the town.

Concern about risks. As noted earlier, Indian Springs residents express relatively cavalier attitudes about the risks associated with existing federal nuclear programs in southern Nevada. However, those orientations appear to be affected by the

fact that few residents have experienced negative consequences of activities at NTS. Although a substantial number of residents are linked economically to NTS through their own jobs or employment of family members, relatively few lived in the area during the period when atmospheric weapons tests were conducted. In addition, the location of Indian Springs on the "upwind" side of NTS has limited local exposure to off-site health hazards associated with the testing programs.

Although some residents appear to view the repository as something new and qualitatively different from existing nuclear programs, for many residents this context of generally benign experiences with NTS translates into similar perspectives regarding risks associated with the proposed Yucca Mountain repository (see Stoffel et al., 1988; Krannich and Little, 1988, 1989c). In the absence of major problems or accidents involving waste storage or transportation, such perspectives are likely to remain intact for most Indian Springs residents if and when the repository is developed and operated.

However, the occurrence of major problems or accidents involving waste storage or transportation would create a situation of dissonance between the prevailing local perspective on risks and the appearance of information suggesting that such problems and accidents might threaten public health and safety. Response to this state of cognitive dissonance (see Festinger, 1957) would likely involve a tendency for many residents to re-evaluate their risk perceptions and develop new orientations reflecting a

heightened concern about risks associated with the project. Such reactions would likely be more widespread if problems involved waste transportation, since the community is situated on a likely waste transportation corridor. These effects would be somewhat lower if accidents and problems were confined to the repository site, which most residents perceive as being sufficiently far from the community to minimize dangers related to on-site waste handling or storage problems.

Economic effects. As is true in the three Nye County study communities, residents of Indian Springs expect that the repository would generate increased opportunities for employment of local residents, as well as general improvement in community business conditions. The occupational skill requirements for employment at NTS are likely to overlap considerably with those that would be required during repository construction and operation. Therefore, it seems reasonable to assume that a number of Indian Springs residents either currently or previously employed at NTS could qualify for and secure employment at the Yucca Mountain repository. This would be consistent with local expectations and would contribute to generally positive perceptions of repository economic effects.

However, a substantially less positive response is likely if repository employment opportunities are not forthcoming for Indian Springs residents. Many residents currently claim that union hiring practices for NTS jobs limit opportunities for those not living in the Las Vegas area. Some residents currently employed at

NTS claim that they would not have been able to get a job there if they had lived in Indian Springs when they were initially hired. If such practices were to characterize future hiring for the repository, any modest increases in trade for a handful of highway businesses such as gas stations and convenience stores would not offset the overall degree of dissatisfaction that many residents would experience over unrealized expectations for more widespread economic benefits.

Government management. Indian Springs residents tend to express levels of dissatisfaction and distrust of government similar to those in other rural study communities. This dissatisfaction extends to government nuclear programs which many residents believe are managed inefficiently. Residents also generally believe that federal agencies responsible for activities at NTS and defense installations are insensitive and unresponsive to local needs and concerns. Nevertheless, most residents generally view government nuclear programs at NTS as being relatively safe.

In the absence of major safety problems involving repository operations, such views are likely to be transferred to local perceptions of repository management. It seems unlikely that uneventful repository operations would enhance local perspectives on federal agencies or government management in general, since such perspectives are based on broader, long-term experiences involving NTS, military and other programs.

In contrast, the occurrence of major accidents or problems would likely result in perceptions that, in addition to being generally inefficient, insensitive and untrustworthy, the responsible government agencies were incapable of assuring the safety the program. Although some Indian Springs residents already hold such views, this would represent a sharp departure from the perspectives of most current residents and would be a source of increased government distrust and dissatisfaction.

Satisfaction

Unless land availability limitations are resolved in a manner allowing considerable additional housing development in Indian Springs, repository standard effects are not likely to result in significant adverse effects on levels of personal and community satisfaction. Repository-induced population growth is likely to be fairly limited, which would be consistent with local preferences. At the same time, increased employment opportunities and the generation of at least some additional business activity from population expansion and additional workforce commuter traffic would be consistent with local expectations, contributing positively to satisfaction levels.

