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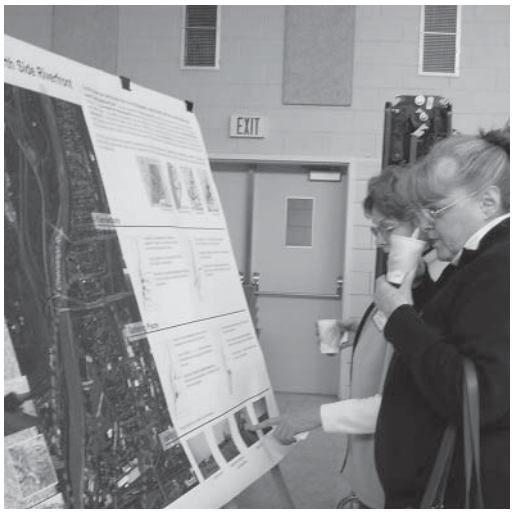
New York State *Community Seminar Series*

BOA Inventory and Analysis



Governor David A. Paterson
Secretary of State Lorraine A. Cortés-Vázquez
Commissioner Pete Grannis, NYS Department of Environmental Conservation

New York State Department of Environmental Conservation,
Division of Environmental Remediation
New York State Department of State, Division of Coastal Resources
SUNY ESF Center For Community Design Research

INVENTORY AND ANALYSIS

Purpose

This training module introduces the advisory committee to the inventory and analysis process, methods, and documentation. It prepares the committee to guide consultants and community volunteers, facilitate public participation, and ensure that inventory and analysis is used effectively to make decisions. This module also introduces the concept of identifying and prioritizing opportunities based on the understanding of existing conditions and trends. Through the inventory process a community gains an understanding of the many existing conditions, factors, and characteristics that will potentially effect or be effected by project decisions. Systematic and deliberate analysis of those conditions, in coordination with a community's vision and goals, will provide the framework for decision-making that protects and enhances valuable resources, takes advantage of opportunities and underutilized resources, and mitigates undesirable impacts.

Goals

1. Establish the value and role of inventory and analysis in the planning and design process
2. Provide an understanding of how to conduct inventory and analysis
3. Provide an overview of inventory requirements, categories, and methods specific to BOA projects
4. Promote an understanding of the iterative process and relationship between vision and goals, and inventory and analysis, and the analysis of inventory findings to refine and confirm vision and goals
5. Provide an overview of different methods of documenting, illustrating, and presenting inventory and analysis to promote understanding and confirmation by all involved in the project
6. Establish an understanding of the role of consultants, steering committee, and community members in preparing and reviewing inventory and analysis
7. Understand the importance and process of prioritizing brownfield sites
8. Understand the development and use of descriptive profiles in the BOA process

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Oswego Map for Activity

Supplemental Materials

Presentation Slides

The New York State Community Seminar Series was developed with financial assistance provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office of Ocean and Coastal Resources Management, National Oceanic and Atmospheric Administration; seminar delivery and educational materials were prepared of New York State municipalities with funds provided under Title 11 of the Environmental Protection Fund and the New York State Departments of State and Environmental Conservation with state funds provided through Brownfield Opportunity Areas Program.

PRESENTATION 1: Introduction to Inventory and Analysis

This presentation describes the role of inventory and analysis as an essential component in the planning and design process, and emphasizes its significance in strategic decision-making.

Key Terms

• Inventory: Data describing the type and extent of existing and past features and qualities of an area and its context.

•Analysis: The systematic process of sorting through data to find patterns and connections, opportunities and constraints, for the purpose of making appropriate, informed recommendations and decisions.

•Issue: A matter of concern, which may be the topic of discussion during the planning process.

•Opportunity: A favorable situation or condition for the attainment of a goal. It is something that exists and is known, and, given the right combination of other factors, can be used to achieve a goal. It is not just the opposite of a constraint.

•Constraint: Something that restricts or limits action or resolution.

Inventory and analysis are key steps in any planning process

Planning is an iterative process. It is usually necessary to refine or revise a preliminary vision and goals as the information gathered through inventory increases the knowledge and understanding of the issues, opportunities, and constraints. Through the process of developing a vision, a community asks and answers a series of questions, including, “Where do we want to be in the future?” Through inventory and analysis, they find out how to use their resources as the basis for achieving that desired future.

