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Addressing Environmental Justice Under the National Environmental Policy Act at Sandia National Laboratories/New Mexico

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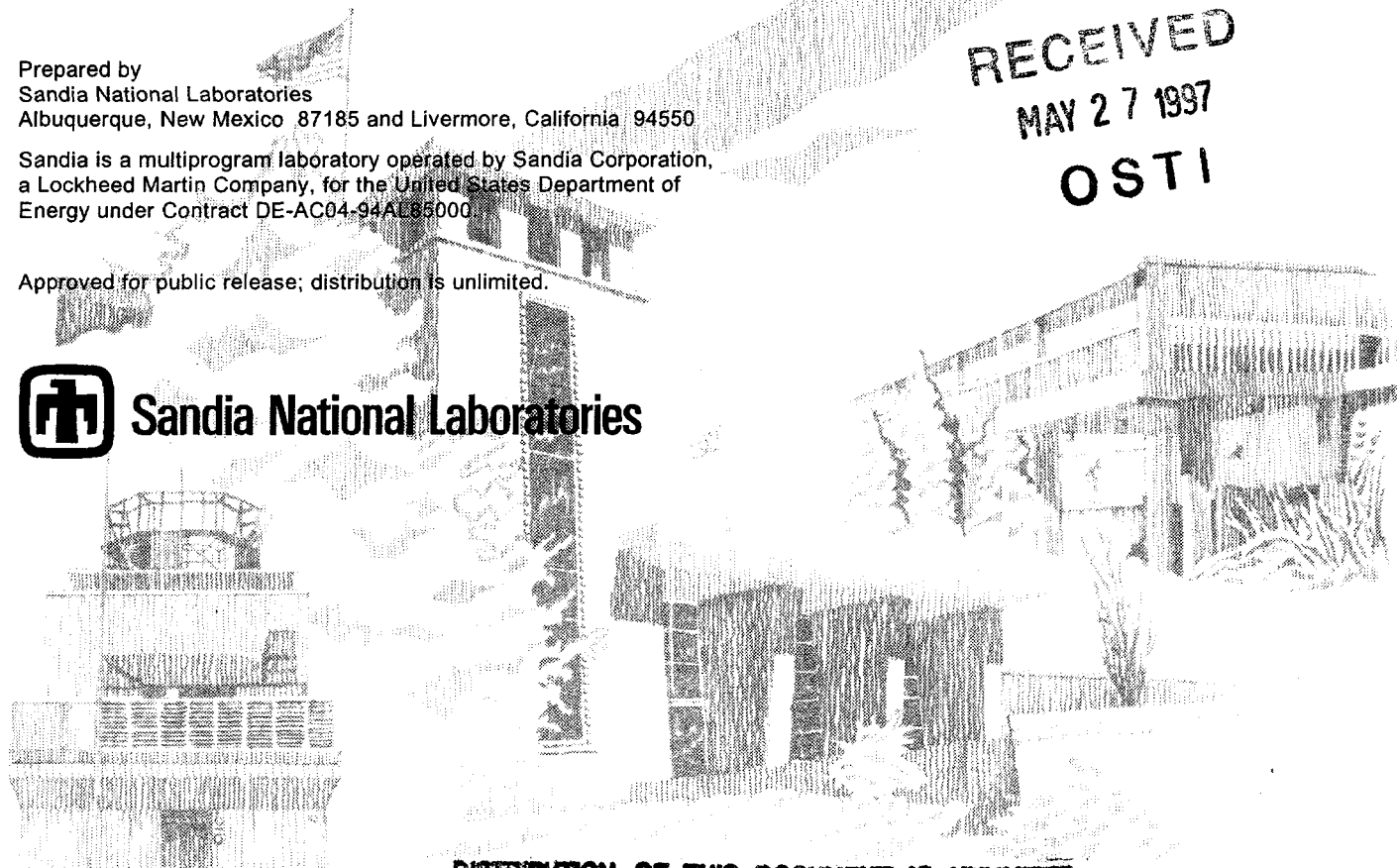
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Addressing Environmental Justice Under the National Environmental Policy Act at Sandia National Laboratories/New Mexico

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Abstract

Under Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, the Department of Energy (DOE) and Sandia National Laboratories/New Mexico (SNL) are required to identify and address, as appropriate, disproportionately high, adverse human health or environmental effects of their activities on minority and low-income populations. The National Environmental Policy Act (NEPA) also requires that environmental justice issues be identified and addressed. This presents a challenge for SNL because it is located in a culturally diverse area. Successfully addressing potential impacts is contingent upon accurately identifying them through objective analysis of demographic information. However, an effective public participation process, which is necessarily subjective, is also needed to understand the subtle nuances of diverse populations that can contribute to a potential impact, yet are not always accounted for in a strict demographic profile. Typically, there is little or no coordination between these two disparate processes. This report proposes a five-step method for reconciling these processes and uses a hypothetical case study to illustrate the method. A demographic analysis and community profile of the population within 50 miles of SNL were developed to support the environmental justice analysis process and enhance SNL's NEPA and public involvement programs. This report focuses on developing a methodology for identifying potentially impacted populations. Environmental justice issues related to worker exposures associated with SNL activities will be addressed in a separate report.

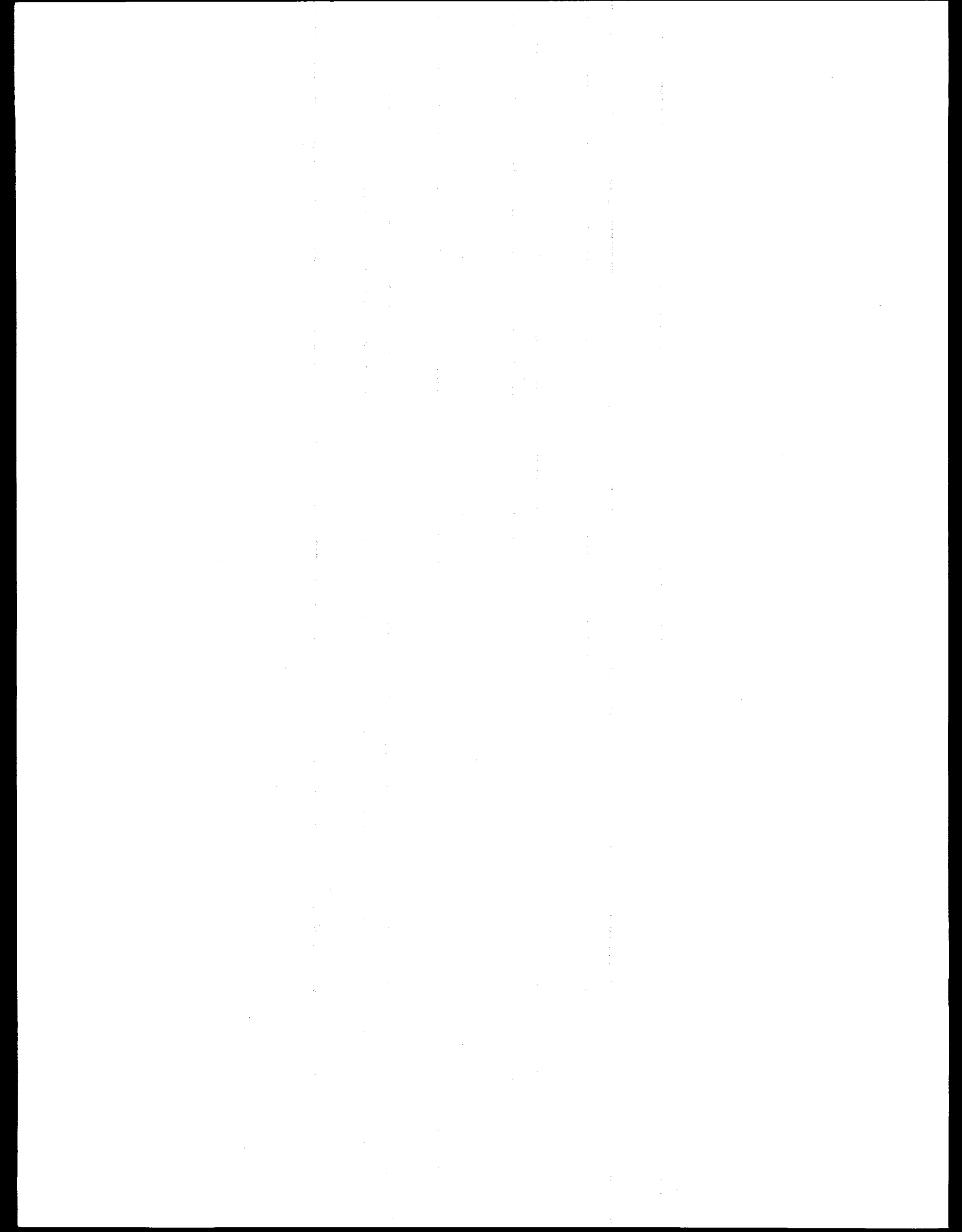


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Introduction

Background

Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (FR, 1994), mandates that all federal agencies, including the Department of Energy (DOE), incorporate environmental justice goals as part of their missions. To accomplish this, DOE and Sandia National Laboratories/New Mexico (SNL) must identify and address, as appropriate, disproportionately high adverse human health or environmental effects of their activities on minority and low-income populations. Environmental justice (also referred to as “environmental equity” or “environmental racism”) is often a controversial issue and presents a challenge for DOE and SNL in responding to citizen concerns.

The Environmental Justice Challenge

Environmental Justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group (including racial, ethnic, and socioeconomic groups) should bear a disproportionate share of the negative human health or environmental consequences resulting from industrial, municipal, or commercial operations, or the execution of federal, state, local, and tribal programs and policies (USEPA, 1996). Environmental justice can be thought of as a new slant on an old challenge; namely, how can SNL better relate to its neighbors and work with communities to include them in decisions affecting their lives.

Located on Kirtland Air Force Base (KAFB) in Albuquerque, New Mexico, SNL is in a culturally diverse geographic area. Isleta Pueblo borders KAFB on the south, and areas of Hispanic settlement dating back 300 years or more are directly to the west and east. The city of Albuquerque, with its large, multi-ethnic population base, borders KAFB on the north.

Development of the Environmental Justice Movement

Although the issue of environmental justice has gained attention recently, it was debated as early as the 1970s, when the Council on Environmental Quality (CEQ) reported a correlation among environmental risk, race, and income (CEQ 1971). However, the backbone of the environmental justice movement took shape in the 1980s, as grassroots organizations sprang up nationwide to confront specific environmental problems facing minority and low-income communities (Kratch, 1995).

During the 1980s, there were several specific instances in which individual poor or minority communities protested the siting of hazardous facilities in their area as discriminatory. These protests were followed by studies to determine whether such facilities were indeed

disproportionately sited near poor and minority communities. Although earlier cases may have raised similar issues, they did not result in a galvanized "environmental justice" movement. Two recent events that led to the development of this movement are briefly described below.

In 1981, the State of North Carolina decided to site a landfill for disposal of polychlorinated biphenyls (PCBs) in a predominantly Black community in Warren County. Former civil rights activists and local residents organized civil protests. Following these protests, the General Accounting Office conducted a study to determine whether hazardous waste sites were disproportionately sited in minority neighborhoods. The study, released in 1983, concluded that three of the four hazardous waste sites in Environmental Protection Agency (EPA) Region IV were located in predominantly Black communities, and that at least 26 percent of the population in all four communities had income below the poverty level.

In 1987, the United Church of Christ Commission for Racial Justice released a more comprehensive study entitled *Toxic Wastes and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites* (UCC, 1987). This study examined the demographics of communities near the 415 sites then listed in EPA's hazardous waste management system. Based on 1980 census data, it concluded that although socioeconomic status appeared to play an important role in the location of commercial hazardous waste facilities, race proved to be even more significant.

Federal Response

To address these concerns, President Clinton issued Executive Order 12898, which directs federal agencies to identify and address, as appropriate, disproportionately high adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations.

Additionally, this executive order directs the Administrator of the EPA to convene an interagency Federal Working Group on Environmental Justice (referred to below as the Working Group). The Working Group is directed to provide guidance to federal agencies on criteria for identifying disproportionately high adverse human health or environmental effects on minority populations and low-income populations. The Working Group is also directed to coordinate with each federal agency to develop an environmental justice strategy for addressing these impacts.

Addressing Environmental Justice in the NEPA Process

The National Environmental Policy Act (NEPA) also requires that environmental justice issues be identified and addressed. Successfully identifying and addressing environmental concerns in the NEPA process depends critically on the ability to apply the results of an analysis in a manner that maximizes the effectiveness of the public participation process. Unfortunately, doing so is often hindered by the disconnect between the technical analysis and the public participation process.

Because local history and circumstances of a particular community or population are essential in arriving at environmental justice, and these attributes vary greatly from site to site, there is no single, specific formula for identifying or addressing issues. However, the CEQ, which has oversight responsibilities of federal compliance with Executive Order 12898, has issued draft guidance for identifying and addressing environmental justice concerns within the NEPA process (CEQ, 1996). The EPA, which has been the lead agency in implementing the Executive Order, has also issued draft guidance on addressing environmental justice in the EPA's NEPA process (USEPA, 1996).

This study draws heavily on the EPA guidance. Because DOE is still in the process of developing guidance on addressing environmental justice, the methods used in this report may differ somewhat from whatever guidance DOE eventually issues.

Approach

This report develops a systematic methodology for identifying and addressing environmental justice issues in the NEPA process while reconciling the technical analysis and the public participation process to maximize the effectiveness of the public's participation. It describes a five-step process and illustrates its integration within the NEPA process. The first section lists and discusses each of the five steps in detail. Section two illustrates the entire process by applying the five steps to a case study. The case study uses a hypothetical scenario involving activities in Technical Area V at SNL.

To support the environmental justice analysis process, a demographic analysis of the geographic region surrounding SNL was conducted and is provided in Appendix A. A community profile designed to enhance SNL's NEPA and public involvement programs was prepared and is provided in Appendix B. Additional sources of environmental justice information are listed in the References section of this report.

This report focuses on developing a methodology for identifying potentially impacted population(s). Environmental justice issues related to worker exposures associated with SNL activities will be addressed in a separate report.

The Environmental Justice Analysis Process

This section discusses a five- step process for addressing environmental justice in the NEPA process:

1. Characterizing the baseline population.
2. Identifying and analyzing potential adverse impacts.
3. Characterizing the potentially impacted population(s).
4. Comparing the potentially impacted population to the baseline population.
5. Developing an environmental justice issues management plan.

Each of the these steps is discussed in detail below.

1. Characterizing the Baseline Population

The first step in analyzing for environmental justice issues is to characterize the baseline population with respect to race, ethnicity, and income. Census and other data are used to determine the racial and ethnic breakdown, and income level of the population in a geographic area surrounding a specific location. This allows identification of minority and low-income populations. The baseline population is a larger population to which the potentially impacted populations can be compared to determine whether they are disproportionately impacted. Preliminary findings from this analysis may identify issues that will need to be addressed later in the analysis.

Demographic Factors

Demographic factors (such as race, ethnicity, and low-income status) are key components of environmental justice. Table 1 discusses demographic factors that could be addressed in an environmental justice analysis.

Table 1. Demographic Factors to Consider in Environmental Justice Analysis

Population Age	Older or younger populations may be more susceptible to risks, when taking into account special health concerns of the elderly and potential for increased exposure pathways in younger populations (e.g., ingestion of soil).
Population Density	High population density may promote synergy between industrial pollutants and typical urban pollutants (e.g., ground level ozone), especially if industry is located in close proximity (5 miles or less) to high density populations.
Population Literacy	Lower levels of education may hinder the community's ability to sufficiently identify or interpret risk and other factors, and therefore respond to proposed actions.
Population / Economic Growth	Rapid or severe changes in population or economic growth include: (1) an increase in low-income or minority population(s) in an area (e.g., migration), (2) high birth rates, and (3) cumulative impacts due to multiple sources of population increases.
Source: Adapted from USEPA, 1996	

Geographic Factors

Certain communities may be at high risk from environmental hazards or exposed to substantial environmental hazards due to geographic factors that isolate them from other surrounding communities or that tend to allow pollutants to accumulate in the environment surrounding the community. Table 2 discusses several important geographic factors.

Table 2. Geographic Factors to Consider in Environmental Justice Analysis

Climate	Weather patterns (e.g., prevailing winds) that may concentrate pollutants in a certain area, allow pollutants to migrate, increase certain exposure pathways (such as respiration), or cause pollutants to behave in a manner that differs from that expected under normal weather conditions.
Geomorphic Features	Mountains, hills, or other surface features, natural or man-made, that may affect pollutant dispersal and may focus or funnel pollutants in particular directions or to particular locations.
Hydrogeologic Features	Presence of surface water and/or aquifers that may provide drinking water, subsistence fisheries, cultural significance, and recreational use.
Source: Adapted from USEPA, 1996	

Economic Factors

Economic factors can be divided into two categories: 1) the economic condition of individuals within the community; and 2) the overall economic base of the community. Low-income individuals in the population may be at higher risk and unable to avoid risk factors. The economic condition of the community at large may result in situations that preclude the local government's ability to adequately protect the population or may promote the acceptance of disproportionate risks or adverse effects. Such factors include, but are not limited to, those identified in Table 3.

Table 3. Economic Factors to Consider in Environmental Justice Analysis	
Individual Economic Conditions	
Income Level / Health Care Access	Includes whether affordable or free health care is available and whether any cultural barriers exist to seeking health care. Many low-income and/or minority communities lack adequate levels and quality of health care, often due to lack of resources or access to health care facilities.
Infrastructure Conditions	Includes whether existing infrastructure provides sufficient protection from adverse impacts (e.g., adequacy of sewage facilities or protection of domestic water supply, especially if the community relies on public or non-public drinking wells or surface water) and the effect that new facilities may have on the ability of existing infrastructure to reliably provide adequate protection. In many low-income and/or minority communities, historic allocation of resources has resulted in inadequate infrastructure development, maintenance, and reliability.
Life-support Resources	Includes subsistence living situations (e.g., subsistence fishing, hunting, gathering, farming), diet, and other differential patterns of consumption of natural resources. If a community is reliant on consumption of natural resources such as subsistence fishing, an additional exposure pathway may be associated with the community that is not relevant to the population at large. Similarly, dietary practices within a community or ethnic group, such as a diet low in certain vitamins and minerals, may increase risk factors for that group.
Community Economic Base	
Industrial	Reliance on polluting industries for jobs and economic development. If the community is reliant on polluting industries for jobs and tax revenue, there may be reluctance to take actions that would avoid or reduce risk to health and the environment at a cost to the industry. In addition, minority or low-income communities may not enjoy benefits in proportion to the risks or impacts they bear.
Brownfields	Communities with low revenues may be unable to finance rehabilitation efforts that would improve the physical environment of a community in response to environmental degradation that might be caused by a proposed action.
Natural Resources	Reliance on natural resources as the economic base (e.g., tourism, crops, use of resources to create salable items such as woven baskets among Native Americans, subsistence and commercial fisheries).
<i>Continued</i>	

Table 3. Economic Factors to Consider in Environmental Justice Analysis (Cont'd)

Other	Other indirect effects that a low-income or minority population may not be able to avoid that will have a synergistic effect with other risk factors (e.g., vehicle pollution, lead-based paint poisoning, existence of abandoned toxic sites, dilapidated housing stock).
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Source: Adapted from USEPA, 1996

Community Profile

In addition to census data, a community profile can provide valuable information when performing a demographic analysis. A community profile is a comprehensive summary of the key characteristics of the people of a community or study area (Connor, 1992). New policies, programs, and projects often generate hostile public reactions because the managers fail to understand and respond to the values, goals, concerns, and views of the people affected. From the community profile, project managers can learn how and why particular communities are different from others, and how they are likely to respond to a new activity (Connor, 1992). This information is particularly useful in developing an environmental justice issues management plan. Items to address in a community profile are discussed in Table 4.

Table 4. Factors to Consider in a Community Profile

Local History	Identify early settlement, key events, and past leaders. Note population trends (e.g., age-sex distribution, migration, ethnic origin, occupations, and education). What are the trends in land use? How does the history of the community help to explain its present position and character?
Industries and Occupations	What are the main employers, markets, and skills? How do these affect the community's behavior?
Development Issues	What issues arose in the past five years? Who got involved? What happened? How was each issue resolved? What are current issues and what, if anything, is being done about them (e.g., planning studies, etc.)? What are the implications of the above for the agency and/or project? Identify attitudes to growth.
Organizations and Leadership	List the principle groups, their activities, officers, and their role in the community. Identify and give a brief description of community leaders and influential people (e.g., who has followers and is respected for their opinions). What does this imply for the proponent and its plans?
Communication Channels	Outline the formal media (e.g., geographic coverage, capacity, and credibility of each, circulation and audience of each). Describe the informal networks, key nodes on grapevines, and strategic listening posts in the community. What relevance do these channels have for the agency and/or project?
Knowledge and Attitudes Towards a Facility, Site, or Agency	What valid information, myths, and areas of ignorance are evident in key people and groups? How does this affect information and education requirements for the proposed activities?

continued

Table 4. Factors to Consider in a Community Profile (Cont'd)

Populations Potentially Affected	Summarize the key characteristics of each public (e.g., language, education, appropriate media and grapevines), and relevant organizations and leaders. What implication do these have for the formation of a Citizens Advisory Committee and other forums of information exchange?
Observations and Conclusions	Provide a succinct outline of how the characteristics of this community appear to affect the agency and/or project and their implications for a public participation program.
Source: Adapted from Connor, 1992	

2. Identifying and Analyzing Potential Adverse Impacts

Once the baseline population has been characterized, potential impacts resulting from the proposed action and alternative ways of meeting the purpose and need should be identified and analyzed. NEPA requires that proposals be analyzed for adverse impacts, which are used to identify populations affected by them. If disproportionately high adverse impacts are possible from the proposed action, mitigation measures or other reasonable courses of action that have fewer impacts or less disproportionate impact should be analyzed. If no adverse impacts are identified for the proposed action, a full-blown environmental justice analysis may not be necessary.

Impacts associated with the environment, health, and safety, and socioeconomics should be considered in the analysis. Evaluation of human health and risk factors relevant to environmental justice concerns may prove to be complicated when detailed technical analyses of risk factors and interaction of toxic chemicals are undertaken. Table 5 discusses factors that may indicate whether more detailed risk assessments or analyses specific to minority or low-income populations are appropriate.

Generally, individual resource experts will determine the impacts associated with a proposed action and alternatives and provide the results to the individual responsible for conducting the environmental justice analysis.

Table 5. Human Health Risk Factors to Consider in Environmental Justice Analyses

Emissions	Number of point and non-point sources of emissions including permitted and non-permitted (violation) releases.
Toxics	Presence of EPA-listed highly toxic pollutants.
Exposures	Multiple exposure sources and/or paths for the same pollutant.
Pollutants	Presence of EPA-listed air pollutants.
Locations	Exposures through multiple locations (e.g., workplace, home, school, ambient).
Concentrations	Exposure to emissions from concentrated locations of similar industries.
Health Data	Health data for population in question (e.g., abnormal levels of cancers, asthma, emphysema, birth defects, low birth weight, infant and childhood mortality, blood-lead levels, asbestosis).
Research Gaps	Research gaps (e.g., subsistence consumption, demographics, dietary effects, synergistic effects of chemicals).
Data Collection	Data collection/analysis reliability and validity.
Source: Adapted from USEPA, 1996	

In NEPA compliance documents, impacts are often differentiated as being direct, indirect, or cumulative. Direct impacts are immediate and local impacts on affected individuals or communities. Indirect impacts are those that occur over time rather than immediately. Cumulative impacts result from the incremental effect of past or present impacts when added to reasonably foreseeable future impacts caused by or associated with the proposed action. Therefore in the context of environmental justice, one must consider the historical, current, and reasonably foreseeable circumstances of minority and/or low-income communities. Potential cumulative impacts associated with additive/synergistic effects of pollutant loadings from new discharges and existing sources and reasonably foreseeable future sources could be significant issues.