Satisfaction levels would probably deteriorate, however, if conditions were altered to allow more extensive population growth from repository-related in-migration. Indian Springs lacks the high levels of familiarity, integration, attachment and informal social control and support commonly found in more stable small

communities. As such, even in the face of rapid growth it would not experience the degree of disruption in informal social structures that has occurred in some contemporary boom town settings (see Freudenburg, 1986; Brown, Geertsen and Krannich, 1989; Krannich and Greider, 1990). Nevertheless, growth resulting in substantial social disruption and increased problems of crime and violence could adversely affect satisfaction and perceived well-being, which for many residents are closely associated with the relative security and safety of the small-town setting (Endter, Little and Krannich, 1988c; also see Krannich et al., 1989). In addition, growth pressures on the limited array of public and private infrastructure would likely result in reduced levels of satisfaction, since residents already express considerable concern over the limited availability of goods and services in the community.

Community satisfaction could decline markedly in the event of major or recurrent risk events associated with repository operations, especially if those events included waste transportation accidents in proximity to Indian Springs. At present the normative standards of the community make it generally unacceptable to express concerns about, or even give credence to, community risks from existing federal nuclear programs. Residents' satisfaction with the community seems to be linked in part to a shared sense of safety and security (Endter, Little and Krannich, 1988c). Although at present such perceptions are linked most directly to the relatively low levels of local crime and violence,

they are also tied to beliefs that the community is safely isolated from any hazards associated with on-site activities at NTS. The occurrence of repository accidents or problems perceived as directly threatening to the health and safety of Indian Springs residents would clash with such perspectives and generate reduced satisfaction among those living there.

Participation/Integration

As noted earlier, levels of community participation and social integration are fairly low in Indian Springs. The community does not display high levels of acquaintanceship or involvement and participation in local affairs, and there is little reason to anticipate that the standard economic and demographic effects of the repository would include a meaningful alteration of these patterns.

There is also little reason to anticipate that "special" effects associated with real or perceived repository risks would substantially alter the context of local participation and integration. Those who are currently opposed to the project are generally isolated in the community and tend not to pursue expression of their views in the context of community organizations or activities. Indian Springs seems to lack the "critical mass" of persons who share risk concerns and an activist orientation necessary to generate local grass-roots mobilization in opposition to the project. Even in the event of repository accidents and problems, it is likely that locals who might actively oppose the repository would tend to affiliate with urban-based groups in the

Las Vegas area rather than developing new avenues of involvement in the local community.

Conflict

Intracommunity conflict. In the absence of major repository safety problems it appears unlikely that the future impacts of the project would include either increased or decreased levels of community conflict in Indian Springs. Those who are strongly opposed to the project would likely remain a relatively small minority and would be unlikely to engage in community-level confrontations over repository issues. The community will probably continue to be characterized by a fairly high degree of contentiousness and political turmoil, but the focus will be on local issues that are at least somewhat amenable to local control or action.

Major safety problems or accidents could alter this situation by encouraging repository opponents to gather additional support and express their concerns publicly. Under such circumstances, those expressing concerns would likely clash sharply with those who would remain unconvinced of the seriousness of repository risks, resulting in increased community divisiveness.

Intercommunity conflict. Repository development is likely to exacerbate tensions and conflict between Indian Springs and other government entities in Clark County. Indian Springs residents are presently resigned to their relative powerlessness in the context of predominantly urban Clark County politics. They also seem resigned to the fact that repository mitigation funds and programs

will be controlled by and primarily allocated to more powerful urban interests. Moreover, there appears to be a willingness on the part of many residents to live with repository impacts and a desire to minimize interactions with or interference by Clark County agencies (Endter, Little and Krannich, 1988c).

However, any substantial degree of repository-induced growth in Indian Springs is likely to generate increased local demands for county service provision and increased dissatisfaction if desired levels of assistance are not forthcoming. Similarly, local concerns over highway safety conditions may be exacerbated by waste transportation concerns, generating increasingly strong community demands for enhanced county support for public safety programs.

