SOCIAL MANUAL ANALYSIS

Volume 2:
Social Analyst's Guide to Doing Social Analysis

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center

2001

Social Analysis Manual

Volume 2: Social Analyst's Guide to Doing Social Analysis

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center

2001

For information about this report, contact:

Bureau of Reclamation
Technical Service Center
Denver Federal Center
D-8580, Bldg. 67
Denver CO 80225-0007 USA

tcoulter@do.usbr.gov
303-445-2706

This manual was produced by

Bureau of Reclamation
Technical Service Center
Thayne Coulter, Sociologist, Resource Management and Planning Group, D-8580
Deena Larsen, Technical Writer, Technical Communications Group, D-8011
Marcia Knott, Visual Presentations Group, D-8012

In collaboration with Rabel J. Burdge
Professor of Sociology and Environmental Studies
Western Washington University
Bellingham, Washington

What is this Manual?

The Social Analysis Manual is guidance for the Technical Service Center (TSC) under the Manuals and Standards Program.

The Reclamation Manual website <http://www.usbr.gov/recman> contains:

- Policy which reflects Reclamation's philosophy toward social assessment
- Directives which contain the minimum standards for all social assessments

This TSC manual provides more detailed instructions and information to effectively tailor a social assessment within diverse contexts, socio-cultural settings, and decision processes.

Each program or project involves different purposes and objectives, problems and issues, individual organizations, communities, and people. Thus, no one-size-fits-all approach can provide the needed analyses and insights. We present a range of approaches and suggestions to help focus analyses to present findings that are useful to decisionmakers. Social analysts can use this manual to perform analyses and show the significance of social impacts to the range of alternatives in a proposed decision or action. However, the analyst must rely on professional judgment and expertise to determine and provide the relevant insights for decisionmakers.

Table i.1.—Overall guide to this manual

Chapter	Audience	Find out	Take action
Volume 1: Manager's Guide to Using Social Analysis			
Chapter 1: Executive overview	Decisionmakers, team leaders, managers, and social analysts	Why are social analyses needed? How do social assessments fit into multidisciplinary decision processes?	Use social analysis to implement successful solutions
Chapter 2: Social analysis in the decision process	Team leaders and social analysts	What specific information will we gain from a social analysis and at what stage? What is the role and input of a social analyst?	Write a statement of work Determine expectations in particular studies
Chapter 3: Ensuring useful, accurate results	Managers, team members and leaders, contractors, Contracting Officers, and Contracting Officers' Technical Representatives	How can we track the progress of a social assessment? How can we judge the plan?	Evaluate contract proposals and finished products
Volume 2: Social Analyst's Guide to Doing Social Analysis			
Chapter 4: Effective mindsets for the Reclamation social analysis process	Social analysts, team leaders, and managers	How to tailor social assessments to Reclamation's requirements?	Determine Reclamation's context and to focus the assessment on important decision factors
Chapter 5: Approaches and strategies for the social analysis	Social analysts and team leaders	How can I plan and execute a social analysis? How do we scope out and create a social assessment plan and statement of work?	Develop a complete, focused social analysis plan and estimate of work
Chapter 6: Measurements	Social analysts, team leaders, and managers of social analysts	What factors, impacts, and issues are important?	Determine what to measure in a social assessment
Chapter 7: Data sources	Social analysts	What sources of data are available?	Determine the most effective investigation approaches
Chapter 8: Analysis methods	Social analysts	What methods of analysis are best in what situation?	Select analytical methods and approaches
Chapter 9: Sharing the results	Social analysts, technical writers	How do we present the material most effectively?	Close the process and present the results

Volume 2: Social Analyst's Guide to Doing Social Analysis

How social analysis is used and viewed within Reclamation is described in Volume 1: Manager's Guide to Using Social Analysis and the social analysis policy and directives and standards in the Reclamation Manual <http://www.usbr.gov/recman>.[1] This volume gives suggestions for social analysts to:

- **Use social analysis in Reclamation**.—What assumptions are in place as the social analyst approaches the task within Reclamation.
- **Plan approaches and strategies**.— How to determine which factors will drive decisions, decide what approaches and techniques to use and determine what to do within the staff days allotted.
- **Focus the measurement**.—How to ensure that the decisionmaker has the relevant and significant information to make a decision. What information is really needed to measure the important factors.
- **Gather data**.—Where to look for the data and perspectives to measure social impacts.
- **Analyze the information**.—How to keep your analysis within a reasonable time frame and create a framework to evaluate impacts within the context of affected communities and people. What to do with the information.
- **Present results.—**How to communicate results to the publics and decisionmakers in a usable form. How to present findings within the context of Reclamation reports.

Social assessment policy reflects Reclamation's philosophy toward what a social analysis or a social assessment (also called a social impact assessment) contributes to a decision process. Please read Reclamation's policy before proceeding through this manual.

Remember, steps in the social assessment are not always linear or chronological—often new information, issues, participants, and alternatives create the need to re-plan the approach, redefine the context, and may even require the development of new indicators or categories.

[1] At the time of printing, these are in draft form. They will be posted on the Reclamation Manual site and updated in Appendix 2-E when final.

Defining terms

We recognize that there is an academic debate over specific definitions of terms. Our focus is a practical application within a Federal agency. Therefore, we are using the terms "social impact analysis practitioner," "practitioner," "social analyst," and "social assessor," as synonyms to refer to the person who uses the Social Analysis Manual to do the social analysis.

One definition of social impact assessment is "a part of the rational problem solving process serving to facilitate decisionmaking activities by determining the range of social costs and social benefits of the alternative proposed courses of action" (Burdge et al., 1999, p. 31).

For Reclamation's purposes, we are defining "social analysis" as the process of considering impacts on humans, and "social assessment" as the product of the analysis (the results needed to describe the impacts on the human community from the action).

Volume 2: Table of Contents

Tables

Figures

Appendices

Chapter 4: Effective mindsets for Reclamation social analysis

This chapter is designed to clarify the assumptions about the task and role of a social analyst within Reclamation. Understanding the "world view" and the cultural context of Reclamation is vital to producing a useful analysis.

The social analysis process is complex and analytical, with stages that are simultaneous and iterative rather than sequential and finite. Initially the question is "What do we know?" This applies to the problem, the geographic and social area, as well as any proposed action to solve an identified problem. Almost immediately we ask "Given what we know, what do we need to know?" This is once again within the context of the problem, the area, and potential solutions. "How can we get the data, analyze it and communicate the results?" "What can we do to solve the problem?" Each of these questions will be repeated throughout the analysis process.

Without a specific problem to solve, the process makes little sense. Once the process has been experienced and applied as a conscious process to solving a problem, it becomes common sense and the relationships among problem definition, analysis of relevant information, and finding a workable solution are taken for granted.

Clarifying assumptions

Research approaches

An educational background in the social sciences, particularly at the graduate level, imposes a research approach designed to gain knowledge through hypothesis testing. The techniques, skills, and concepts taught form a mindset for the analyst.

Reclamation does social analysis as part of an overall assessment process to find the best solution to a problem before taking action. Thus, social analysts need a practical mindset.

The task here is finding solutions to problems that are implementable, acceptable, and sustainable. The insights gained from the social analysis is directly applied to resolving the problem—not to professional journal publication.

Hypothesis testing, empirical research, and statistical causal inference are not emphasized. Moreover, as interaction and involvement continually modify the proposed action and perceptions of the people affected in all applied participatory decision processes, these methods do not meet our needs.

Reclamation's decisionmaking context

Most of the decisions facing Reclamation are framed in the form of a problem or need which requires a solution acceptable to groups outside of Reclamation. Within Reclamation, the assumption is that good decisions are based on sound technical information. Short, strict timeframes with limited funding and resources are normal operating conditions.

The content and format of these reports are often defined by law, Executive Order, or Reclamation and Department of the Interior regulations and directives.

Reclamation uses interdisciplinary teams to produce analytical reports that integrate information from all relevant disciplines to make recommendations to decisionmakers. The team leader's role is to facilitate the team's activities so that members work together with a common understanding of the purpose and team product. The final product is not separate reports stapled together, but an integrated presentation with the team's diverse perspectives brought together. We assume that each technical specialist represents their discipline and keeps the team aware of data needs, analysis results, and recommendations. We also assume that each specialist will use the best science and supporting technology to provide the best possible information to the decisionmaker.

The social analyst is a technical specialist who analyzes the effects of Reclamation's actions on an affected population. The social assessment contributes unique perspectives:

- **Training in using a variety of conceptual approaches, data gathering techniques, and analytic methodologies used by social sciences.**—Analysts use this training to provide information toward the common goal of solving an identified

problem. Analysts must communicate their methodology, findings, and recommendations within the context of the diverse technical analyses.

- **Experience in applying and analyzing human communities**.—This results in an understanding and a perspective not shared by other disciplines. People are the only resource that Reclamation works with that provide direct feedback about proposed actions. Fauna and flora cannot tell us how they view changing water uses and habitat impacts. Thus, the findings from the social analysis will by their nature come from a different unit of analysis than other disciplines. The feedback from the affected populations may, and often does, change the solutions to the problem and build consent among different interest groups and communities.

Agencies perform social analyses differently according to their respective missions. While some agencies have limited social analysis to describe the demographic history of communities, others have implemented it as a holistic approach to understand the vision of a community's future. Reclamation's approach is to assist the decisionmaker by determining relevant information for the problem being solved.

Focusing the process

Using time and resources wisely

As a social analyst, you will be given background information on the project and project area and a rough idea of the time and funding available to you. The team leader and team members work together to schedule the tasks and estimate the time and resources needed.

Studying every possible impact from each action would take years of analysis and quickly bankrupt Reclamation's resources.

Technical Service Center (TSC) employees need to pay attention to Technical Service Center Operating Guidelines <http://intra.usbr.gov/~tsc/TscMemos/index.html> and coordinate with their supervisor in providing Service Agreements and Task Based Estimates and in prioritizing this project with the rest of their time and effort. If the work is to be completed under a contract, statements of work that contain descriptions of tasks, staff capability, staff day estimates, and costs will be produced to answer request for proposals and contracting requirements. (See Chapter 5: Approaches and strategies for the social analysis.) Specifics on coordinating the work will depend on Reclamation management and the contracting company.

Time and resources will be constrained. In Reclamation, the social analysis must be geared to providing the decisionmaker the needed information. Ensure that the analysis is not sidetracked. Focusing is central to planning, measuring, gathering data, analyzing, and presenting the material.

Determining what is needed

A selection process sometimes referred to as "triage" is applied where the most important questions are answered first. Triage is a term borrowed from emergency medicine to determine what actions to take in a life or death situation—what are the priorities?

Triage in a social analysis uses the same approach to determine what information is absolutely vital to the decision. Simply put, the question is "What is the most useful information I can provide the decisionmaker, technical team, and affected publics within the time, funding, and resource constraints of this project?" If the major purpose of the project is to conserve water to keep salt out of the river, don't analyze rates of juvenile delinquency. On the other hand, analyzing large construction impacts in a boomtown may require studying juvenile delinquency rates.

What to study

The constraints of the project will help determine: "What is to be studied?" "How will it be studied?" and "How will it be presented?" We are frequently tempted to study only what can easily be gathered or calculated. But statistics don't always answer the relevant questions. To winnow out irrelevant issues to study, ask:

- Is what I am analyzing an issue? Does the affected population care about this issue?
- Is this issue relevant to the project?
- Is this issue relevant to the community?
- Is this issue crucial to accepting or supporting the solution?

If you determine the issue does not need to be studied, eliminate it from further study and document your reasons. To determine how to study the relevant issues left, ask:

- What are the most important data needs?
- What can be done in the allotted time and staff resources?
- Are there identifiable meaningful thresholds of impacts?
- Will this issue demonstrate a contrast or comparison among alternatives that will help make a decision?
- How can we measure, gather data and analyze, and present the information on this issue in a meaningful way?

To work within the limited time, ask:

- What innovative techniques can be used to accomplish the study within the constraints?

- What information can you get for the decisionmakers and community that will provide reasonable results?

Focus on what is relevant to the project and what is most important to gather in a limited time. Document the process and results.

This chapter explains how to get into the mindset of a Reclamation social analyst to provide what Reclamation needs to make balanced decisions.

Within Reclamation, the social analyst helps the team understand the consequences that a proposed action will have on the day-to-day lives of human communities—before Reclamation acts.

The next four chapters suggest approaches to planning and doing a social assessment for the assigned project.

Chapter 5: Approaches and strategies for the social analysis

This chapter lays the foundation for the social analyst to determine what the resulting social assessment will accomplish, how it will be produced and how it will contribute to the overall analysis effort and interact with other scientific analyses. The social analysis plan also covers who will be responsible for the tasks.

Plan the study to ensure that it is workable, flexible, and doable.

This chapter focuses on developing a strategy and plan for the social assessment. In addition, two case examples provide directions on the amount and directions of the analysis.

A social analysis plan is needed very early in the planning stages. This can be a plan of study, a scope of work, a statement of work, a contract, a memorandum of agreement, or any other document that outlines who will do what and when and how much funds and resources will be needed. The social analysis plan may change but it must show that your actions are reasonable and will provide useful results (See Volume 1: Manager's Guide to Using Social Analysis, Chapter 3: Ensuring useful, accurate results.)

This chapter also provides accepted guidelines for the social analysis plan so that the social analyst can defend the methodology and explain the final results.

Groundwork: Getting the context

Knowing what the process is expected to accomplish and what resources are available is crucial to developing the social analysis plan. To understand what is expected during the analysis and where you as a social analyst fit into the overall interdisciplinary team, ask team leaders, look at similar projects, and find out what has already been done.

What are we doing?

Reclamation's programs and projects have various levels of analysis. These range from quick studies (to determine if Reclamation should be involved) to in-depth analyses (to compare alternatives and determine the best course of action). At each of these analysis levels social analysis is crucial. However, the extent of the effort will vary in depth, focus, and geographical area. Also, efforts will depend on the stage in the program's or project's life. Table 5.1 lists varying levels of decisions, the information decisionmakers need, and the type of social analysis that might be done to provide the needed information.

Table 5.1. Matching the level of decision with the social analysis input and output

Level	Decisions to make	Needed information	Type of assessment
Appraisal, preliminary	Should Reclamation be involved in solving or addressing this issue? Is this action worth pursuing? (types of decisions: funding a study, forming partnerships).	What are the water problems and needs of the affected publics?	Initial screening. Briefly review the history of water use in the community. Do a short needs assessment.
Feasibility, initial stages	Is addressing the problem going to work? (types of decisions: go/no go).	Is there a potentially workable solution? Are there any fatal flaws in these solutions?	Develop a community profile, review the concerns of interested and affected publics. Identify factors and analyze for fatal flaws. Preliminary analysis of the values on water and water uses in the community.
Feasibility, definite plan	What is the optimal way to address this issue? (types of decisions: forming a definite proposal and a range of alternatives).	Are there ways to refine the alternatives to help ensure the action's success and to minimize social impacts to the communities?	Complete a social assessment to refine alternatives. Do a comparative analysis of social impacts for each alternative.
NEPA[1] compliance (EAs, EISs, SIAs[2]), cost benefit analyses	What is the proposed action and how will that action affect the human environment?	What are the social impacts? How do they differ among alternatives?	Provide an in-depth analysis and comparative impact assessment.
Resource Managemen t Plans (especially reservoir use and recreation)	How will the proposed management plan affect the human environment? (types of decisions: operating and managing resources).	What are the changes and restrictions on water use and how will the communities be affected?	Provide a comparative tradeoff analysis among alternatives.

[1] NEPA - National Environmental Policy Act
[2] EA - Environmental Assessment
EIS - Environmental Impact Statement
SIA - Social Impact Assessment

At times, more than one level of decision is being applied on the same study. Tailor your social assessment to the information needed. You may be asked to explain what information the completed social assessment will provide and why that information is useful.

What resources are available?

How much can be done depends on what time and resources are available. Work closely with the team leader and other team members to tailor the approach and strategy so that it fits the needs of the project.

Ask:

- **What is the project's budget and resources?** Determine what can be done in the time available, and identify what data and social assessment variables will be addressed. Determine how you will identify and deal with the unknowns. (See chapter 8, section, Dealing with uncertainty.)

- **What is the timeframe of the project?** To schedule your data gathering and analyses, determine what depends on results from hydrology models, biological assessments, and economic forecasts. Base the social analysis work schedule on when these will be available and when the assessment must be completed.

- **What studies and resources are already available?** Knowing how impacts will affect the human communities depends on knowing past research. Previous projects in similar situations are often the best sources for identifying resources for information, analyses, and studies. (See chapter 8, section Using alternative scenarios to compare impacts).

Other types of studies may also hold relevant information. Check with other agencies (e.g., Bureau of Land Management [BLM], Fish and Wildlife Service [FWS], and Bureau of Indian Affairs [BIA]), local communities, social science departments, and other possible sources about studies in the area. Important data can come from discussing potential issues and impacts with people who may be impacted. Are there key informants or experts on staff that know the area? A skilled social analyst can do this without creating increased anxiety. (See chapter 7: Data sources.)

Who is doing what?

As social analysis is conducted within an overall multi disciplinary team, determining who is doing what up front will save time and money. (Volume 1: Manager's Guide to Using Social Analysis has more information about working within an interdisciplinary team.)

Ask:

- What disciplines are on the team?
- What level of analysis and data sources will these disciplines use?
- What information will other team members provide to the social analyst?
- How will the public involvement efforts fit within the social analysis plan?

Decision process to develop a social analysis plan

Setting up the groundwork for developing a social analysis plan and following a decision process on creating the social analysis plan will help you determine the best approach. Use the questions and considerations in table 5-2 as a guide to focus the social assessment. You will need to decide what can be done to get the answers needed for your particular process. Although each analysis has some unique aspects, the outline will provide guidance in developing a plan.

This table is based on the steps in Reclamation's Decision Process Guidebook <http://www.usbr.gov/guide>.

After using this table to do a few social analyses, these questions should become second nature and you will be able to quickly determine what is needed in each situation.

Table 5-2.—Decision process for developing a social analysis plan

Step	Questions to answer and points to consider within the social analysis plan	
Needs What do we know? What do we need to know to make an effective decision? How do we fill in the gaps between what we know and need to know? (e.g., needs assessments)	In a preliminary way, determine what information about social impacts the decisionmaker needs: • What is the proposed action, program, project, policy change etc. • What is the background and context of the action? (e.g., Where is the project area? Why and how was it settled? What are the demographic history and projected population trends?) • What is the purpose of the action? Why is a change or action needed? • How does the action relate to overall activities in the area and Reclamation's programs? • Based on similar situations, what are the likely social impacts? • Who may be affected?	
Objectives How can the social analysis plan produce the relevant information?	Determine the roles and goals of the social assessment: • What is the role of the social analyst in the decision process? • What kind of input is expected? For example: — Obtain description of proposed action and alternatives (including problem identifications and needs assessments) — Provide decisionmaker and publics with relevant information — Suggest actions that will minimize negative and maximize beneficial impacts — Assist in problem solving as part of the team • What are the expectations of the clients, the decisionmakers, and the affected community? • What is the objective of the social analysis process? • How will the social assessment be focused to provide relevant information?	
Resources/Constraints What do you have to work with? What are the limitations, boundaries, and barriers to the assessment?	Catalogue the available **resources:** • How much time do you have and what is the schedule? • How much funding is available (from Reclamation, partners, etc.)? • Which organizations and agencies are involved • Who might be affected? • What type of data are available from previous Reclamation (or other) activities? • Are there environmental and social assessments that deal with similar projects? • What personal resources do you bring (e.g., training, skills, experience, and the ability to innovate?	Identify process **constraints:** • How will available time, the schedule, and funding limit the assessment? • How will staff availability and other work priorities affect your work? • How will the legal constraints (e.g., Paperwork Reduction Act)—limit data sources (e.g., surveys of the general population)?

Table 5-2.—Decision process for developing a social analysis plan

Step	Questions to answer and points to consider within the social analysis plan
Options How you can do the work? What can you do? • What are the types of impacts you will be looking at? • What data do you need? • What is the most efficient way to provide the information to meet needs? Who can do the analysis? Are there persons within the agency to do the work?	To determine how to do the work, look at ways to gather primary and secondary data (See Chapter7: Data sources) and analyze the available data (see Chapter 8: Analysis methods). General ways to get the work done include: • Perform a brief in-house analysis (community profile) • Visit the community (key informants) • Relocate to the community for as a participant/observer (ethnography) • Analyze census data (demographic profile) • Contract with university faculty • Contract with a consulting firm • Work with appropriate non-governmental organization in the community • Partner with other federal, state, and local agencies
Screening criteria What fatal flaws will keep an option from working? What can you accomplish within the timeframe and funding limits? Will the option meet the information needs? NOTE: If none of the options meet your criteria for a workable assessment, then you may need to convince the decisionmakers, managers, etc., of the need to examine social impacts to gain the priority and resources necessary to do it.	Screen these options for gathering data to determine what actions you can take. For example, options must: • Get results within the: — Timeframe — Budget — Legal constraints on data availability and access — Staff availability • Meet acceptability standards of community and decisionmakers • Meet client's and team leader's expectations within funding constraints • Provide relevant information
Alternatives What are the workable combinations of techniques to do the social analysis?	Combine options that pass the screening criteria. You may need to be innovative to meet the needs of the particular study. Sketch out alternative social analysis plans. Include a range, such as: • No action (No social assessment will be done) • Rapid appraisal (Quick visit with key stakeholders coupled with census and secondary data) • Detailed analysis (Use both secondary and primary data, talk with key informants, and interact with stakeholders) • In-depth analysis (Include all of the above and use comparative projection models with both primary and secondary data)

Table 5-2.—Decision process for developing a social analysis plan

Step	Questions to answer and points to consider within the social analysis plan
Evaluation What is the best way to do the social analysis? What will we need for this project and program? What will fit our budget? What is best under the existing constraints and with the available resources to meet the objectives?	Determine the best fit for the situation. Then propose this plan to managers and decisionmakers to get the resources needed. Think about tradeoffs among the different social analysis plans. The plan you choose will depend on the team's priorities. Is it more desirable to be: • Fast (A quick assessment may cost less but miss some important information.) • Defendable (An in-depth analysis may stand up to legal scrutiny if it meets scientific standards but may be too expensive in terms of time or money.) Other considerations include being: • Accurate (the less uncertainty, the better) • Compatible and useful for other disciplines • Useful and relevant to the decision • Complete and comprehensive • Understandable to all participants and decisionmakers Compare alternatives and refine the best one by combining techniques. See Volume 1: Manager's Guide to Using Social Analysis, Chapter 3 for a more thorough checklist to evaluate social analysis plans.
Selection Decide on the plan	The team leader and client (or decisionmaker) directly influence the decision. Decide how to perform the analyses within the constraints and requirements. Get buy in and commitment as early as possible.
Implementation Carry out the analysis and produce the social assessment.	Apply the plan and carry out the analysis. Produce a product (social assessment). The timing may relate to other disciplines (although it is ideal to proceed together, the social analyst may have to wait for data from other team members).
Follow up Make sure the assessment provides relevant information. If necessary, modify the plan to do the analysis or produce the assessment.	Establish monitoring criteria and review procedure for the assessment. Do reality checks with other team members, team leader, stakeholders, and decisionmakers. Avoid unanticipated impacts by working with affected stakeholders and implementers. As appropriate, develop a monitoring program to assess the need for mitigation and enhancement. For alternatives or the selected action, work with stakeholders to implement mitigation and enhancement program. For long-term mitigation programs, determine if there is a commitment for funding (Who will fund it?) and people available (Who will do the work?).

Focusing the social analysis

Concentrate the social analysis on what is important in this particular case, what will be affected, and what the community and decisionmakers need to know about a particular project. What counts in one program or project is often irrelevant in the next.

This initial assessment is generally referred to as scoping, which in the context of social analysis means to consult with the affected and interested publics to define the extent of the proposed action. To understand the context of the proposed action, look for implications within:

- **An overall context.**—Where does this action fit within the community and Reclamation's programs? What is the level of priority? What is the relation to other Reclamation activities and other activities in the area? What are potential cumulative impacts?

- **Communities.**—What will change within this geographic zone of influence? How will these changes affect the long term sustainability of the community, the action, and other actions?

- **Smaller groups.**—Look at the make-up of the communities (e.g., families, neighborhoods, organizations). Which individuals will be affected? How and why?

What is important?

Community leaders and decisionmakers will help you determine what is important. Find out what the needs, belief systems, and values are from what people in the project area are doing.

- What do people view as issues or needs in their communities?

- What are their priorities for water uses?

- How does the proposed project or policy change fit local needs and priorities for water uses?