3. Characterizing Potentially Impacted Population(s)

Once the adverse impacts are identified and analyzed, the population(s) that are potentially adversely impacted as a result of the proposed action and alternatives should be characterized. This characterization involves determining the racial and ethnic breakdown, and income level of the people impacted by the proposed action. The potentially impacted population(s) will be compared to the larger baseline population to determine whether they are being disproportionately impacted. The same assumptions and methodology used in identifying the baseline minority and low-income populations (see Step 1) should be used here.

4. Comparing Potentially Impacted Population(s) to Baseline Population

Once the larger baseline population and the potentially impacted population(s) have been identified, they can be compared to determine if minority and/or low-income populations are being *disproportionately* adversely impacted. If the percentage of minority and/or low-income individuals residing in the potentially impacted area is significantly higher than the percentage of minority and/or low-income individuals residing in the baseline area, the potential for environmental justice concerns exists.

When determining whether adverse human health impacts are disproportionately high, the following three criteria should be considered (CEQ, 1996):

1. Is there an impact on the natural or physical environment that significantly and adversely affects a minority or low-income community? Such effects may include ecological, cultural, economic, or social impacts on minority or low-income communities that are interrelated to impacts on the natural or physical environment.
2. Are environmental effects significant and will an adverse impact on minority or low-income populations appreciably exceed (or be likely to appreciably exceed) those on the general population or other appropriate comparison group?
3. Will the environmental effects occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards?

Although identifying disproportionately high adverse impacts on a minority or low-income population does not preclude a proposed action from going forward, nor compel a conclusion that a proposed action is environmentally unsatisfactory, these potential environmental justice issues should be addressed if appropriate (CEQ, 1996).

5. Developing an Environmental Justice Issues Management Plan

After potential environmental justice issues have been identified, an issues management plan (IMP) should be developed. The environmental justice IMP should be designed to bridge the gap between the technical analysis and the public participation process by involving the affected population(s) in the planning process. The IMP's purpose is to engage the affected populations by customizing the public participation process to these specific populations. It should identify the affected population(s) in detail and state what measures will be taken to engage them in the public participation process. Any mitigation measures resulting from this process should be made available to the public in a mitigation action plan (MAP), finding of no significant impact (FONSI), or record of decision.

Factors to Consider in the IMP

Focusing public participation efforts and improving communication can be difficult due to cultural and ethnic differences. Table 6 lists factors to consider which may inhibit an affected population from meaningful participation in the decision-making process.

Table 6. Factors To Consider In the Public Participation Process

Public Access	Community members should have access to the decision-making process (i.e., be fairly represented on commissions, boards), and the community should be made aware of their role in the decision-making process.
Cultural Expectations	Cultural expectations and understanding of the decision-making process.
Meaningful Information	Access to meaningful and understandable information, such as clear presentation of what a facility produces, what pollutants it releases, how these are managed, and the potential risk to the population.
Job Security	Potential for fear within the community that participating in the process may jeopardize job security or similar circumstances.
Literacy Rate	If a low literacy rate exists, consideration should be given to the clarity and accuracy of presentations to the community and whether non-written materials, such as videos, have been considered for use in presentations.
Translations	Consideration of non-English translations, both written and verbal, during community presentations or public meetings.
Community Representation	Consideration should be given to whether representatives were selected by the community or by outside sources without proper consultation with the community.
Community Identification	Identification of minority and/or low-income communities should take into account all potentially impacted communities. If communities were defined geographically rather than culturally, certain communities that are impacted given other cultural factors may be unfairly excluded.
American Indian Populations	<p>When projects or activities may affect tribal lands or resources of Native American communities, the analytical team should include one or more analysts familiar with American Indian issues and culture, and the sponsoring agency should formally request the affected Indian Tribe(s) to seek participation as a cooperating agency. Specific factors to consider in such situations include, but are not limited to:</p> <ul style="list-style-type: none"> • Effect of insufficient financial and technical resources for the development and implementation of tribal environmental programs. • Impacts to treaty-protected resources, cultural use of natural resources, and/or sacred sites. • Government-to-government relationship with affected Indian tribes as well as meaningful participation of the affected tribal community. • A dispute resolution process may be appropriate to ensure that tribal lands and resources are not diminished. • Health and socioeconomic effects due to cultural, subsistence, and commercial use of natural resources. • Potential for risk assessment to underestimate potential of environmental degradation to harm human health due to low population density.

Source: Adapted from USEPA, 1996

Historical land-use factors and public policy issues may also play a role in how an affected community should be involved in a decision-making process. Table 7 discusses some of these factors.

**Table 7. Historical and Public Policy Factors to Consider
in Public Participation Process**

Industrial Concentration	Concentration of industries that may create a high risk of exposure to environmental hazards for the community's economic base. Factors that may lead to such a result include government/industry arrangements that may reduce available public funding for adequate protection of low-income or minority populations (e.g., tax breaks provided to certain industries to encourage the location of such industries to a certain area).
Inconsistent Criteria	Non-uniformity in enforcement and site-selection criteria across communities including methods for pursuing enforcement targeting, compliance actions, and compliance initiatives.
Research Gaps	Research gaps and past data collection practices and validity. For example, data relevant to low-income communities may not be adequately collected and analyzed given the potential for inadequate resources within or provided to the community to collect and analyze data.
Program Gaps	Program gaps between tribal, state, and federal programs (such as asbestos worker protection programs) that may have subjected community to high risk of exposure to environmental hazards. Such gaps include the lack of explicit Congressional authorization for tribal participation in and delegation/authorization of certain EPA programs and the efficiency of funding and technical assistance for the development of tribal environmental programs.
Non-inclusive Processes	Decision-making and documentation processes that were non-scientific, and/or non-inclusive in nature (e.g., selection of community representatives by potentially affected community rather than by decree.)
Past Practices	Negligence regarding past resource allocation practices.
Cultural Diversity	Past and present cultural diversity or lack thereof on decision-making boards, within agencies, commissions, etc.
Obligations	Adherence to prior agreements, such as treaties with tribes. The site should be particularly careful not to diminish tribal resources, including cultural and natural resources, and treaty-reserved rights, without tribal concurrence and to ensure the protection of such resources from environmental harm.

Source: Adapted from USEPA, 1996

Planning for Community Involvement

The environmental justice IMP should clearly address how the affected communities will be contacted, what measures will be taken to provide meaningful participation in the decision-making process, and how the affected communities comments/concerns will be addressed in that process. Public outreach is one way to contact potentially affected communities.

The public participation process should be used to define environmental justice concerns by including the following: (USEPA, 1996)

- Consulting with leaders and members of the surrounding communities to seek their assistance in identifying all minority and/or low-income communities that may be affected by the proposed action.
- Consulting with officials in tribal, state, and/or local government agencies on the environmental and human health concerns within the region and others who may be familiar with the demographics of the affected populations.
- Soliciting information from the local community on potential environmental justice issues.
- Soliciting public comment on environmental issues through formal public notice and comment procedures tailored to the community.
- Working with any community advisory boards that may already exist.

Potential sources for contacting minority and low-income individuals include neighborhood associations, chambers of commerce, community and senior centers, tribal government offices, local offices of the Bureau of Indian Affairs, and religious organizations with environmental justice concern affiliations.

Tribes and low-income and minority communities have distinct concerns with communication styles and processes. Table 8 identifies some of these communication challenges and offers some practical means for meeting them.

Table 8. Community Involvement Communication Challenges	
Challenge	Ways to Meet the Challenge
Language barrier	<ul style="list-style-type: none"> ● Provide simultaneous translation of meetings. ● Use local translators where possible. ● Translate key documents in entirety (notices, summaries, etc.). ● Advertise meetings/process in alternative-language medium. ● Design communication strategy to reach "general" population; eliminate jargon-laden language that may appear to be foreign to many lay persons. ● Use facilitated meeting to encourage comments.
<i>continued</i>	

Table 8. Community Involvement Communication Challenges (Cont'd)

<p>Distance to meeting or inconvenient access (e.g., rural or cross-town)</p>	<ul style="list-style-type: none"> • Use local cable-channel broadcast and arrange for telephone tie-in from several locations (e.g., schools, religious centers). • Hold series of short meetings (1-2 hours each) in multiple locations. • Arrange for alternative transportation (possibly through proponent) or have proponent provide transportation vouchers. • Ensure location is accessible to public transportation and identify itinerary in notices.
<p>Unfamiliar surroundings (government buildings, luxury hotel, etc.)</p>	<ul style="list-style-type: none"> • Use schools or other local facilities including religious centers, churches, temples, mosques. • Have several smaller decentralized meetings, including open-air meetings (possibly with tent backup) in season.
<p>Normal EPA communications loops (i.e., <i>Federal Register</i>, newspapers)</p>	<ul style="list-style-type: none"> • Use pro-active approach to identify stakeholder (both groups and affected individuals). Consult with local advocates/public interest groups to identify outreach mechanisms and refer to the <i>People of Color Environmental Groups Directory</i>. • Disseminate information through alternative media (neighborhood organization newsletters, religious centers, fliers, local cable access channel, etc.)
<p>Format of Meetings</p>	<ul style="list-style-type: none"> • Use "town hall" type meetings. • Avoid "panel of experts." • Use small focus-group seminars or workshops. • Use community "experts" and comments as part of communication strategy. • Use local facilitator.
<p>Schedule conflicts (e.g., conflict with working hours, working days)</p>	<ul style="list-style-type: none"> • Hold after-hours and/or weekend meetings or sessions. • Hold meetings on successive days. • Hold multiple shorter meetings at diverse times/days.
<p><i>continued</i></p>	

Table 8. Community Involvement Communication Challenges (Cont'd)

Lay audience	<ul style="list-style-type: none"> • Tailor background explanations to audience. • Use plain language in meetings and printed material. • Provide hands-on demonstrations/participation (e.g., tours of similar activities/locations). • Use visual presentations (e.g., pictures, videos). • Provide two-way communication - Q &A. • Use background summary reports, fact sheets, and abstracts.
Trust	<ul style="list-style-type: none"> • In writing, clearly present goals of the proposed actions, the public involvement process, and what is expected to be gained from the process. • Do not oversell; present uncertainties and limitations. • Present experiences and track record, successes and failures.
<p>Note: • Seeking advice from local groups/individuals can help in meeting all challenges identified above</p> <p>• Arranging for a 'comment line' (e.g., 800 number) to provide remote access or allow callers to leave recorded comments can help meet most challenges.</p>	
<p>Source: Adapted from USEPA, 1996</p>	

Low-income and minority communities are no different than any others in that there will be as many different opinions as there are people. It is important not to focus exclusively on one mechanism (one person or one group) for disseminating or soliciting information, but to use as many avenues as possible. For example, when formal or informal representatives purport to speak for a wider population, it is always advisable to seek divergent opinions. Any anticipated impacts and community perceptions of those impacts (and their fairness) can be very different, so both must be considered. When perceptions are the concern, an effort to involve and inform the community can go a long way toward building confidence that the analyses and actions are well-intended and balanced. When actual impacts are the concern, the participation can serve to educate SNL and identify the means to mitigate the impacts.

The final aspect of the environmental justice analysis is to determine how the affected communities comments and concerns will be addressed in the decision-making process and the mitigation of any environmental justice issues. Public participation efforts should specifically ask the public to suggest alternatives and mitigation measures aimed at reducing or avoiding disproportionate adverse impacts. These suggestions should be publicly addressed and incorporated as part of the NEPA process.

The primary challenge here is using the information acquired from the demographic analysis and community profile to mitigate potential disproportionate adverse impacts, to focus public participation to include impacted minority and/or low-income individuals, and to communicate effectively with these people. Examples of mitigation measures include:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Compensating affected communities for the impact by replacing or providing substitute resources or environments.

Hypothetical Case Study at SNL

To illustrate an environmental justice analysis for SNL, a hypothetical case study was conducted. An area within Bernalillo County, New Mexico, with an 80-kilometer (50-mile) radius centered on SNL Technical Area V was used for this analysis. Data from an established SNL project with a worst-case scenario potential for having adverse impact to the public were used to generate an area of potential adverse impacts outside KAFB. Figure 1 shows the location of SNL in relation to the surrounding area and the State of New Mexico. For illustrative purposes, all five of the environmental justice analysis steps are discussed:

1. Characterizing the baseline population.
2. Identifying and analyzing potential adverse impacts.
3. Characterizing the potentially impacted population.
4. Comparing the potentially impacted population to the baseline population.
5. Developing an environmental justice issues management plan.

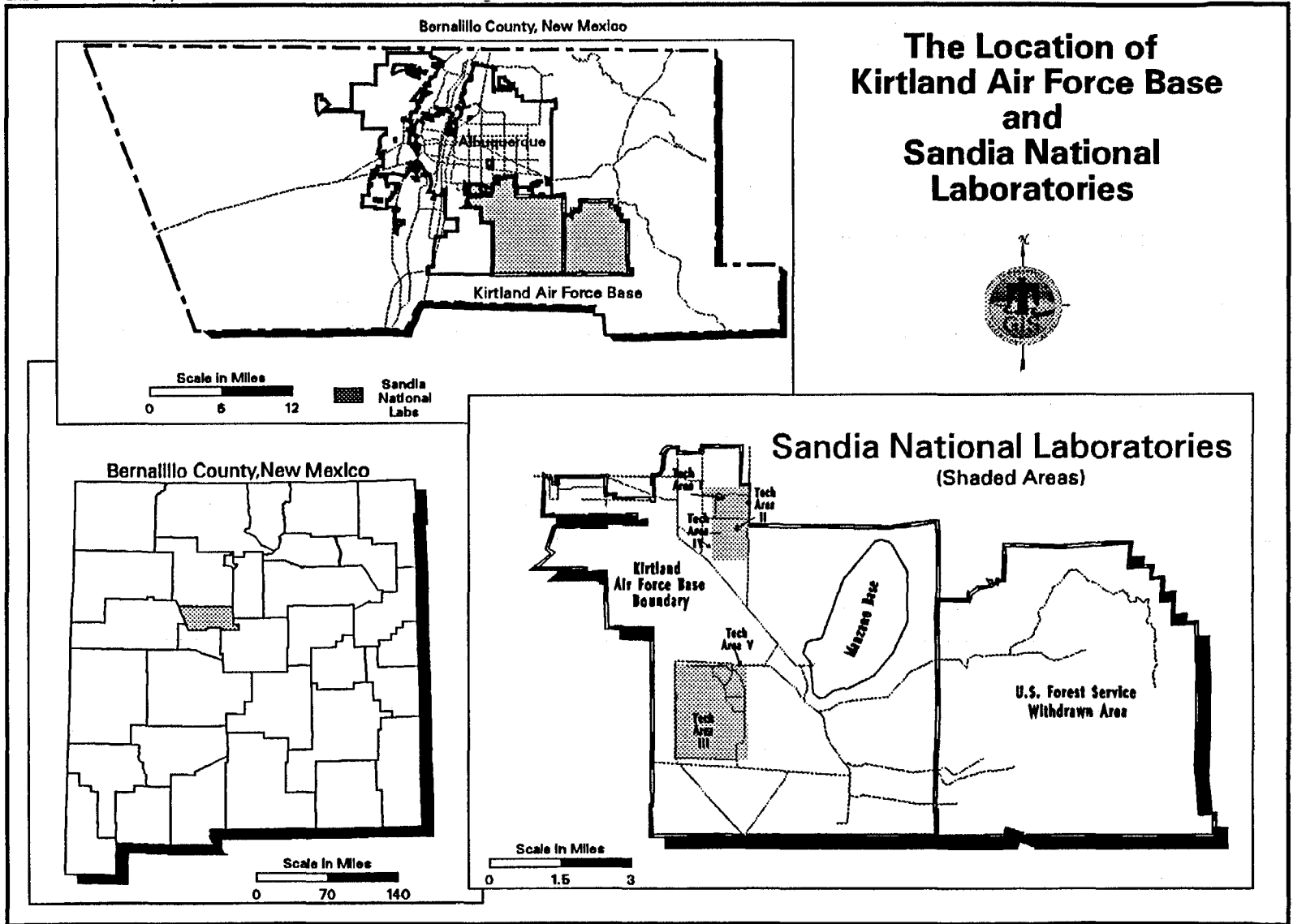
1. Characterizing the Baseline Population

Characterizing the baseline population surrounding SNL was accomplished by preparing a demographic analysis and a community profile. Two methodologies were used to prepare the demographic analysis: a basic demographic analysis and an environmental justice index. The basic demographic analysis involved analyzing data on race, ethnicity, and income separately. To provide the reader with a complementary methodology, an environmental justice index developed by the EPA (USEPA, 1994) was modified for use at SNL. Detailed results of the demographic analyses and the community profile are located in Appendixes A and B, respectively.

Basic Demographic Analysis

Minority and low-income individuals within the study area were identified using 1990 U. S. Bureau of Census (USBC) data (USBC, 1991). Detailed results of the demographic analysis are located in Appendix A. These analyses are based on USBC Tiger Line files, which contain political boundaries and geographic features, and summary Tape Files 3A, which contain demographic information (USBC, 1991). Demographic statistics for New Mexico and the 80-kilometer (50-mile) radius study area are presented in Table 9.

SNL EGIS 6682 Map by D. Rizer GIS ID = 970208 AML used - nmloc_2.aml 06-FEB-1997



Source: SNL EGIS Database

Figure 1. Location of Sandia National Laboratories

Table 9. Demographic Statistics for New Mexico and 80-kilometer (50-mile) Radius Study Area

Population	State of New Mexico	50-mile Study Area
White	1,146,028	465,294
Black	30,210	14,597
Eskimo, Aleut	258	105
American Indian	134,097	29,834
Asian & Pacific Islander	14,124	8,052
Other	190,352	91,601
Total Population	1,515,069	609,483
Hispanic Origin*	579,224	228,793
% Minority	49%	46%
% Low-Income	21%	14%
* Persons who identified themselves as Hispanic also identified themselves by race.		
Source: Adapted from USBC, 1991		

Demographic data were analyzed at the block group level. A block group, as defined by the USBC, is a cluster of city blocks generally containing between 250 and 550 housing units, with the ideal size being 400 housing units. Block groups can vary in size significantly depending on whether they are located in a rural or urban setting. For example, in this case study many of the block groups are one city block in size, while the entire KAFB is considered to be one block group.

Block groups were then classified with regard to minority and low-income status. Characterizing minority and low-income block groups within a geographical area takes into account the basic definitions and assumptions used in conducting the analysis to identify them. Both the Interagency Working Group and DOE are in the process of preparing final guidelines for the evaluation of environmental justice. In the absence of final guidance, the definitions and approaches being used by and within federal agencies could vary.

For this case study, the definitions and nomenclature of the 1990 census were used and are further defined in the glossary (located in Appendix C). The USBC characterizes persons in poverty as those whose income is less than a "statistical poverty threshold," which is a weighted average based on family size and the age of family members. For instance, the 1990 census threshold for a family of four was a 1989 income of \$12,674 (USBC, 1991). Low-income block groups are identified where the low-income population percentage in the block group exceeds the low-income population percentage in the State of New Mexico. In this case study, 21 percent of the state population was considered to be low-income; thus, a block group was identified as low-income if its low-income population exceeded 21 percent.

The USBC defined a minority individual to be, Negro/Black/African-American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons, based on self-classification by the people according to the race with which they most closely identify. Minority block groups are identified where the minority population percentage in the block group exceeds the minority population percentage in the state. In New Mexico, 49 percent of the population is considered to be minority. In this case study, a block group was identified as minority if its minority population exceeded 49 percent.

Block groups identified as minority or low-income are important from an environmental justice standpoint. Projects or activities that disproportionately adversely impact the individuals in these block groups should be identified and addressed.

Limitations of Census Data

Although the availability of census demographic data can be particularly useful for environmental justice analyses, there are limitations in using this information. Two limitations of the 1990 data include its currency and accuracy. The Census Bureau, despite its best efforts, believes that the 1990 census was not complete. They estimate that throughout the U.S. nearly 5 million people were missed in that census. This represents approximately 2.1 percent of the U.S. population. These people were disproportionately from minority racial and ethnic groups and concentrated in a small number of geographic areas throughout the U.S. (Riche, 1995). Of these people, it is estimated that Blacks were underreported by 4.8 percent, Asian and Pacific Islanders by 3.1 percent, American Indians by 5.0 percent, and Hispanics by 5.2 percent (Dameron, 1996).

It is estimated that approximately 49,000 people living in New Mexico were not accounted for in the 1990 Census (USBC, 1991). This represents approximately 4.5 percent of the state population. In Bernalillo County, an estimated 3.5 percent of the population was not accounted for.

Problems associated with using census data should be addressed by validating the results through preparation of a community profile and the public participation process.

Environmental Justice Index

Employing a methodology developed by EPA Region VI (USEPA, 1994), an environmental justice index was created using a modified human health risk index model. This index incorporates the race, income, and total population per square mile of each block group into one measure, which ranges from 0 to 100. The higher the number, the more potential exists for environmental justice issues.

The environmental justice index methodology has the advantage of incorporating three important variables into one measure. This allows for ranking and comparing multiple sites. Although higher scores can indicate greater potential environmental justice concerns, even an index ranking of zero can have significant concerns. For example, an unpopulated area will rank zero, but if owned by minority and/or low-income groups, the site may have significant environmental justice importance. The population density, percent minority population, and percent of economically depressed households data are the more important analytical factors. When

evaluated independently, they often provide greater insight to the potential environmental justice concerns and can be used alone to rank sites. The environmental justice index is most effective when used to complement the basic methodology. Results of the environmental justice index analysis for SNL are located in Appendix A.

Description of Environmental Justice Index

Block groups are evaluated using an environmental justice formula and ranked on a scale of 0 to 100. The environmental justice index consists of a population ranking multiplied by the minority and economic rankings. Other variables can be incorporated into the formula as well. The population ranking ranges from 0 to 4, while the minority and economic rankings range from 1 to 5.

$$\text{EJ Index} = \underbrace{[\text{Population Ranking}]}_{(0 - 4)} \times \underbrace{[\text{Minority Ranking}]}_{(1 - 5)} \times \underbrace{[\text{Economic Ranking}]}_{(1 - 5)}$$

To calculate the Population Ranking, the population density or number of people per square mile in each block group should be determined. The scale in Table 10 is then used to rank each block group.

Table 10: Scoring Criteria for Population Ranking	
Population per Square Mile	Population Ranking
0	0
> 0 and ≤ 200	1
> 200 and ≤ 1,000	2
> 1,000 and ≤ 5,000	3
> 5,000	4

Source: Adapted from USEPA1994

To calculate the minority ranking, the total minority population in each block group is determined. The scale presented in Table 11 is then used to assign a ranking between 1 and 5 for each block group.

Table 11. Scoring Criteria for Minority Populations

Percentage of Minority Residents in Block Group	Minority Ranking
≤ state average.	1
> state average, but ≤ 1.33 x state average.	2
>1.33 x state average, but ≤ 1.66 x state average.	3
>1.66 x state average, but ≤ 1.99 x state average.	4
≥ 2 x state average.	5

Source: Adapted from USEPA1994

To calculate the economic ranking, the total population in each block group living below poverty should be calculated. The scale presented in Table 12 was used to assign a ranking between 1 and 5 for each block group.

Table 12. Scoring Criteria for Low-Income Populations

Percentage of Low-Income Residents in Block Group	Economic Ranking
≤ state average.	1
> state average, but ≤ 1.33 x state average.	2
>1.33 x state average, but ≤ 1.66 x state average.	3
>1.66 x state average, but ≤ 1.99 x state average.	4
≥ 2 x state average.	5

Source: Adapted from USEPA1994

The results of the environmental justice index analysis, indicate a cluster of block groups north and west of the Wyoming Gate of KAFB that have index numbers ranging from 16 (low) to 80 (high). The Isleta Pueblo lands south of KAFB have an index of 20, which indicates a low to moderate concern. This is a result of the low population density on the Isleta Pueblo. However, Isleta Pueblo is, in reality, of high concern to SNL, which illustrates that index numbers should not be relied on solely as indicators of environmental justice concerns.