Government. Relations between Indian Springs and state and federal agencies could change substantially in response to future repository development and operation. Community relationships with state government have been limited, with the exceptions of conflict episodes over the state prison facility and highway safety issues. Repository development could result in a greater local effort to influence state policies, particularly if waste is transported through Indian Springs and state agencies are designated as responsible for safety and emergency preparedness programs. Such efforts could become contentious if local residents perceive the state as unresponsive to community needs, particularly if repository problems and accidents generate heightened local risk concerns.

Community relations with agencies of the federal government are less likely to be directly affected by repository development, if only because the channels of government communication generally limit interactions between the community and federal levels of political organization. If repository operations were to be relatively problem-free, local involvement with and orientations toward federal agencies responsible for the project would likely remain limited in scope and generally positive. If repository problems were to become sufficient to generate heightened local risk perceptions and safety concerns, orientations toward responsible federal agencies would likely become more negative, although direct community linkages to and conflict with those agencies would probably remain very limited.

CONCLUSIONS

Impacts to Date

On the basis of evidence presently available, it is clear that date the proposed Yucca Mountain high-level nuclear waste repository has had only limited sociocultural impacts on the four rural communities located nearest to the repository site. This should come as no surprise, since it will be at least several years before actual project construction and operational activities get underway. In many ways the repository remains a "non-project" with respect to impacts on individual communities, particularly those considered in this report.

Pre-development research and planning activities by DOE and its various contractors have undoubtedly involved substantial numbers of workers, as have research and planning efforts involving the state of Nevada and Clark, Lincoln and Nye counties. However, virtually none of those whose work is directly linked to the repository project have resided in or relocated to the rural areas surrounding Yucca Mountain.[88] As a result, the project has not generated the types of "standard" sociocultural impacts[89] often

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[88]A limited number of individuals working on repository planning and data collection efforts have undoubtedly resided in the rural study communities for brief periods. For example, several individuals claiming to be involved in geological site testing for DOE were encountered living temporarily in Amargosa Valley in early 1988, and researchers working under contract for both DOE and the Nevada NWPO have spent anywhere from a day to several months in the study area communities since 1986.

[89]Economic, demographic, fiscal and public service impacts are largely missing as well.

associated with rapid growth induced by large-scale construction projects. In the absence of repository-induced population growth, oft-cited boom town impacts on levels of community satisfaction, social integration and participation, neighboring interactions, fear of crime, levels of social deviance and disorder, and so forth have simply not occurred (see Krannich and Greider, 1990).

For similar reasons, some of the "special" effects that might be expected to arise in response to a project involving storage of highly dangerous radioactive materials have failed to materialize, or have been of minor consequence. To varying degrees residents of the rural study communities do perceive potential risks associated with the repository, although the levels of risk concern are generally lower than those reported among residents of the Las Vegas urban area (see Mushkatel and Pijawka, 1989). However, even perceptions of risk and possible associated "stigma" effects involving community conflict, dissatisfaction, and psychological trauma (see Edelstein, 1988) have been attenuated by the fact that for many area residents the repository is only a vaguely defined proposal for activities that might occur at an unspecified future date.

This situation is compounded by shifts and delays in the DOE schedule for initiating site characterization, construction and repository operation. These slippages in project schedule, as well as periodic suggestions by political leaders and scientists that the project be abandoned, make the repository appear to some residents as increasingly unlikely. To others, the project is

currently too far in the future to worry about. Thus, many of the pre-repository impacts such as local conflict and deteriorating community satisfaction that have occurred in response to more concrete project proposals have not been evident in these study communities (see Little and Greider, 1983; Greider and Little, 1988; Brown, Geertsen and Krannich, 1989).

Of the impacts that have occurred to date, those which appear to be most substantial involve local residents' perceptions and expectations about future repository consequences. Attitudes toward and conflict involving various levels of government are also significant. Some of these reflect positive local orientations toward the repository, while others reflect negative perceptions of the repository and its repercussions.