- How does the proposed action fit priorities on a national and regional level?

What will happen as a result of a proposed action?

Focus the assessment on what will change as a result of Reclamation's action, rather than the totality of social changes, and what decisionmakers need to know to make balanced decisions:

Reclamation focuses on changes in the use and availability of water and related resources.

- Consider potential impacts from the alternatives and what would happen if Reclamation did nothing (the no action alternative)
- Work on supportable solutions that address these concerns
- Identify and address potential conflicts through tradeoff analysis of benefits and costs to affected individuals and groups

Look at the context of Reclamation's changes. Reclamation's actions are not isolated events—other actions in the zones of influence and societal trends will need to be considered to determine cumulative effects.

Interested and affected parties

Determine what communities, groups, and individuals will be affected and what the constraints (legal, etc.) are. Identify values, beliefs, and attitudes:

Where conflict exists, we must identify ways to promote awareness and provide incentives for solving problems.

- What do the communities perceive as impacts? What is the best way to show these impacts?
- Are the project objectives consistent with their expressed needs, belief systems, and cultural values?
- What do interested and affected parties see as key issues?
- How tolerant is the local population to inquiries from outsiders?
- What insights relevant to the proposed action and alternatives are they willing to share?
- Is it possible to identify key informants or knowledgeable individuals in the community?

Stakeholders at all levels can help identify social concerns and provide information in helping Reclamation set priorities and weigh tradeoffs. These people should be identified from the needs assessment and NEPA scoping in conjunction with public involvement. Listening to affected groups, experts, key people in the community, decisionmakers on other projects, etc. will help identify key issues and determine ways to translate these issues to a manageable program.

Politics

Political relationships, processes, and concerns are a part of the social analysis and cannot be ignored. However, politics should not shade or influence the analysis. Being aware of political concerns helps:

- Highlight which issues and impacts are important to the community
- Avoid surprises later (e.g., court, legislative, and other actions)
- Gauge acceptability and support for alternatives

Informing elected officials and other decisionmakers about the tradeoffs and impacts for all communities will help provide a balanced, effective approach. Keep communication channels open to determine what impacts and issues are important in the political process—and why.

Reclamation's Decision Process Guidebook has tips for dealing with politics.

What questions need to be answered?

First determine the communities' priorities, the context of the action, and the potential impacts. Next, determine what the social assessment will focus on, and what questions the assessment will answer. Ask:

- What are the probable dimensions of the social impacts?
- What variables are important to measure change and what indicators will you use to measure them?
- To what level of detail do you need to analyze these impacts?
- How will the assessment be done?

Chapters 6, 7, and 8 cover these questions in more detail.

Focus the search for:

- **Individuals**.—Who would be affected in the project area? What are their lifestyles, decisionmaking processes, and values? How do they cope with problems, issues, and changes?
- **Communities and local social institutions**.—What communities would be affected? What social institutions such as schools, health facilities, and recreation are present? How do they

interrelate and how are they changing? How do they help people cope with problems, issues, and changes?

- **Formal and informal interest groups**.—How are these groups interdependent? How will they be affected? What socioeconomic categories of residents are affected (e.g., low income, racial, or ethnic groups)?

Data are cheap. Useful information is expensive.

- **Decisions**.—What data will answer the questions relevant to the decision process? What data are needed to determine the sensitivity of those answers? What are the boundaries to the areas where social impacts will be significant?

Outline for a social assessment work plan

The specific outline for a social analysis plan depends on the type of document being produced. Service agreements, memorandums of understanding, contracts, etc. have differing legal requirements (see Volume 1: Manager's Guide to Using Social Analysis, Chapter 3, Ensuring Useful, Accurate Results). This basic outline provides the information needed in any tasking document.

*Where possible, the plan outline should be **peer reviewed** to assess the appropriateness of the proposed approach to the study, the design, data gathering, and analytical procedures.*

1. Background

- **Program.**— Provide a very brief (one or two sentence) explanation of the proposed action, policy, or program being analyzed. Where appropriate, refer to another report section or supporting document.

- **Purpose and need for action**.—Explain what the project hopes to accomplish, what needs will be met, and what objectives fulfilled.

- **Decision context**.—What is Reclamation's decision process and authority? Develop and describe the proposed action or policy change and viable alternatives.

Use the social analysis plan as a basis for more detailed planning. Update and check regularly with the team manager and decisionmakers. Show the rationale for your focus.

- **Project area description**.—Find out enough about the area to get a sense of the potential issues and what would be involved in a social analysis. What are the commercial and industrial focus and trends in the community and surrounding areas? What are the historical and current trends in population and community stratification? What are the relevant factors in local decisions? What are the social organizations and local government units involved? What are the relevant issues and concerns in the decision process?

- **Issues.**—List major issues as a way of identifying potential impacts.

- **Perspectives and attitudes.**— How will the communities and groups view the opportunities and consequences of the actions? Will these be considered beneficial or harmful? What is important to the communities? What are their values as related to water use?

Without careful thought up front, you'll waste a lot of time collecting data that are never used, and you'll invariably miss some essential data.

- **Social assessment expectations.**—How will the results of the social analysis presented in the social assessment be integrated with the other disciplines? How will the results be used?

- **Data sources.**—With the plan in mind, specify the type, category, and sources of data you are going to collect. Describe what is already available. This should be done early in the study—before you start to collect data. Chapter 7 discusses data sources and variables and Appendix 2-D provides a list of variables.

2. Assumptions

Outline the assumptions about the work, the constraints, and analytical approach as a basis for schedule and cost estimates. For example:

- How much data collection will be involved

- How the social assessment works within the overall project impact assessment

- The kind of data that will be provided from related impact assessments (examples include hydrology, economic, recreation, and water quality)

- How public involvement input will be used in the social assessment

3. Tasks, Staff Day Estimates, and Schedule

Outline the tasks and briefly describe the methodology to be used. These tasks will depend on how much analysis is needed and how much has been agreed to, as well as the context, project scope, size of communities, and the timeframe. Estimate the number of staff days to determine the schedule. If the staff days appear to be too much, talk with the team leader about what is reasonable. If you still have more to do than you have resources, you will need to try to explain why you need more resources and how additional analysis will benefit the decision.

Examples of social analysis plans

The following examples are based on the composite case studies described in Appendix 2-A. The table of tasks and schedules with allocated staff days are loosely based on Task Based Estimates produced by the Technical Service Center.

Towee Indian Nation Safety of Dams Project

1. Background

Program

Reclamation is working with the Towee Indian Nation and the Bureau of Indian Affairs to provide safety of dams modification and operations and maintenance on the Towee Diversion Structure, which was built in 1952 by Reclamation. Reclamation owns and regulates the dam.

Purpose and need for action

Ensure that the Towee Diversion Structure does not pose a safety hazard to a small village downstream with an estimated 1,000 lives at risk and less than a half hour warning for structure failure. Towee Indian and downstream non-Indian water rights need to be maintained and downstream resources need to be protected.

Decision context

The Reclamation area office issued an initial environmental assessment that concluded that a full-scale environmental impact statement (EIS) be conducted. This EIS will be done in conjunction with Safety of Dams evaluation and procedures. Suggested actions include replacement at $10 million, modifications at $7 million, or breach at $2 million. Funds for actions are authorized under Reclamation's Safety of Dams program and are limited to actions to ensuring safety of dams. The draft EIS will be issued in 8 months so that groundbreaking for the project could start in the spring—almost 18 months from now.

Project area description

Towee Indian Nation is in Crystal County in Crystal State. The county seat and major urban center is Marble Springs, population 30,000. About 500 non-Indian irrigators live on ranches around the reservation.

The reservation comprises 30,000 acres and was established by treaty in 1873. The decisionmaking body is a tribal council. There are two bands with equal representation. Each band elects two members to the council. Each position is for 4 years, and one member is elected yearly. The social analyst will be working with representatives of the tribal council.

Of the 4,000 enrolled tribal members, 3,000 live on the reservation, most in the village downstream from the Towee Diversion Structure.

Currently there is only a small store, gas station, tribal offices, and a church in the village. There is a grade school, and secondary students commute 30 miles north to the Marble Springs high school. There is a 60 percent unemployment rate on the reservation. Most of the jobs on the reservation are connected with the tribal government, which includes a fish hatchery, forest enterprise, and an irrigation enterprise. Irrigation is used to produce hay for livestock. An assembly plant shut down in the late 1980s. The tribe recently received a recent federal grant to develop a website for marketing tribal crafts and plans are underway for a casino at the tribal park.

Issues

The FWS has declared the ruby-throated trout to be an endangered species, and has identified critical habitat for the species downstream of the diversion structure. Potential Social Impacts issues include fishing, irrigation, and municipal and industrial water. Several sacred sites have been identified in the area.

Perspectives and attitudes

There is a history of controversy over water rights, and the tribe feels their water was stolen in the transbasin diversion, which began in the 1950s from Crystal River to Cold River. The tribe represents about 8 percent of the 50,000 persons in the area.

Social assessment expectations

This social assessment will be part of the EIS and must address potential impacts to Indian Trust Assets (ITA) and Environmental Justice issues.

Data Sources

Project description and background; tribal website; background statement for casino proposal; and verbal communication with Richard Pritchard, BIA Water Management Division; Susan Green Birch, Director of Towee Tribal Enterprises; and Jack Smith, Reclamation's Regional Native American Coordinator.

2. Assumptions

The following assumptions about the work, the constraints, and analyses are the basis for the staff day estimate and planned analytical approach.

- Work will be performed as part of an interdisciplinary team.
- Information needed for the social analysis to put into the social assessment supplied by other disciplines will be produced at least 2 weeks before the deadline for social analysis input to the technical writer.
- The results described in the social assessment will be incorporated into the EIS and integrated with other analyses.
- As much as possible, data will be used from existing sources, such as the impact analysis from the Safety of Dams feasibility report, tribal reports, census, BIA. No questionnaires will be distributed. However, the social analyst may have discussions with knowledgeable individuals in the affected communities. These discussions will not be statistically analyzed.
- Work will be done in-house, as time constraints prevent soliciting for contracts. A university professor, who has done research in the area, will provide a peer review.
- Area office public affairs staff will do the public involvement. Input from public involvement activities (i.e., the scoping report) may be used to provide data for selected social assessment variables.
- Deliverables and reviews are set forth in the task based schedule and staff day estimate.
- Work will comply with Reclamation's policy, directives and standards for social analysis, public involvement, and NEPA compliance.

3. Tasks and schedules

Whether done in-house or contracted out, the activities may take place over a longer period of time than shown by the staff days listed. The final schedule will be developed in conjunction with the team. Staff days are charged at the TSC billable rate.

Tasks	Staff days	Travel and other
Review existing literature, existing reports, tribal, BIA, and census data	3	
Field trip/scoping meeting	3	$1,500
Assist in Public Involvement plan	2	
Gather data (note that key data comes from other disciplines e.g., cost estimates to determine the number and locations of workers).	3	
Analysis	5	
Write input to preliminary or team draft (coordinate with Native American Affairs)	5	
Review team draft for consistency	2	
Outside technical reviews	3	$1,000
Team meeting on comments	1	
Revise to produce input to final draft (coordinate with team)	2	
Review based on comments from decisionmaker, funding office, and publics	3	
Participate in ITA consultation	2	
Team meetings	2	
Total	**35**	

Crystal River Watershed Management Program

1. Background

Purpose and need for action

- To maintain continued water deliveries and meet obligations for downstream Crystal River water and transbasin Cold River water supplies
- To ensure the survival of the ruby-throated trout, thereby removing the FWS jeopardy opinion

Program

- Develop concurrent and interrelated watershed operating plans for Crystal River and Cold River watersheds to meet increased demands for instream flows and municipal and industrial (M&I) uses
- Consider modifications to Marble Springs Dam to provide additional storage for downstream requirements
- Develop alternatives to meet FWS recommended flow regime on Crystal River and to provide habitat for the ruby-throated trout
- Develop a resource management plan for Marble Springs Reservoir
- Develop water conservation plans for the Crystal River Valley and Major City

Decision context

A technical team will prepare an environmental impact statement under the authority given by the regional office. The technical team, with the approval of the Regional Director and guidance from the team leader, will formulate and evaluate alternatives to recommend a preferred alternative. The team will determine the methodology to be used in the evaluation. The EIS (including the social assessment) will be filed with the Environmental Protection Agency (EPA).

Reclamation is the lead on the EIS and will be coordinating with FWS and consulting with the tribe, BIA, U.S. Forest Service, BLM, Crystal State Fish and Game, Crystal State Parks, and Crystal State Department of Transportation.

Scoping meetings will be held and public involvement will continue throughout the analysis, extending to all the affected publics, e.g., Major City, town of

Marble Springs, recreation groups, resorts, ranchers, irrigation districts, power company.

Project area description

Crystal State has a population of 4 million. Major City has a population of 1,500,000 and is entirely in Cold River County. Major City is the capital, located 100 miles northeast from Marble Springs across the Crow Mountain. Travel time from Major City to Marble Springs is 3 hours. Major City gets M&I water by the Davidson pipeline from the Marble Springs Reservoir. The population of Major City has been growing, primarily from high tech industries. No alternative water supplies have been developed.

Major City's unemployment rate is 5 percent, and Crystal State is 7 percent.

Crystal River County has a population of 50,000, of which 30,000 live in Marble Springs, the county seat. Marble Springs is 30 miles upstream by paved county road to the Marble Springs Dam. The area was settled by miners, who were replaced by ranches in the early 1900s. Marble Springs is a boom/bust community and has seen much change.

Hispanics make up 40 percent of the population in Marble Springs. Towee Indian Reservation in the southern part of the county (30 miles southwest) has a population of 3,000 with another 1,000 tribal members living off the reservation.

In the last 30 years, the economy of Crystal River County has shifted from ranching to tourism and resorts. There are still two active mines in the area. Unemployment in the county averages 7 percent but often reaches 15 percent in the off season. Work force in the area tends to be relatively high-skilled in construction labor. In the last 7 years, population has increased due to expansions in tourism and high tech development. The cost of housing has increased dramatically. There is a small community/technical college in the town with 300 students.

FWS and BLM manage 70 percent of the county's lands. Land use decisions on private lands are under the jurisdiction of county planner who is hired by the three-member county commission board. The board members are elected for 3 year terms. A large multinational corporation has recently developed a four season destination resort, attracting tourists from outside the area.

Marble Springs prides itself on maintaining a "crystal clear environment" which attracts white water rafters, brown trout fishermen, and eco-tourists.

Marble Springs Dam provides irrigation water to ranchers in the Crystal River Valley for hay and alfafa production. Ranchers are often of third and fourth generation lineage and are the major community power holders.

Issues

- Endangered species (ruby-throated trout flows and habitat)
- Adequate water for Crystal River and transbasin diversions for Cold River
- Availability of M&I water for growing populations in Marble Springs and Major City
- Recreation at the Marble Springs Reservoir
- Recreation downstream (brown trout fishing, white water rafting)
- Power rate
- Sustainability of the irrigation portion of project
- Basin diversions may limit development opportunities within the county

Perspectives and attitudes

The social analyst will describe the context, past history, and issues and concerns among interested and affected parties.

Social assessment expectations

The social analyst will provide a community profile for each area community for use in public involvement and background sections of the NEPA document. The social analyst will work within the interdisciplinary team. Some of the data needed for the social analysis will be provided by other disciplines (e.g., costs and duration of construction, changes in flows and operating criteria, and potential impacts in their expertise areas). The final social assessment will be used to analyze impacts, refine alternatives, and evaluate alternatives. Indian Trust Assets and Environmental Justice will be included in the final social assessment.

2. Assumptions

This section outlines the assumptions about the work, the constraints, and the analyses, thereby providing a basis for the analytical approach, schedule, and cost estimates.

- Data sources may include reports from other agencies, states, census reports, state recreation reports, prior research in the project area, scoping meetings, and discussions with knowledgeable individuals.
- No questionnaires or survey instruments will be used to contact the general public. Public involvement meetings will be held without using survey instruments.
- The social analyst will work directly with the economist on the team in collecting and developing data for a two county input/output model.
- The social analyst will work with the recreation planner on the team and economist in assessing recreation impacts.
- The Regional public affairs office will coordinate public involvement. The social analyst will assist and use information from the public involvement process.
- Technical peer reviews will be performed on the team draft.

3. *Tasks*

Tasks	Staff days
Gather and review literature, existing reports, profiles, and background data	10-15
Field trip with technical team	5
Coordinate with Public Affairs in developing the initial public involvement plan. Prepare for scoping meetings	10
Participate in formal public scoping meetings as needed	5
Assist in preparing scoping report and identifying groups and issues through analysis of the scoping input	10
Gather data	10
✦ Identify study area, groups, problems and issues, and perceptions and values. Do a preliminary needs assessment. ✦ Identify the communities, groups, and major social organizations to determine what organizational constraints are present in the communities. ✦ Identify the range of probable social impacts that will be addressed after obtaining a technical understanding of the proposal. Base this on discussion with all potentially affected publics.	
Analysis	2
✦ Select indicators ✦ Establish impact parameters and thresholds ✦ Determine the significance of the identified social impacts ✦ Estimate and measure primary, secondary, and cumulative impacts to the extent possible ✦ Analyze and compare potential impacts ✦ Assist team in refining alternatives ✦ Compare social effects and the impacts of plans	5 5
Write input to the technical team draft	10
Review team draft/ Peer review	4
Team meeting to coordinate revisions	2
Revise team draft (which becomes administrative draft for agency review)	3
Team meeting to coordinate changes based on review	1
Revise administrative draft (which becomes a draft EIS filed with EPA)	1
Review and organize public comments	4
Team meeting to coordinate response to comments	1
Revise draft and respond to comments—if no further analysis is needed	5
Technical review/revise for consistency	1
Draft and peer review support	3
Team meetings and coordinate with team to revise and refine comments	1
Revise based on final comments	1
Assemble social analysis appendix as support to decision documents	5
Total	**115**

This chapter provided a detailed explanation of the thought process needed to create a social analysis plan and statement of work. Each process will vary in detail and complexity.

Chapter 6: Measurements

This chapter discusses measuring and understanding both social values and potential social impacts. Social analysts look at the social values about water to determine what is important to the affected communities and to interpret the social impacts in the context of these values. Social analysts use indicators to measure changes and show how these changes are perceived by various groups. Indicators are used to measure impacts on values.

Social values: seeing impacts through all eyes

Impacts by themselves mean very little—it is how people perceive these impacts that counts. Impacts on society (unlike impacts to flows or habitats) depend to an extent on human perception and reaction to the changes. An increase in construction activity may benefit a town that values population growth. The same increase may be seen as disruptive to a town that values stability. A new white water rafting company in Las Vegas may add to recreation diversity, but will have a marginal influence on the town. On the other hand, the same company in a small mountain town may provide new jobs and significantly enhance recreation opportunities.

Tell the decisionmaker what the affected people want out of life—and how the proposed action may alter their way of life.

Organizations and formal groups within the community may view impacts differently. An economic boom will be welcomed by the Chamber of Commerce, but homeowners may be worried about increasing property taxes, and environmentalists may express concerns about the effects of urban sprawl. The social analyst can put these values into perspective through tradeoff analysis. (See tradeoff process in this chapter; chapter 8, section What to do in analysing data; and the triage discussion in chapter 4, section Focusing the process.)

Describing the values in a community makes the results of the impact analysis relevant. Values cannot always be measured, but they can and must be described to provide the context and meaning behind the indicators. For decisionmakers to truly understand the consequences of the alternatives, they need to look through the eyes of the people affected. Social analysts put these values into perspective and make them meaningful to decisionmakers. This perspective gives the needed context for selecting the indicators and analyses.

Consider attitudes from all sides: government agencies, decisionmakers, publics, and implementers.

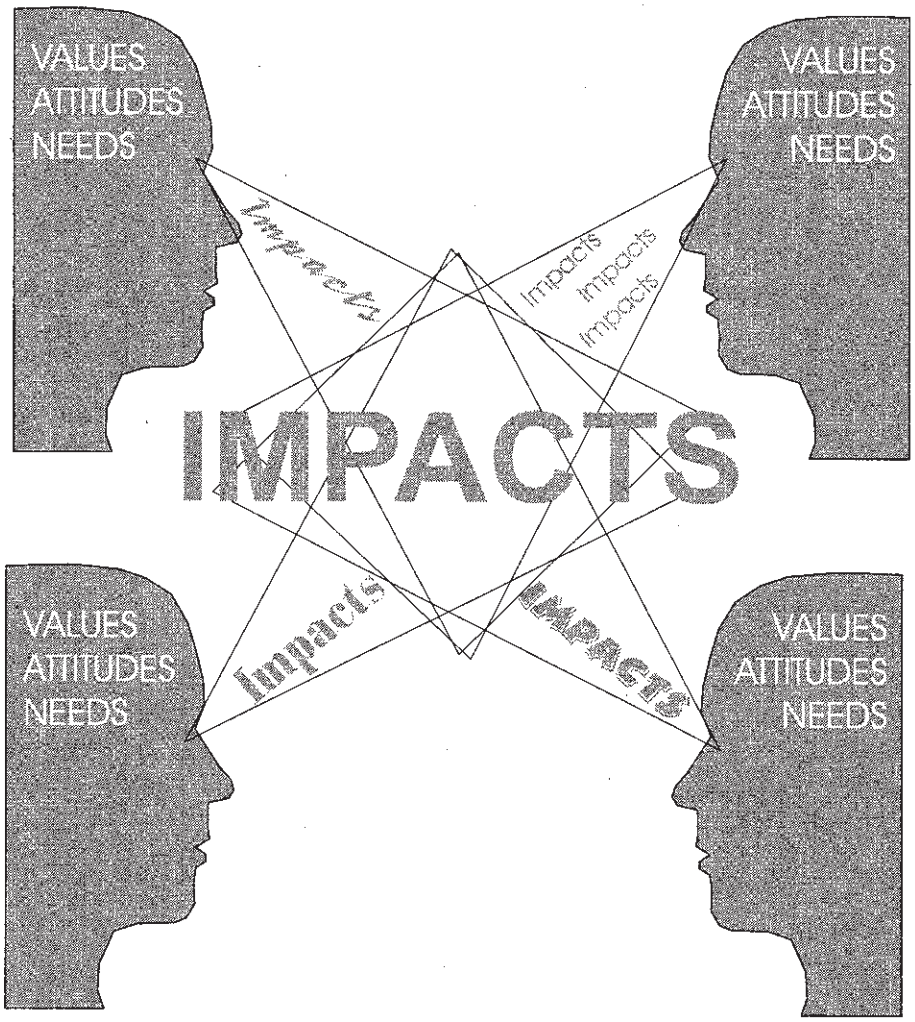


Figure 6.1. People perceive impacts differently.

Attitudes and perceptions underlie an individual's choice to either support or oppose a proposed action. Decisions cannot be implemented without the support and consent of those affected. Thus, we must consider and analyze the reactions to proposed impacts and the values that underlie those reactions. Dismissing these concerns as merely "emotional responses" or "misinformed publics" is dangerous. People often act on emotions which are based on underlying values. Insults to these perceptions will only entrench their positions and raise the level of controversy and hostility. (See politics, agendas, and levels of awareness in the overview to Reclamation's Decision Process Guidebook.)

Understanding values

If a person values something, he or she believes that a certain set of actions or states of being are preferable (adapted from Rokeach, 1973). For example, those who value natural habitat believe that leaving that land undisturbed is preferable to development for agriculture, homes, or industry.

A social value is a belief about what is right and important that is shared by a group or category of people.

People in different social settings perceive basic values in different ways. For example, when members of the Towee Indian Nation talk about individual freedom, they mean being able to go to open land without anyone shooting in or driving through the area. When anglo residents of Crystal River Valley talk about individual freedom, they mean being able to go to the same open land and shooting or driving without restrictions. These views may be the basis for political action.

Yet people may not act on their values. They may be too busy taking care of more immediate and important needs. They may be bored, apathetic, or uninformed. They may be disillusioned from previous processes that did not change anything or did not consider their input. People and communities usually prioritize based on the relative importance of the issue to their survival.

When doing the social analysis, we must take the values of the agencies and groups proposing the project into account. Why is Reclamation taking action? How does this action relate to Reclamation's mission statement? What are the values behind the objectives?

Tracking changes

Values are not static, rigid doctrines governing individual behavior. Rather, values are based on a priority list that can change for many reasons:

Information changes.—New information may help people understand the costs or potential risks involved, or the true impacts (or non-impacts) of a proposed action and alternatives.

Values and perceptions are moving targets.

Ideological or political changes.—Changes in perception may be generational (e.g., a hundred years ago, beneficial uses of water meant consumptive uses outside of the stream—now maintaining instream flows are also seen as beneficial) or take place very quickly (e.g., the Internet changed our expectations of data and communication within 2 years).