2. Identifying and Analyzing Potential Adverse Impacts

To illustrate the entire environmental justice analysis process, a scenario was developed involving potential adverse impacts to the public. The scenario involved a release of contamination with the potential to impact the block groups shown in Figure 2. Application of the processes being illustrated would begin with identifying hazards, such as toxic chemicals or radioactive sources, to human health and the environment. This is followed by modeling the effects of an airborne release of the materials based on material form, type, and quantity as well as prevailing meteorological conditions. The resulting plume model can then be used to identify potentially impacted block groups. The population falling inside the block groups is defined as the potentially adversely impacted population.

3. Characterizing the Potentially Impacted Population

Once the potentially adversely impacted population is identified, it can be characterized with respect to race, ethnicity, and income. The same assumptions and methodology used in identifying the baseline minority and low-income populations were used here. The results indicate that 34 percent of the potentially adversely impacted population are minorities, and 12 percent are low-income. Figure 2 illustrates the potentially impacted population for the case study. A 10-mile radius is used in Figure 2 instead of a 50-mile radius because it better illustrates the potentially impacted population in detail.

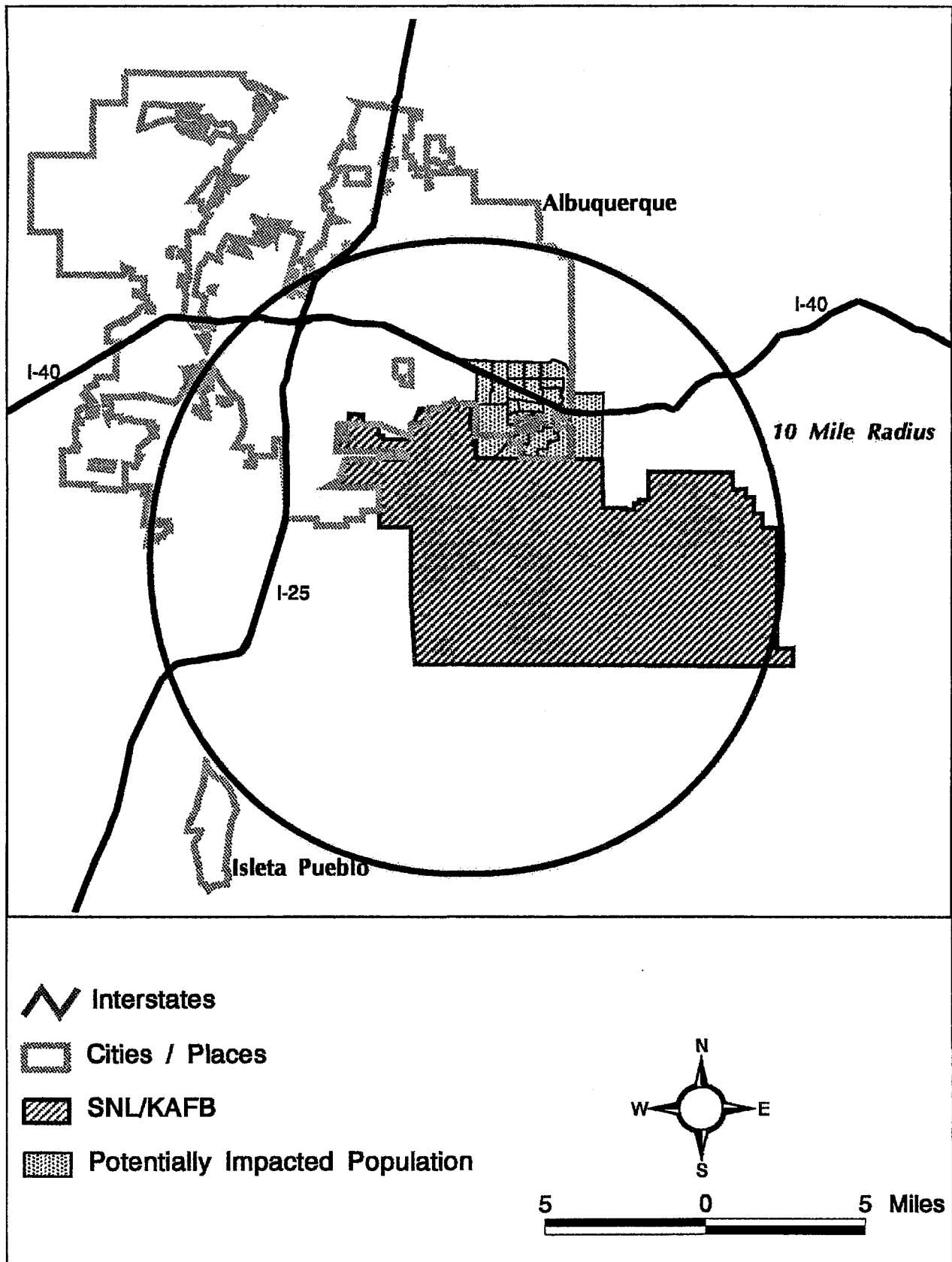


Figure 2 Potentially Impacted Population for SNL/NM Case Study.

4. Comparing the Potentially Impacted Population to the Baseline Population

To determine whether minority and/or low-income populations are being disproportionately impacted, the impacted population is compared to the baseline population. Table 13 shows the demographic data for the two populations.

Table 13. 1990 Demographic Statistics For 80-kilometer (50-mile) Radius Study Area and Potentially Impacted Population		
Population	50-mile Study Area	Potentially Impacted Population
White	465,294	22,027
Black	14,597	1,037
Eskimo, Aleut	105	5
American Indians	29,834	799
Asian & Pacific Islander	8,052	679
Other	91,601	2,726
Total Population	609,483	27,273
Hispanic Origin	228,793	6,990
% Minority	46%	34%
% Low-Income	14%	12%
* Persons who identified themselves as Hispanic also identified themselves by race.		
Source: Adapted from USBC, 1991		

Upon review of the data presented in Table 13, there does not appear to be a potential for minority or low-income populations to be disproportionately adversely impacted. In the area of potentially impacted population, 34 percent of the population is minority (compared to the state average of 49 percent) and 12 percent of the population is low-income (as compared to the state average of 21 percent). The environmental justice index for this area shows an index value of "low" (see Appendix A, Figure 17). This supports the conclusion that minority and/or low-income individuals would not be disproportionately adversely impacted.

Although there does not appear to be a potential for disproportionately impacting minority or low-income individuals in the potentially impacted area, there are three census block groups that have a higher-than-average percentage of minorities. These groups are illustrated in Figure 3. By identifying these populations in the demographic analysis and discussing them in an environmental justice Issues Management Plan, public involvement efforts can be effectively directed towards these individuals.

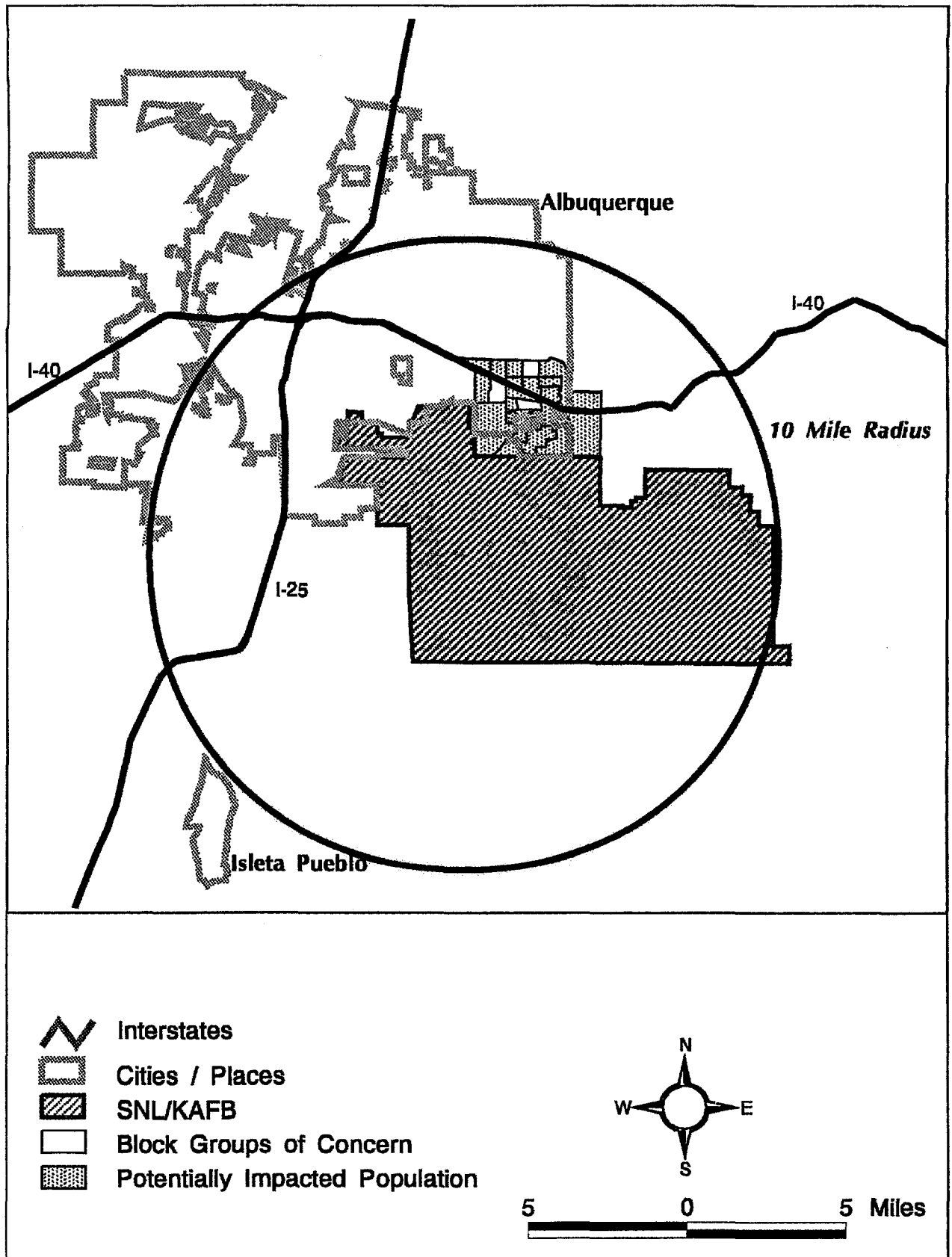


Figure 3 Block Groups of Concern

5. Developing an Environmental Justice Issues Management Plan

If the above analysis had determined that there was a potential for minority and/or low-income communities to be disproportionately adversely impacted, it would be appropriate to develop an environmental justice Issues Management Plan (IMP). Although an actual plan was not developed for the hypothetical scenario used in this report, the guidance provided here should be used.

To assist in developing an environmental justice IMP, the Community Involvement and Issues Management (CIIM) Program Office at SNL should be consulted. This office is responsible for involving the public in the decision-making process for any actions that may affect them or their communities. The CIIM Program Office has issued a document entitled *Public Involvement Preferred Process: A Guidebook for Listening To and Interacting With Diverse Publics* (SNL, 1996), which details many ways Sandia activities could impact the community, and provides a extensive guide to the public involvement process.

An IMP need not be a long or complex document. The issues presented in Tables 6 through 8 should be examined to see if they apply to a particular project. For this case study, the issues determined to be relevant are identified and addressed in Figure 4. In general, the issues identified in the IMP would be incorporated into the public participation plan for any proposed Sandia project.

Environmental Justice Issues Management Plan	
Issue	
Background:	
Project:	<i>SNL Case Study</i>
Is there any potential for off site releases?	<i>Yes, based on hypothetical risk assessment.</i>
Has a demographic analysis been performed?	<i>Yes</i>
Has an environmental justice index analysis been performed?	<i>Yes</i>
Has a risk analysis been performed?	<i>Yes, (see USDOE, 1996)</i>
Affected Populations	
Identify the potentially impacted populations.	<i>The demographic analysis indicated 34 % of the population are minorities and 12% are low-income in the case study area. The demographic analysis indicated three census block groups with higher minority populations than the state average of 49%. This includes Blacks, Hispanics, and Asian and Pacific Islander populations.</i>
Coordination with the Community Involvement and Issues Management Program (CIIM) Office	
Has the CIIM Office been contacted?	<i>Yes</i>
What are the recommendations of CIIM?	<i>Modify location of public meetings.</i>
Public Participation Process	
How will the affected groups be engaged in the public participation process?	<ol style="list-style-type: none"> <i>1) For this action we will be modifying the typical public meeting place from the BDM facility to the local school.</i> <i>2) We've contacted the ministers of the churches in this neighborhood.</i> <i>3) We've had meeting announcements printed in Spanish and English, and placed in community spaces.</i>
Integration with NEPA	
How will input from these affected groups be incorporated into the NEPA document?	<i>We will take all oral input from the public meeting and place it into an appendix of the final NEPA document.</i>

Figure 4. Sample Issues Management Plan for SNL Case Study

Conclusions

Identifying and addressing environmental justice concerns as required by Executive Order 12898 and the National Environmental Policy Act (NEPA) represent a challenge for SNL because it is located in a culturally diverse area. This report described a process for addressing environmental justice at SNL. The five-step process has been integrated with the NEPA process in accordance with the procedures contained within NEPA.

As part of this report, a demographic analysis was prepared for SNL. This analysis could be used as a baseline for anyone wishing to perform an environmental justice analysis for a new project or activity at SNL. In addition, a community profile was prepared for SNL. Using both the baseline demographic analysis and the community profile will provide project managers with a detailed profile of potentially impacted population(s). These populations can be brought into the decision-making process through the involvement of the Community Involvement and Issues Management Program Office (CIIM) at SNL. Finally, a case study for SNL was presented to illustrate the entire process.

The five-step process described in this report provides SNL managers with an effective mechanism to maximize the objective and subjective aspects of environmental justice during both the data gathering and the analysis stages. Rather than stopping with the preparation of a technical demographic analysis, this process uses the technical findings as a basis for customizing the public participation process to potentially affected population(s). Information received from this public participation process should foster better community relations between Sandia and its neighbors, and result in better decisions by the DOE and SNL.

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USEPA (U.S. Environmental Protection Agency), 1995, *Environmental Justice Strategy: Executive Order 12898*. EPA/200-R-95-002, Office of Environmental Justice (OEJ).

USEPA (U.S. Environmental Protection Agency), 1996, *Review Draft Guidance for Incorporation Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. Office of Federal Activities.

Web Resources

The following web sites provide online information on environmental justice:

- Ecojustice Network homepage:
<http://www.igc.apc.org/envjustice/>
- Environmental Justice Contact listing (EPA):
<http://www.epa.gov/docs/oejpubs/strategy/contacts.txt.html>
- Environmental Justice homepage (EPA):
<http://es.inel.gov/oeca/oj.html>
- Environmental Justice Index Mapping Project (EPA):
http://www.epa.gov/region02/html/gis/ej_gis.html
- Environmental Justice resources (listing):
<http://www.igc.apc.org/envjustice/ejresources/>
- Executive Order 12898:
<http://cti1.volpe.dot.gov/fhwa/eomemo.html>
- National Environmental Justice Advisory Council (NEJAC) homepage:
<http://www.prcemi.com:80/nejac/>
- People of Color Environmental Groups Directory:
<http://www.igc.apc.org/envjustice/pocdir/>

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Appendix A

Demographic Analysis of Sandia National Laboratories/ New Mexico

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INTRODUCTION

This baseline demographic analysis (based on 1990 U.S. Census data) of the region surrounding Sandia National Laboratories (SNL) is intended to help SNL project managers address environmental justice issues. Results of the analysis are presented in two scales: the 80-kilometer (50-mile) scale provides a broad view of the regions surrounding SNL, while the 16-kilometer (10-mile) scale provides a more detailed view of the Albuquerque metropolitan area and the immediate areas surrounding SNL. In addition to providing the aggregate results for minorities, each individual minority classification is discussed. This is particularly useful for developing an environmental justice issues management plan (IMP).

The results presented in this analysis are baseline results. For future use, project-specific information would need to be overlaid with the baseline results to determine if potential environmental justice concerns exist.

ETHNIC DISTRIBUTION

Distribution of Minority Individuals Near SNL

According to 1990 census data, approximately 280,362 minority individuals reside in the 80-km (50-mile) study area, which represents 46 percent of the total population. Figures A-1 and A-2 illustrate the census block groups containing minority individuals. Block groups in which zero to 49 percent of their individuals are minority are not considered "minority" block groups for the purpose of this analysis (because they do not exceed the state average of 49 percent of minority individuals).

Block groups with potential environmental justice concerns are those with an above average percentage of minority individuals. For example:

Block groups in which _____ of its individuals are minorities	exceed the state average by a factor of:
50 to 65 %	up to 1.33
66 to 81 %	up to 1.65
82 to 98 %	up to 2.0
99 to 100 %	over 2.0

Block groups with higher percentages of minorities have a greater potential for environmental justice concerns.

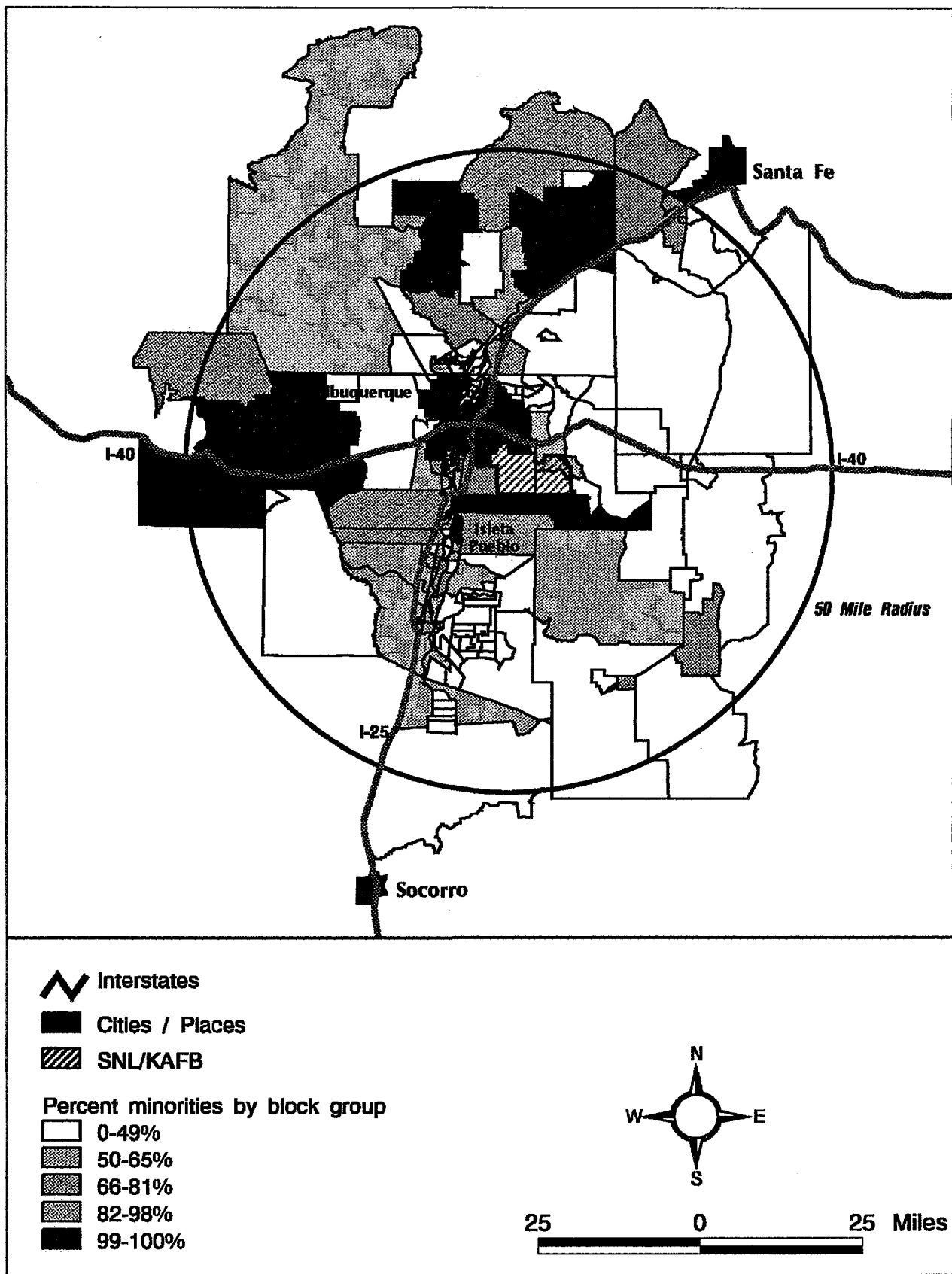


Figure A-1 Minority Population (50 Mile Radius).