Clearly, the project has spawned widespread expectations of enhanced economic opportunities in all four of the study communities. Even in Indian Springs and Pahrump where economic conditions have been relatively good, a majority of residents look forward to increased levels of business activity and greater access to high wage jobs which they anticipate to result from repository construction and operation. These expectations suggest that local residents are more optimistic about future community economic conditions as a result of the repository proposal. If those expectations are realized, dimensions of satisfaction linked to community economic development conditions would likely be enhanced (Krannich and Little, 1989a). In contrast, if repository development does not proceed or if it otherwise does not result in

the expected degree of economic opportunities, many residents will experience disappointment and dissatisfaction.

In spite of these expectations of economic benefits, substantial numbers of residents in the study area express high levels of concern about the possible health and safety risks and environmental consequences of repository development. The proportion of residents expressing high risk perceptions regarding the repository itself and transportation of nuclear waste to Yucca Mountain is noteworthy in all four of the study communities. The proportion perceiving these risks is quite substantial in Pahrump and Indian Springs.

Although the data collected thus far do not permit a definitive analysis, it seems inevitable that levels of satisfaction and perhaps other dimensions of personal well-being have declined among those who are most highly concerned about or fearful of repository risks, even in advance of actual repository development. Given that support for repository development is more widespread than opposition in these communities, those residents who oppose the project are often reluctant or even fearful about expressing their concerns in public. Such experiences are undoubtedly accompanied by a sense of dissociation from their communities.

Perhaps the most obvious impact of the repository project thus far involves the political contentions which have embroiled local, county, state and federal government entities, and the resulting expressions of anger, distrust, dissatisfaction and dismay

expressed by rural community residents. Residents of all four study communities express substantial distrust of the federal government in general, and high levels of concern about the ability of DOE to develop and operate the Yucca Mountain repository in a manner that is responsive to public concerns about safety and the provision of accurate and honest information. Even in communities like Amargosa Valley and Beatty where repository support is highest, substantial numbers of residents question the equity of the repository siting process. Events which have occurred in conjunction with the siting process, such as the provisions of the Amendments to the Nuclear Waste Policy Act,[90] or the widely-reported internal conflict in DOE over a scientific report questioning the geological safety of the Yucca Mountain site, have exacerbated these concerns about federal management of the repository program.

Residents of the study area communities are perhaps even more disdainful of state actions and responses to the repository proposal than they are of federal actions. Many local residents question the state's attempts to block repository development, arguing that state efforts should instead be devoted to securing maximum levels of impact mitigation assistance and compensatory funding allocations from the federal government. At the same time, locals also perceive the state as attempting to direct both current and future allocations of repository program funds away from rural impact areas and toward urban centers of economic and political

[90]Colloquially referred to as the "Screw Nevada Bill."

power. The passage of the Bullfrog County legislation (AB 763) by the state legislature reinforced these perceptions, and generated especially bitter responses in Nye County communities.

Surprisingly, the repository project has not yet generated a great deal of intercommunity or intracommunity conflict in these study areas. In numerous other instances proposals for the siting of hazardous facilities have generated rancorous local conflict and the emergence of new grass-roots organizations supporting and opposing the proposals. Other than possibly fueling existing tensions between Pahrump and the Nye County government and stimulating additional support for the effort to split Nye County, such effects are notably absent. This may, as noted above, reflect the degree of uncertainty associated with the repository and the absence of concrete project development activities. Alternatively, it may reflect the effects of a collective fatalism and sense of powerlessness which appears to characterize the perspectives of many local residents when it comes to federal decision-making and program implementation processes.

Potential Future Impacts

The absence of major impacts to date does not lead to a conclusion that the Yucca Mountain nuclear waste repository will not have significant adverse sociocultural impacts on surrounding rural communities. Rather, it seems that most impacts, particularly those most likely to be problematic, will not emerge until the project becomes more concrete. If and when repository construction occurs, there is the likelihood that a variety of

impacts will arise in these and other rural communities in southern Nevada.

To varying degrees each of the study four communities is vulnerable to sociocultural disruptions associated with project standard effects during repository construction and operation. With the possible exception of Pahrump none possesses the level of infrastructure necessary to accommodate rapid, large-scale growth associated with workforce inmigration. Even in Pahrump, continued high rates of baseline population growth make the capacity for absorbing large numbers of additional residents dubious. Since residents of these communities are already only marginally satisfied with the availability of local goods and services, such effects would contribute to a deterioration of that dimension of community satisfaction. In addition, large-scale inmigration would likely contribute to some fragmentation of the existing social order in all of the communities, most notably in Amargosa Valley where levels of informal acquaintanceship, mutual support, and social integration are high.