Lifestyle changes.—Individual changes, such as growing older, getting married, having children, changing jobs, or becoming unemployed may affect values.

Situational changes.— Economic, social, and demographic changes can determine values. In a good economy, less value may be placed on increasing employment, while in a depression, a source of income takes priority. Crises (droughts, floods, war, epidemics, etc.) shift values very quickly into a survival mode. (Adapted from Harlt et al., 1985, p. 63.)

Analyzing and categorizing perceptions of impacts

A portion of the social analysis will attempt to measure, understand, and communicate to decisionmakers values related to water. We do this by studying the attitudes of the affected community as an indicator of values regarding water.

You can sometimes tell more about a community by what they take for granted than by what they argue about. Ask: What is a source of controversy? Then find out what is assumed that all residents know. Try to find out how people in the community use water. For example, everyone in Marble Springs assumed that there would be enough water in Marble Springs Reservoir through Labor Day for the annual Tippy Canoe and Big Boat Too Race. Reclamation needs to know about these assumptions to make operating decisions that avoid surprises.

To determine individual and community values:

- Look at the results of focus groups and interviews with key knowledgeable individuals. Look at comments received in the public involvement process. Read editorials and articles in local papers.

- Infer values from behavior. How do people pay for and use water? Where do people spend their time and money? What issues have been raised in local elections?

Asking about values does not provide a complete picture in itself as people may not fully understand their values. Inferring by behavior also has difficulties: is a person opposed to an action because he feels it might not work or does he oppose the action's consequences? Analysts can more fully explain choices by looking at both value statements and actions. (Adapted from Harlt et. al., 1985, p. 61.)

Look at what is going on in the community:

- How is water used now?
- What are proposals for changes in water use?
- How far have those proposals been taken?

Identify the groups in the community and attempt to determine their positions regarding changes in water use. Establish which groups in the community support a particular position.

- How many people are in these groups?
- What kinds of actions are they taking?
- Where are they—what are the geographical locations?

Approaches to understanding values:

- **Analyze the comments and attitudes for underlying values**.—Dire predictions show underlying fears: "*This will destroy the ecosystem*" shows a value for the environment; "*This will eliminate jobs*" shows a preference for economic gain. Values-laden language shows the underlying bias. Depending on the individual, the same stand of trees can be seen as "*causes for water loss in the canals*," "*stationary safety hazards*," and "*irreplaceable habitat.*"

- **Actions may show values more clearly than words**.—By participating in the public involvement process, people demonstrate that they either oppose or support the project. The fact that people take time to participate shows that these

values are held strongly enough to motivate them to participate. However, they must also believe that their participation will have an influence on the project.

Often, values conflict—habitat for trout precludes habitat for humpbacked chub; meeting agricultural water demands may mean not meeting instream flow demands. We can try to compromise and meet values (e.g., water conservation and lining canals can help meet both agriculture and stream flow).

- **Find the distinguishing values**.—What values differ among groups? Voluntary organizations usually form because members share the same values. The analyst could identify what each group values, as shown in table 6.1. Be careful:

  - These lists of information and tables are conceptual constructs used only by the analyst and would not be included in any report, memo, or other outside communication.

  - Let groups describe themselves—use their language as reflected in comments on the study. Do not impose descriptions on groups. Check back with groups to ensure you understand their positions.

Table 6.1. Charting social groups and their values

Group	Decision factors			
	Water use	Environmental	Economic	Governmental control
Billie Rose Miners Union	Water is needed for mining operations	Willing to work with government on environmental issues	Want to ensure stable economy and transportation	Want to ensure infrastructure is in place for the mine, but keep control to a minimum
Marble Springs Chamber of Commerce	A stable, clean water supply is essential to the town's stability and growth	Environmental tourism is a plus in this mountain community	Value economic growth	Want to limit government controls on business
Crystal River Valley Ranchers	Water rights need to be maintained to keep ranches alive	Value open spaces and habitat	Value stable water and crop prices	Want to ensure grazing rights and water deliveries continue
Friends of the River	Instream flows and habitat enhancement are important uses of water	Value wild and scenic rivers	Want to balance industry and tourism with protecting the environment	Want to ensure controls for water, air, and habitat quality

- **Prioritize these values**.—You can list issues and concerns on the basis of their priority and importance for the community groups.

  Further, if people have become so polarized that no one remembers the values underlying these positions, lists of priorities can help resolve conflict. Use this list to establish what everyone can agree on and provide technical information on points of controversy. This will help focus the effort on those issues that really matter.

- **Describe the values**.—Charts and graphs can be seen as too impersonal, while philosophical summaries show that you have listened and can present the various points of view. To be sure you have accurately portrayed these values, share your statements with key informants and team members.

  Try to describe how an individual or group with a particular value set would view the impacts under each alternative. This is best done as a text summary to show the tradeoffs for each alternative.

How to predict responses

Predicting how people will react to changes is essential to estimate impacts and the political consequences of the proposed actions and alternatives. Teams need to understand how people will respond so they can develop effective, supportable solutions. Decisionmakers need to know how people will respond so that they can work within the political structure. This is an opportunity for social analysts to provide useful information.

Psychological well being can be considered on a par with decreasing or increasing the scarcity of any material commodity. (See Valaskakis, 1977)

Predicting reactions is based on the analysis of publics, impacts, and values. Knowing what will happen and how groups feel about it leads directly to predicting how groups and individuals will react. For example, a mining project will bring 100 new jobs into the Crystal River Valley. The real estate board values new growth and will probably do all they can to develop houses for new residents. A closely knit ranching community nearby with older residents on fixed incomes, however, views the new growth with suspicion—this development might lower the water quality, raise prices, etc. They value keeping the land open and may appeal to the governor (a former rancher), write articles in the regional newspaper to appeal for less growth, refuse to sell land to developers, etc. (See Finsterbusch, 1995, p. 242.)

Social assessment contexts and factors

To predict reactions, we need to understand the context of the community and the factors relating to other projects. Social analysts and community development practitioners focus on impacts in several key levels ranging from individuals and families to communities and regions. Communities can range from small neighborhoods and local groups to larger communities, such as towns or cities. Community-wide impacts range from changes in attitudes and images to organizational and power structures to infrastructure and population changes. Social justice issues are considered at all levels to focus on the more vulnerable populations.

For construction projects, the social assessment concentrates on a specific geographical area, with distributions of special populations at risk. For programs, policies, or technology assessments, the relevant human environment may be a more dispersed collection of interested and affected parties, pressure groups, organizations, and institutions. The generic set of dimensions for investigation could include the contexts of the human environment listed in table 6.2. Specific factors would depend on the action and context of the action. Appendix 2-D lists specific indicators. See chapter 8, section Using alternative future scenarios to compare impacts for discussions of using these indicators.

The level of effort devoted to describing the human environment should be commensurate with the size, cost, and degree of expected impacts of the proposed action and alternatives. Obviously, social analysts would not necessarily need to use every factor listed in table 6.2 or in Appendix 2-D.

Getting from values and factors to indicators

Social analyses start with issues and concerns and determining what the communities value (what is important), go on to identify social assessment variables (how those important elements could change), and then to select indicators (ways to measure those changes).

Indicators help provide consistent comparisons among all alternatives.

In translating issues and concerns into variables and indicators for Reclamation projects, ask:

- What questions do the publics or decisionmakers need to have answered?
- How will the project influence the variables (concerns)?
- What are the impacts of the alternative?
- How will indicators provide answers and measures?
- How can we communicate this information in a usable manner?

Table 6.2. Social analysis considerations and contexts

Context	Factors	Questions to answer
Population characteristics Demographics of relevant groups (including all significant interested and affected groups and sensitive populations and groups)	➳ Major industries and businesses ➳ Future prospects for growth and sustained resource use ➳ Labor markets and available skills ➳ Levels of unemployment and underemployment ➳ Population and expected changes ➳ Availability of housing, infrastructure, and governmental services ➳ Size and age structure of households ➳ Seasonal migration patterns ➳ Race and ethnic minorities	Will there be social justice implications? What are potential economic and infrastructure impacts? Will changes be significant in view of the existing population?
Relationships with the bio-physical environment How people react to and live within their environment	➳ Ecological setting (aspects of the environment seen as resources/problems) ➳ Areas with economic, recreational, esthetics and/or symbolic significance to specific indigenous categories ➳ Residential arrangements and living patterns, including relationships among communities/social organizations ➳ Attitudes toward environmental features ➳ Patterns of resource use	How will impacts to the physical environment (e.g., flows, reservoir levels, habitat, water supply and water quality) affect the people in this community?
Historical background How people have thought about and reacted to changes in the past	➳ Initial settlement and subsequent shifts in population ➳ Developmental events and eras, including experience with boom-bust effects as well as a discussion of broader employment trends ➳ Past or ongoing community controversies, particularly those involving technology and/or the environment ➳ Other experiences likely to affect the level or distribution of the impacts of and/or local receptivity to the proposed action	How will this community react to these changes in view of previous changes? What approaches have worked well in the past? What should be avoided? How does the community view itself and its history? How has the community used and viewed water (e.g., defined beneficial uses, settled water rights)?

Table 6.2. Social analysis considerations and contexts

Context	Factors	Questions to answer
Social and political resources How groups are organized, and how they make decisions and act	➳ Distribution of power and authority ➳ Capacities of relevant systems or institutions (e.g., the school system) ➳ Friendship networks and patterns of cleavage or cooperation among potentially affected groups ➳ Levels of residential stability ➳ Distributions of socio-demographic characteristics such as age and ethnicity ➳ Presence of distinctive or potentially vulnerable groups (e.g., elderly, minority, low income) ➳ Cooperation among geo-political units (federal, state, county, local and inter-local)	How do groups at the household and community level affect participation, access to services, flow of resources, and ability to deliver or receive development goods and services? What institutional arrangements are needed for participation and project delivery? Are there adequate plans for building and maintaining these institutions?
Larger culture, attitudes, and social values How groups think and what they value	➳ Attitudes toward the proposed action ➳ Trust in political and social institutions, perceptions of risks ➳ Relevant psychological coping and adjustment capacity ➳ Perceptions of society and environmental interactions ➳ Important values related to water and water development	How will groups react to the proposed alternatives? What social and cultural factors affect the ability of the stakeholder to participate in or benefit from the alternatives? What are the lifestyles of the community (how people behave and live)? What does the community value? What are the priorities?

We must clearly lay out the rationale and context for each selected indicator to provide an overall picture of impacts. Determining how many acres farmers will cultivate with or without irrigation is not enough. One must ask about land tenure and ownership–the meaning and consequences behind changes in the number of cultivated acres which may come about as a result of the proposed action.

Human environments and value systems are often too complex for simple answers. Causal links are very hard to establish in social investigations. For example, an Indian Nation harvested a successful experimental crop of yellow hybrid corn. The next year, they did not plant this crop. Many factors could have caused this change in planting, but one that would easily be overlooked would be the preference for white corn tortillas rather than yellow (Spicer, 1952).

It's easy to assume simple black and white causal links. However, these simple assumptions do not reflect the real world.

In a similar way, recreation visitation is not necessarily tied to lake levels–fads for jet skiing, economic conditions, or the hotel offering free sailing lessons may be a greater factor.

Social assessment variables and indicators

A social assessment variable is a factor that points to measureable changes in human populations, communities, and social relationships resulting from a Reclamation project or policy change. Social assessments measure changes on a range of levels from the individual to local communities to national communities. Indicators measure these variables, or show how much would change as a result of the project. Using variables and indicators helps us focus on the ways a community may be altered by project development and policy change and helps decisionmakers and publics understand specific consequences of the alternatives and proposed actions.

The social assessment variables do not cover every aspect of all the potential changes. Rather, they highlight one area of change to show what the consequences may be. This provides a basis for indicating impacts in related areas. If, for example, the proposed project does not bring in new people, it is reasonable to assume the action will not significantly impact the local housing market for new homes.

Section 8 of Reclamation's Social Analysis Directives and Standards[1] lays out the minimum requirements for a social assessment, based on Reclamation's experiences. These are printed in Appendix 2-C. This is a starting point to determine what indicators are needed. For a detailed list of indicators, see Appendix 2-D.

[1] At the time of printing, these are in draft form. They will be posted on the Reclamation Manual site <http://www.usbr.gov/recman> and updated in Appendix 2-E when final.

*Reclamation' Social Analysis Directives and Standards, Section 8***

(1) Formulate a Study Design. A flexible outline of areas of emphasis, techniques and approaches, and data evaluation in the light of the contextual social values is needed. Ensure that potentially affected groups are considered in the social analysis process. Work closely and exchange information with public involvement activities. Determine the amount, type, and sources of information needed. Use the following list of social variables to determine relevant factors. Items in the list below marked with an asterisk may be optional within certain contexts and decision processes. Document all required items. If a required item would not be impacted, list it and explain that there would be no impact.

(a) Population (Demographics)
- Number/distribution
- Growth/decline
- Race/ethnic
- Age/sex*

(b) Economics
- Income
  - Per capita
  - Source
- Employment
  - By sector
  - Historical and present trends

(c) Infrastructure (provide only relevant items as determined by scope of potential impact)
- Transportation*
- Education*
- Law enforcement*
- Medical*
- Air quality*
- Fire protection*
- Communication*
- Utilities*
- Retail/wholesale/industrial base
- Recreational opportunities/facilities

(d) Values
- Social/historical perspective (traditional values)
- Issues and concerns (including aesthetics such as values on open space, scenery, etc.)
- Cultural (different kinds: Washington, field, groups, tribes, etc)*
- Non-use values*
- Subcommunities (stakeholders and interest groups)

(e) Abstract potential impacts which need to be identified within the context of the study area, (e.g., community structure, social relationships, equity considerations, attitudes, stress, and conflict)

***** This is in draft form and will be replaced when Directives are final.***

Using this list will help focus your study. When discussing social assessment variables, detail the indicators used to measure each one. You may need to use different indicators, depending on the data available, timeframe, and results from other analyses.

A number of additional approaches to developing social impact assessment indicators can be found in Conyers, 1993; Burdge, 1999; Reclamation's Social Assessment Manual, 1977; and Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (Interorganizational Committee, 1994). Appendix 2-D provides the most extensive list of social assessment categories of impacts and examples of variables and indicators. These have been drawn from the larger discipline of social impact assessment and have been shown to be significant in a variety of social assessments.

There are a few things to be careful about, however:

- **Considering too much**.—Remember that not all of these variables need to be considered in every assessment. What you consider depends on the context, focus, and impacts from your project.

- **Showing the type of change**.—Social assessment variables by themselves do not indicate the direction of the change. Changes in farm acreage can be increases or decreases as well as changes in irrigated acreage, cropping patterns, etc. You need to clearly describe the variable and what the changes mean.

- **Substituting labels for variables**.—A social assessment variable is not to be confused with such social science labels as middle class, ethnicity, or small groups. These labels define sociological concepts and situations but do not describe changes that may take place in communities due to project development. Avoid using social science jargon.

Tradeoff process among alternatives

The most important task facing the technical team and the social analyst is to provide the decisionmaker information on the tradeoffs among alternatives. Which alternative will be better—or worse—for each factor?

Everybody is a decisionmaker—yet few people think about the systematic process of making choices. This is a rational, practical process that provides information we need to make a choice. To make systematic decisions, we need to be able to consistently compare

If you have not thought through the process, you are doomed to a poor analysis and an even poorer decision.

Tradeoff analysis will not make the decision for you, but it will help demonstrate how you make the decision.

alternatives. In Reclamation, we use a few carefully chosen indicators and measure predicted changes to compare the benefits and drawbacks in the same manner for each alternative. These results are usually summarized in a table weighing the tradeoffs. To do the job, we need to understand the entire process of tradeoff analysis.

Select the factors

Based on the issues and concerns, identify factors that may impact the decision. Before selecting indicators and variables, you need to understand how you will use these in your analysis to get relevant information.

The first step in the process is to select the relevant factors that will influence the decision. (This is discussed in more detail in the next major section of this chapter.) Recognize that this preliminary list will change and be refined as the process progresses.

Measure the factors

Planning how each factor will be measured is crucial to comparing predicted changes. Indicators are measurement units or scales used to illustrate factors.

Determine desirability of changes

How good or bad a change in a factor is can be shown in a function form, such as those illustrated in figure 6.2. These are two-dimensional line graphs that compare how much of a factor we have with how desirable the factor is. Factors have different types of function forms, depending on what is affected and what is desired.

- **The more the better (linear desirability)**.—Some factors are more or less desirable, no matter what–we can't have too much of a good thing, or we can't have too little of a bad thing. For example, the more agricultural jobs the better, so we can draw a line graph showing this desirability as a 45 degree angle (/). Other linear variables will have the opposite slope; e.g., the lower the cost measured in dollars of federal appropriation, the better (\ ).

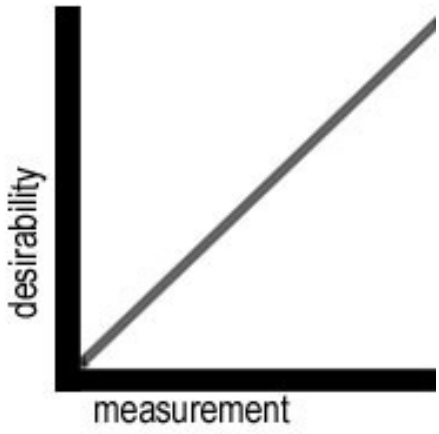


Figure 6.2a.—A function form for "the more the better."

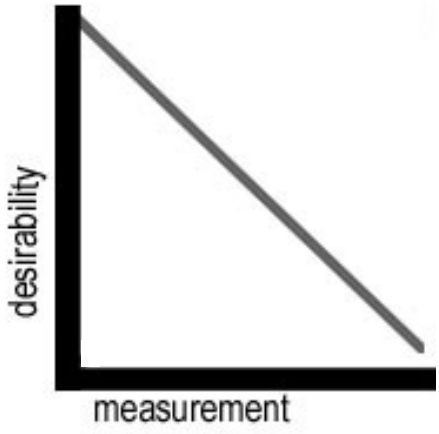


Figure 6.2b.—A function form for "the less the better."

- **Up to a point (curvilinear desirability)**.—Some factors are desirable or undesirable until a certain point is reached, and it starts to decrease or increase—eating a gourmet meal is great until you are overfull. For example, more deer in a given habitat are increasingly desirable until the habitat cannot support more. At this point, the desirability of increasing numbers will decline. Sometimes this is a sharp decline. (/\). Sometimes the line will continue horizontally as a plateau is reached (/‾‾\). Construction workers moving into a town may be viewed as desirable up to a point as they fill up empty housing. As the construction workers exceed capacity, however, the situation becomes much more complex as the community strives to change the situation by building more housing and rents increase. Without careful planning, this is followed by empty housing as construction workers leave.

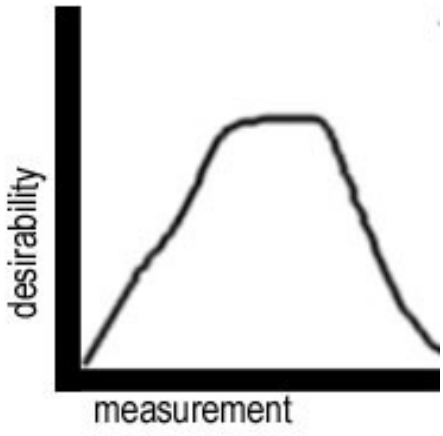


Figure 6.2c.—Function form for "desirable up to a point."

- **Either on or off (dichotomous)**.—Some factors are either on or off, without room for "how much?" An easy way to remember this is either you are pregnant or you are not. Either the alternative threatens a sacred site or it does not. Either the alternative affects a wild and scenic river, requiring special legislation from Congress, or it does not affect the wild and scenic portion of the river.

Determine the values, priority, and influence of the factors

Use weights as a way of showing priorities and representing the relative importance of each factor in the decision. One way of assigning weights is to ask: If you had $100, how much money would you put on each factor? Suddenly, it becomes evident that some factors are very important and others are not. You'll also be able to identify and screen out double counting—which factors are really measuring the same impacts?

Different groups will have different weights, but most will recognize the same set of factors. You can run more than one analysis to determine the relative desirability of alternatives.

Predict how the factors will change under each alternative

You can now determine how much a factor will change under each alternative. This may be done by estimating on simple scales what the score will be for each alternative on each factor.

Compare the changes with the weight of the factor

You can use the scales and scores to do numerical analyses. These scales demonstrate whether each factor is a determinate in the decision. Ask: would a change in this factor result in a significant change in the score of the alternative relative to other alternatives?

Analyze the comparisons

Analyze comparisons to determine the differences among alternatives using these factors. This sensitivity analysis is a reality check on the previous steps.

This comparison leads to a discussion of how we can optimize both the alternative and our analysis. The process is usually refined through sensitivity analysis and the actual number of factors is usually reduced to 7 or fewer.

Table 6.3 shows a very simple matrix to illustrate comparing alternatives. Actual tables would have more factors and more alternatives. The weighted number total would be from all factors. We usually use a computer program to make these calculations.[2]

Table 6.3. Sample analysis matrix comparing alternatives

Factor	Water Storage Alternative	Water Conservation Alternative
Affects a wild and scenic river (weight = 5)	*Yes* 5	*No* 0
May limit irrigation (weight = 15)	*scores 6 on a 1-10 scale, where 10 is the best for irrigation* (6 x 15) 90	*scores 3 on 1-10 scale, where 10 is the best for irrigation* (3 x 15) 45

[2] Reclamation's Multi Attribute Tradeoff System (MATS) software is a DOS based program that performs these analyses and helps determine factors and weights. The program and manuals are available from Reclamation's Technical Service Center social analysts.

Refine analyses

Based on the sensitivity analysis, modify factors, measurements, or weights, and compare these alternatives again.

The comparisons show relationships among factors and alternatives. This is not a black and white analysis, but a rainbow of greys. The numbers help identify tradeoffs and show differences in shades rather than distinct differences in color. Comparing these scores among alternatives is more important than the actual number. If the difference between the no action alternative and the highest score is not significant, for example, one might question the need for the action. Similarly, if the scores of the top two ranked alternatives are not significantly different, the choice between them may not be clear. However, usually, by this point the alternatives are sufficiently refined that there is a distinct choice.

Select alternative

Based on these multiple comparisons, select the most desirable alternative.

Bottom line

Each step in this process can be briefly written as a progress report. The resulting information documents refining alternatives and making selections. Open documented processes are seldom challenged.

This process helps reduce a decision's complexity by helping to:

- Assess publics and decisionmakers preferences or values relevant to the objectives and alternatives
- Record relevant facts about an alternative
- Use the publics and decisionmakers values to evaluate alternatives
- Show different rankings of alternatives based on different priorities or weights

Choosing your indicators

Indicators are the measurements attached to a selected social assessment variable. Indicators must be comprehensive enough to provide an adequate picture of the type of social impact that is relevant to the decision, yet focused enough to be easily obtainable and understandable.

Where possible, use indicators that are compatible with other disciplines to provide your part of a comprehensive, easily comparable analysis.

Using indicators is crucial to:

- Focus the assessment
- Coordinate with other disciplines to ensure that tradeoffs and impacts can be consistently compared

Social assessment variables always have a discrete, nominal, or continuous empirical indicator that can be measured, collected, and interpreted within the context of a specific project or policy setting (Burdge, 1999, p. 27).

Select your indicator so that decisionmakers can understand potential consequences. For example, if the number of irrigated acres decreases, there will be proportionate declines in farm income, farm jobs, and agriculture-related manufacturing. Therefore, having fewer irrigated acres will bring about changes in the community. If possible, explain how the indicator is linked to other indicators (e.g., farm income is related to the standard of living for farm families, which in turn affects the stability of employment in other agriculture-related sectors).

You will use a variety of indicators to show the overall picture and garner other important clues to community values, perspectives, and possible social impacts. Indicators help determine what you will look for and focus the study. For example, in analyzing proposals to raise Marble Springs Dam, the social analyst would determine the size of the construction work force based on construction schedule and costs. This indicator, construction workforce occupational composition, can be compared to the available workforce in the area to determine employment impacts. However, using workforce jobs as the only indicator may not measure other changes in the community, such as the need for housing and schools.

When discussing indicators, carefully show the relationship between the indicator and the impact you are analyzing. For example, hydrologic models can provide information on the amount of municipal water available for Marble Springs with and without raising the dam. You need to determine whether this will significantly impact the community's water capability, which will contribute to the sustainability and stability of the community—or will it be seen as inducing growth, which may or may not be viewed positively. You may need to do a reality check with community leaders and the team. Be aware of other changes outside your project which may influence and limit growth. (See Burdge, 1999 p. 28 for examples of indicators.)