Community members and consultants have important roles in inventory and analysis

There are a variety of roles required to prepare an effective inventory and analysis. Community members and other stakeholders can contribute local expertise and specific knowledge of present and past conditions. They should have the opportunity to review and confirm data and analysis. In addition to these same responsibilities, the advisory committee should review the consultant’s work and progress to ensure that they are accomplishing the inventory scope, and producing understandable, useful, high quality products. Both advisory committee members and community members can be involved in data collection under the supervision of the consultant or municipal staff.

Consultants usually take primary responsibility for conducting inventory and analysis. They should possess the technical skills, experience and expertise that is required for the BOA project in which they will be engaged.

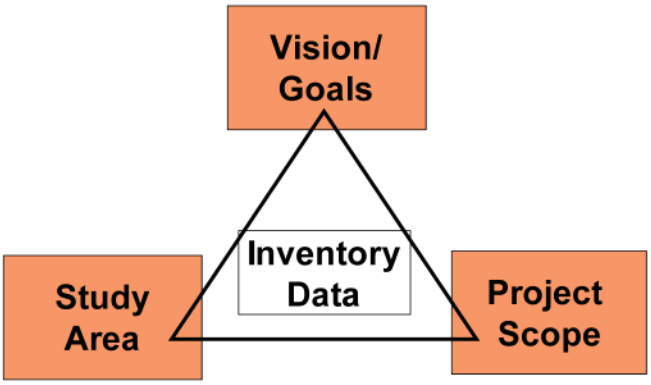
Inventory should include physical, cultural and socioeconomic characteristics and conditions

Physical conditions are the elements that physically exist within an area. Naturally occurring factors include topography, soils and geology, surface water and drainage, vegetation, and wildlife and habitat.

The built environment includes constructed features and systems and the regulations that control them, such as buildings, land use, zoning, roads, and infrastructure.

Cultural resources contribute to or influence the character and image of a community and may include historic sites, downtowns, Main Streets, and waterfront areas.

Socio-economic characteristics describe the people that live and work in the community. Demographic data may include statistics on age, race, and income. Economic data may include information on employment, industry, and market characteristics. The history of the community and changes over time may also be important to understand.



Design the inventory process to be efficient and iterative

While you don't want to overlook important factors you also don't want to gather unnecessary information. To design an efficient and useful inventory process, your team needs to know the approximate boundaries of the study area and relevant context, have a good understanding of the project scope and scale, and consider the vision and goals as the basis for determining the relevant topic areas.

An iterative approach that starts with existing data available through municipal, county, state, and studies and documents, as well as federal sources, can save valuable time and resources. After review and confirmation of this readily available data, it may be necessary to collect additional information to adequately determine the viability of, possible changes to, and ways to achieve the project goals.

Inventory must be followed by analysis

Inventory is the collection and documentation of raw data. In this form it is not very useful to the planning process. It must be looked at through a series of lenses that include the community vision and goals, the consultant and staff professional experience, and community member's local expertise. This analysis should be systematic, starting first with individual inventory factors to identify and flesh out issues, opportunities, and constraints; then bringing the individual factors together to understand the sometimes complex relationships between them.

Use of Inventory and Analysis BOAs

In the BOA Step 1 Pre-Nomination Study, the inventory and analysis should provide a comprehensive understanding of the conditions and resources of the study area to determine opportunities and constraints to the vision and the preliminary goals. In the Step 2 Nomination, a more in-depth inventory and analysis provides understanding of specific conditions and characteristics that will be used to determine feasibility, costs and benefits, and prioritization of proposed actions and strategic sites.

Presentation Worksheet

Presentation 2: BOA Step 1 and Step 2 Inventory and Analysis

As you listen to the presentation about the range of factors to consider in your inventory and analysis, think about which ones are most applicable to your BOA's draft vision and goals.

Place a check by those that are relevant and jot down any questions or issues that come to mind related to that topic.