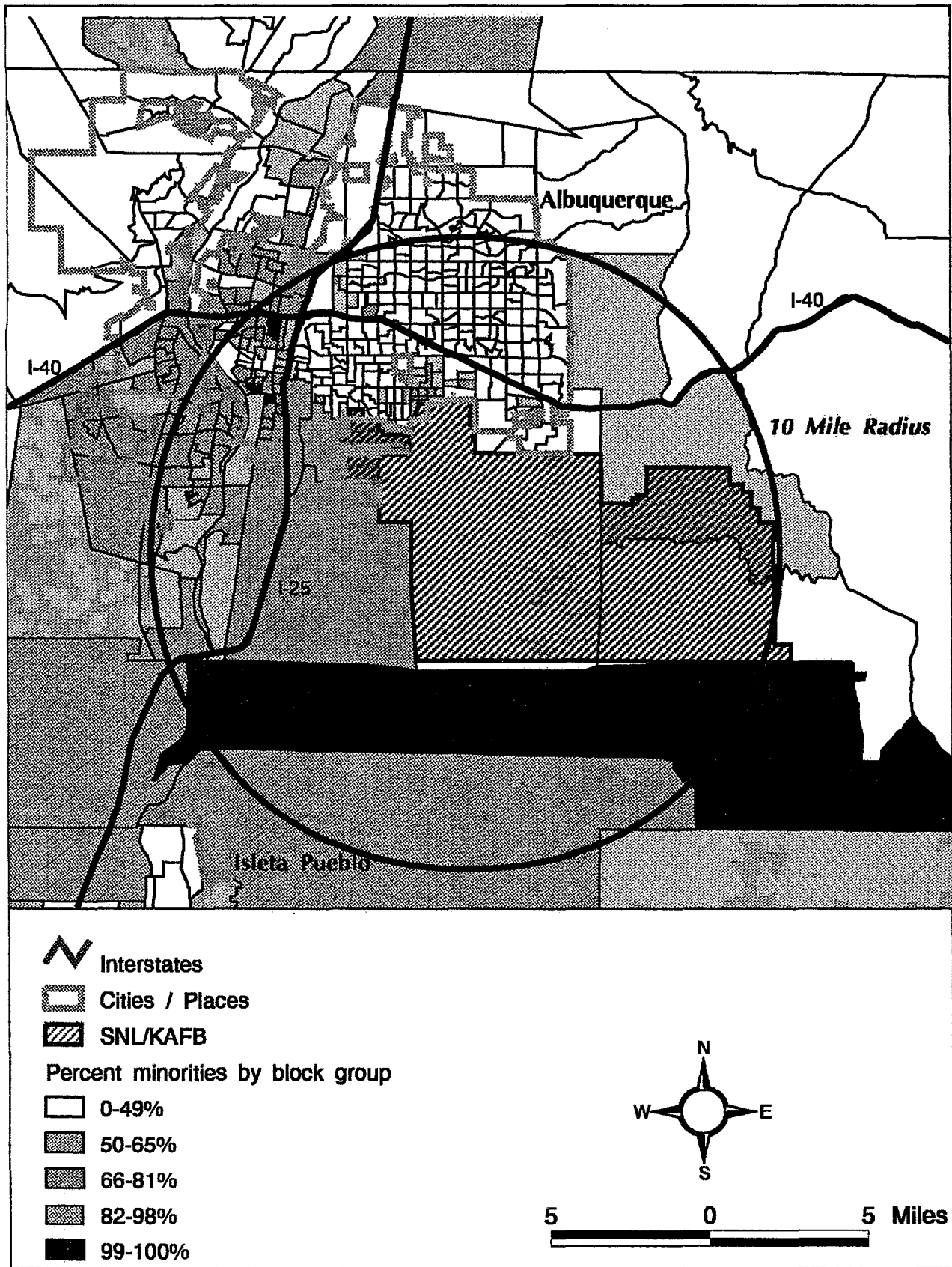


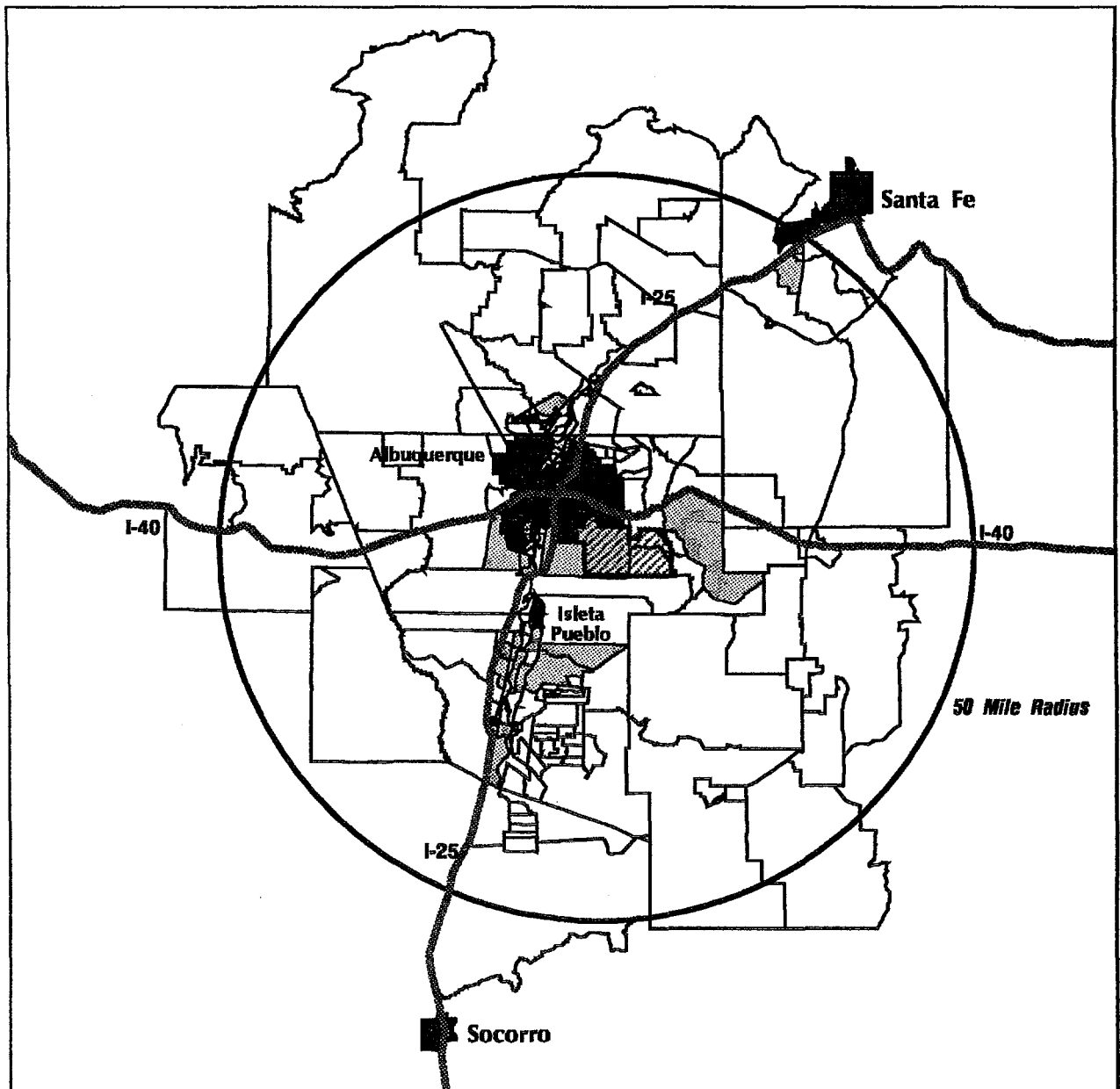
Figure A-2 Minority Population (10 Mile Radius).

Distribution of Hispanic Individuals Near SNL

Within the 50-mile study area, 228,793 persons identified themselves as being of Hispanic origin (USBC, 1991), which represents approximately 37.5 percent of the population. Figures A-3 and A-4 illustrate the distribution of Hispanics in the census block groups. Note that the numbers in the figures refer to individuals and not percentages.

Areas of Hispanic population lie generally within historical settlement patterns, which were based upon the land grant system established after the reconquest of New Mexico in 1693. Hispanic communities and individuals were granted land holdings along established "trails" such as the Camino Real. One such trail, Tijeras Canyon, was a major artery connecting the high plains in Eastern New Mexico with the Rio Grande Valley. Many Hispanic settlements developed in the Rio Grande Valley, on land once held by Pueblo Indian peoples, and are still centers of Hispanic population: Belen, Tome, Los Lunas, Peralta, Bernalillo, Algodones.

The Albuquerque metropolitan area is divided into four quadrants roughly divided by Central Avenue running east-west and the Atcheson, Topeka, and Santa Fe (ATSF) Railroad lines running north-south. Historic settlement patterns developed in small agriculturally based communities located along the Rio Grande and its flood plains. These population areas are west of Interstate 25 in the northwest and southwest quadrants of Albuquerque commonly referred to as the "North Valley" and "South Valley," respectively. In the North Valley, Los Ranchos de Albuquerque and the adjacent census block groups have a higher-than-average concentration of Hispanics. Further south lies "Old Town," the original center of Albuquerque, which also has a higher-than-average concentration of Hispanic people. However, the highest concentrations of Hispanic people are located in the South Valley. The census block groups having the largest numbers of Hispanic people are located west of Isleta Boulevard, and south of Blake Road.




 Interstates

 Cities / Places

 SNL/KAFB

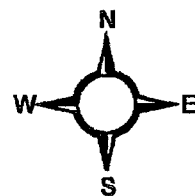
Number of Hispanic individuals by block group

 0 - 689

 690 - 1379

 1380 - 2068

 2069 - 2758



25 0 25 Miles



Figure A-3 Hispanic Population (50 Mile Radius).

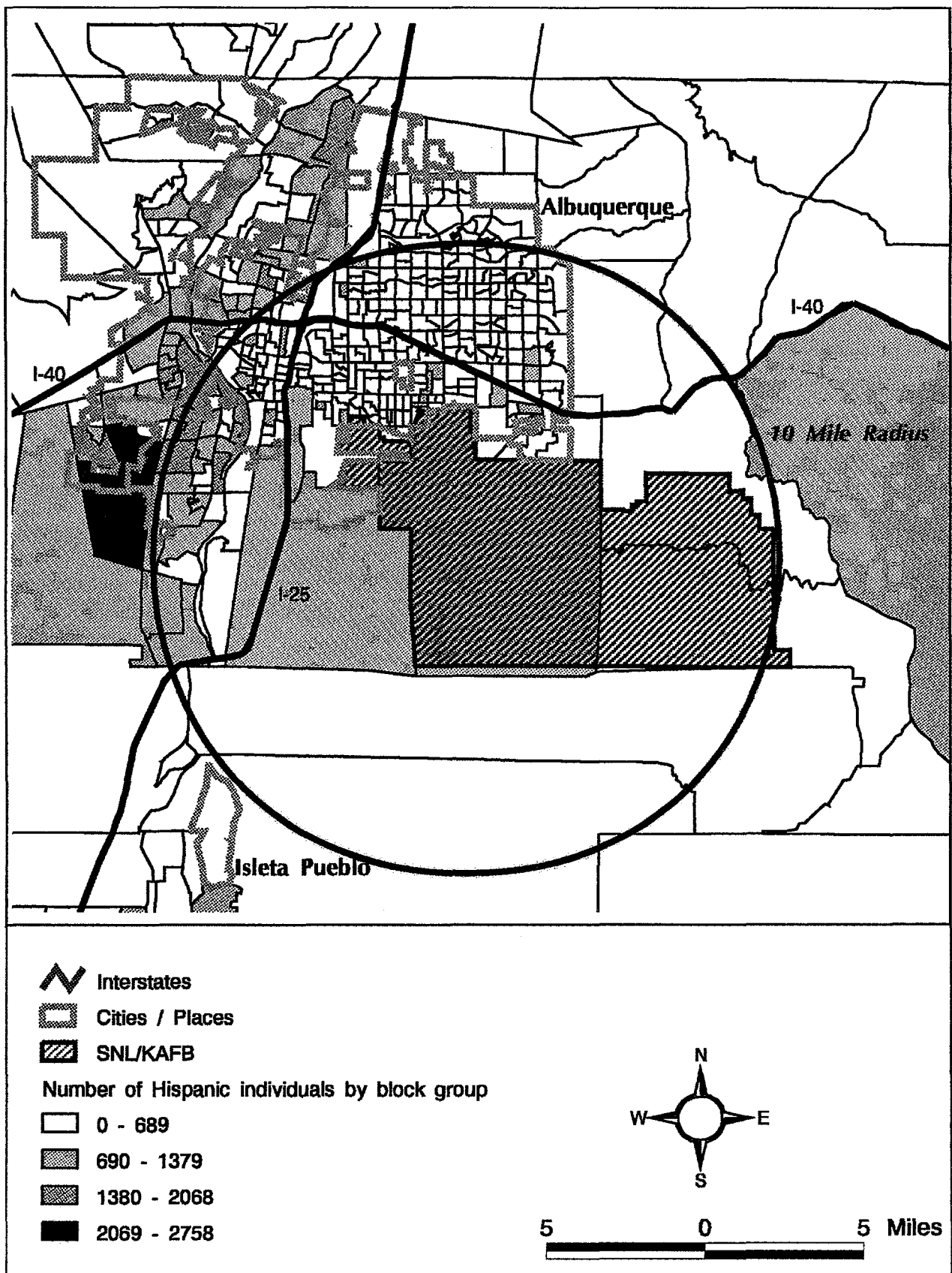


Figure A-4 Hispanic Population (10 Mile Radius).

Distribution of American Indian Individuals Near SNL

Within the 50-mile study area, 29,834 persons identified themselves as being American Indians (USBC, 1991), which represents approximately 5 percent of the population. Eleven pueblos/reservations and two joint-use areas are located within the study area. These areas are listed in Table A-1 along with the number of people residing in each area.

Figure A-5 shows the location of these areas in relation to SNL. Isleta Pueblo is probably the most important pueblo from the standpoint of SNL environmental justice concerns. The Isleta Pueblo and Isleta Pueblo Trust Lands are located adjacent to the southern boundary of KAFB. In addition, Isleta Pueblo represents the largest land holding of a minority population adjacent to KAFB.

Table A-1. American Indian Reservations and Trust Lands within Study Area

Reservation/Pueblo Name	1990 Population
Acoma Pueblo & Trust Lands	2590
Canoncito Reservation	1189
Cochiti Pueblo	1342
Isleta Pueblo & Trust Lands	2915
Jemez Pueblo	1750
Laguna Pueblo & Trust Lands	3731
Sandia Pueblo	3971
San Felipe Pueblo	2434
Santa Ana Pueblo	593
Santo Domingo Pueblo	2979
Zia Pueblo	637
San Felipe/Santa Ana Joint Use Area	0
San Felipe/Santo Domingo Joint Use Area	0

Source: USBC, 1991

Figures A-6 and A-7 indicate the census block groups containing American Indian individuals. Note that the numbers in the figures refer to individual persons and not percentages. Many of the pueblos and reservations are sparsely populated; however, this does not mean that these areas are not important from an environmental justice standpoint.

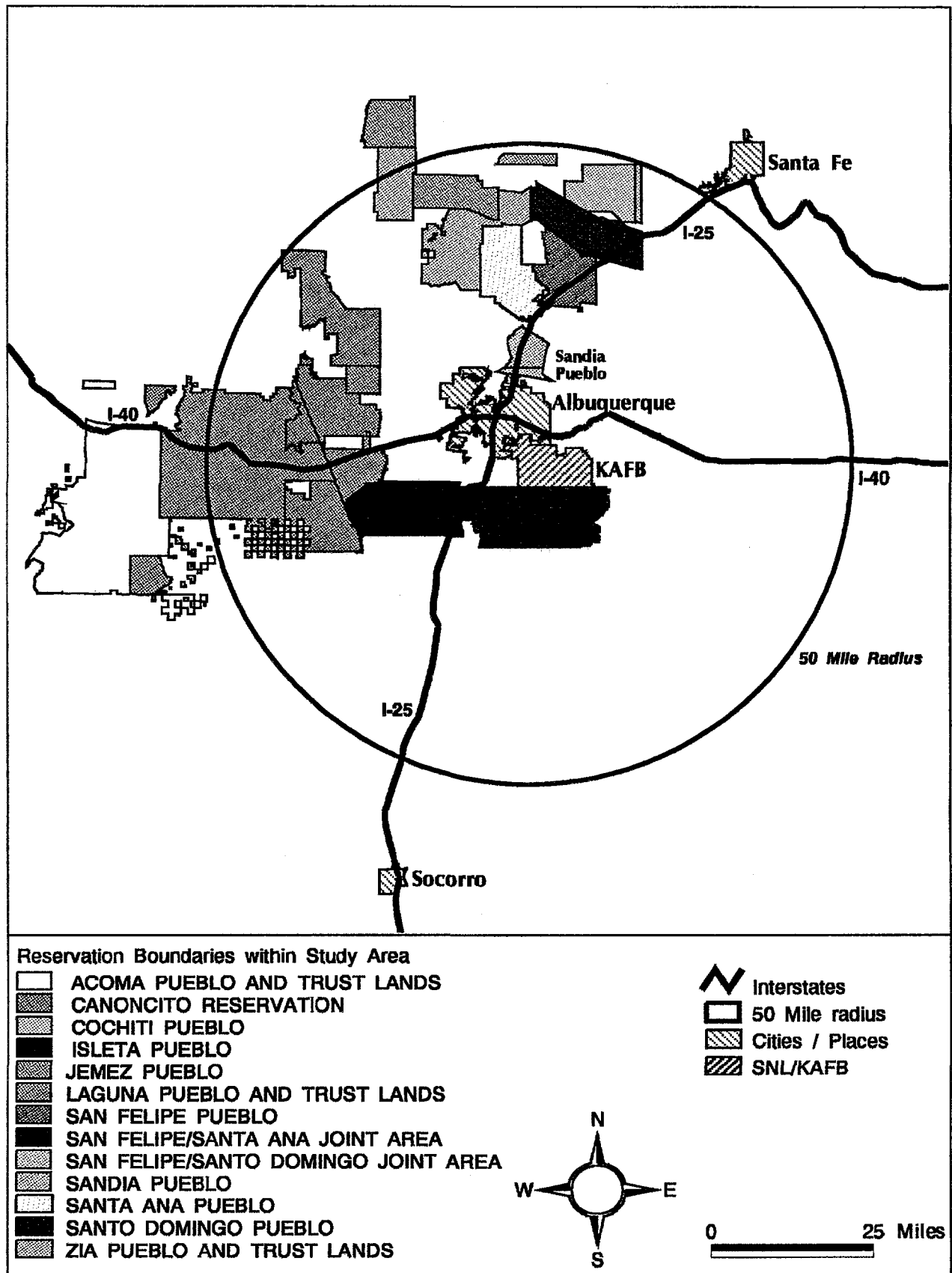


Figure A-5 American Indian Reservations and Trust Lands

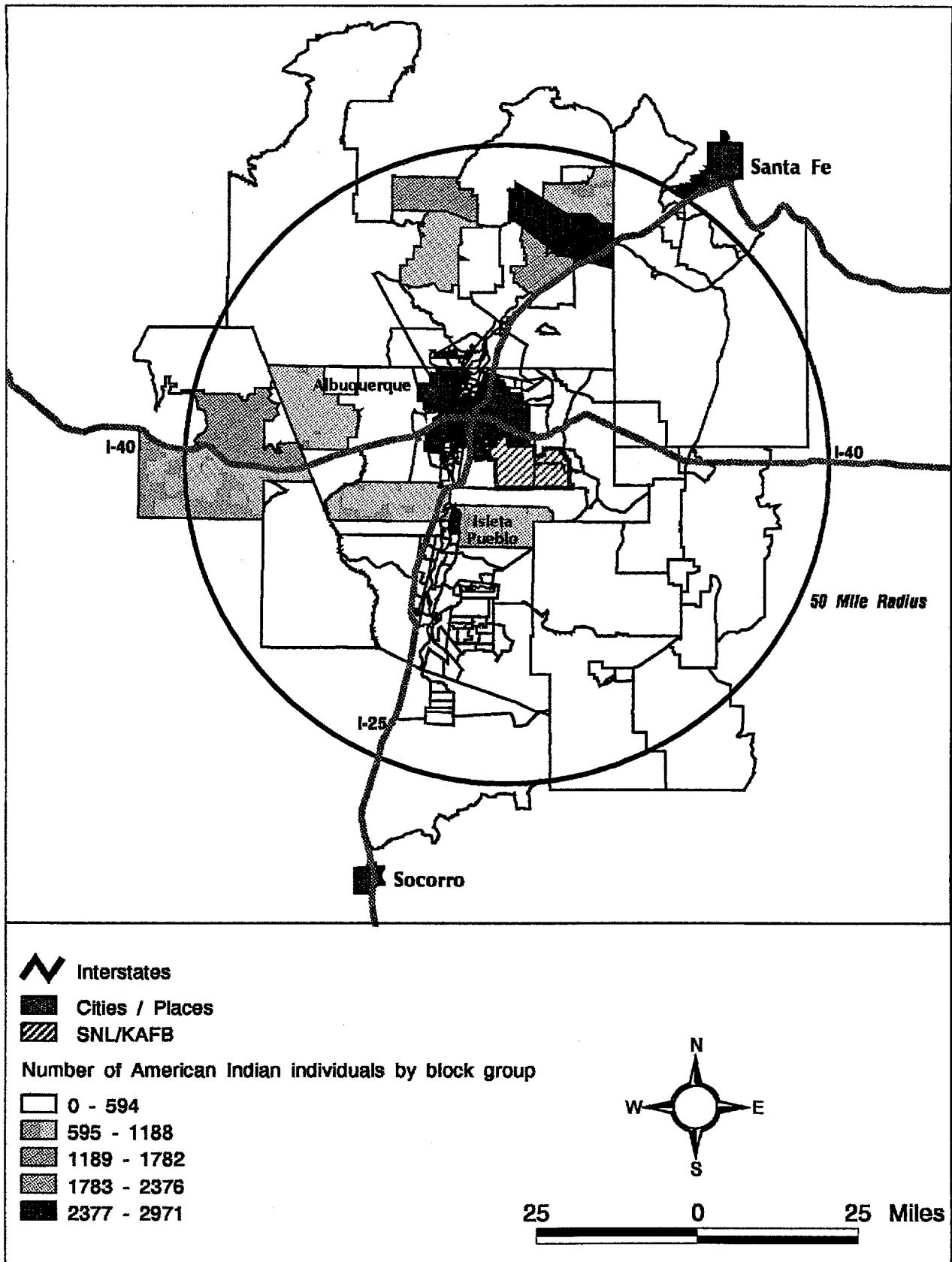


Figure A-6 American Indian Population (50 Mile Radius).

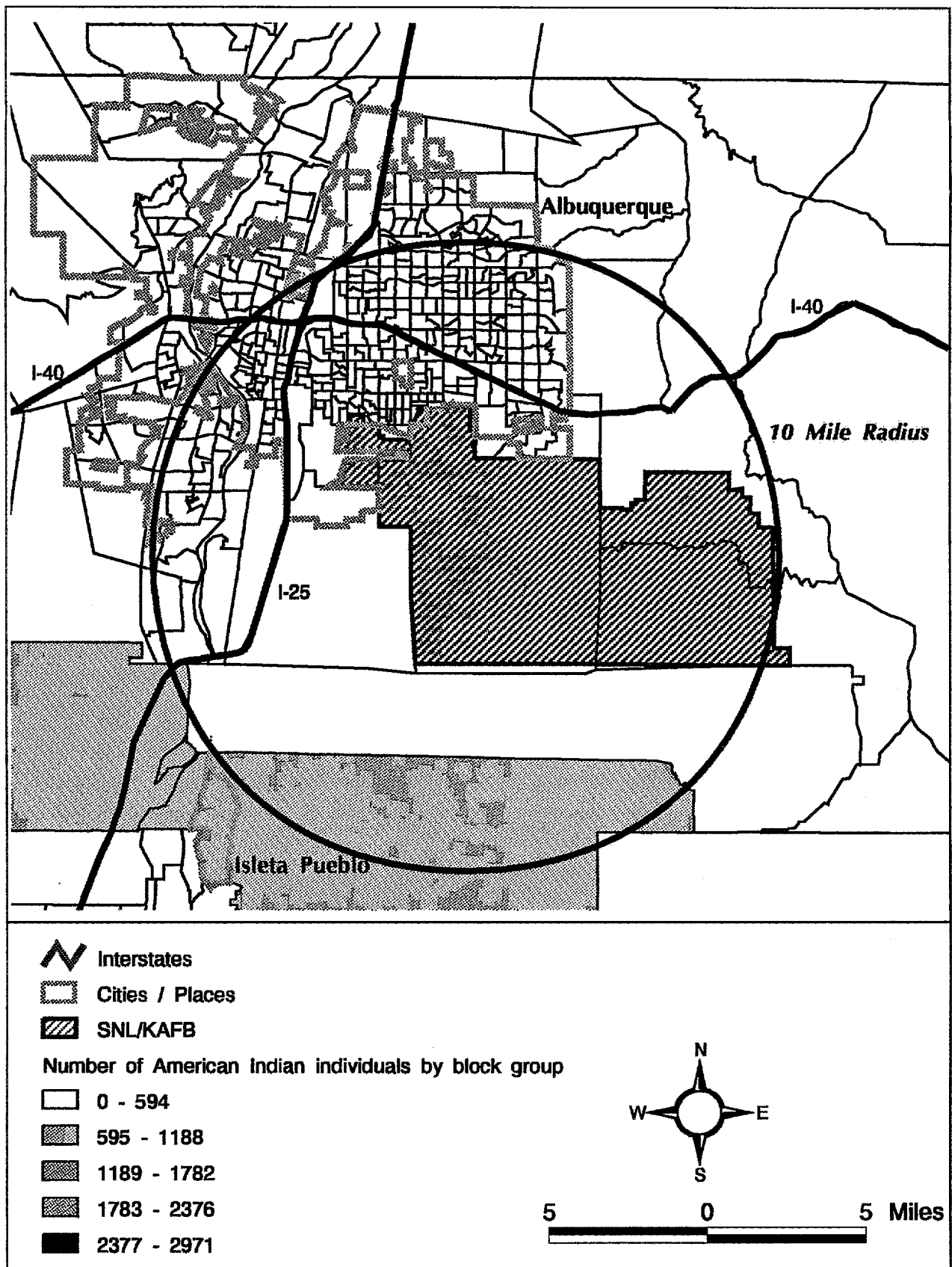


Figure A-7 American Indian Population (10 Mile Radius).

Distribution of Asian or Pacific Islander Individuals Near SNL

Within the 50-mile study area, 8,025 persons identified themselves as being Asian or Pacific Islander (USBC, 1991), which represents approximately one percent of the population. Figures A-8 and A-9 illustrate the census block groups containing Asian or Pacific Islander individuals. Note that the numbers in the figures refer to individual persons and not percentages.