Relevance

Determine the relevant indicators by the scope of potential social impact. To determine what is relevant to your decision process:

1. Identify impacts:
   - What will change?
   - What changes will these changes cause?
   - Where are the potential social impacts?
     - What will be impacted from these primary and secondary (direct and indirect) changes?
     - How much will these primary and secondary resources be impacted?

2. Prioritize these impacts:
   - Does the community view this as an impact?
   - What does the impact mean to the affected publics?
   - What do decisionmakers and affected publics feel is important?

3. Identify variables that show these impacts
   - Will the project development change this variable?
   - Will the variable tell the decisionmaker about a specific consequence of the proposed action?

Comparability

Indicators make it possible to compare a wide range of alternatives and weigh tradeoffs. Thus, consistency is vital.

- What can we count or scale?

- What can we measure that will provide accurate comparisons between different groups and organizations and points in time?

- How do we analyze data consistently for all alternatives?

Availability

Because social assessment information is required before the event, we rely upon data that can be collected and analyzed in advance of the proposed action. All social assessment indicators need to be based on data that can be collected or made available during the planning and decision stage as well as other stages in the development of the project or policy. You need to ensure that data are available to compare past, present, and future impacts (with and without the project).

Interval data (e.g., demographics) may be analyzed differently than nominal or ordinal unquantified data (e.g., values statements, aesthetics). Use all types of measurements to avoid data gaps. If gaps remain, explain the risk and uncertainty of not having that information in the social assessment. (See chapter 8, section Dealing with uncertainty).

Any gaps must be explained to managers and decisionmakers to obtain the resouces needed to fill these gaps.

Ensure that each indicator is based on data that can be collected or made available during all stages of the decision process (including implementation, monitoring, and follow up).

Completeness

Indicators need to paint as complete a picture that is as relevant to the proposed action and alternatives as possible. Make sure you cover:

- **The timeframe for the process and action**.—A 100-year project will require different measurements than a 20-year project. Solutions that worked once (e.g., hauling water in by truck during a drought for a town of 3,000) will not work when situations change (a drought after the town has grown to 300,000). Indicators need to show what the impacts will be and when to evaluate how well the solution will work over time.

- **The geographic extent of the proposed action**.—These are sometimes termed the primary and secondary zones of influence. You may need different indicators to show the impacts further removed from the project areas.

- **The affected communities**.—The changing makeup of the community needs to be reflected in the indicators. It isn't enough to say how many people will move to the area; you need to show the influx in relation to how many presently live in the area.

Check your indicator

Have a peer review your indicators and determine if they:

Measure relevant impacts.—Recheck the issues and impacts to ensure that the indicators actually measure relevant impacts.

Are specific.—Be as specific as possible (e.g., introduction of a new social class, change in population for an ethnic group, change in income or proximity to a facility for a minority group). Make sure your indicators do not refer to categories of persons (e.g., class, ethnicity, minority) but actually describe social changes resulting from a proposed action.

Are consistent.—Make sure your indicators use consistent data and can be easily compared to indicators used in comparable studies and, where possible, other disciplines.

Work.—Indicators should provide as comprehensive, accurate, and useful picture as possible. Decisionmakers should be able to use the indicators and results to quickly understand the general social impacts and tradeoffs for each project alternative.

(See Volume 1: Manager's Guide to Using Social Analysis, Chapter 3 for more on checking to ensure plans work.)

Fitting social assessment variables with other indicators

Some of the indicators in a social assessment will need to mesh with the indicators used in other disciplines. Impacts are interrelated–hydrologic flow and storage data will indicate availability of flows for white water rafting recreation opportunities, while reservoir storage levels will influence aesthetics of the area, boating opportunities, and access to recreation facilities.

Results from all the environmental assessments are usually collated. NEPA documents, for example, feature a summary table that lists the indicators for all the resources and factors (e.g., hydrology, biology, economics) and all the alternatives considered. Summary tables show the indicator, measurement unit, and measurement for each alternative. These help decisionmakers and publics make overall comparisons.

Of course, as part of your social analysis you need to interpret and explain your results. The next chapters provide analytical directions.

This chapter discussed types of measurements and ways to determine which measurements are important in a decision process. Once we know which indicators will be most effective, we can gather data to analyze these indicators. Chapters 7 and 8 will cover suggestions for data gathering and analytical procedures.

Chapter 7: Data sources

This chapter provides suggestions on how to gather the data you are looking for without overlooking what you should be looking for. While there are many possible data sources, what you use depends on what indicators you have selected. (See Chapter 6: Measurements.)

You need to plan where the data to measure your indicators will come from. To do this:

1. Determine what data are necessary to measure the selected social assessment variables.

2. List sources of useful data—and how these data would be used to answer the questions.

3. Determine if these data sources are available—and where they are located.

4. Analyze samples from the data source for potentially useful information—are these data reliable? Do they answer the questions?

5. Develop systematic, consistent techniques to analyze the content of each record. Tables showing the question to be answered and the distribution of responses may be helpful.

6. Evaluate whether further analysis of each data source is worth the time and effort—is it needed and if so, for which social assessment variable?

Integrating data gathering techniques

Building a house with only a hammer is difficult—you also need screwdrivers, saws, and wrenches. Likewise, you need to use a variety of techniques to expand your knowledge of a community and how it might change due to the proposed action and alternatives. You will need to use more than one data gathering approach, technique, or analytical method.

To understand practical impacts, we must describe an alternative future scenario for each alternative being considered. To compare these scenarios, we will need to use a variety of data gathering techniques.

"To carry out policy-permeated social inquiry and analysis, one has to come out of the cocoon of the [academic] discipline in more than one way" (Cernea, 1991, p. 15).

Gathering data directly from people in their own terms (e.g., discussions, meetings, questions, and particularly living in the community and gathering data through participant observation) is called ethnography. The social analysts will gain subtle clues that form the key to refining alternatives and working within the community to produce supportable, sustainable solutions.

(See Chapter 8: Analysis methods). A study emphasizing ethnography needs demographic data to understand the history; demographers need ethnography to understand the implications of population change. For example, demographic analysis of census data may help to understand historical changes. Modeling may indicate future changes in land use. Ethnographic techniques bring perspectives, perceptions, and meaning to changing trends expressed in the words of the affected populations. Only by applying different data gathering techniques and methodological tools will you be able to identify, analyze, and describe what has, is, and is likely to happen from the standpoint of social changes due to the proposed action or alternatives.

Where applicable, use expertise and insights from all available social science approaches. These approaches must be focused on meeting the needs of the program. Professional judgment, based on experience, provides the necessary perspective to select appropriate data gathering techniques.

Locating data sources for the social assessment

Social analysis often begins informally through a network of contacts and professional inquiry. As project plans move forward, a process will be needed to formally determine the social impacts and their underlying meaning. To accurately determine what the impacts will be and how communities view these impacts, you will need several sources of data.

Deciding what information is needed, how it should be obtained and analyzed, and how it should be presented depends primarily on the significance or complexity of the issues, the amount of conflict, the amount of uncertainty or risk involved in the evaluation and prediction of impacts, and the variety and complexity of the affected individuals, groups, and communities.

Primary sources

Data from community observations will help you understand trends in areas when interview data are limited. Observational data are rich in context and can increase the understanding of the possible effects of an action (e.g., participant observation at community events, content analysis of selected local newspaper issues).

Talking with people

Ask people in your office as well as local planners (in your agency, in the state and local governments, in private and nonprofit organizations, etc.) Determine who are the key individuals to interview and why. Talk to key informants (store owners, knowledgeable individuals, opinion leaders, public meeting participants, etc.). Find out how people perceive the

process, players, and impacts to their communities and ways of life. Look at the various cultures involved (e.g., Washington Office, field offices, national and local groups, tribes).

Are there any groups that value the water and related resources but do not use them? Non-use values play important roles in determining levels of impacts and support for a proposed water project.

Public participation information

Public meetings, transcripts of meetings, and public comments are a source of both quantitative and qualitative data to identify values and priorities (See Chapter 6: Measurements).

"Field work allows the assessment team to identify the most critical points upon which deciions about change will ultimately rest. The identification of key issues involved in this work will not be achieved satisfactorily, as early as possible, without close collaboration with the social groups involved. Therefore, field work is also essential because it is participatory, involving people most affected in the anticipation of conflicts that will concern them." (Taylor, et al., 1995, p. 103).

Your project may have or will be the topic of public hearings or meetings, or scoping under formal NEPA processes. Sources of public involvement data include interviews with key informants, newspaper accounts, transcripts of public hearings, and letters in local newspapers. Gather comments on related actions within the project area or region to understand perceptions of proposals related or similar to your own. Most local or regional libraries and planning offices carry public documents and composites of newspaper articles about important activities in the community.

Other resources include a Conceptual Approach to Social Impact Assessment, Chapters 14, 15, and 16, Burdge, 1998; the International Association of Public Practitioner's website <http://www.pin.org/>; and Howell et al., 1987.

Surveys and questionnaires

Survey data vary in quality, depending upon the amount of care taken in questionnaire design, sampling, and interviewing. Data from well designed questionnaires can provide up-to-date information about how the entire community may respond to a proposed project. However, careful analysis of selective response and nonresponse rates is essential.

Social analysts often use surveys as a preferred method of gathering data. However, government regulations severely curtail the use of surveys in federally financed projects.

There are many federal restrictions on using questionnaires and surveys. Unless you have a complex project with a long time frame, this data gathering technique should be avoided. The Paperwork Reduction Act (updated in 1995 to close semantic loopholes) is designed to ensure that the American public is not overwhelmed with information requests from government agencies. Approval from the Office of Management and Budget (OMB) is required to ask the same question of 10 or more people. Approvals take at least five months and require going through the Department of the Interior before going to OMB. Reclamation's Information Collection Officer can determine if your data collection activities need approval and help you get that approval.

Reclamation may, however, use the data from survey research that others have already gathered (see secondary source section). Sometimes, other federal agencies have cleared a questionnaire under their own authority which, with approval, Reclamation could use (e.g., National Park Service has clearance for certain recreation surveys). If a state or local government agency gathers the information, we can use it. If any federal money is used to pay for gathering the data (e.g., using a contractor), the restrictions still apply. Keep in mind, though, that most community and project level workers do not have the time nor the expertise for detailed questionnaire development and survey research.

Frequently, needed information can be obtained by using techniques other than surveys.

Secondary sources

Secondary sources are data collected on a systematic basis and include everything from building permits to the federal census. Find out what economic and demographic information is available in your project area and where it is located.

Secondary sources also include investigations by Reclamation and other agencies, histories of the area, and environmental and social impact statements that have been written about similar projects. Be aware of potential bias and document the source of all information.

Information from many state and federal agencies is compiled on an annual or systematic basis and may be available on websites. These sources form the informational base for a community profile. These sources provide data on past trends and present conditions for a wide variety of social indicators (e.g., ethnic community growth and diversification, employment, housing costs). Sources include:

- **Government agency reports**.—Many land management, energy, and regulatory agencies keep extensive records on such diverse activities as recreational visits, building permits, energy production, grazing permits, crime statistics, health statistics, disease and incident exposure.

- **Census and other demographic statistics**.—Most census data, as well as vital statistics, deeds, building and zoning codes, among others, as used by local, state, and federal agencies, are available at the county and community level. Census data are available for larger urban blocks, tracts, county subdivisions, and other levels. The Department of Commerce Census Bureau gathers information and publishes reports in addition to the

decennial census (including population characteristics, housing, agriculture, and business).

- **State reports**.—Also consult the state agencies (e.g., the Bureau of Business Affairs, Vital Statistics, Bureau of Labor Statistics), and other public and quasi-public organizations that routinely collect statistical data about the general population (e.g., the Statistical Abstract and the City and County Data Book). Most states have counterparts to the federal agencies and keep and collect local data. For example, all states have the equivalent of the EPA, although with a different name. Vital statistics are collected at the state level. Each state has an agency which makes population projections and reports employment as well as business receipts.

- **County/municipal/village/township reports**.—These data sources include local and regional planning offices, school records, tax records, zoning and land use data, unemployment data, land ownership records, utilities, and numbers and types of local government employees, as well as data on everything from building permits to welfare expenditures.

- **Maps**.—The project's location in relation to natural resources or hazards, governmental, industrial, and other distinguishing characteristics are a beginning point for identifying possible social impacts. Comparing maps over time shows distribution and growth in industry, population, and transportation. Maps are needed to lay out the primary and secondary zones of influence.

- **Telephone directories**.—Glancing through the phone book can provide ideas about the size and nature of the community. Business listings show the distribution of businesses over time, residence listings show the frequency of family names. The yellow and blue pages list everything from the voluntary associations to the names and numbers of all levels of government.

- **Newspapers**.—Local community newspapers can be used to document how the community has coped with past problems, the values of various interested publics, the size and extent of the social institutions, and the quality of life in the community (e.g., available services, level of living). Be careful, as there is often too much information that is not related to the project. Reading newspapers should be restricted to gathering information on project related activities and background. In depth, formal analysis is usually not necessary.

Data will never be as accurate or as complete as you would like. Aim for the minimum amount of data and the minimum degree of accuracy needed to ensure a balanced, effective decision.

- **Area histories and profiles**.—These provide insights into how the area was settled, how groups interact, how the community makes decisions, and what is controversial. Local libraries and historical societies and Chambers of Commerce are often good sources for histories and profiles, respectively. Descriptions of the past, present, and desired future of the community often provide insights into community self-images and possible responses to proposed actions.

Be careful to ensure that definitions and measurement terms are compatible. State agencies may not use the same definitions as federal agencies. For example, employment can be stated in terms of jobs or person years, or employment may be counted by the employers' location or workers' place of residence. Agricultural census data may be counted differently in Reclamation crop reporting, the federal agricultural census, or a state agricultural census. Farms may be or may not be counted with commercial productivity or size limits.

Reclamation sources

Measuring some indicators also requires information about proposed project design. This information should be available early in the planning stage from Reclamation's engineers and planners or from on-site visits. Examples include, but are not limited to:

- Numbers of construction workers
- Projected length of construction
- Requirements for union or non-union workers
- Size and boundaries of project
- Organizational and institutional changes (e.g., internal Reclamation functions, relationship to existing or new federal or local water-related institutions and roles)
- Number and type of permanent and part-time employees

Data gathered by other disciplines is a vital part of social analysis. Hydrologic, biologic, economic, recreation, etc. impacts will affect people, too. You must understand the physical and institutional workings of the proposed action and alternatives to fully determine the social impacts. Work with the indicators and results from analyses from other team members. How will the impacts on flow regimes, habitat, and others affect your project? See Table 6.3. Social analysis considerations and contexts in Chapter 6: Measurements for examples of social assessment data that other disciplines could provide.

Structuring the data

Determine what form data collection should take. You will need both quantitative data (e.g., unemployment value indicators and population data) and qualitative data (e.g., a historical description of the community). While the tendency is to gather numbers, both work together to provide a more complete picture. For example, employment figures may show that most income in Marble Springs is derived from tourism with little from the two remaining active mines, yet talking with the residents revealed that most people perceived the town as a mining community.

Determine your perspective

When determining what forms of data to collect, keep in mind the end goal: to help decisionmakers compare alternatives and determine what is best solution for the identified problem. How can you best understand and present the information? For example, you can consider impacts in the following ways:

Comparing one geographical area with another that has had a similar project will help hone the analysis to determine what kind of effects the project will have in your area (Burdge, 1998, p. 20).

- **By geographic location**.—Distinguishing and comparing characteristics of geographical areas can help show priorities, issues, and decisionmaking. An issue map can help visualize where impacts could occur. Examples include:
  - Site specific (e.g., transporting workers to and from Marble Springs Dam during construction)
  - Local community (e.g., housing for workers in Marble Springs)
  - County (e.g., impacts on Crystal River County's economy)
  - Regional (e.g., costs to provide municipal and industrial water to Major City, a regional trade center)

Look at participants and potentially affected people in terms of structured, organized groups of individuals—each with their own values, beliefs, needs, and skills (Adapted from Cernea, 1991, p. 431).

- **Categorically by types of impacts**.—Presenting information by different categories can identify variations or inequalities among populations or can highlight a particular group (e.g., by income, occupation, interests, as well as racial, ethnic or other social grouping). For example, while you can mark out the recreation areas, it is better to think of white water rafters as a category of users. Although not together geographically, they share a common interest. Impacts thus can be associated by groups while the community as a whole may not be affected.

Social analyses are designed to use the limited resources (time, personnel, etc.) available. To balance between overly complex and overly simplistic methods, determine what resources are available for gathering data.

What resources are already available to obtain and analyze that information? Consider:

- Data already collected
  - What research has been done?
  - How reliable is it?
  - What are the biases?
- Other studies
- Internet resources

Use what is known and being developed in the field. A substantial body of experience in social assessment is being accumulated both nationally and internationally. See detailed workbooks listed in the Appendix 2-C, e.g., Burdge 1999; Taylor, et al.; and 1995; Interorganizational Committee, 1994.

Determine the format for the data

Data must be available in a form that allows comparisons among different analytical categories and at different points in time. Comparing data often requires numerical or interval data. Ordinal (numerical scales) and nominal (discrete categories) can also be used for comparisons.

If you use a qualitative scale, be careful to define your source and your method of interpretation. (See Conyers, 1993, pp. 42, 43.) For example, the Towee Indian Nation values the natural look of the reservation. Disrupting the natural view of the river should be minimized when modifying or replacing the unsafe diversion structure near the village. You can develop a scale to measure the quality of the view—when the river looks natural for the area and its setting. A low quality view would be when the dam is the predominant feature of the landscape. A high quality view would be when the dam is not noticeable.

To determine what form your data should take, consider:

- **Why you need the information**.—How will the data help measure and illustrate social impacts and in turn explain priorities, values, and tradeoffs? Will decisionmakers and affected populations participants require precision or general explanations?

- H**ow you will collect the information**.—How information is collected will influence what resources and skills are needed and its usefulness. Quantitative information comes from a variety of secondary sources and questionnaire data from a representative sample, while qualitative data relies on detailed observation or discussions.

- **How you will analyze the data**.—Make sure that your analyses are consistent and, where possible, compatible with other disciplines. Use qualitative data to provide an overall view of the situation, or a detailed or vivid impression of the issue or impact. Pictures and graphs can help show these impacts.

- **What form will be best understood**.—Some impacts (e.g., population data, income levels, property values, availability of social services) are relatively easy to present in numerical form. Other impacts (e.g., religious beliefs, decisionmaking in the community, gender roles, attitudes, perceptions of impacts) will need to be presented with an appropriate indicator to help the decisionmaker and the community understand. These impacts may need to be described, as well as quantified.

- **How you will present the data.—**Numbers can be scaled, subjected to statistical analyses, and translated into graphs and charts. Qualitative data must be carefully described and measured before being scaled. Simply saying that an attitude is "strongly agree" means nothing until you explain how people will respond if they agree or disagree with the action. (See Conyers, 1993, pp 91-93).

Ensure your data are representative

You can't look at every house or every record—so ensure your sample sources represent the overall data. Consider:

Number.—Establish the reliability and validity of your data by sampling an adequate percentage of the available documents.

Representation.—Determine if your data sources come from an atypical year (e.g., employment records for a small town during a construction boom does not accurately reflect long-term employment changes).

Completeness.—Check to ensure the sample represents all data categories. An incomplete sample or record biases the samples in the same way a low number of responses on a survey does.

Comparability.—Series of records should be comparable over time, communities, and areas. For example, if boundaries for a water service area change, then crop data from the period before the change will not be comparable with those after the change. If records track different groups or areas at different times or if people interpret questions differently, these records cannot be directly compared.

When selecting data sources, remember that the primary goal of all assessments is to answer the questions with the highest amount of certainty with the least cost and time.

Building a community profile

Compiling a profile or a description of the community is important for the decisionmaker and team to understand the social context of the proposed action and alternatives.

Compare population projections by state, county, or communities for population estimates done recently by federal, state, or local entities to determine how many more people might be impacted in the future, and what changes are occurring in the area.

To understand the setting and context of a project, you need a description of the area and population. This community profile provides the statistical summary needed as a foundation for understanding the community. The level of detail will vary, depending on the information needed for a decision. Profiles might include past, present, and future trends and conditions without the proposed actions.

Not all of the census information is useful. Key information about the community can provide a framework and perspective for visits with community members. Focus on what numbers and information will be useful to describe the local community to staff in Washington D.C. who are not familiar with the area.

Examples of the types of data to include in a community profile are listed below.

- Population by community and county subdivisions (shows how many people live where they may be affected directly).
- Population for Indian reservations (indicates potential need for Native American government-to-government consultation and how many reside on the reservation).
- Employment rates by county (compares how many unemployed people are seeking jobs and how large the workforce is to the number of dependents). This can show whether growth may be an issue.

- Employment by occupational categories and industrial sector (portrays the mix among sectors with time scale data to show trends).

- Per capita income (comparing with state and national figures shows regional or local differences).

- Housing units, e.g., average rent, average value, ratio of renters to owners (provides hints on social class and structure. Assists in predicting potential construction impacts).

- Percentage of seasonal dwellings (indicates the importance of second homes).

- Racial/ethnic breakout by county (helps indicate potential need for special languages or other techniques to reach minorities as well as potential ethnic value issues, environmental justice, and Indian Trust Assets. Impacts to minority groups may be quite different than for the population as a whole). (See chapter 8, section Environmental justice analyses.)

While community profiles are useful to understand contexts, we are usually faced with comparing alternatives.

See Burdge, 1999 Chapter 6 pp. 55, 56; Guidelines and Principles for Social Impact Assessment; Interorganizational Committee, 1994; and Appendix 2-D for more information.

This chapter outlined places to gather information. You will not need every data source mentioned here. However, determining the best data source and documenting the rationale for using that data will provide the foundation you need for an effective and defensible social assessment.

Chapter 8: Analysis methods

This chapter assists the social analyst by providing practical guidance and knowledge of how to apply analytical methods in the social assessment process. A statistical and methodological background is assumed.

An analysis must:

- Be systematic
- Check with interested and affected publics
- Make sense
- Be relevant to the proposed action

Data must be categorized, compared, and summarized to measure tradeoffs, compare alternatives, and show the sequence of and connections among impacts. These comparisons must then be analyzed in the context of community responses to the proposed action and alternatives to determine significance of impacts and to translate impacts into values, as well as a way to estimate acceptability and viability of alternatives.

What to do in analyzing data

To interpret the data effectively, you need to:

- Synthesize to determine trends in the data and how the proposed action and alternatives will affect these trends
- Think about short-term, long-term, and cumulative impacts
- Show interrelationships among identified issues
- If possible, use the results of the analysis to show where benefits may be enhanced and where identified negative impacts may be minimized
- Categorize primary and secondary impacts

What to ask in a social analysis

Social impacts

Estimating the probability of social impacts, determining the significance, and showing how strongly people view impacts will help the decisionmaker calculate the risks involved in a particular action. (See Reclamation's NEPA Handbook, 2001, on risk). Ask:

- Who is being affected and how?
- How will identified social impacts alter people's lives and the community?
- How likely is it that a given social impact will occur?
- How much risk and uncertainty is involved in estimating the impact?
- How many people would be affected?
- What social impacts will occur in each stage of the project life cycle?
- How likely is it that the alternatives will lead to secondary or cumulative impacts?

Values and perceptions

Keys to understanding how alternatives will affect the community include:

- How the community perceives itself
- How it views water issues and the ways water is used
- How it views growth, stability, and industrial development

Evaluate community organization and cohesion as well as attitudes toward the project to determine whether the community will support the project in the long term. Priorities and values will change (e.g., irrigated agriculture was a high priority in the 1900s, in the 2000s endangered species and other water uses now vie for that priority).

Consider:

- How do people view identified social impacts?
- What indications or evidence do we have about how people might react to these impacts?

- What is the perceived value of project benefits and consequences to the affected groups?

- How controversial is the issue? If it is controversial, how far apart are the groups involved?

Tradeoffs

Community values and perceptions will also influence the desirability and support for a project. (Chapter 6, section Tradeoff process among alternatives).

- How relevant are identified impacts to present and future policy decisions?

- Which interested and affected groups will benefit and who will lose if the proposed action is approved?

- How do the alternatives compare with each other?

- Do alternatives spread benefits and negative consequences?

Refining the alternatives

During the analysis process, alternatives will be reformulated as comparisons reveal how options can evolve into more optimal solutions. Identify ways to reduce or eliminate possible social impacts. These may be used as a basis for potential mitigation. As appropriate and as necessary, teams may develop monitoring programs as a part of an ongoing evaluation to minimize identified negative impacts and enhance positive benefits.