Factor	*Relevance*	*Questions/Comments*
Community Overview and Description		
Project Overview and Description		
Brownfield, abandoned and vacant sites		
Land ownership		
Natural resources		
Parks and Open Space		
Building Inventory		
Historic or Archeologically Significant Sites		
Transportation Systems		
Infrastructure		
Strategic Sites		

PRESENTATION 2:
BOA Steps 1 and 2
Inventory and Analysis

This presentation provides an overview of the recommended inventory topics and considerations for analysis in a BOA Step 1 Pre-Nomination Study and the BOA Step 2 Nomination.

Inventory and analysis of the BOA

Through inventory and analysis, the project team develops a comprehensive understanding of the conditions and resources of the study area, and applies that understanding to determine opportunities and constraints, and develop a place appropriate revitalization strategy.

Inventory and analysis for the BOA are performed at different scales to gain understanding of the characteristics of the region and community, BOA study area, and strategic sites and properties.

Inventory and analysis performed for the Step 1 Pre-Nomination study will serve as the basis and substance of inventory and analysis in Step 2. Inventory factors described as follows for Step 1 will also be included in the Step 2 Nomination, but in more detail.

- Existing Land Use & Zoning
- Brownfield, Abandoned & Vacant Sites
- Strategic Sites
- Land Ownership Patterns
- Parks and Open Space
- Building Inventory
- Historic & Archeological Significant Areas
- Transportation Systems
- Infrastructure
- Natural Resources & Environmental Features

Completed in Step 1

BOA Step 1 Inventory and Analysis

Every community is composed of many different resources and conditions. The factors that you investigate should provide the information needed to make place appropriate recommendations. These factors are initially defined in the Work Program through discussion with your DCR project manager, but may be revised later in consultation with your consultant and the DCR.

• Community overview and description – This information promotes understanding of the physical, social, and economic conditions of the community and region, and the historical trends of economic conditions and land use. This information may help identify opportunities and trends that inform revitalization strategies.

• Project overview and description – This introduction and description of the proposed BOA provides an overview of the existing conditions and redevelopment potential.

• Existing land use and zoning – Researching and documenting zoning and land use will provide information on individual sites as well as illustrate patterns and districts of use and regulation. Analysis should focus on how these parts fit together to create a working community.

• Brownfield, abandoned and vacant sites – This description includes specific information about each relevant site, including current and past use and any data that may be available about known or suspected contaminants. Information for each site is recorded in a Description Profile form, which can be modified and used to develop a database for each site.

• Land ownership – Inventory of land ownership should include land in public or private ownership, ownership of strategic brownfields, and location of roads and right-of-ways. Analysis should examine how site ownership and ownership patterns may influence the potential for reuse and redevelopment of strategic sites.

• Natural resources - Numerous features and characteristics can be included in this category, depending on the geographic location and naturally occurring resources in your BOA. Natural resources hold value, whether it is aesthetic, natural protection, wildlife habitat, or economic development. Inventory should document location, condition and extent of the resources, and analysis should seek to understand issues or opportunities that might be raised or addressed through BOA redevelopment.

• Summary of preliminary analysis – The data described and illustrated should be synthesized to look collectively at the opportunities and constraints for revitalization of the brownfield area. Grounded in the community vision and goals, and the inventory and analysis, this summary will include potential land use and development projects, ranking of the importance of strategic sites, and a description of necessary actions and key projects.

BOA Step 2 Inventory and Analysis

Building on the Step 1 study, the Step 2 inventory and analysis will be more in-depth for some factors, and introduce others that were not previously explored. Work in Step 2 delves into specific conditions and characteristics from which feasibility, costs and benefits, and recommendations can be determined.

• Strategic Sites – These are brownfield, vacant or abandoned sites within the BOA that seem to be the most favorable for development and which might serve as catalysts for other development. Strategic sites are determined based on factors and criteria important to a specific BOA.

• Parks and Open Space – These sites are valued resources and serve a variety of purposes including recreation and resource protection. Investigating and documenting the location, use and characteristics may reveal both issues and opportunities for revitalization within your BOA.

• Building inventory – The inventory of key buildings must include information that will help you determine how and if buildings can contribute to the BOA revitalization. In addition to physical and ownership data, consider architectural character and meaning to the community.