One of the highest concentrations reside in base housing located on KAFB. These individuals are associated with the U.S. Air Force. Additional areas of high concentration of Asian or Pacific Islander individuals include a block group northeast of the Eubank gate of KAFB bordered by Southern Blvd. and I-40 and Morris and Juan Tabo; three block groups between Carlisle and I-25, and south of Lomas; and a single census block near Montgomery and Carlisle.

Distribution of Black Individuals near SNL

Within the 50-mile study area, 14,597 persons identified themselves as being "Black" (USBC, 1991), which represents approximately two percent of the population. Figures A-10 and A-11 illustrate the census block groups containing Black individuals. Note that the numbers in the figures refer to individual persons and not percentages.

The highest concentrations of Black individuals are located on or near KAFB. Many Blacks are associated with the U.S. Air Force and reside in base housing located on KAFB. To the west of KAFB, just beyond the city's airport, are smaller Black neighborhoods.

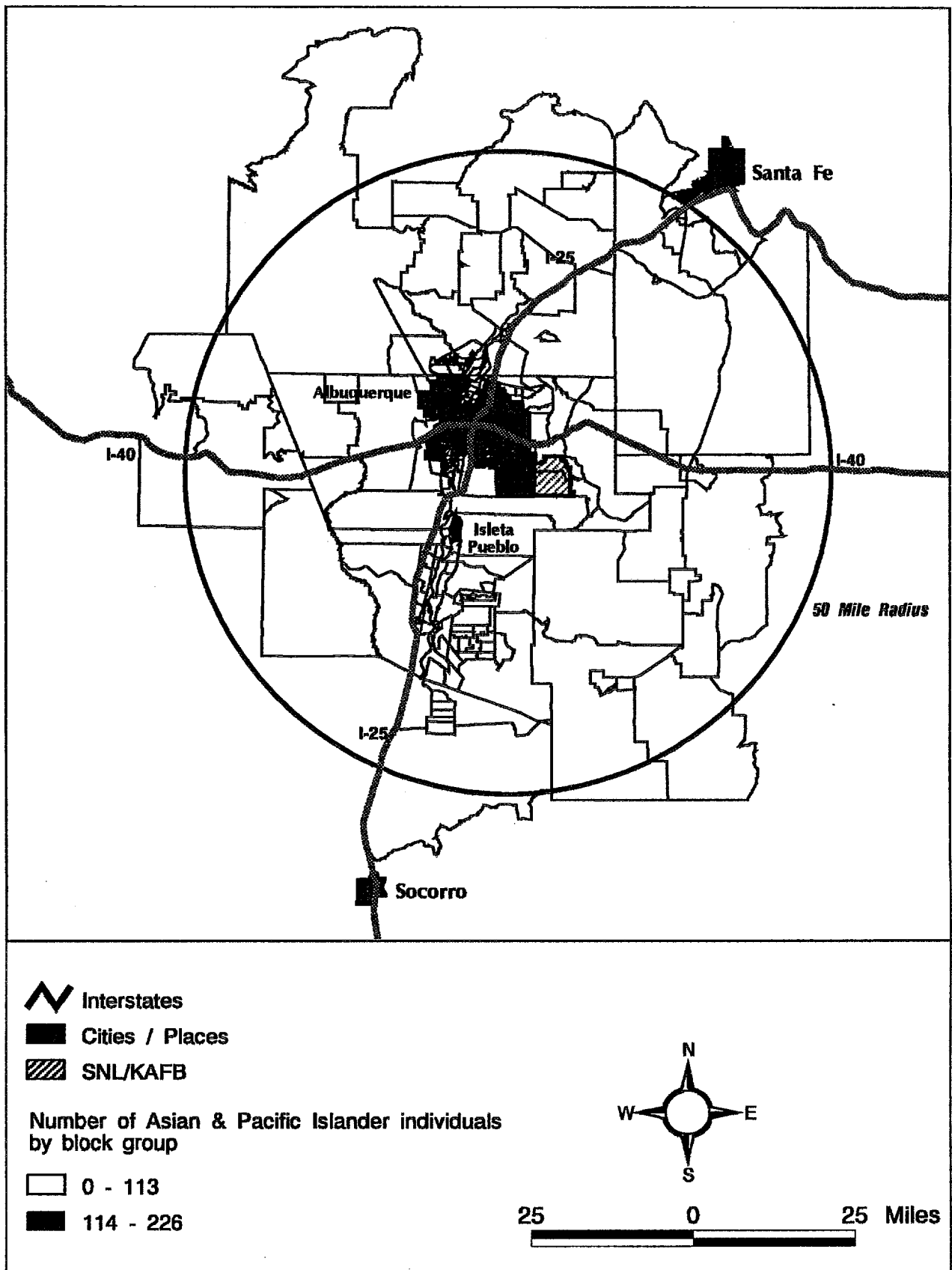


Figure A-8 Asian & Pacific Islander Population (50 Mile Radius).

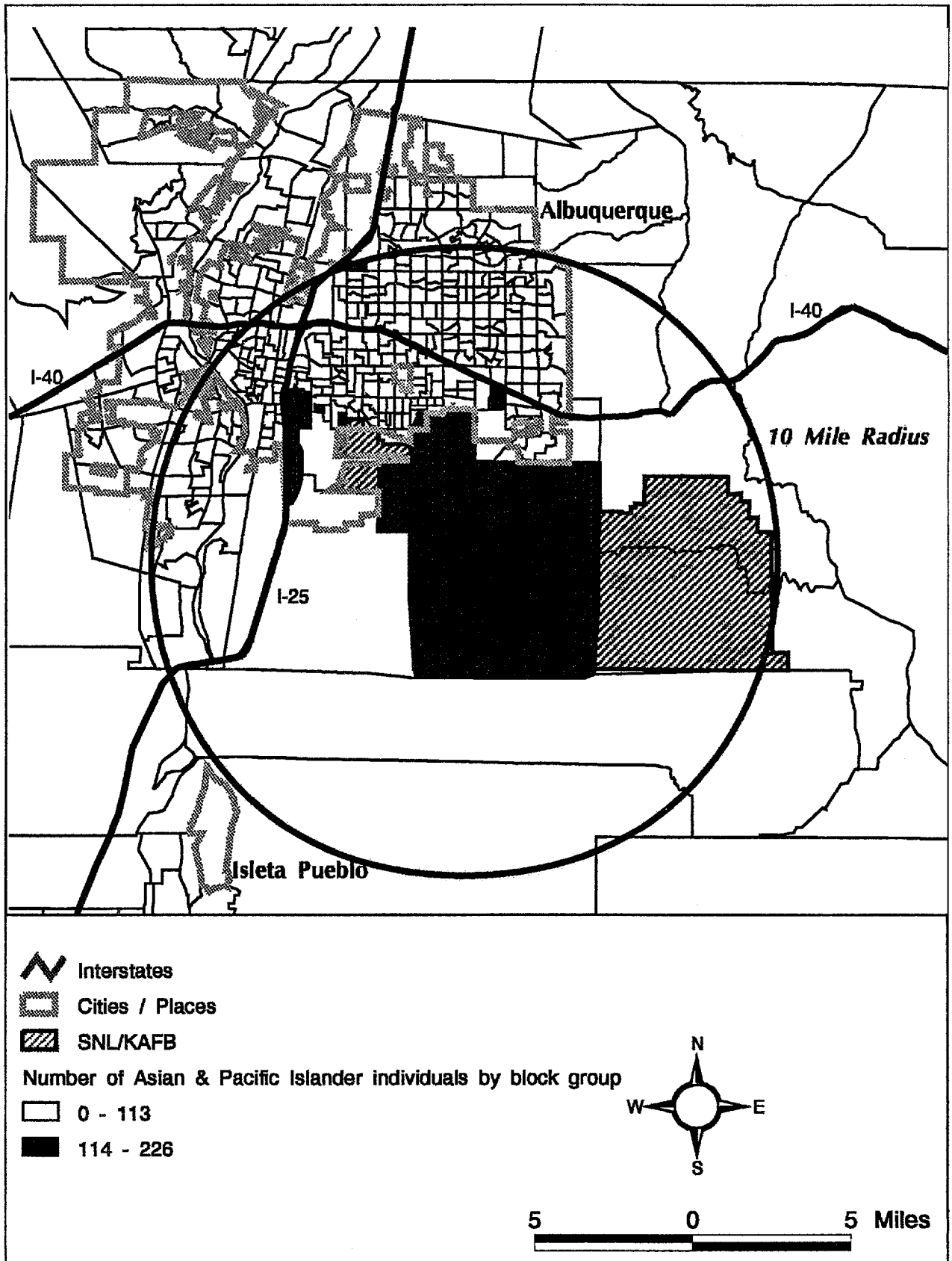


Figure A-9 Asian & Pacific Islander Population (10 Mile Radius).

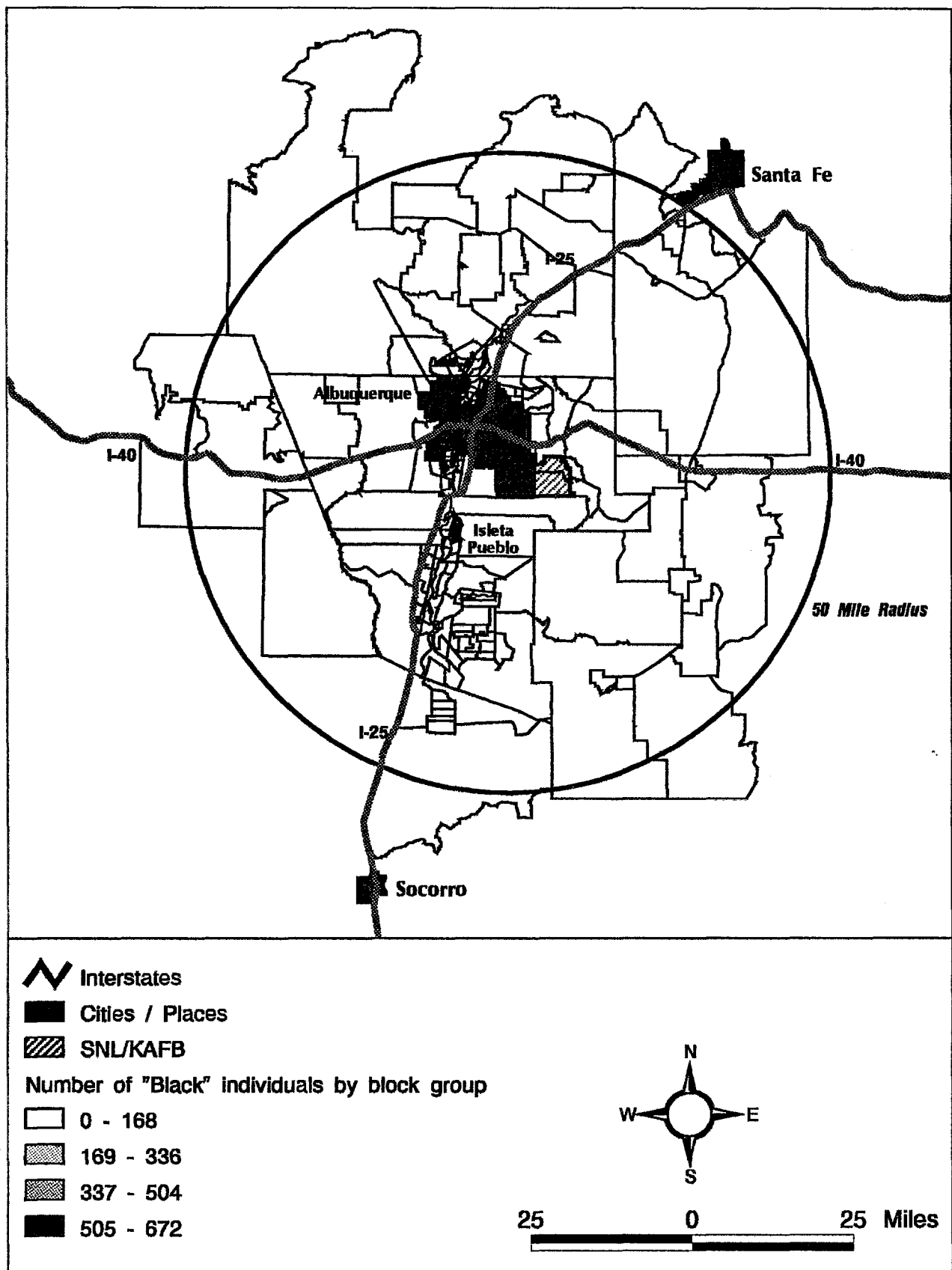


Figure A-10 "Black" Population (50 Mile Radius).

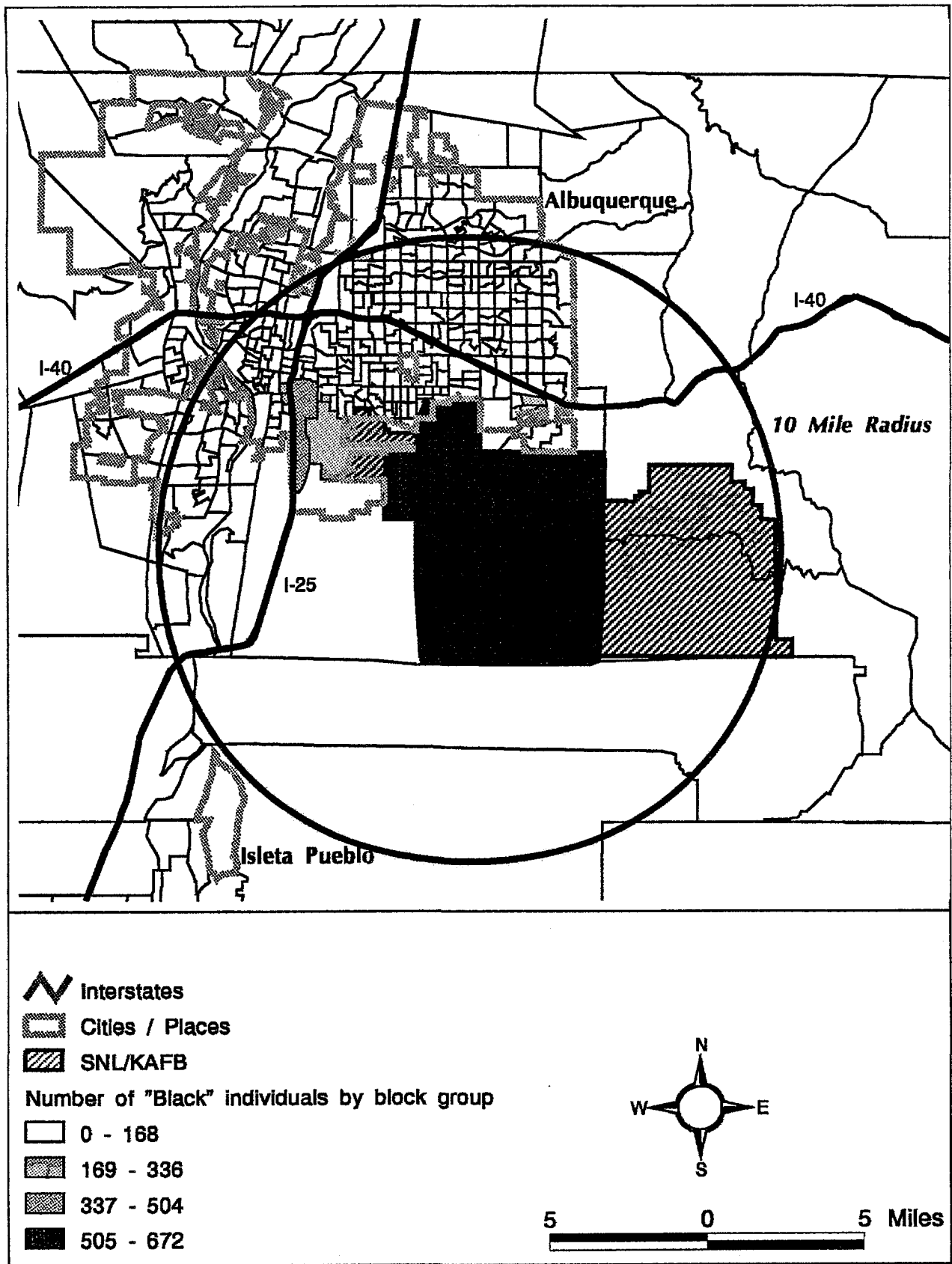


Figure A-11 "Black" Population (10 Mile Radius).

Distribution of "Other" Minority Populations Near SNL

Within the 50-mile study area, 91,601 persons identified themselves as being an "other" race (USBC, 1991), which represents approximately 15 percent of the population. Figures A-12 and A-13 illustrate the census block groups containing "other" individuals. Note that the numbers in the figures refer to individual persons and not percentages.

Within the State of New Mexico, 190,352 persons identified themselves as "other" (USBC, 1991). Of those people, 186,968 (98%) were of Hispanic origin. This phenomenon occurs because many Hispanics do not see themselves as "White," a category they perceive as designated for European-Americans only. Since none of the other categories on the census questionnaire provide an alternative, these people mark the "other" category, and then identify themselves as "Hispanic" in later questions.

The concentrations of "other" populations to the west of SNL are Hispanic neighborhoods originally settled as rural agricultural villages along the Rio Grande under Spanish and Mexican rule, and continuously inhabited since the late 18th century. The "other" concentrations to the east of SNL are comprised of more recent Hispanic immigrants from Central and South America who rent low income housing as an initial staging area for entry into the Albuquerque job market.

As mentioned earlier, the distribution of "other" minority individuals near SNL mirrors the distribution of Hispanic individuals. Figures A-12 and A-13 show this distribution for the 50- and 10-mile views of the study area.

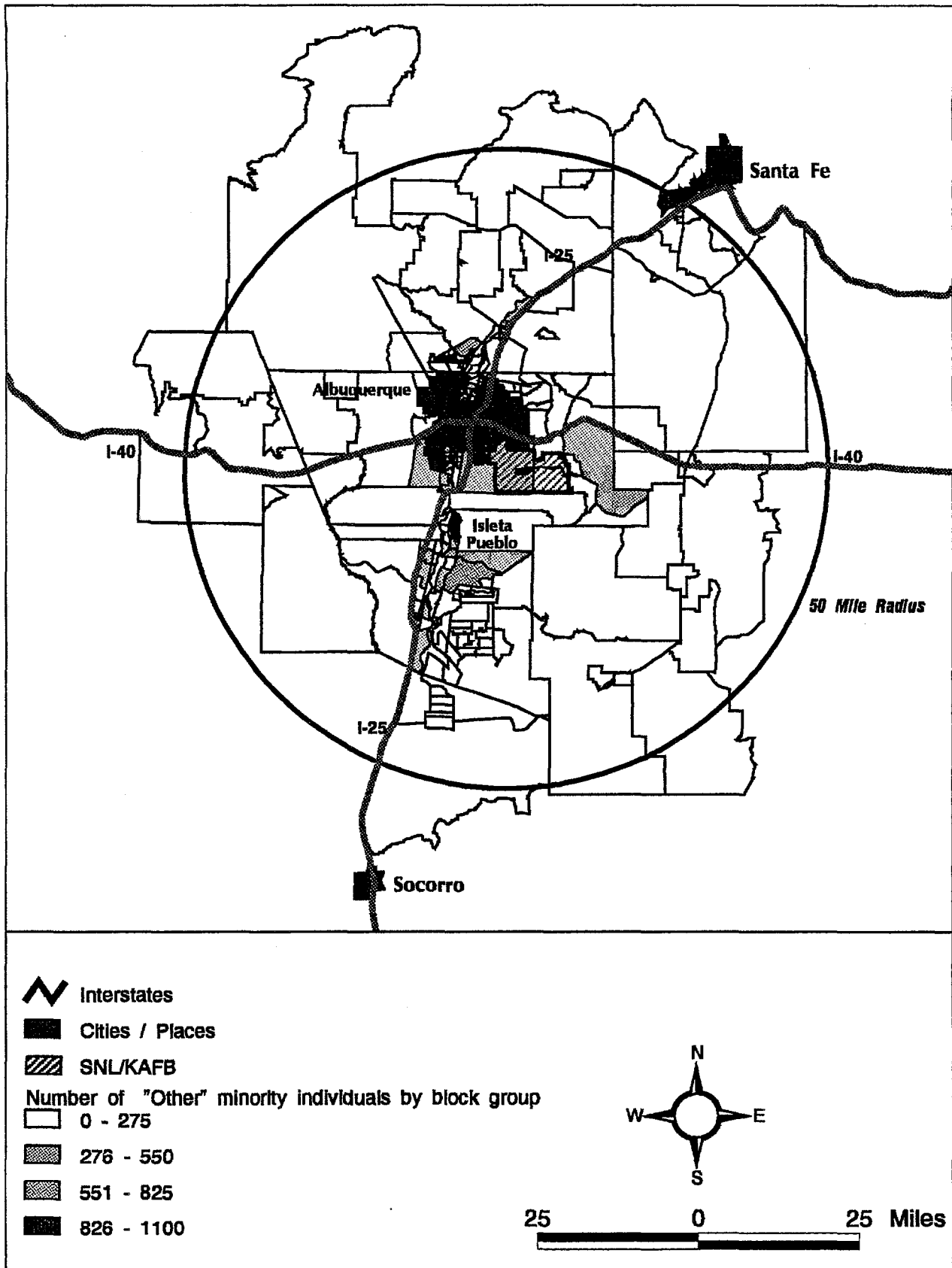


Figure A-12 Other Minority Population (50 Mile Radius).

INCOME

Distribution of Low-Income Populations near SNL

Within the 50-mile study area, approximately 85,328 persons were identified as being low-income (USBC, 1991), which represents approximately 14 percent of the population. Figures A-14 and A-15 illustrate the census block groups containing low-income individuals. Block groups with less than 22 percent low-income individuals are not considered low-income block groups for the purpose of this analysis because they contain less than or equal to the state average (21%) of low-income individuals.

Block groups with potential environmental justice concerns are those with an above average percentage of low-income individuals. Block groups in which 22 to 28 percent of its individuals are low-income exceed the state average by up to 33 percent. Block groups in which 29 to 35 percent of its individuals are low-income exceed the state average by up to 65 percent. Block groups in which 36 to 41 percent of the individuals are low-income exceed the state average by up to two times the state average. Block groups in which 42 to 100 percent of its individuals are low-income have more than twice the state average for percentage of minorities. Block groups with higher percentages of low-income individuals have a greater potential for environmental justice concerns.

This distribution of low-income population appears to have a strong correlation to ethnic populations of Blacks, Native American, and Hispanics. For example, the high concentrations of low-income population west of Albuquerque in Figure 15 (near the 50-mile radius limit) indicate the Pueblo of Laguna and its outlying Native American villages. Similarly, Isleta Pueblo, south of the city, has a high percentage of low-income individuals. To the southeast of SNL, the rural Hispanic villages of Tajiue, Torreon, and Escobosa are also low-income. To the north of SNL, high concentrations of low-income populations are located in the Pueblos of Jemez, Santo Domingo, and Cochiti, as well as in the rural Hispanic villages of La Cienega and Jemez Springs.

High concentrations of low-income populations are found west of SNL, along the Rio Grande in the predominantly Hispanic South Valley neighborhoods. Also, small pockets of low-income population reflect Black neighborhoods such as the Kirtland Addition and the South Broadway/East San Jose area.