Summarizing the basic social analysis process

Before we get into a detailed discussion of social science techniques, let's put these into perspective by summarizing the steps in a social analysis. The analysis is both iterative and simultaneous. Table 8.1 presents a quick reference to detailed explanations.

Table 8.1 Reference guide to social analysis tasks

Task	Reference
Analyze existing social conditions (e.g., a community history, needs assessment, and the identification of important social values). Identify/analyze social issues and concerns relevant to the decision process. This is usually part of the scoping process for NEPA compliance, but is also a beginning step in the social analysis.	Chapter 5: Approaches and strategies for the social assessment
Determine social assessment variables to select indicators based on the impact categories and gather data to measure these indicators.	Chapter 6: Measurements Chapter 7: Data sources
Use social assessment indicators to :	Chapter 6: Measurements Appendix 2-D: Categories of social assessment variables and indicators
✦ Project future social conditions (with each alternative compared to the no action or future without)	Chapter 8, section Using alternative future scenarios to compare impacts
✦ Determine social impacts on people and communities	Chapter 8: Analysis methods
✦ Determine what impacts are significant to the decision process and to the communities and individuals involved	Chapter 8, section Establishing thresholds to focus the assessment
✦ Determine if there are cumulative impacts and estimate these as appropriate and foreseeable	Chapter 8: Analysis methods
✦ Interpret and display "significant" impacts	Chapter 9: Sharing the results
Describe what each significant impact might mean to different categories of stakeholders and explain how these changes and perceptions relate to the decisions.	Chapter 6, section Social values: seeing impacts through all eyes
Evaluate alternatives and analyze tradeoffs.	Chapter 6, section Tradeoff process among alternatives Chapter 8, section Using alternative future scenarios to compare impacts
Perform sensitivity analysis for alternative plans.	Chapter 8, section Dealing with uncertainty
Document the evaluation with a social assessment account, reports, appendices, etc, as required by Reclamation.	Chapter 9: Sharing Results Appendix 2-E: Reclamation's social analysis Policy and Directives and Standards
Perform special analytical procedures for ✦ Environmental Justice ✦ Relocation Plans	Chapter 8, section Environmental justice analyses Chapter 8, section Relocation analyses

Establishing thresholds to focus the assessment

To narrow the field of analysis, only use analytical techniques that will produce results that are:

- **Relevant to the decision.**—The analysis will show results that will affect the decision.

- **Significan**t.—The analysis will show results that may determine the decision.

- **Going to influence acceptability**.—The analysis will show whether the factors carry enough weight for people to support or oppose the action.

- **Going to influence sustainability**.—The analysis will show results that will contribute to the long-term sustainability of the action and solutions.

Applying the four threshold tests discussed below should reduce the potential social analyses to a manageable number. These analyses will refine, evaluate, and compare alternatives.

Thresholds of relevance

To determine which possible social impacts are relevant, ask a series of questions. If you get a no answer, then the factor is not relevant. Document the answer.

- Will any factor change under the alternative (including no action)?

- Do individuals, families, and communities in the project areas value this analysis?

At times, we may need to address issues that are not relevant to the project but are very relevant to the community if there is a perception of an impact on an issue that the local residents hold highly or has been recently raised. Examples of these kinds of issues include:

- **Previous experiences**.—The last experience that the community had with the federal government or Reclamation may foreshadow and color responses to the proposed action. Although your program may have nothing to do with these previous issues, these experiences need to be acknowledged. For example, a controlled burn on federal forest lands got out of control and destroyed 17 houses. The issue of fires and how federal agencies responded

Providing social impact information should not become an emply ritual.

becomes part of the mythology your project operates in. Bad experiences are retold and embellished with each passing year. The community will want to know if your project will affect firefighting capability.

- **Controversial issues**.—Issues that have sparked controversy in the community must also be acknowledged. In the Marble Springs area, for example, 45 teachers were fired during a strike in the local school system. Changing operations at Marble Springs Dam would not impact the school system. Still, Reclamation may need to analyze the impacts of possible future enrollments to put actions in perspective.

Analyze these issues only to the extent needed to put your project into perspective. Work with communities, public involvement specialists, and team leaders to show these perspectives.

Thresholds of significance

If analysis results are relevant, determine if the potential changes are enough to pass a threshold of significance for the project area.

- **The magnitude and intensity of the impact**.—Compare the extent of the impact with the community's capacity to cope with the change.

  Not all impacts are significant. For example, if the fish flow criteria in Crystal River do not restrain the availability and safety of the river for white water rafting, it will not significantly alter the number of guides and rafting companies. However, rafting companies may have to change timing and operation of white water trips to coincide with the flows.

"Significantly" as used in NEPA requires considerations of both context and intensity. Council of Environmental Quality (CEQ) guidelines section 1508.27

- **The cumulative effect of the action**.—How large are the impacts in relation to other actions in the community? For example, a new company adding 100 employees will not be significant in a community that has 5 other large companies employing 10,000 people. However, these 100 people may be the straw that broke the back of the available community infrastructure in a modestly sized community.

  The change from Reclamation's operations also needs to be evaluated in the context of other actions that increase or decrease the amount of available water. A 10 percent decrease in industrial water availability may have a cumulative impact if Marble Springs has lost a well field due to water quality problems in an aquifer.

- **Duration and scope**.—How long will the impact last and what area will it cover? A construction crew staying a short time will have different impacts than long-term employees that come from the outside to operate a large power facility.

Thresholds of acceptability

The analysis of acceptability to the community may be incorporated into alternatives rather than being analyzed separately. For example, analyses of acceptability may demonstrate that people who live below a dam may have a safety concern and need reassurance that procedures are in place for an early warning system and safe evacuation of their children from the flood plain. Without this reassurance based on dam safety analyses, any plan is unacceptable. Likewise, actions that ignore fish passage will attract opposition from groups that value anadromous fish.

A technical evaluation may be an important part of the rational planning process, but it will not convince people unless it has the credibility to be believable.

Determine the acceptability thresholds for different issues and alternatives. Ask:

- Will any of the proposed alternatives contribute to or detract from a sustainable community?
- What are the major concerns within the community about water and why?
- How much of a priority is this in the community?
- How many resources (time, money, tradeoffs) are the project proponents and opponents willing to spend on this issue?

Relate concerns identified at a community level to the national level. For example, national initiatives to protect fish, convert agricultural water to use in urban growth areas, and natural resource development for power production may influence acceptability both locally and nationally.

Thresholds of sustainability

Solving problems in the short term can be counterproductive in the long term. To manage water and related resources, we must ensure solutions continue to work in our children's lifetimes and beyond. Native Americans refer to providing "for the seventh generation." This implies that there is a need for analyses that project future conditions for centuries and decades rather than years or months.

Projecting possible established consequences from a range of alternatives lie at the heart of your social assessment. A systematic approach to comparing these projections is needed to collate, catergorize, and interpret the needed data and indicators.

Social analysts examine not only the social costs and possible benefits to current generations but to future generations. Ask:

- Given the current policy and budget restrictions, how will this action alter the lives of future generations?

- What will the costs and future changes to the human communities be if we do not take action?

In an EIS, analysis of short-term and long-term impacts and cumulative impacts are places to consider these points.

Using alternative future scenarios to compare alternatives

Decisionmakers and the communities need to know *what would happen if . . .* to answer the question of which alternative solution best solves the situation and needs.

Alternative future scenarios describe what would result from implementing an alternative over time. This is not forecasting (which requires establishing the probability of an action taking place), nor is it hypothesis testing (which focuses on proving or disproving an assumption). An alternative future scenario is an *if . . . then . . .* statement. If a specific alternative is adopted, then the indicators will change in this specific way. (See Scaling Impacts of Alternative Plans; Reclamation, 1980; Cascaded Tradeoffs: Multiple-Objective, Multiple-Publics Method for Alternative Evaluation in Water Resources Planning, Anderson, 1981; and Commensuration in Federal Water Resources Planning: Problem Analysis and Research Appraisal. Lord, W.B., Deane, D.H., Waterstone, M., 1979.)

We cannot forecast based on the nature of the data (e.g., 90 percent probability a dam will be built), but we can say that an indicator will be higher or lower (there will be x amount of difference between these alternatives—this one will have more impacts on this factor, etc.) in describing the alternative future scenarios for each alternative. Alternative future scenarios must describe a set of assumptions made to compare different alternatives. Social analysts also consider costs of failures if the predictions about the magnitude and significance of the impacts are in error. (See the section Dealing with uncertainty later in this chapter.)

Constructing and comparing future scenarios

Reclamation generally considers from 3 to 10 alternatives. The social analyst uses indicators to describe impacts under the various alternatives and compares these descriptions against the no action alternative.

For each alternative, develop a future scenario. Describe the future of the area in terms of the same specific indicators to measure the relative differences among alternative changes that will occur. This provides a comparison for social impacts measured consistently over all alternatives.

To analyze these changes, use a systematic approach to describe the future of the project area. Start with a description of the future under the no action alternative. This no action alternative uses "baseline conditions" (existing conditions and past trends) to project a future scenario of what would happen if Reclamation didn't take any action. Use social analytic techniques discussed in the next section to formulate probable social changes under this scenario.

The analytical timeframe is based on what will happen during the implementation (constructing and developing institutions) and operations (as resources and facilities are managed). This timeline usually stretches out to 50 years or more. We look at past trends, current conditions, recent changes, similar situations, and the likelihood of continuing these trends.

Use the selected indicators and consistent measurements to compare each alternative scenario with the no action scenario. (See the discussion of tradeoff process among alternatives in chapter 6: Measurements.) The incremental difference between the no action and each alternative presents the comparison necessary for evaluating trade offs for decisionmakers and publics. This also meets Reclamation's planning and environmental compliance requirements.

For example, under the no action alternative, limited water supplies will result in continued water shortages to Marble Springs, which have contributed to a loss of jobs and declining population which threaten community sustainability. An alternative providing a more reliable water supply and water conservation will result in more stable employment and population than under no action (Conservation and Water Banking Alternative). Another alternative goes even farther by providing additional water for future economic development and population growth whose magnitude may alter the nature of the community and lead to conflicts among long term and new residents (More Storage Alternative).

Use the analysis to determine how indicators will change under each alternative, followed by a short description. For example, tourism employment in the Crystal River Valley indicates growth. Tourism employment will fall by 5 percent under the Conservation and Water

Banking Alternative and rise by 5 percent under the More Storage Alternative. Try to explain why these results occurred (e.g., some dude ranches will be closed down under the conservation alternative; while adding more storage water to Marble Springs reservoir will provide more reservoir-related recreation).

Relate the impact analysis to the identified problems and needs of the project. Comparing impacts in this manner allows us to refine alternatives to formulate more effective solutions to meet the project purpose, maximize benefits, and minimize negative impacts. Use these explanations to paint a picture of what the impacted community will look like under each alternative. Always include a discussion of how life will change for categories of stakeholders.

Calculating "futures foregone"

A number of methods have been formulated to determine what options would be given up irrevocably as a result of a plan or project; e.g., river recreation and agricultural land use after inundation by a dam. One study found that high value instream recreation would be replaced with low value flat water reservoir recreation and as much agricultural land would be inundated as would be served by irrigation. As a result of this analysis, the dam was not built.

Analyzing irretrievable and irreplaceable resources is required in environmental impact statements. Irretrievable resources are those that are foregone temporarily—for example, water deliveries may be lost for a season to repair a dam. Fishing or white water rafting that are discontinued in the short term are irretrievable. Irreplaceable resources are those that are foregone permanently—for example, land inundated by a reservoir. Mineral resources that may not be mined under the reservoir are irreplaceable resources.

Considering similar situations

Researching similar projects and actions in comparable communities helps understand the likely outcome of the proposed action and alternatives. This approach is called comparative research and is based on the assumption that if it happened in analogous situations, it will likely happen here. Have Reclamation or other federal agencies worked on other projects in the area? What information do cooperating and local agencies have?

Appendix 2-D lists social assessment variables which have occurred repeatedly, regardless of the project setting.

Ask:

- What actually happened?
- What issues were important but never addressed?
- What parts of the community changed the most?

It helps to understand how different types of communities function. If you can't find a similar project, look at similar communities. Background information in planning a water development project in a resort town may include development patterns in other resort towns. This will help show the context of a resort town and how it functions so that you can more accurately analyze potential impacts.

Note that all communities view themselves as unique—don't try to tell a community they are the same as another community.

If possible, locate case studies and reports of similar activities from previous analyses to look at similar types of impacts. Sometimes a proposed action is judged to have a significant impact if critical areas are disturbed, such as habitat for endangered species or wetlands crucial for maintaining water quality. Another example would be destroying sacred sites or disturbing Native American traditional fishing and hunting grounds.

Based on impacts caused by similar projects in similar areas, the potential changes may be matched with a comparable control area where no project of this kind has taken place. This type of analysis relies heavily on the comparability of the two communities. (See Burdge 1998, p. 98 and 1999 p. 23.) However, since all assessments are comparative, look for studies that dealt with change that occurs after the project is in place (i.e., an ex-post-facto or post-audit basis).

Analytical methods

There are many analytical procedures and methods used to develop the future scenarios. You will need to tailor the methods used to the particular situation, context, available data, and analysis approaches other members of the team use. Table 8.2 provides a quick overview of some of the methods, with a description of their strengths and weaknesses and examples of situations where they might be appropriate. All the methods and tools listed in table 8.2 are valid when applied appropriately.

Approaching the analysis with a predefined solution is counterproductive. To use the old analogy, if you go in looking for oranges, you'll find oranges. If you ask what fruit is available, you'll find a wider variety and get more useful information for the decisionmaker.

Find out what information is needed and take the simplest, most direct route to get the best information possible:

- Determine what is the best information available
- Tailor methods to the particular situation, context, and use methods that other members of the interdisciplinary team are using
- Be innovative or use unusual techniques when appropriate
- Use a variety of techniques

Table 8.2 Overview of analytical methods

Method	Description	Major strengths and weaknesses	Examples of when to apply this method
Trend analysis	Using an existing trend and projecting the same rate of change into the future. This assumes that what happened in the past is likely to happen in the future (e.g., recreation visitations increase each year at about the same rate they did in the past). This also assumes that enough data are available to project future trends.	Trend analysis can project future trends in the absence of data. Conclusions must be tempered with the recognition of limitations of resources for analysis and current and future data. Exponential growth curves must be limited by carrying capacity. The major strength of this method is the ability to project future trends in the absence of data.	This is the most common analytical procedure in comparative research. Used to determine future without conditions in stable communities. May be used in conjunction with computer modeled futures and input from knowledgeable individuals.
Population multiplier methods	Each specified increase in population estimates implies designated multiples of other variables (e.g., jobs, housing units, and other infrastructure needs).	The relationship between population and demand may change. Thus, thresholds of impacts are not always clear (e.g., when a community "needs" a new school vs. when a school is bonded and built).	Infer from a change in one factor to obtain the result in another. For example, assume a corresponding need for more schools and hospitals based on a change in population to a need for more schools and hospitals.
Statistical analyses	Calculations to determine probabilistic differences between with and without the proposed action. A social analyst could employ comparative statistical methods to determine relationships and magnitudes of impacts for certain social assessment variables.	This is good for ensuring consistent comparisons of changes in many social assessment variables. Statistical significance can help identify impacts, but must be evaluated in the context of all computations, as discussed in the next major section. Determining the likelihood of an event in the real world is often too complex for reliable forecasting using statistical methods. This is especially true as there are feedback loops in the process.	Post audit and monitoring studies use this to determine what has resulted from past actions. Analyze past trends to establish relationships among various indicators and impacts (e.g., crosstabs can be used to locate relationships). Causal inference is difficult to establish. Predicting secondary and cumulative impacts is difficult with statistical procedures. Note that there may be a time delay between changes in one factor and impacts in another. Results of comparative statistical analyses, however, add credibility to the importance of social impacts.

Table 8.2 Overview of analytical methods

Method	Description	Major strengths and weaknesses	Examples of when to apply this method
Professional judgment, key informants, and knowledgeable individuals	Persons familiar with the study area are asked to react to scenarios and assess significant issues resulting from alternatives for proposed actions.	This is subjective, but is a valid way to determine reactions of individuals that influence and are affected by alternatives.	Use as reality checks with stakeholder groups to define issues and identify thresholds for relevance and significance.
Focused group discussions	Often called juried panels or delphi groups, these groups are selected from a sample of the impacted population to identify issues and possible solutions.	Findings from these groups are only as good as the quality of knowledge of participants—or the information provided to and by the participants.	Federal Advisory Committee Act (FACA) groups can assist in advising a technical team regarding the analysis of impacts on a community.
Comparison of gains and losses to stakeholder individuals and groups; beneficiary assessments	Similar to professional judgment, but here the "experts" focus on which individuals and groups are likely to benefit or not-benefit from the proposed action.	Cooperation of stakeholder groups is needed to establish the validity of assumptions and conclusions. Opposing groups can be made to recognize the validity of tradeoffs.	Use when tradeoff analysis among impacts and benefits must be made among groups affected differently by an alternative.
Computer modeling	Computational relationships among variables to illustrate changes over time. Models provide an opportunity to compare a wide range of potential alternative future scenarios quickly to identify relevant factors.	This is especially useful for economic and demographic analysis and projections of alternative future scenarios. Use reality checks, resource capacities, and impact thresholds to ensure validity. Assumptions must be carefully thought out and reexamined through sensitivity analysis. Models need long lead times to develop the model and gather the large amounts of input data. Models can be developed to produce an analysis of infrastructure impacts.	Use for long-term planning, economical, and institutional demographic analyses of communities. Best with large construction workforces.

To find out more about analysis methods, consult a recent textbook. For example, SAGE publications provide an excellent series of short pamphlets on obtaining data, different methods of analysis, both quantitative and qualitative, and innovative ways to present social science data. Other good sources for analytical procedures include:

- Burdge, 1999, pp. 160-165
- Taylor, et al., 1995, pp. 123-156
- Becker, 1997, pp. 67-111

The social assessment bibliography in Appendix 2-C is an excellent guide to the relevant literature on these procedures.

Comparative statistical methods

The more complex the analysis, the more difficult it will be to communicate the results to the general public.

Statistical analysis is useful for comparing the relative effects of alternatives. Relationships among indicators may be established using analytic techniques, such as cross tabs and measures of association (e.g., linear programming). Ensure relevance by focusing on indicators directly related to your project.

Pay careful attention to both validity and statistical significance when extrapolating trends. The goal here is to establish an association—not causality. Inputs from other methodologies can help verify and clarify the meaning of statistical analyses in human terms. Before doing any statistical analysis, ask:

- Do I have the necessary data?
- Will the resulting analysis improve the understanding and accuracy of the description of impacts and future alternative scenarios?
- Is the source of my comparative data from similar projects?
- How will I use the results of the statistical analysis?

However, this powerful tool must be used with care. While comparative statistical analysis bolsters an argument that an identified social impact is significant, most statistical analysis is completed after the fact. The problem here is to develop the necessary data to do the analysis before the proposed action is implemented.

Social analysis is done before the decision is made. Thus, statistical analysis is limited to comparing baseline or present conditions with data manufactured from likely future conditions. Statistical analysis is, therefore, limited to comparative parametric and non-parametric statistics, including all the variations of disproportionate analyses such as chi-square and discriminate analysis.

For example, a chi-square test of disproportionality may tell if the need for additional housing was significantly impacting low income families by establishing both a threshold and magnitude on this indicator. The same goes for determining if new jobs would go to the presently unemployed minorities or workers brought in from the outside. Statistical techniques of association would demonstrate if the average salary of new workers were significantly greater or less than community workers in the same category. Potential changes in wage rates, housing costs, and even the lifestyle of fixed income retirees in the project area might be better understood using statistical analysis.

Graphic techniques

Arranging and comparing data graphically may help show patterns, which can illustrate relationships among different impacts and links to data from other team members.

Graphic displays could help identify correlated situations. For example, the relationships between congressional appropriations for construction, employment on the job site, economic and infrastructure impacts on the community take on more meaning when graphically displayed. Graphs may also demonstrate how phasing construction to avoid peak impacts may allow the community time to cope while allowing the project to be built. Graphic displays with geographical locations are always helpful in better understanding the distribution of social impacts.

Graphs and charts

If possible, arrange numerical and statistical data in bar graphs, pie charts, histograms, frequency polygons, ratios. Showing the cost of labor in a table does not demonstrate that the employment rates peak 70 percent of the way through the construction period. Showing these same costs over the construction period in a graph better illustrates how many workers will be needed and at what time construction related impacts will occur.

Maps

Use Geographical Information Systems (GIS) and maps to determine potential relationships. GIS provides a methodology to chart clusters and other data by a predefined geographic unit. Comparing maps of residents by income, educational, ethnic, or other breakdowns with

locations of industrial development, water quality problems, etc., may show impacts (e.g., aquifer pollution and availability of clean water) in certain communities. Comparing locations of residential units over time shows population changes. These areas of demographic changes can be particularly useful to locate and understand growth, land use, and water supply and quality issues in a project area.

GIS systems can also help refine alternatives. For example, the distribution of construction worker housing can directly affect transportation routes and school classroom capacity. GIS techniques provide ways to clearly illustrate how staggered work schedules may ameliorate these impacts.

Issue maps identify geographical locations related to a project, juxtaposed with political boundaries and physical features. Draw approximate boundaries where issues occur. Most issues (e.g., critical habitat, water quality problems, recreation areas, transportation) do not stretch the entire length of the river. In Marble Springs, for example, ruby-throated trout habitat exists only in 50 miles of the 136 miles of the Crystal River. An issue map is essential to see where each issue is important. The Toolbox in the Decision Process Guidebook provides more information on issue maps and other tools <http://www.usbr.gov/guide/tool.htm>.

Relocation analyses

Reclamation avoids or minimizes relocation as much as possible.

Reclamation procedures require that we determine early in the process the number of people who will be relocated from their present homes, voluntarily or involuntarily, as a result of the proposed project or development, or even a policy change. The procedure also requires identifying the number and type of structures as well as commercial establishments to be relocated. See the Reclamation Manual LND 06-01 <http://www.usbr.gov/recman/lnd/lnd06-01.pdf>. Use a map of the area and information prepared by other members of the team to estimate the number of households that will be relocated as a result of the proposed project. (See the list of social assessment variables in Appendix 2-D.) Map overlays will show building locations and project areas.

If the decision is made to implement the project, a relocation plan must be developed with property assessors, affected individuals, and public involvement early in the planning process. Social analysts need to work with other disciplines in developing an acceptable relocation plan. Negotiations for fair market value compensation of property will be handled by the real estate assessors under Reclamation procedures. The plan is applied as one of the first requirements in the implementation or construction phase of a project.

If you determine that individuals and families will be relocated as a result of the proposed project (or the alternatives), then analyze the social impacts of that relocation. Whether voluntary or involuntary, any type of relocation is stressful for the individuals and families involved. For planning purposes, the severity of the impact generally depends both on the numbers of persons to be relocated as well as the distance they will be moved. The time between the first announcement until the move actually takes place may compound the impacts.

Although fair market value monetary compensation will be provided to those relocated, there may be additional social impacts that require analysis. If community sustainability, unique characteristics, viability, or the "way of life" (e.g., ranching vs subdivisions) is altered significantly; further analysis may be needed. Burdge, 1999, pp. 68-69 describes a procedure to identify categories of people impacted by relocation.

Impacts on ethnic, racial, or Native American communities will need to be considered. An environmental justice analysis will be needed to establish whether there is a disproportionate impact on populations least able to cope with identified changes resulting from the proposed action or alternatives. (See the following section on environmental justice.)

Environmental justice analyses

"Executive Order 12898, 'Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,' signed February 11, 1994, is commonly known as 'Environmental Justice.' This Executive Order provides that 'each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.' CEQ states that, the Executive Order makes clear that its provisions apply fully to programs involving Native Americans." This view is embodied in the Appendix to Reclamation's Directives and Standards CMP 04-01 "Public Involvement in Reclamation Activities," page A1-8. Social assessments are required within this particular context. (See Reclamation's Directives and Standards on Social Analysis, section 9A in Appendix 2-E and on the web at <http://www.usbr.gov/recman>.[3])

EPA's website describes environmental justice 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

[3] At the time of printing, these are in draft form. They will be posted on the Reclamation Manual site and updated in Appendix 2-E when final.

treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies" <http://es.epa.gov/oeca/main/ej/index.html>.

A copy of the Executive Order can be found at <http://ceq.eh.doe.gov/nepa/regs/executiveorders.htm> and CEQ has developed "Guidance Under the National Environmental Policy Act," which is available at <http://ceq.eh.doe.gov/nepa/regs/ej/justice.pdf>.