Intracommunity and intercommunity conflict could emerge over the problems generated by standard effects, and over the allocation and utilization of impact assistance funds designated for addressing those impacts. However, it is more likely that conflict will be stimulated by the special effects of developing and operating a high-level nuclear waste repository. In each of the study communities there is a notable minority of residents who are concerned about risk issues and opposed to the repository. The

transition from a vague proposal to a concrete, active project would generate considerable dissatisfaction with responsible government agencies and perhaps make the community an unsuitable place to live among those opposed to the project.

Dissatisfaction generated by project development and operation could in turn act as a catalyst for the mobilization of opposition. Such consequences would seem most likely to occur in Pahrump and possibly Indian Springs, where community contentiousness already exists and where the number and proportion of residents opposing the project is probably large enough to comprise the critical mass necessary for coalescence of such groups. The likelihood that opposition groups would emerge would be heightened in all of the communities if accidents and problems occurred with on-site operations or waste transportation. These groups would clash with other locals as well as extralocal organizations and agencies supportive of the repository. Conflict episodes would in turn contribute to a deterioration of satisfaction with community social contexts, and to reduced levels of collective social integration and community attachment.

Recommendations

The analysis and conclusions developed in this report must be interpreted in the context of several remaining areas of uncertainty. First, the focus on just four of the study communities provides some insights into issues that may cut across the study communities, but at the same time ignores certain

distinctions that may cause quite different impact issues to become important in other places.

For example, levels of risk-related concerns and opposition to the repository are notably higher in Caliente, Mesquite and Goldfield than in any of the communities examined in this report (see Krannich and Little, 1989b). This may reflect the fact that each of these three communities is located on a probable waste transportation route, while none of them is close enough to Yucca Mountain to generate high hopes among residents for major employment or other economic gains. Also, areas lying east of NTS, including the communities of Caliente and Mesquite, are affected by their historic experiences as "downwind" communities (Fuller, 1984), which appear to strongly influence orientations toward other federal nuclear projects and programs (Krannich and Little, 1989c; Richards and Krannich, 1989; Cramer, 1990). Further analyses of responses that have already occurred and of future impacts likely to emerge in these more distant communities are needed to fully address repository consequences for rural communities in southern Nevada.

There is a need for more detailed analyses of the correlates and determinants of risk perceptions among rural area residents. The evidence developed thus far clearly indicates that there is a wide disparity, evident both within and across study communities, in the degree of concern that rural area residents exhibit over repository operations and waste transportation issues. Since risk-related impacts appear to be a major component of the overall

social consequences of siting a high-level nuclear waste repository, it is imperative that we develop a more complete understanding of how and why some individuals express relatively cavalier attitudes about repository risks, while others express great fear about perceived threats associated with the project.

Finally, additional efforts to assess both extant and potential project impacts must be informed by an expanded and updated data base. Some systematic updating of the data base for each of the rural study areas is needed on a periodic basis to ascertain ways in which community conditions are changing over time as a result of both baseline conditions and repository effects. At minimum an annual effort to update available data files and to secure information from local key informants is needed to help researchers maintain some understanding of community change processes. Without such efforts, the utility of the data collected up to this point will quickly deteriorate.

REFERENCES

Arizona Republic
1986 "Gays hope to buy desert ghost town." October 12.

Beall, Christopher
1987 "Eucharist celebrated at test site." Las Vegas Review-Journal, April 16.

Beatty Chamber of Commerce
n.d. Beatty, Nevada, The Gateway to Death Valley.

Berry, E. Helen, Richard S. Krannich and Thomas Greider
1990 "A longitudinal analysis of neighboring in rapidly changing rural places." Forthcoming, Journal of Rural Studies, Vol. 6.

Bird, Dorothy
1989 "Out Amargosa way. . ." Gateway Gazette, December 1.