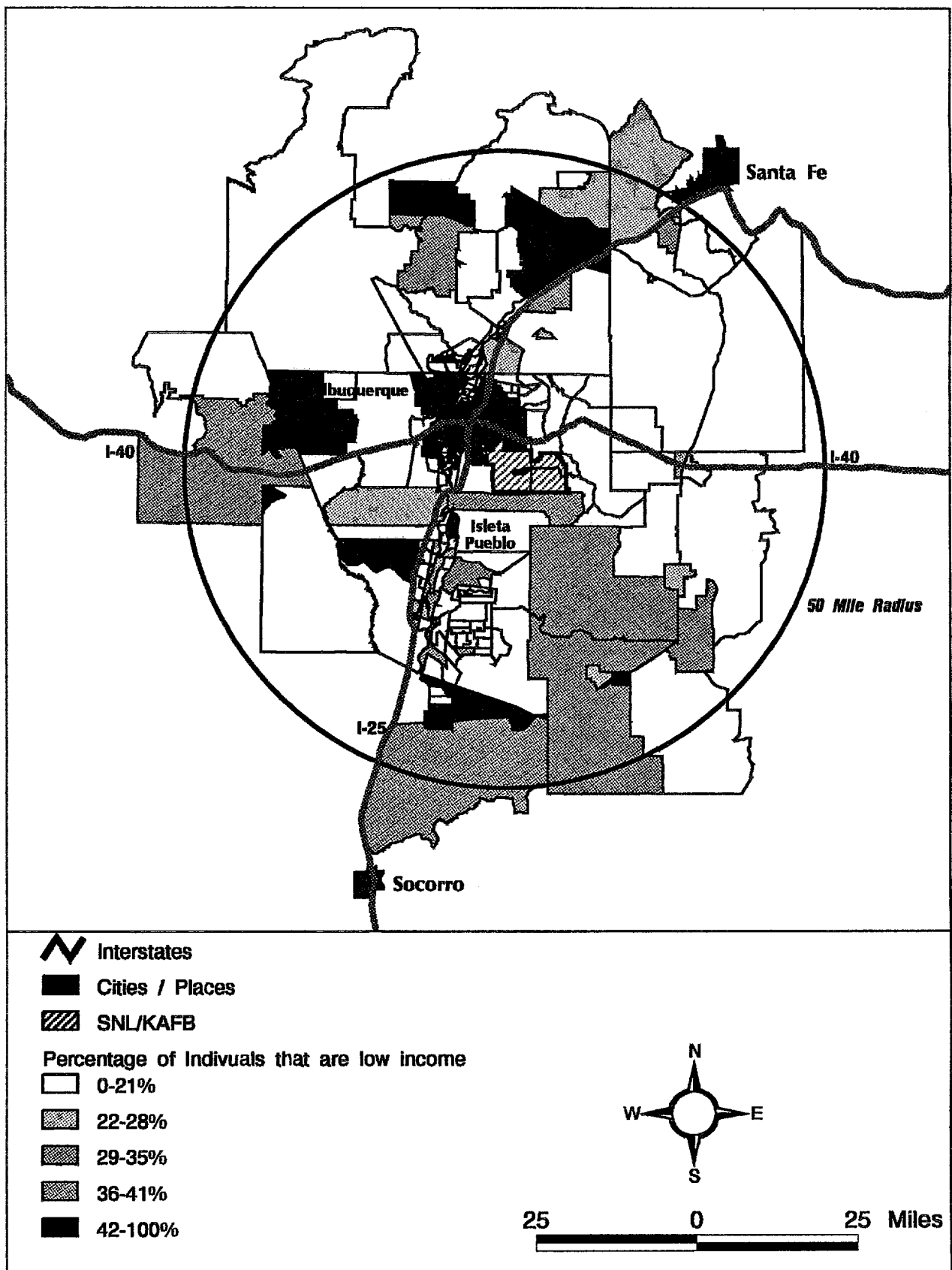
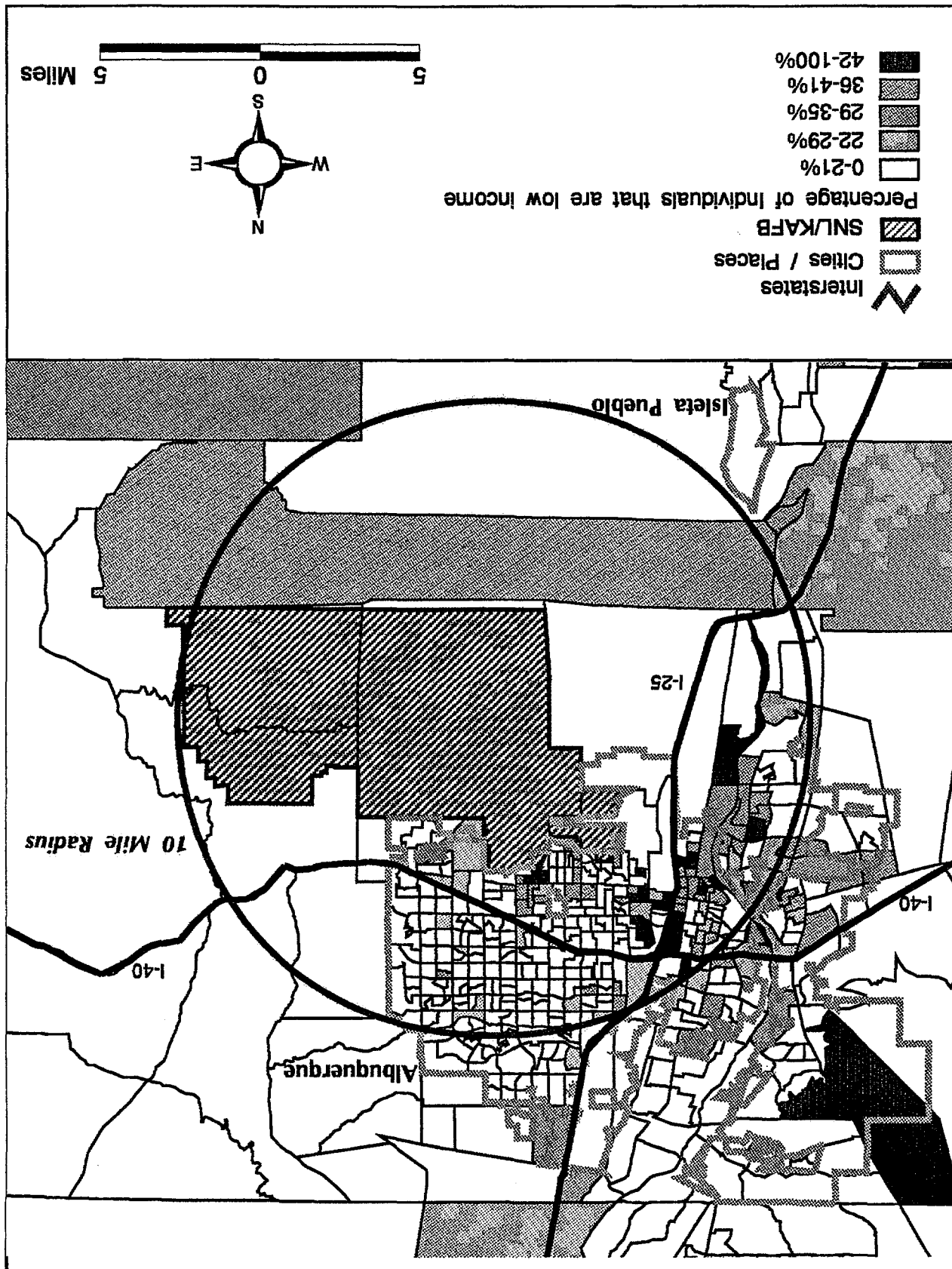


Figure A-14 Low Income Population (50 Mile Radius).

Figure A-15 Low Income Population (10 Mile Radius).



ENVIRONMENTAL JUSTICE INDEX

Environmental Justice Index Distribution near SNL

Figures A-16 and A-17 show the distribution of environmental justice index values for census block groups in the SNL study area. This index does a good job of identifying populations that may have potential environmental justice concerns; however, it has limitations.

Several populations do not show up on the environmental justice index figures as having potential environmental justice concerns. This may be attributed to the population density variable in the environmental justice index formula. Typically, block groups with lower than average population density tend to show up as not having potential environmental justice concerns.

The advantage of using the environmental justice index is that it incorporates several important variables into one, which is particularly useful for ranking multiple sites.

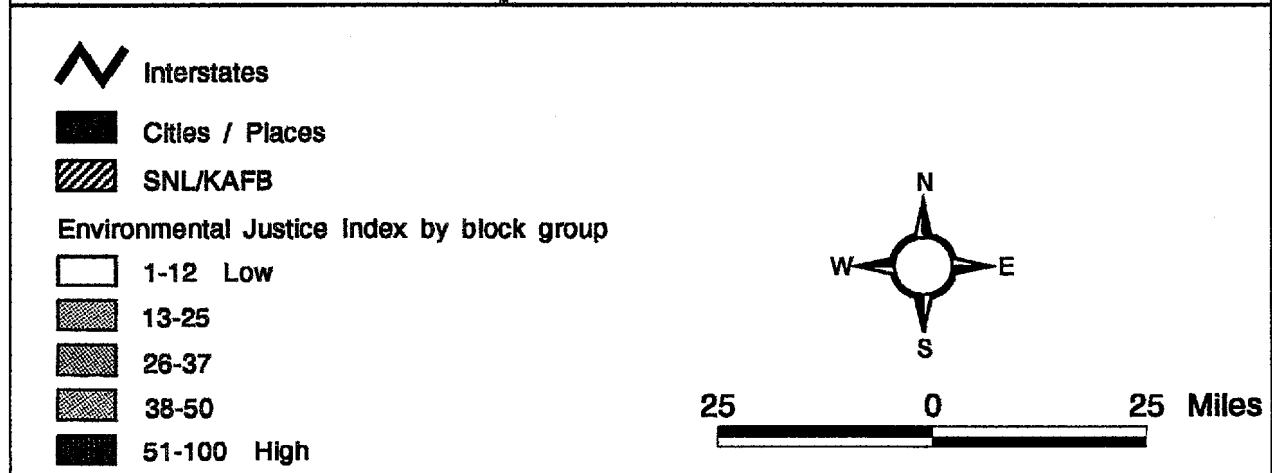
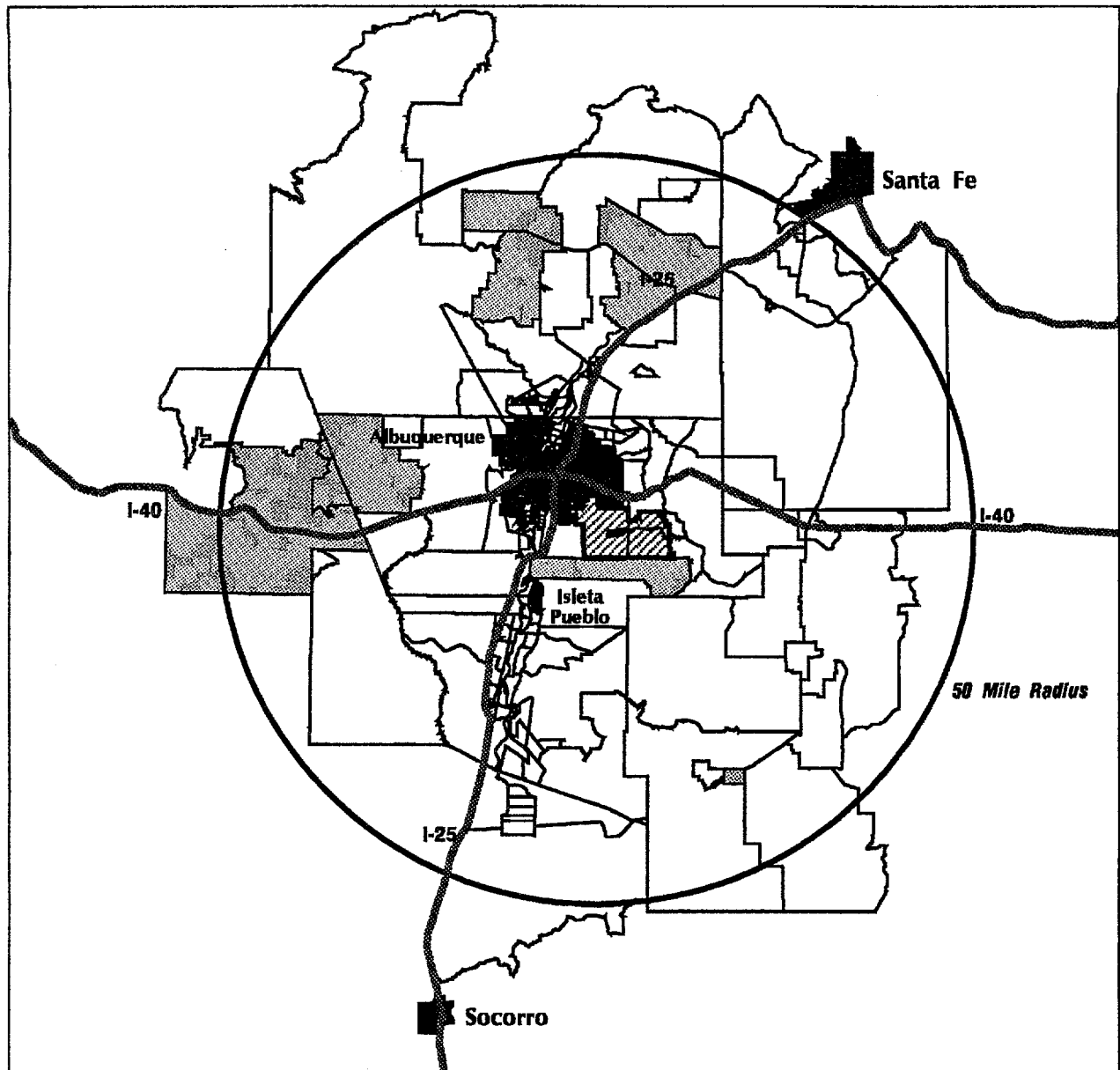


Figure A-16 Environmental Justice Index (50 Mile Radius).

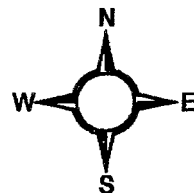
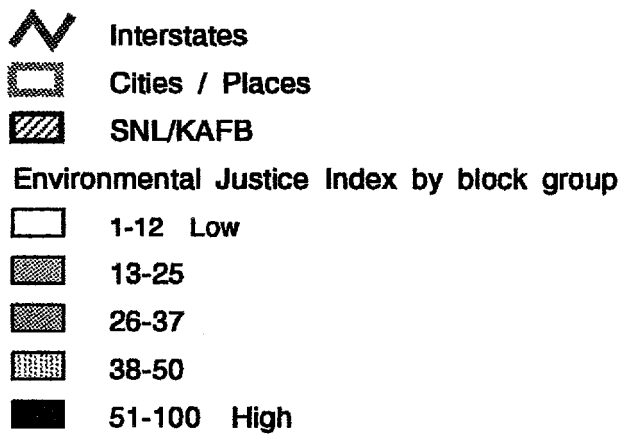
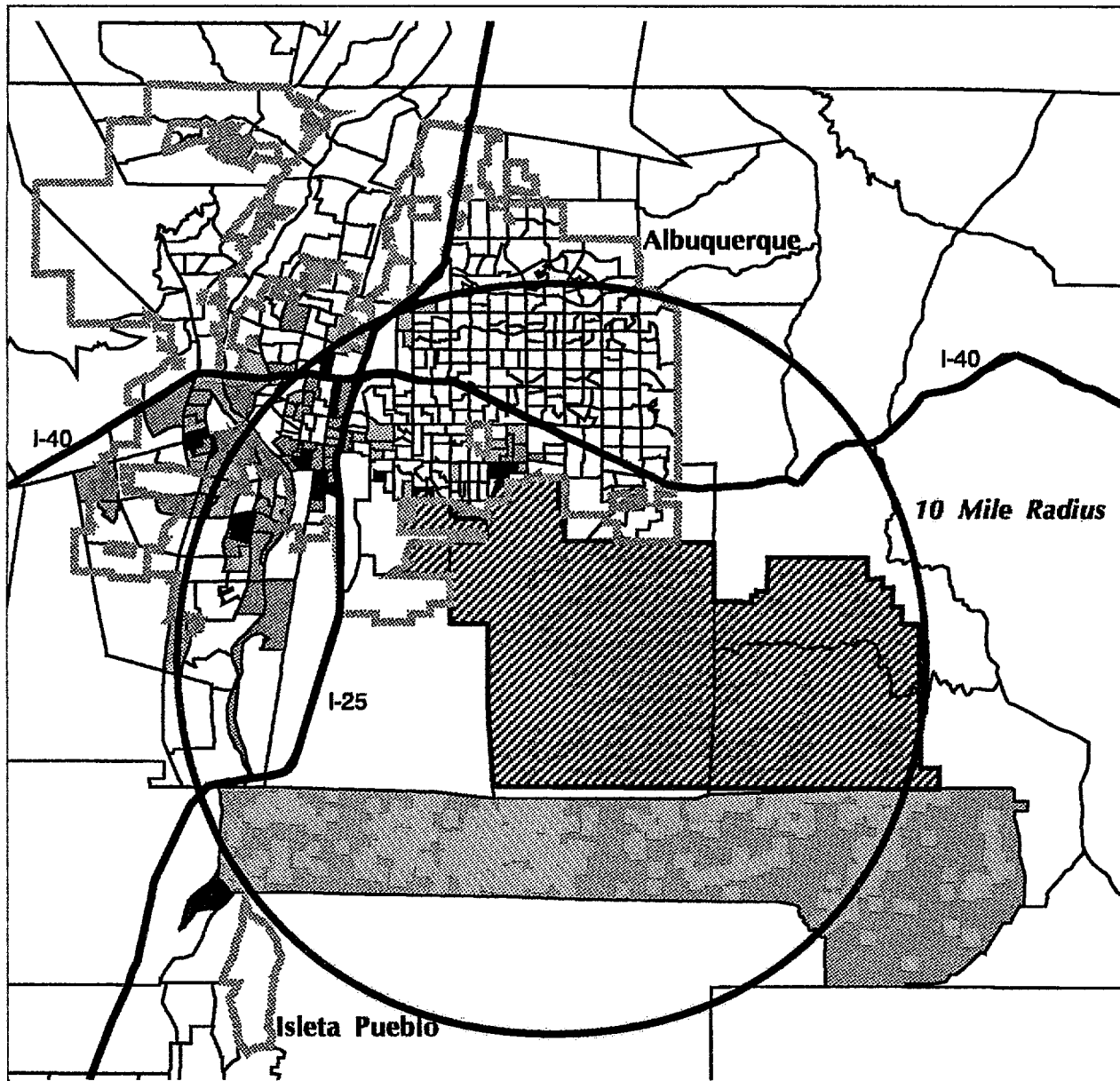


Figure A-17 Environmental Justice Index (10 Mile Radius).

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Albuquerque

A Community Profile

Prepared by:

SNL

**Community Involvement &
Issues Management Office
February, 1997**

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PREFACE

The purpose of this Albuquerque community profile is to highlight the key local community and social issues Sandia National Laboratories (SNL) faces as it strives to achieve its published strategic intent of being a valued, caring, and responsible corporate citizen. This profile is intended to provide the reader with an understanding of why current dynamics and situations exist, and why potential issues need to be viewed from a historical perspective to be successfully resolved. This document should help SNL program managers achieve their goals in program areas that require or can benefit from community advice or participation.

This report reflects a collaboration among several SNL staff and contractors to describe the complexity of the community in which SNL operates. It grew out of a series of training sessions—over a period of three years—on public involvement and participation conducted for SNL and DOE employees by Dr. Desmond Connor, an applied sociologist and international leader in public involvement. As Dr. Connor points out, to be effective, programs that impact a local community require a strong understanding of the community, not only to minimize opposition and create allies, but to ensure that program decisions are in the best interests of both the proposed program and the community.

This is not intended to be a definitive analysis of all relevant issues in Albuquerque and New Mexico. Rather, it is an assessment that provides an understandable context, and offers discussion points for SNL staff to consider when they interact with community members. A living document, we expect this profile will change with our community and its social realities. The issues we discuss may also change, as our community refocuses its priorities. As a result, this report does not discuss every possible aspect of key community issues, but concentrates on those that we believe provide the strongest insight for the reader.

During its nearly 50 years, SNL operated with little input from its local community. As a national security complex, SNL had a clear mandate to support national defense. Created by presidential order, SNL had no need to seek community involvement or support for its national mission. Further, the highly classified nature of most of its work required minimal disclosure to the local community.

Today, the situation has changed dramatically. The end of the Cold War has had a significant effect on funding. Like most other DOE national research and development laboratories, SNL faces increasing public scrutiny of its programs and people. No longer guaranteed national funding, Sandia must answer to a Congress more and more concerned with budget cuts and tightened purse strings. SNL must now justify its programs and its value to the common good in a way unknown during its early years. In fact, if SNL is to survive as a vibrant national laboratory, it must integrate itself into both the national social agenda and its local community. To do so successfully requires more than a passing familiarity with its community.

To achieve this deeper understanding, SNL must question its assumptions about how people are going to react to SNL programs and policies. Sandia must take care to avoid creating a gap in

perceptions between the community—particularly minority communities—and SNL. Further, SNL can learn to appreciate just how unique, how diverse, how complex its local community is, and that this diversity and uniqueness can be an advantage. This initial report focuses on two of New Mexico's major ethnic populations: Native Americans and Hispanics. In future editions, we will expand this report to provide greater detail on Asians, African Americans, low-income, seniors, and other segments of the community.

The authors hope this report will stimulate SNL staff to learn more about the community in which SNL operates, and make SNL a more effective member of its local community. This broad interpretation of the greater Albuquerque area is intended to be an introduction to many of the crucial issues and complex realities in the larger community. For managers engaged in specific SNL programs that most likely have direct impact on a particular neighborhood, it is more important to learn specifically how a neighborhood is organized, who its leaders are, and what its values, priorities and concerns might be. SNL's Community Involvement and Issues Management Office can research and write a community profile targeting much smaller community areas and neighborhoods as programs require.

As important, CIIM has also written and published a Public Involvement Preferred Processes Handbook. This handbook provides specific tools, methods, and strategies for working directly with the community. CIIM staff are available to work with program managers who seek public participation to select appropriate methods in interacting with the public.

This community profile has been written and produced by Sandia's Community Involvement and Issues Management Office. We welcome your comments and suggestions. Please contact us, at 505-284-5200 to share your comments, your ideas and your insights.

BACKGROUND AND HISTORY

Background

The Albuquerque Metropolitan Area is located in the center of New Mexico, and is home to almost one-third of the state's 1.6 million residents. It is the major regional center for services and goods, and is home to the state's largest public university, the University of New Mexico. Located at the city's southeastern edge, on Kirtland Air Force Base, Sandia National Laboratories (SNL) has a major economic impact on the city and state. SNL accounts for \$4.1 billion, or approximately 10 % of the economic activity in the central New Mexico Region, which includes Bernalillo, Sandoval, Torrance, and Valencia counties.

In 1996, New Mexico became only the second "majority minority" state in the nation (along with Hawaii, whose minority population is 68%), according to official data from the US Population Reference Bureau. New Mexico now has a minority population of about 54%, because most local demographers agree that the minority population is undercounted in census data. Hispanics account for 42% of the state's population; Native Americans comprise 8.5%; and Asians, African-Americans and others make up about 4%. The Albuquerque Metro area has a somewhat smaller minority population than the state as a whole.

Local History

Early Settlement Patterns

The state's Native American population (approximately 8.5%), is the second highest percentage of any US state. What is unique about the state's Native Americans is their strong land base, which they have maintained from pre-Columbian times. Nineteen Pueblo cultures own significant arable and non-arable land, primarily up and down the Rio Grande Basin. The Navajo Nation covers about 17 million acres in Arizona, New Mexico, and Utah. The Jicarilla Apaches of northwestern New Mexico have greatly expanded their land base in the past few decades through purchase of large private ranches and now own about 750,000 acres. In southern New Mexico, the Mescalero Apaches own a significant land base of about 460,000 acres.