Impacts to vulnerable populations are likely to be more severe than similar impacts to stable or prospering populations. Just as the biologist focuses on threatened and endangered species because the impacts will be more severe in these species, the social analyst focuses on threatened communities (e.g., Native Americans, minorities, and poor) affected by a proposed project (adapted from Burdge, 1998).

Testing for Environmental Justice

Environmental justice impacts may be determined by comparing the racial, ethnic (including Hispanic and Native American), low-income populations in the project area to numbers in county and state populations, as shown in the example, table 8.3.

Table 8.3.—Demographic characteristics

Group	Impacted community (Marble Springs)	Crystal County	Impacted community vs. county	Crystal State
Percent below poverty	50%	30%	+20	16%
Percent Ethnic/Race				
Percent Native American	5%	15%	-10	2%
Percent Hispanic	40%	10%	+30	5%
Percent African American	1%	1%	0	11%

Obtain data to complete table 8.3 from the City and County Data book, census information, and recent population projections. (See Chapter 7: Data sources for more information).

The key is to determine if the impacts are discriminatory and disproportionate. If any of the differences in the categories are greater than 5 percent, the proposed project may be disproportionately impacting racial and ethic minorities and low-income; and, therefore, a potential exists for environmental racism or environmental injustice. In the sample illustrations, Marble Springs has a disproportionate amount of Hispanic and low income populations compared with both the county and the state. Marble Springs has a very small proportion of African Americans compared to state.

Although this is not shown in the sample table, determine if the relocation concentrated in a low income or minority community rather than in the community as a whole. Compare the percent of the potentially impacted population to the percent of the total population. If 30 percent of the county is comprised of minorities and a disproportionate number are being relocated, environmental justice may be an issue.

Dealing with uncertainty

A good social analysis will provide and follow guidelines for dealing with unknowns and incomplete data. CEQ guidelines (Section 1502.22) on incomplete or unavailable information require that we identify what information is lacking, explain why it is relevant, summarize what "credible scientific evidence" does exist, and evaluate "reasonably foreseeably significant adverse impacts on the human environment" based on theoretical approaches or research methods generally accepted within the social science community.

Incomplete data

Social analyses are limited by time and cost; some data will simply not be available. Yet this unavailable information may still be relevant and significant to the proposed decision. To handle unknown and incomplete data, ask:

- How will analyses reflect unknown or uncertain data?
- How will previous research in similar settings be integrated within this study to provide a more comprehensive, accurate picture?

"It is better to be roughly correct on important issues than to be precisely correct on unimportant issues" (Burdge,1998, p. 120).

Recognize and explain the limitations of your data and put the information in context and show that your estimates are reasonable. Do reality checks with what information is available. Be flexible and incorporate new information as it becomes available.

The Guidelines and Principles for Social Impact Assessment discusses methods to produce assessments when data are lacking (Burdge, 1998, pp. 93-123).

Sensitivity analyses

Sensitivity analysis is often used to refine or optimize alternatives.

Answering the relevant questions is not the same as promising or guaranteeing the results. Analyzing changes in the quality of life in a community relies on factors that can be known, quantified, and plotted. Sensitivity analyses can help answer:

- How sensitive are the results to modifications in the data?
- How sensitive are the results of the analysis to changes in data?
- Will a small change result in a significant difference based on impact thresholds?
- Will minor changes cross thresholds of significance which modify conclusions?
- Are these changes within the allowable amount of error or must your conclusions be qualified due to the uncertainty of the data?

Decisionmakers, other team members, and participants need to know:

- How accurate are the estimates of the impacts?
- Is the resulting social assessment reasonable for the project setting?
- What are possible consequences from events we have not foreseen (e.g., expansion or removal of a metals fabricating plant from the local community)?
- What are the thresholds of impacts—how much of a difference will it take to make a particular indicator or estimate be significant?

Unexpected events in a community might mitigate otherwise significant social impacts. For example, the social assessment completed for Marble Springs project indicated that bringing 100 workers into the area would require expanding the town's infrastructure. However, the calculations of the infrastructure needs were based on a metal fabrication plant, the Sprung Springer Corporation's decision to make Marble Springs its headquarters and stay in the community. The Sprung Springer Corporation subsequently went bankrupt and 300 workers left the area—an event no one had predicted. As a result, the new construction workforce was able to rent exsting housing and no additional infrastructure was needed.

Perform sensitivity analyses to determine what degree of change in the data will significantly alter the results. This is particularly important when models or projections are involved—even ones as simple as a calculation of construction workforce numbers. Determine sensitivity by re-doing the analyses based on potential changes in parameters. Where possible, build in measures to test the sensitivity of the analyses (i.e., would the results remain the same if the data and projections were off by 25 percent? by 50 percent?). The larger the data or variable change, the more assured the decisionmakers can be about their decision.

Handling risk

Perceptions of risk

While the odds of something disastrous happening may be low, consequences may be severe. People do not want to live with the possibility, however remote, of disaster striking. People feel insecure when a sword of Damocles hangs over them (the possibility of a dam failure, a devastating flood, a nuclear reactor meltdown etc.). Expert opinion and technological fixes may not be trusted. We need to understand perceptions of impacts from possible disasters when evaluating the levels of risk.

Risk is more than a potential physical loss of property and communities—we risk living with an every day perception that disaster could occur at any time.

If a dam fails, lives, property, infrastructure, and habitats can be lost. We need to think about secondary factors and risks as well: the reservoir may be supplying cooling water for a nuclear power plant. Redundant cooling systems in the reactor may be of little use if the source of water for cooling is unavailable.

"Perception of risk is an emotive issue and does not correlate with the actual risk (expressed as a probability of occurrence)" (Burdge and Vanclay, 1995, p. 73).

Social assessments need to incorporate evaluating and communicating risk. Social assessments can cite the perception of risk based on comments and interviews and provide an indicator to compare levels of risk and comfort from the perspective of the affected people. For each alternative, describe what the risk means to the potentially at-risk populations.

Evaluating risk

When a result, no matter how unlikely, would be catastrophic, redundancy safety measures are vital—not for the likelihood of the event, but to avert the consequences.

Evaluating the risk that something will happen, like calculating all estimates or projections, relies on judgment. There is no universal, agreed on method for evaluating risk. However, carefully explaining assumptions, criteria, and methodology can show the basis for the judgment and help decisionmakers determine whether or not to take an action to reduce risk.

To lessen the risk and resulting impacts, engineers build in fail-safe measures. In safety of dams issues, Reclamation has developed guidelines for evaluation and analytic techniques under the 1997 Interim Guidelines for Achieving Public Protection in Dam Safety Decisionmaking. For chemical and pollution problems, consult with EPA guidance.

Communicating risk

By communicating the risk, the social analysis can put the practical implications of risk perceptions into perspective:

- **For the community**.—If the community perceives a significant risk, the social analyst must convey to the decisionmakers and other team members some sense of how the community perceives the risk related to the proposed action and alternatives (including no action).

- **For the agency**.—As Reclamation perceives the risk, the social analyst must work closely with the public involvement team to communicate the realities and the perceptions of risk in meaningful terms to decisionmakers and communities in the context of the proposed action.

- **For refining alternatives**.—In addition, the social analyst needs to understand community programs to reduce risk (e.g., for early warning and response to unexpected events).

In communicating risk, avoid emphasizing the catastrophic or negative aspects. Rather than focusing on what can go wrong (e.g., if the dam fails, people will die and property will be destroyed), explain what can be protected and maintained (e.g., by making the dam safe, we are protecting lives and towns).

Further, communicate the appropriate level of risk. Underplaying the likelihood of problem can result in complacency (e.g., we don't need

emergency plans because the emergency won't happen). Overplaying the likelihood can result in unnecessary anxiety over unlikely problems.

Post audit and monitoring programs

Monitoring and post audit studies are conducted as needed to determine if a project or program is actually performing as expected. This type of study can be particularly useful for adaptive management programs, where the next phases are decided based on information about the effects of the previous phase.

Use social impact variables that were significant in the social analysis as indicators during monitoring.

Based on the action being implemented, determine what indicators are significant (e.g., in and out migration, population shifts, second home developments). These social assessment indicators will be incorporated into the monitoring and follow-up stages of the decision process (see these decision process steps in the Reclamation's Decision Process Guidebook <http://www.usbr.gov/guide>).

For example, a planning study projected that potential impacts during construction would include increased secondary employment and the need for more houses, schools, and other community infrastructure. Reclamation did a monitoring study because construction impacts were much smaller than anticipated. Local merchants wanted to know why their businesses were not growing as anticipated. The monitoring study found that the impacts were indeed much smaller because the region was experiencing a regional downturn in the economy rather than the predicted energy development boom unrelated to the project. The head of Reclamation's construction office, the contractor building the dam, and the archaeologic contractor (large workforce relative to the impacted community) all took special measures to ensure minimal negative impacts and worked closely with the community to enhance positive benefits.

If a study is necessary, social analysis can point out potential problems in monitoring and suggest ways to make it effective based onthe results of the social assessment. Table 8.4 shows some of the difficulties encountered in mitigation and monitoring.

Be aware of the constraints on mitigation throughout the process to actively plan ways to avoid impacts by using social assessment variables, indicators, and techniques in monitoring impacts as part of the procedure for implementing actions.

(See Burdge, 1999, pp.159-176 and Rossini and Porter, 1983, p. 222.)

Table 8.4. Planning for potential problems with mitigation

Constraint	Explanation and examples	How to plan
Agency funding Authorization Staff limitations Staff turnovers	Decisionmakers and responsible parties may not be willing to accept responsibility for monitoring.	Document commitments and work with all parties to ensure decision-makers are aware of the need for monitoring.
Lack of experience in coping with change on the part of the impacted community	Implementers, participants, and local decisionmakers may not be experienced in the institutional issues (e.g., administration, grants, planning, bonds, cash flow) or the physical issues (e.g., noise, emergency management).	When researching other related or similar actions, develop relationships with groups and federal, state, and local agencies and learn from them.
Lack of coordination and communication between Reclamation and the community	Implementers may not know about rationales for actions or of the history of the projects. People may not be informed of actions.	Set up a communication plan and public involvement. Get a bulletin board, web site, and establish a central location to exchange information.
Lack of local agencies and implementers	Institutions to manage personal and group stress may not be available.	Develop informal institutions or incorporate the needed organization in the alternatives.
Lack of credibility	Publics may not trust government actions.	Work closely with public involvement efforts. Maintain consistent and credible communication. Do what you say you will!!
Difficulties in assimilation of newcomers	The local community may not have a plan to help newcomers adjust to the area.	Plan for population influx in each alternative. Enlist partners from local businesses, organizations, etc.

This chapter has laid out a variety of analytical procedures which may be used in social analysis. Obviously, only a small proportion will be used in any assessment. The intent is to make social analysts aware of the alternatives, not to dictate procedures. However, remember that analyses are comparative and are completed before a decision is made or an action is taken.

The last chapter provides suggestions on how the results of the analyses might be shared.

Chapter 9: Sharing the results

The purpose for conducting a social analysis is to provide information needed to make a balanced, effective decision. The end result of your work as a social analyst will be a report that will assist in decisionmaking. This chapter discusses ways to communicate your results clearly and thus bring closure to the social analysis process.

Write to your audience

Your audience ranges from publics who want to learn what will happen to a specific issue under different alternatives to decisionmakers who need to balance tradeoffs among all issues. Clear communication is vital so different audiences understand the conclusions of the social analysis and how these results were obtained. Do not write just for other social analysts—write for the people outside your discipline who need to understand what you did.

Be explicit and clear—present enough detail that everyone understands what you are doing, but not so much that it obscures the point.

Organize your analysis and present it in a format that decisionmakers and publics can easily use. Your social assessment will almost always form a part of a larger multidisciplinary document (e.g., an environmental impact statement, a resource management plan, or a planning feasibility report). The document itself summarizes results to help decisionmakers and publics from the perspective of different technical disciplines. Explain the results so everyone can make sense of the potential social impacts within the context of the community and the proposed action and alternatives as well as impacts that other team members have identified. Detailed analyses and methodology should be provided in a technical appendix.

Focus on the purpose of the report: to provide information to the decisionmaker in order to make a balanced, effective decision.

Whether you are a contract or Reclamation employee, you must be prepared to defend your social assessment under legal challenges relating to the EIS or decision document.

Watch your language

Communication is important throughout the social assessment—both with the technical team and the publics. Work with the public involvement specialist, technical writer, and others to communicate with various publics—both during the analysis and in the report.

Language differences and semantics may influence decisions and perceptions:

- The same term can refer to different processes or concepts in different disciplines. "Diversity" can refer to biological, economic, or social diversity—or even a Reclamation hiring objective.

- Concepts may have different meanings to different areas within the same society. For example, watch out for relative distances and sizes. Is a 30-mile commute ridiculous or commonplace? Is a 30-minute drive a long way or in the same neighborhood? Washington, D.C., and rural Montana residents will view the questions quite differently.

- Terms can be controversial. Does "instream recreation" include jet skis or is it limited to fishing? Does "sustainable" mean continuing population or economic growth or continuing the status quo?

- Translating project information into other languages may be needed when working with ethnic groups. Dialect may be an important consideration for people who speak the same language but come from different backgrounds. (For example, Castilian Spanish may not be appropriate for people from Guatemala).

- To avoid the appearance of choosing sides, recognize and be sensitive to potential conflicts among groups (e.g., conflicting ethnic groups among boat people from southeast Asia) when selecting languages.

- Some terms that do not readily translate into a foreign language may require a fuller explanation. For example, the term "facilitation" does not directly translate into Japanese.

- Other terms may be triggers from negative experiences with the other government agencies. For example, the concept of "self determination" was put forward as giving Native Americans control over their lives. Initially, many of the affected Native Americans viewed this as an extension of the old federal policy of "termination," an attempt to eliminate their people as a unique ethnic group. Over time, this confusion has been resolved.

Work with local leaders, ethnic groups, and Reclamation employees who live in the project area to ensure your terminology does not cause problems.

Close the book—bring the social assessment process together

Along the way, you will have shared your results with interested and affected publics, the team, and decisionmakers. But the culmination of the analysis is presenting your results in a final team report. This report must be supported by the information gathered and the analytical procedures made throughout the process.

The assessment report is not an afterthought, but is the goal of the entire analytical process. Outlines help—have one in front of you during the entire process. Work with the technical writer from the onset to determine what information will need to be in the report.

Generally, writing the report will take as long as analyzing the data.

Table 9.1 lists some of the steps from the social assessment process used in this manual and the corresponding information needed in the report. You will be pulling together the results from different portions of the analysis and categorizing these results to show comparisons among alternatives for the significant issues.

Every activity in the social analysis process is designed to produce information for the decisionmakers and the affected publics. Documenting as you proceed will make it much easier to explain what has been done, the results, and the recommendations. Preparing the report will be simpler and clearer.

Table 9.1.—How information from the social analysis process is used in producing Reclamation reports

Social analysis process	Social assessment report contents
Program or project description	Provide purpose of action, description of alternatives
Background and community profile	Provide project background and context for proposed action and alternatives
Methods	
✦ Measures	Describe and explain the rationale for your social assessment indicators
✦ Data gathering	Describe the source of information and cite bibliographic references
✦ Analysis	Explain the analytical techniques used for the comparative evaluation
Results	
✦ Future scenarios	Describe social impacts under each alternative
✦ Impacts	Discuss each significant impact in terms of consistent indicators
✦ Tradeoff analysis	Compare the impacts and tradeoffs under each alternative
Refining alternatives	Work with team members to accurately describe and refine the proposed action and alternatives. Proposed actions contain recomendations (e.g., mitigation may be appropriate).

Write the book—fit your social assessment within Reclamation's reports

The report should compile all of the technical team's results together to show decisionmakers and publics the problem, purpose of the proposed action, alternatives, and implications of each alternatives (the impacts and tradeoffs). These reports may be NEPA compliance documents, resource management plans, feasibility, other planning documents, etc. The social assessment may be integrated within the report or become an appendix or a supporting document.

The following outline may be used for a social assessment or a team report. Each discipline should follow the same general outline. Usually, the social analyst is only responsible for writing about the significant issues, analysis, and tradeoffs among alternatives analyzed in the social assessment.

The team will draft (or have drafted for them) the purpose of the action, description of alternatives, and background problems leading to the need for the action. Work closely with the technical writer and the rest of the technical team to make sure your section covers the essential points. Check your outline with the basic requirements for social assessments in section 8A in Reclamation's Social Analysis Directives and Standards.

Introduction

- Objective and purpose of the social analysis
- Description of the project area
- Authorization (legislation)
  - Problems
  - Identification and needs assessments leading to project proposals
- Description of interested and affected publics
- Issues (significant social impacts)
- Summary of findings and conclusions

Social analysis is issue driven. Start out by identifying the issues.

Objectives

- Brief statement of program objective
- Problem definition in social assessment terminology, including description of process used to define the problem
- How the problem was identified

Significant issues

Briefly describe the relevant issues and how the identified social impact are relevant to the decision:

- Issue 1 description
  - Relationship to study objectives and alternatives
  - History of the issue
    - Baseline condition
    - Perception and values regarding the issue and the issue's strength and significance
- Issue 2....description (repeat issue 1 items)

Alternative solutions

Describe the no action alternative (the future without) and action alternatives. Describe non-viable alternatives only when the public is interested and only to the level needed to establish the fatal flaw which eliminated it as an alternative.

Analysis

Describe data sources and analytical techniques used.[4]

No action alternative

- Objective (How this alternative meets the objective)
  - Issue 1. (How significant is this issue, how does the alternative affect the issue?)
  - Issue 2.

(Where possible, show issues in order of importance.)

Alternative A . . .

Tradeoff analysis

Describe the tradeoffs among alternatives for decisionmakers and interested and affected parties.

Summary comparison

- Account of social impacts
- Recommendations (include strategies to work with publics to mitigate signficant impacts and enhance benefits as appropriate and necessary)

Writing drafts and working with the technical writer throughout the process can help keep your assessment clear, focused, and useful. Peer review is needed both at the beginning and near the end of the analysis process.

Pulling the report together becomes more difficult in a study without a technical writer (or someone compiling the results from various disciplines to make a concise, cohesive report).

This chapter provides some suggestions and a sample outline for presenting your results. The analysis means little if readers cannot understand the assessment's description of the methods and the results.

[4] While there is no CEQ requirement in an EIS for a methodological section, experience has shown that both interested and affected publics ask questions about data sources and methods of analysis. Explaining why certain indicators, models, and approaches are used helps present a reasonable course of analysis and puts the analysis into perspective.

Appendix 2-A: Case examples

This manual uses examples to illustrate concepts and applications of principles of social analysis. Our purpose is to illustrate concepts, not debate details. Thus, all examples are compiled from real life cases with changed names[5]. Real life cases can change quickly and unexpectedly—any reference to Teton Dam before it failed is now viewed with suspicion. Further, everyone has had a different experience and understanding about each real-life case example.

These examples represent some types of composite projects where Reclamation performs environmental and social assessments to ensure project success.

Sample project area

Reclamation has several interrelated activities in Crystal State on Crystal River, with transbasin diversions into the Cold River watershed. Marble Springs Dam is at the headwaters of the Crystal River. Marble Springs Reservoir provides water both for the Crystal River and transbasin diversions into the Cold River watershed system across the Crow Mountain Range. Transbasin diversions are through the Davidson Tunnel into the Cold River Dam and Reservoir on the Cold River.

The town of Marble Springs is on the Crystal River about 30 miles upstream from Marble Springs Dam. It has a population of 30,000 and is the county seat of Crystal County. Towee Indian Nation is about 30 miles farther downstream from Marble Springs. Highway I-45 follows Crystal River, and both the town and Towee Indian Nation are on that highway. Although Marble Springs was originally a ranching and mining town, most of the employment in Crystal County comes from tourism.

Major City has a population of 1,500,000 and is on the Cold River, about 50 miles downstream from the Cold River Dam. The city depends on water from the Crystal River as well as the storage in the Cold River Reservoir.

[5] Names are taken from Marble Springs, Larsen, D., 1993, Eastgate Systems.

Marble Springs Dam and Reservoir

Background

Marble Springs Dam was built in 1955, well before NEPA was enacted. It controls the headwaters and, therefore, most of the flows on the Crystal River. It was built for irrigation and to provide some municipal and industrial water supplies for Major City and Marble Springs.

It is a concrete arch dam with a 230 megawatt powerplant. The powerplant below the dam supplies power for pumping irrigation water into the canals and supplies some of the peak power for Marble Springs.

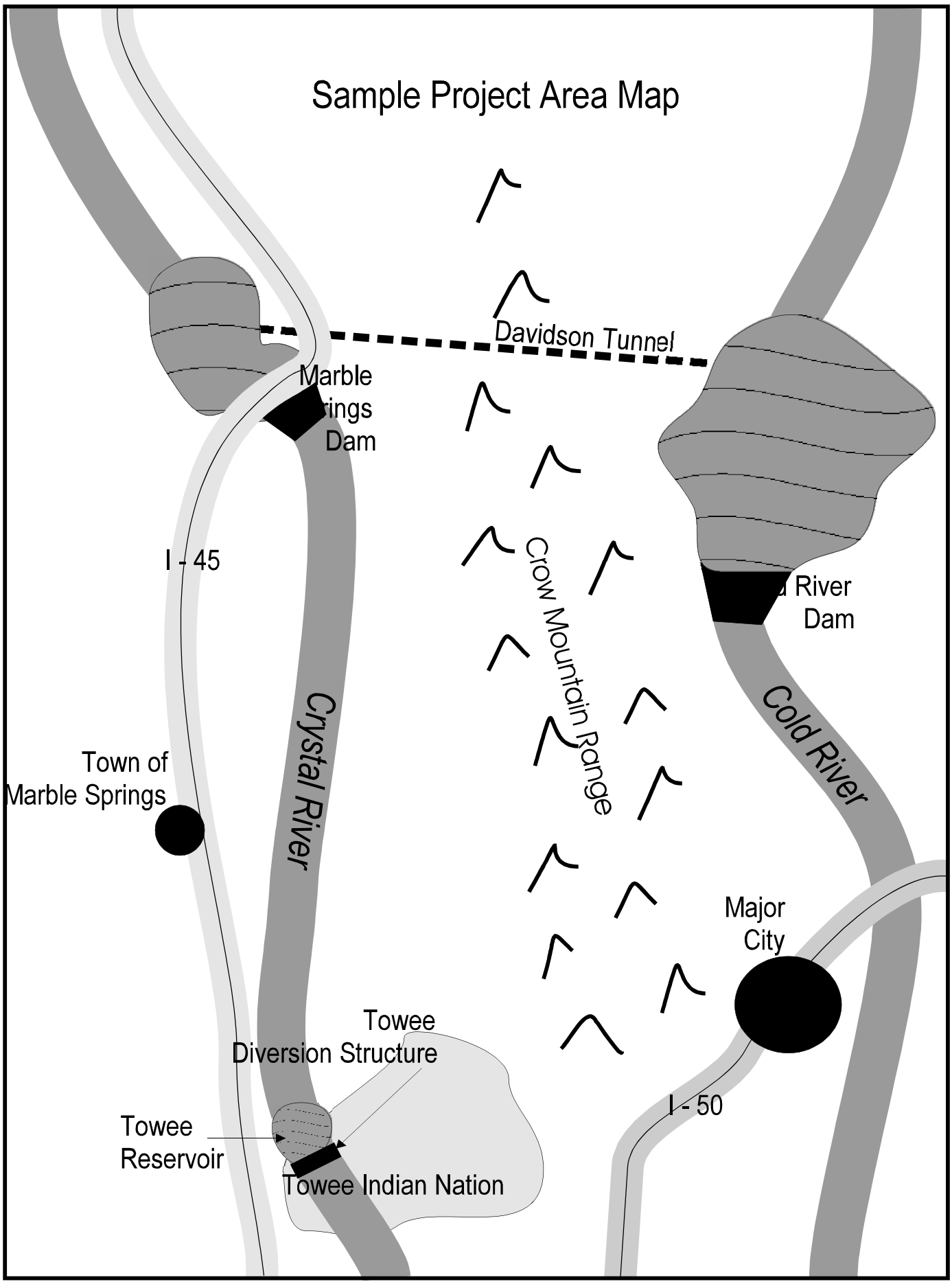
The reservoir has a capacity of 300,000 acre-feet, with 100,000 feet dead pool storage and 30,000 acre-feet flood control. The reservoir is managed for irrigation and power flows, with seasonal fluctuations. The shoreline is about 12 miles in circumference. Reclamation owns the reservoir shoreline, easements, and dam facilities. The northern end of the reservoir contains private land holdings. The rest of the lake is in the Bridget O'Shanty State Park, which extends for about 30 miles around the lake. Boat docks are on the southern end of the reservoir, next to a public campground.