Bourke, Lisa
1990 "Siting of hazardous and toxic waste facilities in rural communities: Perceived economic need vs. environmental attitudes as indicators of risk perception." Paper presented at annual meeting of the Rural Sociological Society. Norfolk, Virginia, August.

Bozanic, Milt
1989 "Bond Gold in full swing at Bullfrog; 300 are employed." Gateway Gazette, October, 27.

Brown, Ralph B., H. Reed Geertsen and Richard S. Krannich
1989 "Community satisfaction and social integration in a boom town: A longitudinal analysis." Rural Sociology 54 (Winter): 568-586.

Bureau of Business and Economic Research
1985 "Special Census of Nye County: Summary Report. Reno, Nevada: University of Nevada, Reno.

Carlson, Helen
1974 Nevada Place Names: A Geographical Dictionary. Reno Nevada: University of Nevada Press.

Christiansen, Peter D.
1985 Nevada County Nevada Profile. Carson City, Nevada: Office of Community Services, State of Nevada.

Cooperative Extension Service
1965 Pahrump Valley: Area Report. Reno, Nevada: University of Nevada.

Cooperative Extension Service
1976 Pahrump Valley Resource Atlas. Reno, Nevada: University of Nevada.

Cramer, Lori.
1990 "Rural attitudes toward nuclear waste repository siting: Exploring he differential influence of community and individual variables." Paper presented at the annual meeting of the Pacific Sociological Association, Spokane, April.

Cramer, Lori, and Lisa Bourke
1990 "Alternative explanations of community responses toward siting a high-level nuclear waste repository: Bad deal, NIMBY, risk." Paper to be presented at the annual meetings of the Rural Sociological Society, Norfolk, Virginia, August.

Cramer, Lori, Richard S. Krannich and Victoria Rhea
1989 "The orientations of rural community residents toward the transportation of high-level nuclear waste: The case of southern Nevada." Presented at the annual meetings of the Pacific Sociological Association, Reno, Nevada, April.

Earl, Phillip J.
1986 This Was Nevada. Nevada Historical Society.

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

Endter, Joanna, Ronald L. Little and Richard S. Krannich
1988a Summary Ethnographic Report: Eastern Lincoln County. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1988b Summary Ethnographic Report: Pahranagat Valley. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1988c Summary Ethnographic Report: Indian Springs. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

Festinger, L.
1957 A Theory of Cognitive Dissonance. New York: Peterson & Company.

Fischer, Claude S.
1981 "The public and private worlds of city life." American Sociological Review 46 (June): 306-316.

Freudenburg, William R.
1986 "The density of acquaintanceship: An overlooked variable in community research?" American Journal of Sociology 92(July): 27-63.

Fulkerson, Bob
1985 "Is Nevada becoming a military reservation?" Nevada Public Affairs Review, No. 1.

Fuller, John G.
1984 The Day We Bombed Utah: America's Most Lethal Secret. N.Y.: New American Library.

Gateway Gazette
1990 "Water grab worries Tonopah." June 8.

1989a "Mother Load dedication ceremony to be held." November I

1989b "Gold project under review." February 3.

1987 "Anti-nuke protesters to face money woes." April 3.

1986c "County spurs feds into action." November 28.

Gold, Raymond
1986 Ranching, Mining and the Social Costs of Energy Development. New Brunswick: Transaction Books.

Greider, Thomas and Ronald L. Little
1988 "Social action and social impacts: Subjective interpretation of environmental change." Society and Natural Resources 1(1):45-55.

Griffith, Wilber
1988 "A town growing and its needs." Gateway Gazette, December 30.

Harris, Thomas
1983 "Preliminary results of Pahrump Resource Analysis." Unpublished manuscript, Cooperative Extension Service University of Nevada, Reno.

Hulse, James W.
1981 The Nevada Adventure, Fifth Edition. Reno, Nevada: University of Nevada Press.

Houghton, Samuel G.
1976 A Trace of Desert Waters: The Great Basin Story. Glendale, California: Arthur Clark Co.

Kasarda, John D. and Morris Janowitz
1974 "Community attachment in mass society." American Sociological Review 39 (June): 328-339.

Kasindorf, Jeanie
1985 The Nye County Brothel Wars. N.Y.: Linden Press/Simon and Schuster.