• Historic or Archeologically Significant Areas – These are resources that have been identified as being important and valued at the local, state or federal level. These resources may provide the character and setting for redevelopment, may hold special meaning to the community, or may need protection and preservation as part of a redevelopment strategy.

• Transportation Systems – Inventory should investigate all modes of transportation within and around the proposed BOA, and the types of users to understand how people, goods and services move in the study area. Analysis should reveal issues, opportunities and constraints that should be considered in the redevelopment strategy.

• Infrastructure – This inventory should provide information about the availability, condition and capacity of existing utility, communication and parking systems. Analysis should consider how the existing characteristics will effect redevelopment strategies.

• Summary analysis, findings and recommendations – The summary analysis will be based on the findings of the community and regional setting investigation, the inventory and analysis, and the economic and market trends analysis. You will bring together all that has been learned about the BOA and context area, the opportunities, issues and constraints that have been identified, and describe how they will be used in the strategy to revitalize the BOA to achieve the community vision.

PRESENTATION 3:
Inventory Approaches and Methods

This presentation introduces the different types of data that might be needed for inventory, methods for data collection, and attributes to consider in reviewing data.

Consider the quality and characteristics of the data and collection methods

Most data will be collected and documented by the consultant, but the advisory committee and municipal staff should be aware of data characteristics to understand how the consultant will accomplish the data collection, and to be able to provide review and comment on data sources.

• Seasonal, and temporal attributes – This concerns data gathered for conditions that may vary or fluctuate depending on time of day, day of week, or season.

• Reliability of data – Confirm that data came from a reliable source and that it is properly referenced and attributed.

• Primary vs. secondary data – Primary data is raw data, such as data from the Census Bureau, that has not been interpreted or put in another form. Secondary data is from a source that has been taken or interpolated from primary data and put into another form, such as a report or planning document. If using secondary data, you must be able to trust its accuracy and understand why it was produced and by whom.

• Time needed to collect and collate data – Even readily available data, such as municipal zoning, may take considerable time to put into a useful form.

• Costs to purchase and organize data – Some data is readily available, such as market research information, but must be purchased and then organized to be useful for analysis.

Data collection involves a combination of methods and sources

Methods and sources are divided into three broad categories:

Existing data and documents – this includes tax records, zoning documents, historic records, census data and existing studies and plans. These may be available from local, county and regional government offices.

• Municipal and college libraries and local historic society are good sources for historic records and documents.

• Libraries and other local institutions may have old land use maps and aerial photographs that can be used to track changes over time, a factor particularly relevant to BOA's.

• The World Wide Web has become a significant source of information and data. Of particular note is the NYS Geographical Information Systems (NYSGIS) website, which provides access to maps and aerial photographs.

Interviews and surveys – These methods of data collection are used to obtain information from people familiar with your study area, such as community members and stakeholders, or with issues that are being addressed. This may be data not available from other sources, or information used to confirm or expand data already collected. Surveys and questionnaires should be developed with assistance from someone skilled in their preparation and analysis.

Study area observation and reconnaissance – These methods can be used to collect data on physical conditions and characteristics, observe the use or behavior on a site or within an area, and confirm and expand on data collected from other sources. Certain on-site observations, such as building inventory, will require specialized expertise.

Additional information on data sources is included in the supplemental material.

Activity 1:
DETERMINING INVENTORY REQUIREMENTS AND RESOURCES

The purpose of this activity is to consider the relationship between inventory factors and a project's goals and to begin thinking about potential sources of inventory data. To complete the worksheet, please read the community description below and refer to the aerial photograph provided.

Summary of Information and Facts Pertaining to Oswego, NY

Summarized from the draft City of Oswego Local Waterfront Revitalization Program by Saratoga Associates

State/Regional Context

The City of Oswego, located on Lake Ontario, is home to a variety of resources. As a commercial port and the first U.S. Port of Call on the Great Lakes, the city is connected to national international trade markets. Its lakefront location also provides a variety of recreational and tourist activities such as boating, sport fishing, and sailing. The City's is located 37 miles from the City of Syracuse and is a 5-hour drive to other significant urban centers of New York City, Boston, and Montreal. The city is also home to SUNY Oswego, with a student population of 8,300.