The earliest Native Americans in New Mexico date back to pre-historic times, approximately 20,000 years ago. The ancestors of the modern Pueblo people lived in northwestern New Mexico more than 1200 years, where the thriving Anasazi culture, in about 1100 AD, reached a level equal in sophistication to European cultures of the same period. Occupied for over 500 years, Taos Pueblo in northern New Mexico is the oldest continuously inhabited structure in the US

The first Europeans came to New Mexico in 1540, when Spaniard Francisco Coronado brought an exploratory force seeking the reported "Seven Cities of Gold." Although he traveled as far as present-day Kansas looking for the golden cities, it soon became apparent that New Mexico was not filled with silver and gold. As a result, it was not until 1598 that a group of Spanish colonists

returned to settle New Mexico, first in San Gabriel near present day Española, and later in Santa Fe and surrounding areas.

Native Americans in the state led the only successful Indian revolt against Spanish rule in the history of the Western Hemisphere. In 1680, the Pueblo Indians, under the leadership of religious leaders and war chiefs, most notably San Juan Pueblo's Popé, rose up against the Spanish and successfully drove them out of New Mexico. Despite several attempts to retake New Mexico, the Native Americans managed to keep the Spaniards out until 1692, when Don Francisco de Vargas retook the capitol city of Santa Fe.

Native Americans have retained their language and religions since European arrival, through conscious resistance, strong internal clan and tribal structures, and a clear understanding of European economic, political, and cultural forces. Recently, New Mexico tribes have moved aggressively to open casinos, build recreational facilities, and develop other reservation-based economic ventures to help themselves out of the poverty they face. While gaming has been an economic success thus far, it is clouded by controversy over the validity of the compacts between the tribes and the state.

Any resolution of gaming issues—currently embroiled in court and legislative action—must include an understanding of Native American history and past interactions with dominant cultures. At stake for Native Americans is more than economic survival. Culture, politics, and sovereignty are deep background factors that color the current arguments over gaming.

Resolving issues, creating dialogue, or seeking to start collaborative efforts with Native American tribes requires special protocols. These include recognizing the importance of formal tribal structures in all interactions and understanding the different time/space paradigm in which Native Americans operate. Tribes are recognized as independent nations in their dealings with the US Government, and as a result, have a strong sense of independence and separation from mainstream US society.

The Hispanic population reflects New Mexico's history as a colony of Spain and later Mexico. New Mexico's border with the northern Mexican state of Chihuahua has provided an uninterrupted flow of culture, people, and goods since the first Spanish colony was established in 1598. This continuous flow places New Mexico in the confluence of two different cultures: Spanish/Mexican and European/American. On the one hand, Albuquerque is a southwestern US city whose people participate in the major cultural, economic, and migration patterns that flows both east and west across the country. At the same time, the state's large Hispanic population also participates in the cultural, economic and migration patterns that flow both south to north, from Tierra del Fuego to Canada. This confluence of sometimes conflicting cultures makes Albuquerque very different from most other mid-size American cities. It presents both opportunities and challenges that affect major business, government, and cultural institutions.

Albuquerque Area Population Patterns

Originally a Native American settlement called Tiguex, the first European settlers arrived in Albuquerque in the 1640s and 1650s, but were driven out by the successful Pueblo Revolt of 1680. In 1706, Don Francisco Cuervo y Valdez started the first official Spanish settlement at the present site of Old Town. From its founding to US annexation in 1846, Albuquerque had an agricultural-based economy, which traded mostly with the Mexican regional capitol of Chihuahua, 500 miles to the south. In the years preceding American annexation, Albuquerque also opened trade with Euro-Americans via the Santa Fé Trail to St. Joseph, Missouri.

After annexation, Albuquerque's Old Town remained the commercial and social center of the city. That began to change with the advent of the railroad in the late 1870s and early 1880s. A "new" Albuquerque emerged along the railroad tracks, where the current "downtown" exists, populated mostly by recent Euro-American merchant immigrants and others associated with the railroad and the US mercantile economy. In succeeding years, wealth and power flowed from Hispanic Old Town to downtown, until Old Town ceased to function as a mercantile center, became another village along the Rio Grande, and re-emerged as a tourist destination in the post-war years.

Settlement patterns for Albuquerque were set early. Most Hispanic settlements nestled along the Rio Grande Valley. Bottom lands were used for farming, and higher grassy areas were used to run sheep and cattle. Wood and stone were obtained from the forests in the Sandia Mountains. Euro-American settlement began along the railroad tracks and slowly grew east toward the Sandia Mountains. These early settlement patterns persist. Generally, Albuquerque's Hispanic population is concentrated in what were once rural agricultural villages along the Rio Grande Valley, but are now neighborhoods and barrios of the valley. Similarly, the city's Euro-American immigrants, especially those who have arrived since the 1930s, moved into new subdivisions stretching across the Heights area.

In more recent years, ethnic mixing in housing has occurred, but the general patterns persist. Adding to the population shifts in recent years is the influx of Mexican, Cuban, and Asian immigrants, who have used the near Southeast Heights area as a point of arrival, later moving into more affluent neighborhoods as their incomes rise.

African-Americans comprise a small percent of the city's population (3%). Lower-income African-Americans are concentrated in the South Broadway and Kirtland Addition neighborhoods, while more affluent African-Americans are spread throughout other areas of the city.

The single largest population boom is occurring on the city's West Side, where low land prices and lower taxes (in Sandoval county) have created huge developments of single and multiple family dwellings. Rio Rancho, just northwest of Albuquerque, is New Mexico's fastest-growing city. Taylor Ranch, Westgate, and other West Side neighborhoods are growing at phenomenal rates, fueled by affordable housing, young married families seeking housing, and an increase in job opportunities on the West Side. These new West Siders include people moving into New

Mexico seeking jobs, as well as New Mexico residents fleeing Albuquerque Heights' higher housing markets, and migrants from the rural enclaves of the state.

INDUSTRIES AND OCCUPATIONS

Albuquerque Area Economy

Like most of the state, Albuquerque's economy is heavily dependent on government funding. SNL has a total annual economic impact of \$4.1 billion in the central New Mexico Region. Kirtland Air Force Base (KAFB), its contractors and other DOE contractors also contribute significantly to New Mexico's economy. At the same time New Mexico taxpayers fund two of the state's largest employers: the University of New Mexico and Albuquerque Public Schools.

In the private sector, Intel Corporation operates the world's largest microchip processing plant in Rio Rancho. Meanwhile, population continues to grow in Albuquerque, and is spurred by migration for jobs in service and retail sectors, as well as the high-tech sector, and migration from outlying rural enclaves by residents seeking higher education and employment.

New Mexico Economy

New Mexico's economy can best be described by considering several distinct geographical regions. The most prosperous region is the Rio Grande Basin, which roughly bisects the state from north to south. Included in this region are Taos, Española, Santa Fe, Albuquerque, Belen, Socorro, Truth or Consequences, Hatch, and Las Cruces. Of these, Albuquerque is the most prosperous.

In the northern Rio Grande Basin, federal and state government, plus tourism, fuel the economy. State government has nearly 15,000 jobs located in the capitol of Santa Fe, and employment has grown steadily over the past 40 years, despite cyclical and economic cutbacks in private sector employment resulting in drops in state tax revenues. State government has a strong representation of Hispanics. The Hispanic colonization, development, and continuing presence in New Mexico led to Spanish and English being named the two official state languages when the state constitution was argued and adopted in 1911-1912. This high level of political involvement has continued unabated for New Mexico Hispanics to this day. Currently, both the Senate Pro Tem and the Speaker of the House in New Mexico are Hispanics.

Another major source of service sector employment in the northern Rio Grande Basin is tourism, anchored by the international art markets in Taos and Santa Fe. In addition to the cultural attractions, including the Santa Fe Opera and major Native American and Hispanic artistic and social events, recreation is also a major tourist draw. Skiing, camping, and river rafting attract a huge tourist market annually. It should be noted, however, that despite the generally good tourist economy of northern New Mexico, Rio Arriba, Taos and Mora counties in northern New Mexico continue to be among the poorest in the US

In the southern Rio Grande Basin, Las Cruces anchors an economy that thrives on agriculture, retirees, New Mexico State University, federal installations like White Sands Missile Range, and its proximity to El Paso and Mexico. The Hatch Valley and Doña Ana county are major producers of chile, alfalfa, pecans, and other cash crops. Southern New Mexico is the largest producer of chile in the United States. This vibrant agricultural sector is supported by the Elephant Butte and Caballo Lake dams, where irrigation water is stored and used as needed to support the agricultural cycles. Due to the distances between the Santa Fe/Albuquerque and Las Cruces hubs, southern New Mexico is generally perceived to be separated from the business and political centers of the state.

Outside of the Rio Grande Basin, the state's economy is generally weak. During the late 1960s and early 1970s, the rest of the state experienced a boom cycle from the extractive industries of oil and gas, uranium, coal, copper, and potash. As extraction of these natural resources waned, the areas that benefited from the boom suffered significant busts, causing high unemployment and intensified poverty. As a result, rural New Mexico communities tend to send their youth to urban centers in the Rio Grande Basin or elsewhere in the country for employment and education opportunities. In fact, many rural New Mexico counties, including Mora, Colfax, and Cibola, have experienced a net population loss over the past several decades.

In northwest New Mexico, Farmington is one of two dominant economic hubs, serving as a center of oil, gas, and coal production and as a regional service and retail center. Outside the city are small towns and villages, mostly dependent on small-scale ranching and farming, and local government employment. Farmington has a large Navajo community due to its proximity to the Navajo Nation.

Gallup, located on I-25, is the other major regional retail and service center, and, like Farmington, serves the Navajo Nation. It is also a major Native American arts and crafts sales center, and a tourist stop along heavily traveled I-40.

In the southwestern corner of the state, Silver City is the dominant economic hub. The major economic driver is copper mining headed by Phelps-Dodge Corporation, a multinational mining company. The Hispanic population of the Silver City area is about 45%, most of whom are descendants of Mexican miners brought to the area during the mid-1800s. Though copper is currently enjoying high market prices, Silver City suffered from depressed copper prices in the late 70s and early 80s. In Deming, crops like chile are increasing the economic impact of the area, while its location on I-10 help its service economy remain stable.

In New Mexico's northeastern quadrant, some coal mining and ranching keep a fragile economy alive. Las Vegas and Raton are the principal cities in this area. Most of the remaining population lives in small towns and villages where development is very limited and the economy tends to be quite depressed.

In the state's southeastern quadrant, potash mining, continued oil and gas extraction, and ranching keep the economy afloat.

In a broader view and from an east-west perspective, New Mexico is located far from the centers of US economic and political power. With low population and electoral votes, the state often is isolated from major national decisions. However, long-tenured representatives in both the US House and US Senate help offset this. Further, the presence of two of DOE's three nuclear weapons laboratories in New Mexico adds to this state's political stature.

Most of the north-south flow in New Mexico is concentrated in people and culture. Formal economic activity between New Mexico and Mexico/Latin America has been—until the recent approval of NAFTA and the economic success of neighboring states like Texas with Mexico—a low priority for the economic and political leadership of New Mexico.

SNL is an important economic player in New Mexico, and each of its major economic decisions reverberates throughout the state's economy. As a result, the local community is especially sensitive to SNL program initiatives, budget decisions, and spending.

SNL ISSUES AFFECTING THE COMMUNITY

Overview

In quarterly polls beginning in August 1990, New Mexico residents identified jobs and the economy as their major concern (34%). Drug abuse (23%) and public education (17%) were distant second and third major issues. Jobs and the economy peaked as a major concern in early 1993 (48%), then dropped consistently as a major issue to second place (25%) in February, 1996, when crime replaced it as the major concern (35%).

The following are some key SNL issues that may impact the community:

Withdrawn Lands

More than 20,000 acres of Forest Service land have been withdrawn from public use by the Department of Defense (DoD) and the Department of Energy (DOE) for use by KAFB and SNL. The DoD acreage—the majority of the 20,000 acres—is subject to a federal law requiring that the withdrawal be renegotiated every 25 years, with the next evaluation scheduled in 2005. The potential conflict is that East Manzano area residents have increased from 1,000 in 1960 to 3,800 presently. Some of these residents, as well as some Albuquerque residents, want the lands returned to public use for recreation or as a wilderness area. The dilemma is that the Air Force, DOE, and SNL have constructed important facilities on or near the withdrawn acreage boundaries. Many are unique research and development assets that require large land buffer zones to ensure public safety. The present withdrawn acreage is considered the minimum needed to meet mission requirements and protect the public. Also, there are some areas of the withdrawn land that were used as targets for military bombing runs in the 1940s, and unexploded ordinance has been discovered on a regular basis. Other areas are actively used for military exercises and live firing ranges. SNL was not involved in these sites and does not have clean-up responsibilities.

Base Closure

The Albuquerque metropolitan area is very sensitive--following the activities of the Base Realignment and Closure Commission (BRAC)--to the possibility of further reductions at New Mexico government facilities, (especially SNL), if the reductions could significantly impact the economy of the metropolitan area.

SNL can continue to be a valued corporate citizen by keeping communication lines open, by being accessible to all local citizens and groups, and by working hard to develop long-term relationships that can withstand budget fluctuations and corporate changes.

The leaders of many organizations, elected officials, and community groups in the Albuquerque metropolitan area continue to be willing to assist SNL to prevent further budget reductions. Through CIIM's ongoing relationship building efforts over the past four years, they are also interested in helping SNL get its message out to the community and state. This is a very positive sign that SNL is valued highly in the local community.

Kirtland Annexation into the City

Over the past several decades, city officials have raised the possibility of incorporating the KAFB/SNL complex into the Albuquerque city limits. The latest attempt was in late 1992, but the DoD opposed the attempt, and it failed. The driving factor by city officials for incorporation is to generate municipal gross receipts taxes, estimated to be at least \$3 million for SNL and more for contractors at both SNL and Kirtland. City officials argue that they provide the funding to maintain access roads to KAFB, and that most SNL and KAFB employees live in Albuquerque and use city services. More attempts to incorporate SNL/KAFB into the city can be expected, especially since there is growing discussion of creating a loop road through SNL/KAFB to connect I-25 and I-40. City officials may argue for SNL/KAFB gross receipts revenues to pay for construction of the proposed loop road.

Highway Corridor Study

The Middle Rio Grande Council of Governments organization, composed of representatives of Bernalillo County, the City of Albuquerque, and the State Highway and Transportation Department, has studied various possible routes to provide better access to the SNL/KAFB complex. One proposal is to make major improvements to Gibson Blvd. Another, which appears to be getting a great deal of support, is the possible construction of a loop road from I-25 through Tijeras Arroyo, passing through the SNL/KAFB complex. This may be the preferred route, as far as the city is concerned. However, such a road would obviously have an impact on SNL operations.

City Radioactive Water Discharge Policy

The city of Albuquerque currently has a "zero discharge" ordinance concerning radioactive waste discharge into the sanitary sewer system. City Council staff has drafted a new ordinance that sets standards that are more stringent than the federal guidelines. This ordinance will need to be sponsored and acted on by the City Council. It would establish a cap from all sources to the City's treatment plant combined to allow only 10 mrem additional exposure to the most exposed

individual (federal regulations allow 100 mrem per facility). Details of the proposed standards and the methods of interpretation and enforcement are sufficiently ambiguous to cause concern as to how they will affect SNL's programs.

Water Resource Conservation

Achieving a balance between use of Albuquerque's exhaustible groundwater supply and making more efficient use of existing water resources and any future rights the city may acquire is the key to a sustainable water supply in the Albuquerque Basin. Significant legal, regulatory, institutional, and infrastructure issues need to be resolved if Albuquerque is to successfully manage its future water needs. Even with conservation, continued use of Albuquerque's aquifer as a sole source of supply cannot be sustained. Some use or combination of uses for surface water must be developed.

Groundwater will remain an essential water supply source because of its high quality and year-around availability. However, Albuquerque must meet its water conservation goal to reduce water use by 30% within 10 years. The city's current per capita use is 250 gallons a day, ranking it among the most thirsty cities in the Southwest. A 30% reduction means a per capita use of about 175 gallons per day. Presently, Albuquerque uses about 123,000 acre-feet of water per year. By the year 2060, the projected population of 1 million residents is expected to use 300,000 acre-feet if no conservation occurs. With conservation, projections show Albuquerque will need 200,000 acre-feet to serve the same number of people. Lower growth and conservation combined will require about 150,000 acre-feet of water by the year 2060.

United States Geological Service studies support the conclusion that the city's existing water management strategy does not sustain the aquifer. The central focus of that strategy—groundwater—has been shown to be an exhaustible resource. The studies show that the thickness of the good-quality aquifer is much less than previously thought and that the Rio Grande provides much less recharge to the aquifer than previously thought. (From a report by the Hirst Company for CIIM).

ORGANIZATIONS AND LEADERSHIP

Government and Politics

Albuquerque has operated under a mayor/city council form of government since 1974. When Albuquerque changed to this forum, city councilors were elected from geographically delineated districts. As a result, Hispanics have consistently held three or four of the nine council seats, representing the predominantly Hispanic areas of the valley and downtown. Hispanics have traditionally supported the Democratic Party, while Euro-American immigrants have generally been Republicans. Most Hispanic city councilors have been Democrats, while Euro-American councilors have been Republican, even though city elections are nominally non-partisan. Two of Albuquerque's 5 mayors elected since 1974 have been Hispanic, including current mayor Martin Chávez.

The city council supports SNL as an important economic player within the city, but a general lack of understanding about SNL's mission and a historical lack of outreach by Sandia to local government has created a sometimes tense relationship. SNL has worked hard for the past three years to establish better relationships with the city council and city government, and, as a result, relations have markedly improved.

Despite calls over the last three decades for merging city and county governments, Albuquerque also supports Bernalillo County government. The county government provides police and fire to the unincorporated county areas, which include the South Valley, East Mountains, Sandia, North Albuquerque Acres, and Alameda in the North Valley. Other county services include parks, libraries, environmental and health services to county residents.

Like city councilors, county commissioners are elected from geographic districts. The commission is usually split evenly along ethnic lines, with 2 or 3 of the 5-member commissioners generally being Hispanic and Democratic and the remainder being Euro-American and Republican.

Albuquerque mayor Martin Chávez was elected after serving several terms as a Democratic state representative for Albuquerque's West Side. He has enjoyed strong popularity for his anti-crime stands and his high profile as a spokesman for Albuquerque's economic initiatives. He is generally supportive of SNL.

City councilors are generally supportive of SNL because of its strong positive impact on the city's economy. Those councilors whose districts include Superfund sites or that border KAFB/SNL tend to raise more questions about SNL's environmental restoration and waste management issues than do other councilors, but have done so within a positive and productive framework of dialogue and information exchanges.

Adjoining Neighborhoods and Communities

Over the past two decades, neighborhood associations in Albuquerque have come of age. The city boasts more than 237 (145 officially recognized and 92 others who exist but have not applied for official city recognition) neighborhood associations and most of them are very active in local zoning, development, and quality of life issues. Neighborhood associations are among the strongest political forces in the city, helping to shape the city's agenda in key areas.

Following are brief profiles of several neighborhood associations as well as Isleta Pueblo and other key neighborhoods in the city.

Isleta Pueblo

Isleta Pueblo has been active in water quality issues tied to discharge into the Rio Grande. The Pueblo, which is located directly south of the city and KAFB/SNL along the Rio Grande, has become more aggressive on water issues over the past several years, including passing a Pueblo law setting water discharge standards higher than those required by federal law.

Isleta Pueblo and a local environmental group recently filed a lawsuit against the DOE asking for a Sitewide Environmental Impact Statement. The case is currently working its way through the court system and it appears as though some progress is being made toward resolution.

Isleta is governed by an elected tribal council and governor. Like most Pueblo governments, Isleta is very conservative and cautious in its dealings with outside organizations and agencies. In contrast to its conservative political stance on most issues, Isleta has moved aggressively in developing its economy. It was among the first pueblos to initiate bingo and later gaming, on Pueblo lands adjacent to I-25. It has used much of the gaming' earnings to build other economic development projects. These include an 18-hole golf course along the Rio Grande, a convenience store and gas station along I-25, and expansion of Isleta Lakes, a recreational and fishing site located along the Rio Grande.

The Pueblo has extensive land holdings along both banks of the Rio Grande, including thousands of acres of grazing land directly west and east of the pueblo into the Manzano Mountains.

Mountainview

This neighborhood is located along south 2nd Street, south of Rio Bravo and extending to I-25 on the west. Mostly Hispanic, the neighborhood is surrounded by commercial businesses including brickyards, gasoline holding yards, lumber yards, the city of Albuquerque's solid waste treatment facility, a major shelter for homeless people, and other businesses with significant environmental impact.

Major issues in the neighborhood include groundwater contamination (high nitrites from outdoor toilets and leaking gas holding tanks, as well as a high groundwater table), high poverty among residents, low educational achievement of students in the neighborhood public school (Mountainview Elementary), overall concern about ongoing environmental impacts of existing businesses, and a relatively high number of recent Mexican immigrants living in the neighborhood.

In recent years (mid 1980s), the Mountainview Neighborhood Association emerged as a strong force for positive change. For example, the association has been successful in forcing Albuquerque Public Schools to focus on the low test scores of Mountainview Elementary students. The result has been significant increases in test scores at all of the tested grade levels over the past 5-6 years, and increased parental involvement—through the leadership of the association—in the school's Parent Teacher Organization.

The association has also had success in improving the water supply by petitioning state legislators and the state's congressional delegation to sponsor funding for water and sewer line extensions into most of the neighborhood. Significant health problems tied to the poor quality of drinking water have almost completely disappeared since water and sewer lines were extended.

The neighborhood association has also become very effective in monitoring existing business, including KAFB/SNL. The association initially alleged that KAFB/SNL chemical dumping carried through arroyos into the Mountainview area was the root cause of the groundwater

contamination in the area. Subsequent testing by the New Mexico Environment Department showed it was primarily from other sources (see above). The interactions between Mountainview residents and KAFB/SNL representatives over the issue has left a legacy of mistrust among many Mountainview residents. Much work on long-term relationship building needs to be done by KAFB/SNL to create a healthy dialogue with the neighborhood.

The Kinney Brick Neighborhood

Adjacent to the Mountainview neighborhood, the Kinney Brick Neighborhood (named for the brick company of the same name) has essentially the same demographic profile as Mountainview, with a few major differences.

First, the Kinney Brick Neighborhood has a disproportionate number of businesses that have a potentially high environmental impact. These businesses include auto junkyards, oil and gas storage facilities, lumber processing yards and cattle feedlots.

Second, there is a high number of recent Mexican immigrants in the neighborhood living in substandard housing. These residents are generally harder to organize, tend to be more suspicious of authority, and are often less willing to participate in decision-making processes.

The Kirtland Addition

Originally built as a subdivision to attract personnel assigned to KAFB, the Kirtland Addition has evolved into a mostly African-American, blue collar neighborhood. The neighborhood is wedged into a small area bounded by Gibson Boulevard on the north, I-25 on the west, the newly-constructed Sunport Boulevard on the south, and Yale Boulevard on the east.

For many years, a number of community members have been active in efforts to improve the neighborhood. A center offering martial arts to neighborhood children was recently built, and a church anchors the northern end of the area. The neighborhood is nearly invisible and unknown to most city residents because of its isolated location, created by the interstate and major streets bounding the neighborhood on all sides.

East San José Community Awareness Council

The East San José Community Awareness Council is one of the city's most dynamic and effective organizations. Under the leadership of Dolores Herrera, the Council has moved aggressively to solve major issues facing the community. These include a Superfund site, high crime, poverty, high unemployment, and a neighborhood surrounded by commercial sites with a negative environmental impact.

The Council has achieved great success in many areas, especially in the area of environmental remediation. The neighborhood successfully fought to get a contaminated site in the area named as a Superfund site, hosted several regional EPA and DOE environmental conferences, and worked closely with government agencies to solve environmental problems in the area.

The Council is also very involved in education, providing strong support to the local elementary school. They work closely with police to combat crime, and serve as an informational clearinghouse for a broad range of issues, including housing, education, and employment.