Krannich, Richard S.
1990 Lake Catamount Resort Sociocultural Assessment: Data Summary Report. Steamboat Springs, Colorado: U.S. Department of Agriculture, Routt National Forest.

Krannich, Richard S. and Thomas Greider
1984 "Personal well-being in rapid growth and stable communities: Multiple indicators and contrasting results." Rural Sociology 49 (Winter): 541-552.

1990 "Rapid growth effects on rural community relations." Pp. 61-73 in A.E. Luloff and L. Swanson (eds.), Social Science in Natural Resource Recreation Management. Boulder, CO: Westview Press.

Krannich, Richard S., E. Helen Berry and Thomas Greider
1989 "Fear of crime in rapidly changing rural communities: A longitudinal analysis." Rural Sociology 54 (Summer): 195-212.

Krannich, Richard S. and Craig R. Humphrey
1983 "Local mobilization and community growth: Toward an assessment of the 'growth machine' hypothesis." Rural Sociology 48 (Spring): 60-81.

Krannich, Richard S. and Ronald L. Little
1987a Baseline Community Social Structure for Alamo-Hiko Area. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987b Baseline Community Social Structure for Caliente. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987c Baseline Community Social Structure for Indian Springs. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

Krannich, Richard S. and Ronald L. Little
1987d Baseline Community Social Structure for Mesquite. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987e Baseline Community Social Structure for Pahrump. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1988 "Differential orientations of rural community residents toward nuclear waste repository siting in Nevada." Presented at the annual meetings of the Rural Sociological Society, Athens, Georgia, August.

1989a Analysis of Key Sociocultural Relationships in Seven Southern Nevada Rural Communities. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1989b Rural Community Surveys: Updated Background Report. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1989c "Rural community residents' views toward nuclear waste repository siting in Nevada." Presented at the annual meetings of the American Association for the Advancement of Science, San Francisco, January.

Las Vegas Review-Journal
1987 "Peaceful demonstration held at test site." April 17.

Lehman, Anthony L. (ed.)
1970 By Buckboard to Beatty: The California-Nevada Desert in 1886. Los Angeles: Dawson's Book Ship.

Lillard, Richard G.
1969 Desert Challenge: An Interpretation of Nevada. Westport, Connecticut: Greenwood Press.

Lingenfelter, Richard
1986 Death Valley and the Amargosa: A Land of Illusion. Berkeley, California: University of California Press.

Little, Ronald
1977 "Some social consequences of boom towns." North Dakota Law Review 53(3):101-125.

Little, Ronald and Thomas Greider
1983 Water Transfers from Agriculture to Industry: Two Utah Examples. Research Monograph 10, Institute for Social Science Research on Natural Resources, Utah State University, Logan Utah.

Little, Ronald L. and Richard S. Krannich
1989 "A model for assessing the social impacts of natural resource utilization on resource dependent communities." Impact Assessment Bulletin 6 (2): 21-35.

1987a Baseline Community Social Structure for Amargosa Valley. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987b Baseline Community Social Structure for Beatty. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987c Baseline Community Social Structure for Goldfield. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1987d Baseline Community Social Structure for Tonopah. Mountain West Research for Nevada Nuclear Waste Projects Office, Carson City, Nevada.

Lowes, Robert
1987a "Nye County election legality in Question." Gateway Gazette, April 3.

1987b "DA: Temper tantrums must stop." Gateway Gazette, May 1.

1987c "Counter protest group: Supports nuclear testing." Gateway Gazette, May 8.

Lowes,Robert
1986 "Military hits Tonopah; Merchants get windfall." Gateway Gazette, December, 12.

1986 "Rhyolite plan draws backlash." Gateway Gazette, October 10.

Lynch, Denny
1982 HIS-Story of Pahrump Valley, Nye County, Nevada, U.S.A. Pahrump, Nevada: D. Lynch.

Mack, Effie M. and Byrd W. Sawyer
1940 Our State: Nevada. Caldwell, Idaho: Caxton Printing Limited.

McCauley, Joe
1986 "State okays Charles Brown LP tank." Pahrump Valley Times, November 14.