Recreation on this high mountain reservoir and downstream has been developed extensively by local resort owners. The State of Crystal and Reclamation jointly manage the state park on the reservoir land. Reservoir visits and downstream recreation, especially the blue ribbon brown trout fishery and white water rafting, provide a significant portion of the local economic base.

Reclamation and the state are working together to develop a comprehensive resource management plan for Marble Springs Reservoir.

Issues and Concerns

Reclamation has the lead agency responsibility for determining operations from Marble Springs Dam but coordinates with the Department of the Interior, FWS, BIA, towns of Major City and Marble Springs, Crystal State Engineer, Crystal State Department of Water Resource, Crystal State Department of Fish and Game, Cold River County, and Crystal River County to determine a set of operating criteria for the fair apportionment of water among all uses. Reclamation has adopted a flexible approach with firm commitment to recover the endangered species while maintaining the water rights of all involved parties.


Sample Project Area Map
Davidson Tunnel
Marble
rings
Dam
I - 45
Crow Mountain Range
River
Dam
Crystal River
Cold River
Town of
Marble Springs
Major
City
Towee
Diversion Structure
I - 50
Towee
Reservoir
Towee Indian Nation

Many people rely on the Marble Springs Dam for their water supply, including Marble Springs and Major City. Crystal River Valley ranchers and farmers, several ski resorts, and the Towee Indian Nation also have claims on water. At present, water in the valley is overappropriated.

The FWS has issued a jeopardy opinion against any further development on the Crystal River to protect the ruby-throated trout, an endangered species affected by the operation of Marble Springs Dam.

The power plant will require major maintenance soon.

Demands for instream flows for fish and more water to support both population and economic growth in Marble Springs and Major City are increasing demands on both the Cold and Crystal Rivers.

Alternatives

Marble Springs Facilities

- Raise the Marble Springs Dam by 6 feet to increase storage for fish flows
- Raise the dam 50 feet for increased storage capacity for both fish flows and M&I water
- Lower the outlet works
- Build an afterbay dam to allow Marble Springs Reservoir to fluctuate more while maintaining steady flows

Water use

- Build a water reuse treatment facility for Major City
- Create a flexible, joint operating plan for Crystal and Cold River
- Institute a comprehensive water conservation plan

Towee Indian Nation

Background and setting

Reclamation is working with the Towee Indian Nation to provide safety of dams modification and operations and maintenance on the Towee Dam and Reservoir. The Towee Indian Nation has 4,000 members, 3,000 of whom live on the reservation. Of these, 2,000 live in the Towee Village and are provided M&I water from storage in the Towee Reservoir.

The dam is a diversion structure built in 1952 by Reclamation for irrigation and municipal and industrial water. Its storage capacity is 25,000 acre-feet, which irrigates about 600 acres.

While installing wells to monitor seepage, crews uncovered several voids. To ensure safety, the reservoir operational pool was lowered until the dam could be repaired. The small village of Towee lies down stream from the dam on the Crystal River. If the structure fails, between 20 and 1,000 lives would be at risk as well as the 50 structures in the flood plain.

Issues and concerns

Historical structures and a national wildlife refuge are in the flood plain.

Alternatives

The sugested alternatives to solve the safety of dams problem are:

1. Replace the structure at a cost of $10 million, which would bring 17 workers per million dollars expended to the small village.

2. Modify the structure at a cost of $6 million, which would bring 17 workers per million dollars expended to the small village.

3. Breach the structure at a cost of $2 million, which would forfeit the storage benefits (including drinking water, a small irrigation project, the reservoir fishery, and recreation).

Appendix 2-B: Glossary of Reclamation SIA Terminology

Acceptability: One of the "four tests of viability" that the Principles and Guidelines use as screening criteria. Principles and Guidelines (Water Resources Council, 1983) define acceptability as "the workability and viability of the alternative plan with respect to acceptability by State and local entities and the public and compatibility with existing laws, regulations, and public policies." Use this test as part of a fatal analysis to screen options.

Action plan: A documented strategy for solving a problem. Action plans come under various names and guises: statement of work, study plan, etc. Updating action plans serves as a record for the problem-solving effort and provides background for new players.

Affected publics: Also termed interested and affected publics or stakeholders. Persons who: live nearby will hear, see, or smell the proposed project; are forced to locate either voluntarily or involuntarily; have an interest in the project or policy changes (may not live in primary or secondary zones of influence); are interested in the potentially impacted resources; might normally use the land affected; or be affected by the influx of seasonal, temporary, or permanent residents.

Alternative: A plan to meet one or more objectives. Alternatives are usually made up of two or more components or options that can work together to solve a complex problem.

Attitude: A relative enduring organization of an individual's belief about an object, that predisposes the individual's future norms.

Baseline conditions: A condition that would prevail if no actions were taken. (See future without and no action alternative.)

Comfort levels: The points where people feel comfortable and able to work—in political, technical, and other arenas.

Communication: Sharing information, perspectives, assumptions, etc., with one or more people.

Community: A geopolitical designation that includes the major social institutions, interactions, and a shared definition of place. ommunities are the focus of social assessment and are affected by or capable of supporting the proposed action. At times, this term is used to refer to groups of people with shared interests; for example, the environmental community, the electronic literature commmunity, the Hispanic community, and farming community.

Community infrastructure: Public and private services and facilities that contribute to the general quality of life (e.g., health, transportation, power, education, water and water quality, sanitation services).

Completeness: One of the "four tests of viability" that the Principles and Guidelines (Water Resources Council, 1983) use as screening criteria. Principles and Guidelines define completeness as "the extent to which a given alternative plan provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. This may require relating the plan to other types of public or private plans if the other plans are crucial to realization of the contributions to the objective." Use this test as part of a fatal flaw analysis to screen options.

Conflict: A struggle where participants perceive threats to values or interests. Conflicts are situations where people seek to promote their own agenda at the expense of someone else.

Consensus: Unanimous agreement and support.

Consensus building: Getting everyone to support a solution and unanimously work to translate it into a long-term, real solution.

Consent: Agreement not to actively oppose the decision process. One can often build consent by showing that there is a serious problem, the right groups are addressing it, and that the process to solve the problem is fair.

Consent building: Making sure no individual, group, or organization actively opposes or tries to stop the proposed project.

Constraint: A limitation or restriction. Resources and constraints are vital to determining what can and cannot be done.

Core team: Participants that are actively and intensively involved throughout the process. Usually, an agency sets up a core team of employees and may invite key participants to join this team.

Council on Environmental Quality (CEQ): A three member Council within the Office of the President established by Title II of the National Environmental Policy Act to provide overview capability of environmental conditions and recommend ways to achieve the objectives of NEPA. CEQ publishes regulations (40 CFR 1500-1508) implementing the procedural provisions of NEPA.

Credibility: Being perceived as worthy of trust, belief. Participants are more willing to invest resources and take risks when they know the process and other participants have proven themselves to have integrity.

Culture: Material and non-material aspects of a way of life, shaped and transmitted among members of a community or a larger society. Sometimes referred to as shared beliefs. Examples include "folk" cultures, a European or Western culture or native cultures, depending on the context of the proposed action.

Cultural resource: Any building, site, district, structure, or object significant in history, architecture, archeology, culture, or science. This can extend to include a community's heritage and way of life. Impacts to cultural resources may be examined separately from social impacts, but are always related.

Cultural resource management: As used here, the management both of cultural resources and of effects on them that may result from land use and other activities of the contemporary world.

Decisionmaker: A participant who decides on a course of action. Who the decisionmakers are depends on the project, organizations involved, and jurisdiction.

Decision process: A fluid, flexible process that solves problems step-by-step. A systematic, conscious approach to each step in the decision process can lead to agreements, partnerships, actions, and policy to meet existing and future needs.

Demography: A sudiscipline of sociology analyzing the composition and distribution of human populations. Demographics refers to specifics such as age, gender, educational achievement, and ethnicity of a geographical location.

Developing alternatives: The process of examining different methods, policies, and development to achieve some goal. The basic rationale for the NEPA process.

Diversity: The degree to which a community, organization, or agency includes persons with a mixture of ethnic backgrounds, gender, age and racial composition in the decision process. Also refers to the presence or absence of the above demographic characteristics in a given population.

Effect: A result or consequence—synonymous with impact.

Effectiveness: One of the "four tests of viability" that the Principles and Guidelines (Water Resources Council, 1983) use as screening criteria. Principles and Guidelines define effectiveness as "the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities." Use this test as part of a fatal flaw analysis to screen options.

Efficiency: One of the "four tests of viability" that the Principles and Guidelines (Water Resources Council, 1983) use as screening criteria. Principles and Guidelines define efficiency as "the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities consistent with protecting the Nation's environment." Use this test as part of a fatal flaw analysis to screen options.

Environment: Sum total of all biological, chemical, social, and physical factors to which organisms are exposed. (Under NEPA legislation, the human environment is specifically included.)

Environmental analysis: NEPA legislation—defines this as a systematic process for considering environmental factors in resource management actions.

Environmental assessment (EA): A NEPA compliance document used to determine if an action would have a significant effect on the human environment. If not, write a finding of no significant impact (FONSI); if so, go through a more detailed analysis process and write an environmental impact statement (EIS). An EA covers the same ground as an EIS, only with less detail and research.

Environmental impact statement (EIS): A NEPA compliance document used to evaluate a range of alternatives when solving the problem would have a significant effect on the human environment. The EIS is more than a document, it is a formal analysis process which mandates public comment periods. An EIS covers purpose and need, alternatives, existing conditions, environmental consequences, and consultation and coordination.

Existing conditions: Characteristics of the problemshed or planning area (zone of influence) that exist at the time of the analysis. See baseline conditions and demographic and social profiles.

Factor or variable: Relevant indicator of potential change used to analyze the difference among alternatives.

Fatal flaw: Any problem, lack, or conflict (real or perceived) that will destroy a solution or process. A negative effect that cannot be offset by any degree of benefits from other factors.

Feasibility: A determination that something can be done. A feasibility report is required in some planning processes to examine the situation and determine if a workable solution can be developed and implemented.

Finding of no significant impact (FONSI): A NEPA compliance document which affirms that an environmental assessment found that alternatives were evaluated and a proposed action would have no significant impact on the human environment.

Full range: The widest range of nonstructural and structural options grouped into alternatives to address as many objectives as possible. Alternatives should span the continuum from no action at all to the maximum amount of action possible. Alternatives should also explore different types of actions

Future without: The future without taking any action to solve the problem. See “no action alternative.”

Gender assessment: Includes systematic procedures to measure and understand the effect of the proposed action on the role and status of women in the cultural context of the communities located in the zones of influence.

Geographical Information Systems: A mapping procedure to cluster physical, biological, and demographic information by common geo-political units; e.g., census tracts, municipal, and other jurisdictional boundaries.

Goal: An end or purpose. A vision of what the action will accomplish. See objectives.

Go/No Go decision: A decision either to continue or terminate a process or action. Frequent go/no go decision points can help provide reality checks to ensure that:

- The problem is still serious
- Your process is still working toward a viable solution
- You are still the correct agency to act (it would be irresponsible if you didn't)
- You are still acting in a fair and responsible manner.

If one of these four points is missing and you continue, you will lose credibility on this and further actions see Appendix 2-F. Determine if bowing out or reexamining the needs, goals, or options is appropriate.

Groups: People in communication and together geographically with common interests and goals.

Historic property: Any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (16 U.S.C. 470w(5)).

Human environment: Natural and physical environment and the relationship of people with that environment including physical, biological, cultural, social, and economic factors within the study area (definition is from NEPA legislation) .

Impact: An economic, social, environmental, and other consequence that can be reasonably foreseen and measured in advance if a proposed action is implemented—see effect.

Indicator: A particular measure for an issue that will illustrate the overall situation. See Chapter 6, section, Choosing your indicators and Appendix 2-D, categories of social impact variables and indicators.

Interested and affected publics: Groups, organizations, and/or individuals who believe that a proposed action might affect them or who are otherwise involved in the decision process (often referred to as stakeholders or affected publics).

Interrelationship: Any person, group, issue, project, action, or resource interacting with or directly or indirectly affecting someone or something else.

Institution: The aspects of a culture that satisfy some functional need of society; e.g., education, the family, recreation, and religion.

Issue: Conditions or situations perceived as a threat to long-held values. Issues and concerns delineate needs.

Measure: Defined unit or method you can use to analyze the relative desirability of an action and ensure that alternatives are compared in the same manner. See indicators.

Mitigation: NEPA defines mitigation as action taken to avoid, to reduce, to minimize or to eliminate an adverse impact (40 CFR, 1508-20, July 1, 1986). Mitigation can include one or more of the following:

- Avoiding impacts
- Minimizing impacts by limiting the degree or magnitude of an action
- Rectifying impacts by restoring, rehabilitating, or repairing the affected environment
- Reducing or eliminating impacts over time
- Compensating for an unresolved impact by replacing or providing substitute resources or environments to offset the loss

Mythconception: A misconception or unfounded assumption that has evolved into a firmly held belief. Mythconceptions are unspoken concepts that participants hold as obvious but that may or may not stand up to reality. Hurdles discusses specific decision process. Mythconceptions such as hange, policy, agendas, and politics. See mythtruth, below.

Mythtruth: An idea (true or false) that has evolved into mythic proportions and beliefs. umors, reputations, half-truths, second guesses, insupportable facts, etc., are mythtruths. Original concept resulted from mishearing a statement made in an interview for this guide, but when we asked, the contributor said the term evoked what the comment really meant.

National Register of Historic Places: Federally maintained register of districts, sites, buildings, structures, architecture, archeology, and culture (may also be listed for individual states).

Needs: Demands on natural and human resources required to sustain individual and/or community standards of living and shared social values. Samples of needs include a safe, secure water supply; protection of ecosystem and endangered species; environmental stability, appropriate economic development; and community viability.

Needs assessment: A systematic procedure for determining and ranking client or community issues as a component of program development.

National Environmental Policy Act of 1969 (NEPA): An act requiring analysis, public comment, and reporting for environmental impacts of Federal actions involving land, funds, and laws on the human environment.

No action alternative: A description of what would happen if no action was taken to solve an identified water-related problem. This description is used as an alternative as a base of comparison for action alternatives. See future without.

Non-use value: The intrinsic value of a natural resource distinct from the benefits derived from the physical use of that resource.

Norms: The established behavior patterns for members of a community or society. Included under norms are laws, folkways, and mores.

Objective: A specific statement of what the proposed action hopes to accomplish. A specific, measurable, and timely proposal to meet an agreed upon need (e.g., ensure water from Settler's Creek at the Iron Peak gauge meets Colorado's water quality standards for rural streams).

Other social effects account: An account in the Principles and Guidelines (defined in this glossary). This account displays and integrates effects such as urban and community impacts; life, health, and safety factors; displacement; long-term productivity; and energy requirements and energy conservation. (See Principles and Guidelines Water Resources Council, 1983, p.12.)

Participants: Organizations, groups, or individuals who provide input and alternatives to the proposed action.

Partnership: Two or more groups, organizations, governmental entities, or individuals working together to achieve a defined purpose. Also called alliances, coalitions, etc.

Phased implementation: Doing work in phases. Also called staging.

Policy: A philosophy behind a proposed action. Policy is often codified for state and federal agencies.

Practitioner: A qualified social analyst who performs the social analysis to provide the social impact statement, also called social impact assessment.

Primary zone of influence: Refers to the social impacts caused by the proposed action and occur in the same time and place.

Principles and Guidelines (P&G's): Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies from the Water Resources Council, March 10, 1983. This work provides the principles and guidelines for planning Federal water resources projects. The U.S. Army Corps of Engineers Planning Manual (1998) provides a good explanation of the P&Gs.

Priority: The relative importance of activities or issues involved in a project, action, or situation.

Priority Stack: A memory device such as a bunch of yellow stickies moved around to establish precedence or importance and timeliness of issues, then recorded and dated to document priority of tasks.

Problem: Situation where needs go unmet, issues are not addressed, or values are threatened (e.g., mine discharge in Settler's Creek).

Problemshed: There the problem or solution is created or impacted. The content and context of a problem: geographical, social, or conceptual area of related actions, influences, and needs.

Professional judgment: A decision made by a person knowledgeable in the relevant field of expertise, and generally based on that person's experience and all information reasonably available at the time.

Profile: A statistical description of a community at a particular point in time. Sometimes, textual explanations and background materials are included. (See baseline conditions).

Public involvement: The systematic provision for affected publics to be informed about and participate in Reclamation's decision processes. t centers around effective, open exchange, and communication among partners, agencies, organizations, as well as various affected publics.

Public involvement plan: A plan to do public involvement as described in Reclamation's public involvement manual. It is based on the action plan and provides a systematic approach to linking what needs to be done and what needs to be communicated. See public involvement.

Quality of Life: Beliefs, perceptions, and values about what constitutes a good life. Includes such factors as adequate income, availability of basic needs, education, and the opportunity to pursue a chosen life style.

Record of Decision (ROD): A NEPA compliance document that states the decision made, describes the environmental factors considered, the preferred plan, and the alternatives considered in the environmental impact statement.

Relevance: Bearing upon, connected with, and pertinent to the decision and solution.

Risk: The probability that an event will occur.

Role: A pattern of behavior associated with a distinctive social position; e.g., tribal chief, irrigation farmer, barge operator, County board member.

Round table review: A brief meeting between a few key players. Useful in determining objectives.

Round tuit: A small round button with the letters "tuit." This token can be given when someone says "I'll do it as soon as I get around to it." Technical writers frequently award these to social analysts.

Scoping: The process of identifying issues, participants, zones of influence, available resources, and likely constraints to a proposed action or planned intervention. his implies consulting with interested and affected publics to define key issues and the extrent of asocial assessment for a proposed action. Usually associated with NEPA processes, but applies to all decision processes.

Screening criteria: Factors that determines whether an option, element, or alternative can solve a problem. Screen options to find workable alternatives.

Secondary zone of influence: Refers to the social impacts that will be caused by the proposed action, but may occur later in time or are farther removed in distance, but are reasonably foreseeable.

Significance: Having meaning or importance to the decision and solution.

Social characteristics of an area or society: These include demographics, ethnic groups, minority groups, social interactions and structure (how people relate to each other), organizational and institutional structure (how people form groups to get things done), religious and cultural beliefs and practices, and general beliefs and attitudes.

Social analysis: A sudiscipline of sociology which provides a systematic appraisal, in advance, of the impacts on the day-to-day quality of life of persons and communities where environment is affected by a project or policy change. Considers all the impacts on humans from the perspective of the impacted individuals, groups, and communities. Frequently, it uses analytical tools to put those impacts in perspective and put information into meaningful terms for the impacted individuals, groups, and communities. This is also defined as the separation or breaking of social science data into its parts and examining these parts to determine their nature, proportion, function, interrelationships, etc.

Social analyst: (Also called social assessor or social assessment practitioner.) Refers to the person or persons who actually do the social analysis to produce a social assessment. A person who analyzes social science data for a variety of purposes.

Social assessment: A document produced by a social analysis that describes the impacts on the day-to-day quality of life of persons and communities whose environment is affected by a project or policy change. This is produced before the decision is made. The results from a social analysis needed to understand, project, and describe human impacts resulting from decision processes and specific policy (including programs and the adoption of new policies) and government actions (including resource management, operation, and construction).

Social assessment variables: Point to measurable change in human populations, communities, and social relationships resulting from a development project or policy change.

Social consequences: Consequences to human populations of any public or private actions that alter the day-to-day ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society.

Social impacts and effects: (Also referred to as issues, effects, and consequences or human impacts and human dimensions.) Changes for individuals, organization, institutions, and communities due to any public or private actions (planned and unplanned) that alter the day-to-day ways people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. The term also includes impacts to quality of life involving changes in the norms, values, and beliefs that guide and rationalize people's understanding of themselves and their society.

Social justice: Issues related to equity, human rights, and the opportunity to participate in decisions affecting one's life. Includes the legal and planning issues related to agency decisionmaking (Conyers, 1993, p.8).

Social well being: An abstract concept denoting the acceptability of an individual, group or communities way of life.

Staging: In implementation, doing the work in stages. Also called phased implementation.

Stakeholders: Groups and individuals who have specific interests in the resources and issues or will be affected directly by the decision and solution to a proposed action. Stakeholders may not be direct participants (e.g., children, people who chose not to participate, people who don't know about the proposed action). See interested and affected publics—terms used synonymously.

State Historic Prevention Officer (SHPO): The State official designated by the governor to carry out the functions ascribed to the SHPO by National Historic Preservation Act (NHPA). SHPOs receive and administer matching grants from National Park Service to support their work and pass through to others. They identify historic properties and nominate them to the National Register. They maintain inventories, do plans, and consult with others about historic preservation.

Stratification: The differential distribution of resources and power among groups in a particular community or other geographical unit.

Sustainability: Meeting the needs of the present generations without compromising needs of future generations.

Tradeoffs: Relative comparison of desirability associated with all alternatives. Tradeoffs consider the impacts on factors and resources that are significant to the proposed action.

Traditional cultural property or traditional cultural place (TCP): A district, site, building, structure or object that is valued by a human community for the role it plays in sustaining the community's cultural integrity. Generally a place that figures in important community traditions or in culturally important activities. May be eligible for inclusion in the National Register.

Uncertainty: The amount of unknowns within the data.

Values: Abstract and often unconscious assumptions by an individual of what is right and important which provide standards to guide ongoing activity.

Value system: An enduring set of beliefs and attitudes held by an individual or community as to what is right and important and used to establish priorities.

Weight: How important a decision factor is when compared with other factors. This determines priorities when evaluating alternatives.

Appendix 2-C: Reclamation's social analysis bibliography and references

These references are listed by type (e.g., textbooks, methodology, and research findings). These categories are separated so the reader will know what kind of reference material is being cited. Other references are included so that this appendix can introduce the reader to important materials in the social analysis field.

Textbooks and guides to social analysis

Barrow, C. J. 1997. Environmental and Social Impact Assessment: An Introduction. London: Arnold.

Becker, Henk A. 1997. Social Impact Assessment: Method And Experience In Europe, North America, And Developing World. HCL Press Limited, 1 Gunpowder Square, London EC4A 3DE and 1900 Frost Road, Suite 101, Bristol, PA 19007-1598 ISBN: 0-85728-347-3 PB

Burdge, Rabel J. 1999. A Community Guide to Social Impact Assessment: Revised Edition. Middleton, WI (P.O. Box 53562-0863): Locial Ecology Press, ISBN: 0-941042-17-0.

Interorganizational Committee on Guidelines and Principles for Social Impact Assessment. 1994. Guidelines and Principles for Social Impact Assessment. U.S. Dept. of Commerce. NOAA Tech. Memo. NMFS-F/SPO-16: 29 p.
Reprinted in:

- Impact Assessment. 1994. 12:2, pp. 107-152
- Environmental Impact Assessment Review. 1995. 15:1, 11-43
- Burdge, 1998, Conceptual Approach To Social Impact Assessment: Revised Edition. Cited elsewhere.

Taylor, Nicholas C., Hobson Bryan and Colin Goodrich. 1995. Social Assessment: Theory, Process And Techniques. Taylor Baines & Assoc. P.O. Box 8620, Riccarton, Christchurch, New Zealand. ++64 3 3433 884 (Fax/Phone). ISBN: 0-473-03245-7

Regulations, guidance and administrative procedures

NEPA, The National Environmental Policy Act of 1969. Public Law 91-190:852-859.42, U.S.C. and as amended (P.L. 94-52 and P.L. 94-83) 42 U.S.C. 4321-4347.

Reclamation. 1997. Interim Guidelines for Achieving Public Protection in Dam Safety Decisionmaking. Dam Safety Office, Bureau of Reclamation, Denver, Colorado.

Reclamation. 1998. Decision Process Guidebook, Bureau of Reclamation, Technical Service Center, Denver, Colorado <http://www.usbr.gov/guide>.

Reclamation. 2000. Technical Services Center Manual for Public Involvement, Bureau of Reclamation, Technical Service Center, Denver, Colorado.

Reclamation. 2000. Reclamation Manual, Bureau of Reclamation, Office of Policy, Denver, Colorado. <http://www.usbr.gov/recman>

Reclamation. 2001. NEPA Handbook, Office of Policy, Denver, Colorado.

U.S. Council on Environment Quality. 1986. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508). Washington: Government Printing Office, Washington, D.C. 20402.

Water Resources Council. 1983. Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. U.S. Government Printing Office. Washington, D.C.