Terrace Village

This neighborhood is probably the closest to Tech Area I. It is a mobile home park of approximately 700 households just outside the Wyoming Gate between Zuni and Southern. Populated by mostly retired citizens, Terrace Village has been generally supportive of SNL operations. The population of the park is very stable and many residents have been in the same location for over 20 years.

During recent public meetings for the Medical Isotope Program, representatives from the park spoke with unequivocal support. At the same time, some of the same residents relate stories about spouses being exposed to Atomic Energy Commission sponsored nuclear testing and subsequently dying from cancer.

SNL has worked to maintain an effective relationship with the leaders in this community. A Terrace Village resident was a founding member of the DOE's Citizens Advisory Board for Environmental Restoration.

East Mountain Alliance

The East Mountain area has grown from 1,000 residents in 1960 to 3,800 at present. Many of these residents are Hispanic descendants of original settlers of Spanish/Mexican land grants. They live in villages like Escobosa, Tajique, and Chilili, just over the Manzano Ridge from Forest Service land taken out of use by KAFB and SNL for testing and other functions.

Newer residents to the East Mountain area are primarily Albuquerque residents seeking a more rural lifestyle, but who commute to jobs in the Albuquerque metro area.

Among old-time residents and newcomers, many favor return of Forest Service land to public use, a potential conflict with current KAFB/SNL plans to continue using the 20,000 acres in question for military and other defense-related uses.

Hispanic residents in the East Mountain area still retain title to small tracts of land grant acreage, and see KAFB/SNL as usurpers who took ancestral lands away from them. It does not appear that KAFB/SNL have done outreach to these Hispanic villagers and presumably the villagers do not have a very positive opinion of KAFB/SNL.

For different reasons, newer residents living in the East Mountain area prefer the Forest Service return the lands to public use. They see the land as potential area for use in recreational pursuits, including hiking, camping, and other multiple uses.

As urban flight to the East Mountain area continues, increased conflict has erupted between old-time Hispanic villagers and Euro-American newcomers over land, water, and lifestyles. Most Hispanic villagers in the East Mountain area are generally low income or fixed income, elderly, poorly educated, and use their land base to supplement income.

Newer residents moving into the area generally are higher income and Euro-American, with higher educational levels, and a perspective on the land as a resource to be used for recreation and profit.

This conflict between Hispanic villagers and Euro-American residents has erupted in the past 20 years into occasional violence, road closures, burning of weekend cabins, and other confrontations.

Even though SNL is a national laboratory working primarily on national security issues, the reality is that the adage "all politics are local" applies to SNL. That means SNL program managers will benefit from making strong efforts to build relationships first with the local community, before moving on to other nationally-based relationships. In the era of government downsizing, SNL's need for strong relationships with its local community is even more important than before.

COMMUNICATION CHANNELS

Albuquerque is the media center for most of New Mexico. Only in the Las Cruces area does El Paso media compete well against Albuquerque media.

Print Media

The *Albuquerque Journal* is by far the largest daily paper in the state, with total daily circulation of 130,000 and Sunday sales of 150,000. No other newspaper approaches it in circulation and market penetration. Locally owned, its editorial position is generally conservative. It generally supports Republican presidential candidates, though it supports both Democrats and Republicans in local and state elections.

The *Albuquerque Tribune* is the afternoon daily, with circulation of approximately 45,000. Its editorial policy and its reporting style is generally more liberal than the *Journal*.

Albuquerque has several other weekly and monthly news publications, and several have significant market penetration. Among the more influential are the *Weekly Alibi*, geared to the youth market with heavy emphasis on entertainment and recreation. More recently, it has emerged as a growing voice for alternative reporting on local government and politics.

Another major publication is *Crosswinds*, which covers both Albuquerque and Santa Fe issues with more in-depth and investigative reporting than most other major news publications.

Print news reporting is generally much stronger--providing more in-depth reporting, more aggressive coverage and broader reporting of the community--than is television reporting in the Albuquerque market, and has more credibility among opinion leaders and viewers/readers.

Television

Albuquerque has seven major over-the-air television stations, as well as a local public access channel. These include affiliates of the major national networks (ABC, NBC, CBS, Fox) and a PBS station. All three major network affiliates have strong news staffs, who compete fiercely for audience share. Two have investigative reporters who regularly scoop the print media with major investigative reports.

Reflecting the growth of the local Spanish-speaking population, Albuquerque also has two major national Spanish-language affiliates, Univision and Telemundo. Univision provides a locally based daily news half hour program that provides in-depth coverage of issues important to the local Spanish-speaking community.

Radio

Albuquerque has between 30 and 40 radio stations, above average for a market this size. Among them are approximately seven Spanish-language stations that offer a wide variety of Mexican and Latin American music. Also in the mix are several talk-only format stations, where local issues are discussed on a daily basis.

Other networks

Just as important in influencing communications are several networks that provide opinion leaders with key information and background on major issues. These networks include formal organizations like the Greater Albuquerque Chamber of Commerce, the Albuquerque Hispano Chamber of Commerce, Albuquerque Economic Development, the Albuquerque Economic Forum, the Middle Rio Grande Council of Governments, and other informal business networks created by opinion leaders. Tied into these business networks are key leaders in government and cultural organizations. Despite its size, Albuquerque retains a small town communication network where major events or proposed projects are often decided in small group meetings rather than formal public venues.

Except for national security issues and programs that require classification, any issue occurring at SNL that impact the community are widely broadcast through both official and informal networks. SNL managers can help get clear messages to the local community through involvement in these networks. At SNL, CIIM has taken the lead in formalizing this important relationship building process.

EDUCATION ISSUES

The Albuquerque Public Schools district is the largest in New Mexico and the 26th largest in the US. The district served more than 88,000 students during the 1994-95 school year (the most recent year for which data is available). APS has approximately 10,500 employees, making it

one of the largest employers in the state. Its annual operating budget is approximately \$540 million.

APS operates 118 schools, operated primarily on a traditional school year calendar. However, 10 elementary schools operate on year-around calendars to alleviate overcrowding in the fastest-growing areas of the city (primarily on the city's West Side). The average size elementary school has 560 students. Middle schools average about 760 students, while high schools average about 1,950 students.

Fifty-five percent of APS students are ethnic minorities, with the majority (45%) being of Hispanic origin.

As many as 20% of APS students live in poverty, 35% are eligible for free lunch, 30% of all households have single-parent families, and approximately 18% of residents have not completed high school.

Fewer than half of all APS Hispanic students entering school in kindergarten graduate from high school. Of particular note is APS' retention rate (holding students back for a variety of reasons) for minorities. Of 299 students retained in 1994-95, 60% were Hispanic, and 10% were other ethnic minorities. This troubling statistic reflects national trends in education for Hispanics.

A recent report (September 1996) by the President's Advisory Commission on Educational Excellence for Hispanic Americans charged in a report to President Clinton that schools attended by Hispanic children are among the most overcrowded, the most structurally unsound, and the most crime-ridden in the nation.

The report also condemned the state of bilingual education in the country, saying it is commonly viewed as a liability instead of as a means to graduate young people with multiple language skills.

Hispanic children are now the largest minority group in the US, the report stated. Part of the problem, the report noted, is that most bilingual programs are remedial, aimed at mainstreaming immigrant children instead of developing bilingual children.

Nationally, while dropout rates have fallen among African-American and Euro-American non-Hispanic students, they continue to rise for Hispanic children, the report noted.

In New Mexico, voters are deeply divided over making English the official language of the US, according to a poll commissioned by the *Albuquerque Journal* (9/12/96). The Journal poll found that New Mexico voters are virtually evenly split on the idea. Forty-seven percent said Congress should pass laws making English the only language used on government documents and in government services. Forty-five percent opposed such laws.

The split among New Mexicans runs along ethnic lines: most Euro-American respondents, 62%, said they supported the bill in Congress, and most Hispanics, 73%, said they opposed it. This poll is one indication that ethnic division and tension still exist in New Mexico, and that these tensions make cross-cultural communication and cooperation difficult.

For Hispanics and other minorities, education is seen as a key to achieving economic and social equality. Thus, education issues strike a particularly deep chord among Albuquerque's minority communities. For example, a broad-based South Valley coalition of Hispanic parents, business people, and grassroots activists have successfully sought formal agreements with APS administrators to combat the perennially low test scores of students in the South Valley cluster. The Albuquerque Hispano Chamber of Commerce places special emphasis on education, providing scholarships and other support to Hispanic students.

A highly educated population is presumed to be more supportive of the research and development issues on which SNL works. In addition, SNL needs highly educated people to fill its workforce requirements. These two driving forces compel SNL to be an active player in ensuring that New Mexico and the country strive to develop an education system that is of the highest quality. Any efforts by SNL program managers to help improve the local education system is a direct benefit—over the long-term—to the success of SNL programs.

KNOWLEDGE OF AND ATTITUDES TOWARDS SNL

Sandia National Laboratories has been tracking public attitudes towards SNL and its programs since 1990. Polling has been done for SNL by the University of New Mexico Institute for Public Policy.

In answer to the question, "What do you think of Sandia?" New Mexico residents have indicated a consistently high favorability rating since the survey began in May 1993. The percent indicating a favorable or very favorable response range from a high of 80% in May 1993, to a low of 66% in September 1994, and back up to 76% in February, 1996.

In Bernalillo County, the favorability rating has been much higher, ranging from 83% in November 1992 to a high of 90% in May 1996. The trend appears to be moving toward even stronger positive feelings toward SNL in Bernalillo County. In May, 1993, negative and very negative responses to the question, "Does SNL listen and respond to the needs of your community?" totaled 26%; only 31% had a positive or very positive response to the question. However, by May 1996, the negative and very negative responses to the above question totaled only 13%, while the positive and very positive responses totaled 57%.

This data must be understood within a specific context. That is, most of the respondents surveyed had very little knowledge of SNL beyond its economic impact. Most were responding to SNL's strong economic impact on the community.

OBSERVATIONS AND CONCLUSIONS

Given Albuquerque's past, especially its long history of ethnic conflict and accommodation, the confluence of major cultures and traditional beliefs, SNL is generally viewed not only as a great economic boon to the city, but also as a somewhat isolated and unknown entity. In the more open environment in which SNL must now operate, there exists a great opportunity to break down the isolation by communicating directly with diverse publics. Through open and honest communication, SNL is able to inform the community of its mission and objectives, while achieving one of its objectives of being a valued corporate citizen. This effort has been underway for the past several years and is already providing strong evidence that SNL is gaining the trust of its local publics.

To continue these efforts, SNL must be sensitive to its immediate land-based neighbors, including Isleta Pueblo and Albuquerque's South Valley, with its very high Hispanic population. Opposition to SNL efforts to dump scientifically safe wastewater into the Rio Grande were met with stiff opposition from both Isleta Pueblo and Hispanics in the South Valley. From SNL's perspective, what initially seemed to be overreaction to a relatively minor issue suddenly became a major political issue because historical perspectives of indigenous peoples were not consciously considered.

SNL is fully capable of developing a strong sensitivity to historical issues, if it is committed to creating long-term relationships built on open and honest communication with its neighbors and local communities. Again, that process has been formally underway for several years and has been notably successful.

What can SNL do as it continues to create dialogue, establish respect, develop credibility and form long-term relationships with its neighbors? There are no simple techniques, but there are several effective approaches SNL has learned through its efforts to build trust in the community.

1. SNL can reach out to its local communities, then listen to, learn about, and discuss their concerns and issues. This can be achieved through formal meetings and informal discussions, on-site visits to neighborhoods, formal tours of neighborhoods organized to provide SNL leadership with community perspectives and history, and other listening processes. But, it does not end there. Once SNL has become aware of community concerns, it can consider and respond to them.
2. SNL can provide ongoing communications to its neighbors to keep them informed of SNL's issues and activities. The community can be a powerful ally to SNL in achieving its mission, but not unless it is regularly informed of what that mission is and how SNL is achieving its goals. This can be achieved through regular meetings with formal and informal leaders and neighborhood associations, through membership in major organizations, and through formal protocols with Native American tribes.

3. SNL can actively seek partnerships on many levels with its community. This could include formal contracts to provide technological expertise to solve long-standing environmental issues, loaned "brain power" to rethink approaches to problems facing the community, and other non-economic partnerships that could benefit the community. SNL can constantly search for ways to ask community leaders and neighborhood associations to help SNL achieve its mission. This could include issue-specific open houses and working groups, informal brainstorming sessions, and a host of other activities that would create community advocacy for SNL and its national security mission.

SNL definitely has strong community support. Its mission in support of national security finds strong resonance among all ethnic groups in the community. Its large economic impact on the local economy is appreciated. SNL staff—who personify the laboratories in the community—have an excellent history of volunteerism in and commitment to the well-being of the local community. SNL consistently contributes 20% of the overall city-wide campaign to the United Way of Albuquerque, by giving approximately \$1.4 million annually.

Most importantly, SNL is working to change its corporate culture from an isolated national laboratory focused on national defense issues to an involved corporate citizen seeking partnerships in both the private and public sector in efforts to diversify its national security mission. Efforts to build alliances with local communities will succeed to the degree that SNL makes a commitment to develop long-term relationships built on openness, dialogue, and mutual respect.

SUGGESTED READINGS

A Brief History of New Mexico - Myra Ellen Jenkins and Albert H. Schroeder

A History of New Mexico - Ralph Twitchell

Bless Me Ultima - Rudolfo Anaya

Ceremony - Leslie Marmon Silko

Great River: The Rio Grande in North American History -Paul Horgan

House Made of Dawn - N. Scott Momaday

Martin and Meditations of the South Valley - Jimmy Santiago Baca

My Grandmother Smoked Cigars - Sabine Ulibarri

New Mexico: A History - Marc Simmons

Pueblo Nations: Eight Centuries of Pueblo Indian History - Joe S. Sando

Roads to Center Place: A Cultural Atlas of Chaco Canyon and the Anasazi - Kathryn Gabriel

To the Inland Empire: Coronado and Our Spanish Legacy - Stewart L. Udall

A Generic Design for Public Involvement Programs - Desmond Connor

Addressing Environmental Justice Under the National Environmental Policy Act at Sandia National Laboratories/New Mexico - Timothy M. Cohen and Denise R. Bleakly

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Appendix C

Glossary

Aleut

Includes persons who indicated their race as "Aleut" or reported entries such as Alutiiq, Egegik, and Pribilovian.

American Indian

Includes persons who indicated their race as "American Indian," or entered the name of an Indian tribe, or reported such entries as Canadian Indian, French-American Indian, or Spanish-American Indian.

American Indian Trust Lands

Trust lands are property associated with a particular American Indian reservation or tribe, held in trust by the Federal Government. Trust lands may be held in trust either for a tribe (tribal trust land) or for an individual member of a tribe (individual trust land). Trust lands recognized for the 1990 census include all tribal trust lands and inhabited individual trust lands located outside of a reservation boundary. As with other American Indian areas, trust lands may be located in more than one state. Only the trust lands in a given state are shown in the data products for that state.

Asian or Pacific Islander

Includes persons who indicated one of the Asian or Pacific Islander groups listed on the questionnaire or who provided write-in responses such as Thai, Nepali, or Tongan.

Baseline Population

For the purpose of this analysis, block groups are included in the analysis if 50 percent of the block group's geographic area lies within the 80-km (50-mile) radius of the study area.

Black

Includes persons who indicated their race as "Black or Negro" or reported entries such as African American, Afro-American, Black Puerto Rican, Jamaican, Nigerian, West Indian, or Haitian.

Block Groups

A geographic block group is a cluster of city blocks within a census tract. Block groups never cross census tract boundaries, but may cross the boundaries of county subdivisions, American Indian and Alaska Native areas, urbanized areas, voting districts, and congressional districts. Block groups generally contain between 250 and 550 housing units, with the ideal size being 400. Block groups can vary in size significantly depending on whether they are located in a rural or urban setting.

Census Tracts

A census tract is an area defined for the purpose of monitoring census data that is usually comprised of between 2,500 and 8,000 persons. Census tracts are designed to be homogeneous with respect to population characteristics, economic status, and living conditions. Census tracts do not cross county boundaries, and the spatial size of tracts varies widely depending on the density of the settlement. Census tract boundaries are delineated with the intention of being maintained over a long period of time so that statistical comparisons can be made from census to census.

Community Involvement and Issues Management (CIIM)

The program office at SNL that is responsible for involving the public in the decision-making process for any actions that may affect them or their communities.

Community Profile

A community profile is a comprehensive summary of the key characteristics of the people of a community or study area (Connor, 1992).

Disproportionately High Adverse Human Health Effects

When determining whether human health effects are disproportionately high and adverse, consider the following three factors to the extent practicable:

- Are the health effects, which may be measured in risks and rates, significant (as defined by NEPA), or above generally accepted norms? Adverse health effects may include bodily impairment, infirmity, illness, or death.
- Is the risk or rate of hazard exposure by a minority or low-income population to an environmental hazard significant (as defined by NEPA) and does it (or is likely to) appreciably exceed the risk or rate to the general population or other appropriate comparison group.
- Will health effects occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards?

(source: EPA: 1996, adapted from *Guidance for Federal Agencies on Key Terms in Executive Order 12898*, developed by the Interagency Working Group on Environmental Justice, August 1995.)

Disproportionately High Adverse Environmental Effects

When determining whether environmental effects are adverse and disproportionately high, consider the following three factors to the extent practicable:

- Is there (or will there be) an impact on the natural or physical environment that significantly (as defined by NEPA) and adversely affects a minority or low-income population? Such effects may include ecological, cultural, human, health, economic, or social impacts on minority or low-income communities when those impacts are interrelated to impacts on the natural or physical environment.
- Are environmental effects significant (as defined by NEPA) or may they be having an adverse impact on minority or low-income populations that appreciably exceed (or are likely to) those on the general population or other appropriate comparison group?
- Do environmental effects occur (or are they likely to) in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards?

(source: EPA: 1996, adapted from *Guidance for Federal Agencies on Key Terms in Executive Order 12898*, developed by the Interagency Working Group on Environmental Justice, August 1995.)

Environmental Justice

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group (including racial, ethnic, and socioeconomic groups) should bear a disproportionate share of the negative human health or environmental consequences resulting from industrial, municipal, or commercial operations, or the execution of federal, state, local, and tribal programs and policies (USEPA, 1996).

Eskimo

Includes persons who indicated their race as "Eskimo" or reported entries such as Arctic Slope, Inupiat, and Yupik.

Federal and State American Indian Reservations

Federal American Indian reservations are areas with boundaries established by treaty, statute, and/or executive or court order, and recognized by the Federal Government as territory in which American Indian tribes have jurisdiction. State reservations are lands held in trust by state governments for the use and benefit of a given tribe. Reservations and their boundaries were identified for the 1990 census by the Bureau of Indian Affairs (BIA), Department of Interior (for Federal reservations), and state governments (for state reservations). Names of American Indian reservations recognized by state governments, but not by the Federal Government are followed by "(State)." Areas composed of reservation lands that are administered jointly and/or are claimed by two reservations, as identified by the BIA, are called "joint use areas," and are treated as separate American Indian reservations for census purposes.

Finding of No Significant Impact (FONSI)

A finding of no significant impact determination requires an answer to this question: Does the proposal qualify as a "major federal action significantly affecting the quality of the human environment?" If it does, an EIS is required. If it does not, a FONSI may be issued.

Hispanic Origin

Persons of Hispanic origin are those who classified themselves in one of the specific Hispanic origin categories on the census form: Mexican, Puerto Rican, Cuban, or Other Spanish/Hispanic. Persons of "Other Spanish/Hispanic" origin are those whose origins are from Spain, the Spanish-speaking countries of Central or South America, or the Dominican Republic, or they are persons of Hispanic origin identifying themselves generally as Spanish, Spanish-American, Hispanic, Hispano, Latino, and so on. Origin can be viewed as the ancestry, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. Persons of Hispanic origin may be of any race.

Issues Management Plan (IMP)

An issues management plan should identify the affected population(s) in detail and state what measures will be taken to engage them in the public participation process. Any mitigation measures resulting from this process should be made available to the public in a mitigation action plan (MAP), finding of no significant impact (FONSI), or record of decision (ROD).

Low-Income Block Groups

Block groups whose percentage of low-income individuals exceed the state average of 21 percent are considered low-income block groups (see Table 1).

Low-Income Individuals

The income cutoffs used by the Census Bureau to determine the poverty status of families and unrelated individuals included a set of 48 thresholds arranged in a two-dimensional matrix consisting of family size (from one person to nine or more persons) cross-classified by presence and number of family members under 18 years old (from no children present to eight or more children present). Unrelated individuals and two-person families were further differentiated by age of the householder (under 65 years old and 65 years and over).

The total income of each family or unrelated individual in the sample was tested against the appropriate poverty threshold to determine the poverty status of that family or unrelated individual. If the total income was less than the corresponding cutoff, the family or unrelated individual was classified as "below the poverty level." The number of persons below the poverty level was the sum of the number of persons in families with incomes below the poverty level and the number of unrelated individuals with incomes below the poverty level.

**Table A-2. Poverty Thresholds in 1989 by Size of Family
and Number of Related Children Under 18 Years**

Size of Family Unit	Weighted average thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or More
One Person (Unrelated Individual)	\$6,310									
Under 65 years	6,451	\$6,451								
65 years and over	5,947	5,947								
Two persons	8,076									
Householder under 65 years	8,343	8,303	\$8,547							
Householder 65 years and over	7,501	7,495	8,515							
Three persons	9,885	9,699	9,981	\$9,990						
Four persons	12,674	12,790	12,999	12,575	\$12,619					
Five persons	14,990	15,424	15,648	15,169	14,798	\$14,572				
Six persons	16,921	17,740	17,811	17,444	17,092	16,569	\$16,259			
Seven persons	19,162	20,412	20,540	20,101	19,794	19,224	18,558	\$17,828		
Eight persons	21,328	22,830	23,031	22,617	22,617	21,738	21,084	20,403	\$20,230	
Nine or more persons	25,480	27,463	27,596	27,229	27,229	26,415	25,719	25,089	24,933	\$23,973

Source: Census of Population and Housing, 1990: Summary Tape File 3 on CD-ROM Technical Documentation, prepared by the Bureau of the Census, 1992.

Minority Block Groups

Block groups whose percentage of minority individuals exceed the state average of 49 percent are considered minority block groups. (see Table 1).

Minority Individuals

Individuals of the United States classified by the U.S. Bureau of the Census as African-American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons are considered minority.

Mitigation Action Plan (MAP)

The mitigation action plan outlines an agency's commitments to mitigation that are essential to render the impacts of the proposed action not significant, beyond those that are integral elements of the proposed action. Forms of mitigation include avoiding or minimizing the impact; rectifying the impact through repair, restoration, or rehabilitation; reducing or eliminating the impacts over time; and compensating for the impact by replacing resources or providing substitute resources or environments.

Record of Decision (ROD)

A ROD is a federal agency's final decision with respect to the proposed action and alternatives analyzed in an environmental impact statement. It must be published in the *Federal Register* and made available to the public. A ROD should state what the decision was, and identify all alternatives considered by the agency in reaching its decision, specifying the alternatives that were considered to be environmentally preferable, and how the agency balanced economic, technical, and other considerations. It should also state whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted and, if not, why they were not.

Study Area

The potential study area used for this study consists of a circle with an 80 km (50 mile) radius centered on SNL Technical Area V. The analysis covers an area of approximately 20,106 square kilometers (7,854 square miles), and includes 1,588 individual census block groups. This particular study area is intended to serve as a baseline. Although each program, project, or activity will have a unique study area, it is likely that the majority of impacts associated with SNL will lie well within this study area. However, projects that may potentially impact areas outside the study area used in this analysis should prepare a demographic baseline analysis that incorporates all areas that could be potentially impacted.

White

Includes persons who indicated their race as "White" or reported entries such as Canadian, German, Italian, Lebanese, Near Easterner, Arab, or Polish.

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