Moen, T.
1986 Needs Assessment for Tonopah and Goldfield. Carson City, Nevada: Bureau of Alcohol and Drug Abuse.

Mountain West Research
1989 An Interim Report: The State of Nevada Socioeconomic Studies. Submitted to Nevada Nuclear Waste Project Office.

Mushkatel, A. and K.D. Pijawka
1989 The Analysis of the Las Vegas Urban Survey Data -- Final Report. Prepared for the Nevada Nuclear Waste Projects Office. Las Vegas: Mountain West Research.

Murdock, S. and F. L. Leistritz
1979 Energy Development in the Western United States: Impacts on Rural Areas. New York: Praeger.

Myrick, David F.
1963 Railroads of Nevada and Eastern California. Berkeley, California: Howell-North Books.

Nevada Commission on Tourism
n.d. "Nevada: Tonopah." Carson City, Nevada

Ostrander, Gilman M.
1966 Nevada: The Great Rotten Borough. New York: A. Knopf.

Paher, Stanley W.
1986 "Beatty celebrates with a bang." Pp. 80-84 in Mark Peplowski (ed.) Nevada: 1864-1985. Las Vegas, Nevada: Southern Nevada Memorial Hospital Foundation, Inc.

1978 Tonopah: Silver Camp of Nevada. Las Vegas, Nevada: Nevada Publications.

Pahrump Chamber of Commerce
1985/86 "Pahrump profile."

Peterson, Brad
1989 "Pro and con at Amargosa repository meeting Monday." Pahrump Valley Times, March 24, 1989.

Planning Information Corporation
1988 Community Development Report: Town of Beatty, Nevada. Unpublished manuscript prepared for the Nye County Board of Commissioners for Nevada Nuclear Waste Project Office.

1987 Selected Demographic Information and Trends, Nye County. Unpublished manuscript submitted to Mountain West Research for Nevada Nuclear Waste Project Office.

Richards, Rebecca and Richard S. Krannich
1989 "Risk perceptions of a nuclear waste repository in rural Nevada communities." Presented at the annual meetings of the Rural Sociological Society, Seattle, August.

Ritchey, P. Neal
1966 "Explanations of migration." Annual Review of Sociology 2: 344-364.

1941 The Shadow of the Arrow. Caldwell, Idaho: Caxton Printers, Ltd.

Skelton, Phyllis J.
1974 A Geography of Indian Springs, Nevada. Salt Lake City: Unpublished Masters Thesis, Department of Geography, University of Utah.

Slovic, P. S., M. Layman and N. Kraus
1989 Perceived Risk, Stigma, and Potential Economic Impacts of a High-Level Nuclear Waste Repository in Nevada. Prepared for the Yucca Mountain Socioeconomic Project, Nevada Nuclear Waste Project Office.

Smith, John L.
1986 "Let's give those gays the ghost town." Las Vegas Review-Journal, October 19.

Stoffel, Richard, M. Traugott, C. Harshbarger, F. Jensen, M. Evans and P. Drury
1988 "Risk perception shadows: The Superconducting Supercollider in Michigan." Practicing Anthropology 10 (3-4): 6-7.

Suplee, Curt
1986 "The ghost town as gay mecca." Washington Post, December 12.

Tonopah Chamber of Commerce
n.d. "Tonopah."

Trend, Michael G., Ronald L. Little and Richard S. Krannich
1988a Summary Ethnographic Report: Amargosa Valley. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1988b Summary Ethnographic Report: Beatty. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

1988c Summary Ethnographic Report: Pahrump. Mountain West Research for the Nevada Nuclear Waste Projects Office, Carson City, Nevada.

Thurlow, Rich
1990 "Boom! PV population growth in 1989 over 13 percent." Pahrump Valley Times, January 26.

1989 "Commission sticks to high road." Pahrump Valley Times, August, 18.

Walters Engineering and Chilton Engineering
1972 Nevada Rural Communities Water and Waste Water Plan. Volume VI, Esmeralda County--Nye County.

Williams, M.H., H. Frost and W. Sibley
1960 "Page, Arizona: A rootless community?" Proceedings, Utah Academy of Sciences, Arts and Letters 47: 97-101.