Social analysis methodology

Anderson, B.F. 1981. Cascaded Tradeoffs: A Multiple-Objective, Multiple-Publics Method for Alternative Evaluation in Water Resources Planning. Portland State University, Portland Oregon.

Bass, Ronald. 1998. Evaluating Environmental Justice Under the National Environmental Policy Act. Environmental Impact Assessment Review, 18: 3-92.

Damrin, M. A. 1993. The Need for Risk Assessment by Consensus. Impact Assessment, 11: 123-45.

Denq, Furjen and June Altenhofel. 1997. Social Impact Assessments Conducted by Federal Agencies: An Evaluation. Impact Assessment, 15: 209-231.

Finsterbusch, Kurt, Lynn G. Llewellyn, and C.P. Wolf (eds.). 1983. Social Impact Assessment Methods. Beverly Hills, CA: Sage, ISBN: 0-8039-2142.

- Carley, M.J. "A Review of Selected Methods of Social Impact Assessment," pp. 341-378.
- Motz, A. B. "Historical Documents in Social Impact Assessment Methods," pp. 123-156.

International Association for Impact Assessment. No Date. Principles of Environmental Impact Assessment: Best Practices. 1330 23rd Street South, Suite C. Fargo, ND 58103 <http://www.iaia.org>

Kamrin, M. A. 1993. The Need for Risk Assessment by Consensus. Impact Assessment, 11: 23-124

King, Thomas F. 2000. What Should be the "Cultural Resources" Element of an EIA? Environmental Impact Assessment Review, 20: 5-30.

Lord, W.B., D.H. Deane, and M. Waterstone. 1979. Commensuration in Federal Water Resources Planning: Problem Analysis and Research Appraisal., LTW Associates. Boulder, Colorado.

McCold, Lance N., and James W. Saulsbury. 1998. Defining the No-Action Alternative for National Environmental Policy Act Analysis of Continuing Actions. Environmental Impact Assessment Review. 18: 5-38.

Mulvihill, Peter R. and Peter Jacobs. 1998. Using Scoping as a Design Process. Environmental Impact Assessment Review. 18: 5-370.

Reclamation. 1980. Scaling Impacts of Alternative Plans. Bureau of Reclamation and Center for Research on Judgment and Policy Institute of Behavioral Science, University of Colorado. Boulder, Colorado.

Safilios-Rothschild, C. 1981. Social Impact Analysis: A Model and Strategy for Implementation in Development Assistance. Human Resources, Institutions and Agrarian Reform Division, Home Economics and Social Programmes Service. FAO, Rome, Italy.

Seebohm, Kym. 1997. Guiding Principles for the Practice of Social Assessment in the Australian Water Industry. Impact Assessment, 15: 33-251.

Society for Applied Sociology. No Date. Social Insight Knowledge at Work. Volume 1, No publisher.

- Carrozza, Mark A. "One Picture is Worth a Thousand Calculations–GIS: A New Tool for Data Analysis," 2: pp 16-21.
- Steele, Stephen S. "Five Steps to an Evaluation: The Five D's," 1: p. 52

World Bank. 1991. Environmental Assessment Sourcebook: Policies, Procedures and Cross Sectoral Issues. Volume 1. Environment Department. World Bank Technical Paper Number 139. World Bank, Washington, D.C.

Research findings on social impacts

Freudenburg, William R. and Kenneth M. Keating. 1985. Applying Sociology to Policy: Social Science and the Environmental Impact Statement. Rural Sociology, 50:578-605.

Freudenburg, William R. and Robert Gramling. 1992. Community Impacts of Technological Change: Toward a Longitudinal Perspective. Social Forces, 70(4):937-55.

Freudenburg, William R. and Robert E. Jones. 1992. Criminal Behavior and Rapid Community Growth: Examining the Evidence. Rural Sociology, 56 (4):619-45.

Gramling, Robert and William R. Freudenburg. 1990. A Closer Look at Local Control: Communities, Commodities, and the Collapse of the Coast. Rural Sociology, 55(4):41-58.

Murdock, Steven H., Richard S. Krannich, and F. Larry Leistritz. 1999. Hazardous Wastes in Rural America: Impacts Implications and Options for Rural Communities. Lanham, Maryland: Rowman & Littlefield. ISBN: 0-8476-9100-4.

Pakin, V. 1996. When Science is Not Enough: A Case Study in Social Impact Mitigation. Impact Assessment. 14:3 pp. 321-328.

Smith, Courtland L., Thomas C. Hogg, and Michael J. Reagan. 1971. Economic Development: Panacea or Perplexity in Rural Areas, Rural Sociology, 36:173-186.

Stoffle, Richard W., and others. 1990. Calculating the

Cultural Significance of American Indian Plants: Paiute and Shoshone Ethnobotany at Yucca Mountain Nevada. American Anthropologist, 92:2. 416-432.

Stoffle, Richard W., and others. 1991. Risk Perception Mapping: sing Ethnography to Define the Locally Affected Population for a Low-Level Radioactive Waste Storage Facility in Michigan: American Anthropologist, 93 (3):611-635.

Thompson, J. G., and Gary Williams. 1990. Vertical Linkage and Competition for Local Political Power: A Case of Natural Resource Development and Federal Land Power. Impact Assessment. 10:4 pp.33-58.

Wilkinson, Kenneth P., James G. Thompson, Robert R. Reynolds, Jr., and Laurence M. Ostresh. 1982. Local Social Disruption and Western Energy Development: A Critical Review. Pacific Sociological Review, 25:275-296.

Literature reviews

Finsterbusch, K. 1995. In Praise of SIA: A Personal Review of the Field of Social Impact Assessment. Impact Assessment. 13 (3) 29-52.

Freudenburg, William R. 1986. Social Impact Assessment. Annual Review of Sociology, 12:451-478.

Other literature cited

Burdge, Rabel J. 1998. A Conceptual Approach to Social Impact Assessment: Revised Edition Collection of Writings by Rabel J. Burdge and Colleagues. Middleton, Wisconsin (PO Box 620863): Social Ecology Press, ISBN: 0-941042-16-2.

Burdge, Rabel J. and Frank Vanclay. 1995. Social Impact Assessment: State of the Art. Impact Assessment, 14:1. pp. 57-86, also in Vanclay and Bronstein Eds., Environmental And Social Impact Assessment. 1995, Wiley & Sons: Chichester, Sussex, UK, pp 31-65, also in Concepts, cited above.

Coates, J. F. 1971. Technology Assessment: The Benefits. . . the Costs. . . the Consequences. The Futurist 5, 6, pp. 225-31.

Finsterbusch, K. 1985. State of the Art in Social Impact Assessment. Environment and Behavior 17(2):193-221.

Foster, George M. 1962. Traditional Cultures: and the Impact of Technological Change. University of California at Berkeley. Harper and Row, New York.

Francis, Paul and Susan Jacobs. 1997. Institutionalizing Social Analysis at the World Bank. Environmental Impact Assessment Review, 19:341-357.

Freudenburg, William R. and Robert Gramling. 1992. Community Impacts of Technological Change: Toward a Longitudinal Perspective. Social Forces, 70(4):937-55.

Freudenburg, William R. and Susan K. Pastor. 1992. Public Responses to Technological Risks: Toward a Sociological Perspective. Sociological Quarterly, 33(3, August): 389-412.

Freudenburg, William R. and Kenneth M. Keating. 1985. Applying Sociology to Policy: Social Science and the Environmental Impact Statement. Rural Sociology, 50(4):578-605.

Gamble, D.J. 1978. The Berger Inquiry: An Impact Assessment Process. Science, 199(3) March, 946-952.

Gramling, Robert and William R. Freudenburg. 1992. Opportunity-Threat, Development, and Adaptation: Toward a Comprehensive Framework for Social Impact Assessment. Rural Sociology, 57 (2): 216-234.

Jordan, William S. III. 1984. Psychological Harm After PANE: NEPA's Requirements to Consider Psychological Damage. Harvard Environmental Law Review, 8:55-87.

Larsen, Deena. 1993. Marble Springs, Eastgate Systems, Watertown, Massachusetts. <http://www.eastgate.com/catalog/MarbleSprings.html>

Llewellyn, Lynn G., and William R. Freudenburg. 1990. Legal Requirements for Social Impact Assessments: Assessing the Social Science Fallout from Three Mile Island. Society and Natural Resources, 2(3): 93-208.

Ruttan, V. 1984. Social Science Knowledge and Institutional Change. American Journal of Agricultural Economics. December, 125-130.

Valaskakis, K. 1977. "The Eclectics Paradigm: A Proposed Methodology for Futures Research." Futures, Vol 7, Number 454.

World Bank. 1996. Guidelines for Using Social Assessment to Support Public Involvement in World Bank-GEF Projects. Global Environment Division, Environmental Department. The World Bank, Washington, D.C.

Public involvement and social analysis

Burdge, Rabel J., and Robert A. Robertson. 1990. Social Impact Assessment and the Public Involvement Process. Environmental Impact Assessment Review, 37: 81-90.

Roberts, Richard. 1995. Public Involvement: From Consultation to Participation. In Vanclay and Bronstein eds. Environmental and Social Impact Assessment, pp. 221-246.

Reference sources: now out of print, but may be in certain libraries or available from the authors

Branch, Kristi, Douglas A. Hooper, James Thompson, and James C. Creighton. 1984. Guide to Social Impact Assessment. Boulder, Colorado: Westview Press, ISBN: 0-86531-717-8.

Blum, F. H. 1970. "Getting Individuals to Give Information to the Outsider," in W. J. Filstead. Ed. Qualitative Methodology: Firsthand Involvement with the Social World. Markham Publishing Company, Chicago, Illinois.

Burdge, Rabel J., and Paul Opryzsek. June 1981. Coping with Change: An Interdisciplinary Assessment of the Lake Shelbyville Reservoir. UILU-IES 81 0008, IES Report No. 8.

Cernea, Michael M. Ed. 1991. Putting People First: Sociological Variables in Rural Development 2nd Edition. Published for the World Band by Oxford University Press. New York. ISBN: 0-19-520465-4

- Cernea, M. "Knowledge from Social Science for Development Policies and Projects, pp. 1-38.
- Chambers, R. "Shortcut and Participatory Methods for Gaining Social Information for Projects, pp. 515-537.
- Uphoff, N. "Fitting Projects to People," pp. 467-505.

Chen, K. Using Alternative Future Scenarios for Integrating Impact Assessments.

- Moor, K.D. and J. S. Moor, et. al. Socioeconomic Impacts of Western Energy Resource Development: State of the Art and Limitations.
- Enk, G. A. and W. F. Hornick. Human Values and Impact Assessment.

Cochrane, Glynn. 1979. The Cultural Appraisal of Development Projects. New York: Praeger Publications.

Conyers. D. 1993. Guidelines on Social Analysis for Rural Development. Training Materials for Agricultural Planning 34. Prepared for the Training Service Policy Analysis Division, Economic and Social Policy Development. Food and Agricultural Organization of the United Nations, Rome, Italy.

Culhane, Paul J., H. Paul Friesema, and Janice A. Beecher. 1987. Forecasts and Environmental Decisionmaking: The Contents and the Predictive Accuracy of Environmental Impact Statements. Boulder, Colorado. Westview Press. ISBN: 0-8133-0154-8.

Dahlberg, Kenneth A., and John W. Bennett (eds.). 1986. Natural Resources and People: Conceptual Issues in Interdisciplinary Research, Boulder, Colorado. Westview Press, 384 pp.

Daneke, Gregory A., Margot W. Garcia, and Jerome Delli Priscoli. Eds. 1983. Public Involvement and Social Impact Assessment. Boulder, Colorado. Westview Press, ISBN: 0-86531-624-4.

- Creighton, J. "The Use of Values: Public Participation in the Planning Process," pp. 123-345.

Dixon, Mim. 1978. What Happened to Fairbanks: The Effects of the Trans-Alaska Oil Pipeline on the Community of Fairbanks, Alaska. Boulder, Colorado. Westview Press, ISBN: 0-89158-961-9.

Elkind-Savatsky, Pamela. 1986. Differential Social Impacts of Rural Resource Development. Boulder, Colorado. Westview Press. 293 pp.

Fitzsimmons, Stephan J., Lorrie I. Stuart, and Peter C. Wolff. 1977. Social Assessment Manuel: A Guide to the Preparation of the Social Well-Being Account for Planning Water Resource Projects. Westview Press, Boulder, Colorado. No ISBN number given.

Food and Agriculture Organization (FAO). 1992. Sociological Analysis in Agricultural Investment in Project Design. FAO Investment Centre Technical Paper 9. Rome, Italy.

Howell, R.E., M.E. Olsen, and D. Olsen. 1987. Designing a Citizen Involvement Program. Corvallis, Oregon: Western Rural Development Center, WREP 105.

Halrt, Stuart L., Gordan A. Enk, and William F. Hornick. 1985. Improving Impact Assessment: Increasing the Relevance and Utilization of Scientific and Technical Information, Boulder, Colorado.

Hyman, E. L., and B. Stiftel. 1988. Combining Facts and Values in Environmental Impact Assessment: Theories and Techniques. Boulder, Colorado. Westview Press.

Leedy, P. 1974. Practical Research: Planning and Design. Macmillan Publishing Co., Inc. New York, New York.

Rokeach, M. 1972. Beliefs, Attitudes and Values. Jossy-Boss, San Francisco, California.

Rokeach, M. 1973. The Nature of Human Values. The Free Press. New York, New York.

Rossini, F. A., and A. L. Porter. Eds. 1983. Integrated Impact Assessment. Westview Press. Boulder, Colorado.

- Moor, K. D., J. S. Moor, J.S. Gilmore, et. al. Socioeconomic Impacts of Western Energy Resource Development: State of the Art and Limitations, pp. 123-456.

Spicer, E.H. 1952. Ed. Human Problems in Technological Change: A Casebook. John Wiley & Sons, Inc., New York, New York.

Peer-reviewed journals

American Anthropologist
Environmental Impact Assessment Review
Environmental Monitoring and Assessment: in International Journal
Human Organization
Impact Assessment and Project Appraisal (formerly Impact Assessment Bulletin, shortened to Impact Assessment)
Project Appraisal (now combined with Impact Assessment)
Rural Sociology: <http://www.ruralsociology.org>
Society and Natural Resources Journal of Environmental Assessment and Management: <http://www.et.ac.uk/jeapm/>

International professional associations and symposia in environmental and social impact assessment web sites

International Association for Impact Assessment was organized in 1980 to bring together researchers, government employees, practitioners, and users of all types of impact assessment <http://www.iaia.org>.

International Association for Public Participation (IAP2) was established in 1990 to serve as a focal point for networking about public involvement activity and techniques <http://www.iap2.org>. The journal is Interact: he Journal of Public Participation—published semi-annually <http://www.pin.org/iap2.htm>.

National Association of Environmental Professionals was founded in 1975 for persons who work on a variety of environmental planning issues. They publish The Environmental Professional <http://www.naep.org>.

Key environmental and social impact assessment web sites

U.S. Council on Environmental Quality has NEPA regulations, scoping procedures, and links to regulations in key U.S. land management agencies <http://ceq.eh.doe.gov/nepa/> or <http://tis.eh.doe.gov/nepa/docs/docs.htm>

CIESIN. The Information Cooperative provides easy access to major data archives and resource centers that electronically share their catalog information (metadata) and actual data. It links well-established information centers and agencies from around the world, including the United Nations and many non-governmental organizations. Includes census data. GIS data and metadata sources. <http://www.ciesin.org/lC/info-home.html>

GSA's NEPA Call-in. The Environmental Resource Library contains links to the "Principles and Guidelines for Social Assessment," Laws an Regulations by Subject, Environmental Assessments and Statements and Environmental Justice. <http://www.gsa.gov/pbs/pt/call-in/nepa.htm>

Canadian Environmental Assessment Agency has excellent links to sites in other organizations and countries, or write to CD_ROM Library, 200 Sacre Couer Blvd. Hull, QC K1A 0H3 <http://www.ceaa.gc.ca/index_e.htm> also <http://founder.library.ualberta.ca/FTP/EN/Laws/Chap/C/>.

Australian EIA Network has information on environmental impact assessment (EIA) and its process within Australia <http://www.environment.gov.au>.

The New Zealand Ministry of the Environment has a range of information on recent publications. <http://www.mfe.govt.nz> <http://www.cnie.org>

University of Manchester: United Kingdom <http://www.art.man.ac.uk/eia/EIAc.html>

National Library for the Environment—U.S. Committee for the National Institute for the Environment <http://www.cnie.org>.

Appendix 2-D: Categories of social assessment variables and indicators

Table D-1 is a suggested list of social assessment variables that describe the change (derived from Burdge, 1999, pp. 64-134), and common sources for measurements. These examples provide a starting point for selecting appropriate variables and indicators.

While neither exhaustive nor comprehensive, these social assessment variables have been compiled over the last three decades. Research on changes in local communities, rural areas, and municipalities resulting from reservoir and highway development, natural resource development, and social changes and trends in general have shown these variables to be crucial in understanding impacts from resource development. Most came from water impoundment studies of the 60s, 70s, and 80s, and more recently from energy projects in the Western part of the United States. These variables have proved to be the best predictors of change in human communities as a result of project development and policy changes.

Table D.1. Suggested categories for social assessment variables and indicators.

Category	Description	Social assessment variables	Examples of indicators
Population	Changes in the number, density, and distribution of people (e.g., rural to urban), the rate of migration in or out of a region, and any changes in the composition of the population (e.g., age and gender)	Population changes	Present population during and following the proposed action or alternatives
		Influx or outflux of temporary workers	Monthly projection of project-related workers Number of workers hired from outside the community per month Influx and outflux of population
		Presence of seasonal (leisure) residents	Percentage and number of seasonal residents to total population
		Relocation of individuals and families	Census of household units relocated due to project development Time of first hearing about relocation plans until final move
		Diversity in communities by age, gender, racial or ethnic categories	Percentage of projected growth in a racial, ethnic, or gender category Percentage of workers in a category compared to percentage in community
		Diversity in community religious practices	Number of and percentage of population in each religious affiliation

Table D.1. Suggested categories for social assessment variables and indicators.

Category	Description	Social assessment variables	Examples of indicators
Community Composition	Changes in community image, the alteration in community power structure with the arrival of a new private or public sector entity, and any conflict that might arise between local residents and newcomers or even outsiders as a result of changes in social institutions.	Presence of an outside agency	New organizations and changes in existing institutions to accommodate new influences
		Changes in intreactions among groups as values modify	Inter-organizational cooperation
		Settlement patterns or real estate development New social institutions and infrastructure Changing employment opportunities	Introduction of new social classes
		Changes in income and revenue structure and sources Changes in employment distribution by sector–migration	Change in the commercial/industrial focus of the community
		Increased service employment Increased seasonal employment by sector-migration	Presence of weekend residents (recreational) Number of campsites and hotel/motel rooms in project areas
		Size and structure of local government	Changes in type of employment Changes in revenue sources and infrastructure demands
Community Infrastructure Needs	Changes in everything from more roads to greater sewage capacity to more police units that might be needed or altered as a result of a development project.	Attitudes toward government, police, other community services to community infrastructure needs	Support for public works, bonding issues Local media commentary and editorials
		Community infrastructure requirements and proposals	Proposals for new facilities based on imported values Increased demands for expanding and diversifying existing facilities
		Amount and tax value of land changing from private to public jurisdiction or tax revenues	Land acquisition and disposal
		Percentage of land in different zoning categories in the project areas	Land use patterns

Table D.1. Suggested categories for social assessment variables and indicators.

Category	Description	Social assessment variables	Examples of indicators
Community attitudes and institutional structure	Changes in attitudes and values, the emergence of interest groups, as well as changes in local government and employment opportunities	Interested and affected parties	Public involvement scoping comments or interactions
		Interest group activity	Number and membership of groups and organizations both for and against the proposed action (or alternatives)
		Leadership composition, capability, and characteristics	Formal and informal organization membership, structure, and activities
		Historical experience with change	History of boom/bust impacts or settlement patterns, change in community structure or composition
		Trust in political and social institutions	Issues, scandals, disenfranchisement, court cases, and impacts cited in the last 10 years in the community (e.g., controlled burn got out of hand and destroyed 17 houses)
		Formation of attitudes toward the project	Public involvement scoping comments and interactions
		Perceptions of risk, public health, and safety	Court cases, settlement patterns, property values influenced by potential actions Attitudes toward proposed activity
		Concerns about displacement/relocation	Property values, property improvements, settlement patterns— even migration
		Attachment to "our way of life"	Percentage of long-term residents Celebration events related to historic settlement (e.g., Rodeo, Watermelon Days, Tippee Canoe and Big Boat Too)
		Employment/income characteristics	Distribution of jobs by sector or Standard Industrial Classification (SIC) code Distribution of income levels by source Living costs/family wages Median Rent Per capita income, family income compared to state Industrial/commercial diversification Percentage of commercial, industrial, governmental firms in each SIC category

Table D.1. Suggested categories for social assessment variables and indicators.

Category	Description	Social assessment variables	Examples of indicators
		Enhanced economic inequities Change in employment equity of minority groups Changing occupational opportunities	Number of jobs created or lost above the poverty line in the project area Number and type of jobs open to minorities Local/regional/national connections Number of other activities and project in area
		Presence of planning and zoning activity	Presence or absence of county land use planning and procedures
		Voluntary associations	Number of local volunteer organizations compared to total populations Number and types of zoning laws
Community identity and attitudes toward water.	Changes in the way that groups and people define themselves. How groups in the area view water, what are their attitudes toward water use, what their values are.	Community descriptions	Chamber of Commerce profile or local community history and website
		Priorities and use of water	State water law, local drought restrictions and priorities, water conservation methods
		Attitudes toward water use	History of drought or scarcity, floods, other water related events Local regulations of water availability
		Willingness to pay for water for particular use	Changes in water bills
Individuals and Families	Changes in family structure, individual social relations and how individuals and families perceive changes in their daily lives.	Daily living and movement patterns	Increased time needed for commute due to construction Increases in municipal water bills Cost of housing Capacity of infrastructure (e.g., hospitals related to population.)
		Percentage of owners vs. renters in the project area	Residential stability
		Number of household units classified as single, unrelated individuals, single with children, married with children, married, widow or widower	Family structure
		Diversity and interrelationships between community groups. Distribution of nuclear and extended families.	Social networks, including family and friends

Table D.1. Suggested categories for social assessment variables and indicators.

Category	Description	Social assessment variables	Examples of indicators
		Density of acquaintanceship	Number of community organizations and events compared to membership or participation
		Diversity and number of recreation facilities, organizations, and opportunities	Leisure opportunities
Social justice and Native American responsibilities	Effects on equity, human rights, and participation in decisionmaking. These issues also relate to the quality of life, but require special attention as they raise special legal and planning issues.	Minority groups–demographics, employment, relocation	Percent in project areas compared to percentage of population in state or nation
		Native American tribes and governments	Percent of native Americans and number of tribal governments in the project area
		Effects on known cultural, historical, sacred and archaeological resources	Listing of sacred sites affected

Table sources:

Burdge, 1999, pp. 64-134
Branch et al, 1984.
Conyers, 1993, p. 8
Interorganizational Committee, Guidelines and Principles, 1994.
Taylor et al, 1995.

Appendix 2-E: Reclamation's social analysis Policy and Directives and Standards

At the time of printing, these are in draft form. Contact Thayne Coulter (303) 445-2706 for a draft copy.

Make sure that all of your potentially affected interests understand:

1. There IS A serious problem

–or an IMPORTANT OPPORTUNITY
. . .one that just HAS to be addressed.

2. You are the RIGHT entity to address it

. . .If fact,. . . IT would be IRRESPONSIBLE for you,
with the MISSION that you have, not to address it..

3. The WAY you are going about it

i.e., the approach you are taking is REASONABLE, SENSIBLE,
RESPONSIBLE.

4. You ARE listening

you DO care . . . about the costs, the negative effects,
the hardships that your actions will cause people.

Acronym List

Volume 1

NEPA	National Environmental Policy Act
P.L.	Public Law
SIA	Social Impact Assessment
TSC	Technical Service Center

Volume 2

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
FACA	Federal Advisory Committees Act
FWS	Fish and Wildlife Service
GIS	Geographical Information System
ITA	Indian Trust Asset
M&I	municipal and industrial
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OMB	Office of Management and Budget
SHPO	State Historical Preservation Office
SIA	Social Impact Assessment
SIC	Standard Industrial Classification
TCP	Traditional Cultural Properties
TSC	Technical Service Center

Department of the Interior

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to tribes.

Bureau of Reclamation

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Technical Service Center

The mission of the Technical Service Center is to provide top quality technical services for managing, developing, and protecting water and related resources.