• **Demographics**: The population within the City of Oswego has steadily declined over the past several decades, a trend that is consistent with many Central and Northern New York cities. Census data from 2000 shows the population to be 18,098, down from over 23,000 in 1970. The population in the surrounding suburbs throughout Oswego County, however, has been steadily increasing, with a 21% increase from 1970 to 2000. The City's population is fairly young. Persons between the ages of 20 and 24 make up the largest percentage (14.3%) of the population. 14.0% of the population is between the ages of 35-44, 11.5% between 45-54, and 11.4% between 25-34.

• **Housing**: Of the 8,080 housing units within the City of Oswego, 52.3% are owner-occupied, 47.7% are renter-occupied, and 9.2% are vacant. The owner-occupancy rate has fallen since 1990 (56%), while the rental-occupancy rate has risen slightly (44%). The vacancy rate has also risen since 1990 (5.7%).

• **Employment and Income**: The unemployment rate has decreased from a rate of 8.2% in 1990 to 4.7% in 2000. This number is lower than the average County unemployment rate of 5.9%. The median income, however, for the City of Oswego is consistently lower than that of the County, $28,248 vs. $36,598. Both of these figures are higher than those recorded in the 1990 census ($23,986 for the City, $29,083 for the County). Even with the rise in median household income, the City has experiences an increase in individuals living below the poverty level. In 1990 18% of the population was considered below poverty. In 2000, this figure had climbed to 23%.

• **Race**: The population of the City of Oswego is predominantly white. Since the 1990 census, however, there has been an increase in minority populations. African Americans make up the second largest group and Hispanic/Latino as the third with 2.8% of the total population in 2000.

Historic Resources

The City contains a variety of historic resources, spanning from the French and Indian War to World War II, tracing the role that the City played in the history of the region and country.

- **Fort Ontario**: One of the most historically significant sites in the City of Oswego is Fort Ontario, first built in 1755 by the British. Used (destroyed and rebuilt) throughout the nation's early years, the fort played an important role in the French and Indian War, Revolutionary War, and Civil War. The fort was also used during in the 20th century as a training barrack during World War II and as an emergency refugee center.
- **Other Historically Significant Buildings**: The City of Oswego is also home to over 20 historically significant buildings, which serve to document and share the city's history.

Natural Resources

- **Lake Ontario**: The City of Oswego has 3.16 miles of coastline along Lake Ontario. There are several points along the shoreline that provide direct access to the water. The scenic views of the lake from points throughout the City are highly valued resources. Some locally important scenic views are the view of the lake from Wright's Landing, a lakefront marina, as well as the coastal bluffs located near Fort Ontario.
- **Oswego River**: The Oswego River, the second largest tributary into Lake Ontario, is part of the New York State Canal System. The section that runs through the city, the Oswego Canal, splits the city in half. As part of the New York State Canal System, the Oswego River connects inland to Oneida Lake and the Erie Canal as well as to the Great Lakes St. Lawrence Seaway and out to the Atlantic. A variety of uses have developed along its shores: manufacturing, commercial storage facilities, canal navigation locks, charter docks, a marina, restaurants, and services for recreational harbor users and tourists. Within the City, the banks of the Oswego River are characterized by steep slopes and are channelized. As a result, the water's edge is two to four feet below the adjacent city streets and sidewalks. Panoramic views of the river from both the east and west banks are considered to be significant resources.
- **Wetlands**: There are several wetlands located within the City of Oswego, none of which are within the Waterfront Revitalization Area, the focus of the LWRP.
- **Fish and Wildlife**: Wildlife habitats are located along the Oswego River and Harbor as well as on land near the City's eastern lakeshore. Local fish species include chinooks, cohos, brown and lake trout, steelheads, as well as the endangered lake sturgeon. The River and Harbor are also wintering areas for waterfowl. An area beyond the breakwater is designated a "significant coastal habitat" where the following species of waterfowl can be found: scaup, common goldeneye, mergansers, black duck, mallard, oldsquaw, canvasback, and bufflehead.
- **Environmentally Sensitive Features/Brownfields**: The City is home to several land uses that pose challenges to future development, including waste disposal sites and facilities producing air pollution and toxic releases. A 2003 listing of inactive hazardous waste disposal sites lists three such sites within Oswego. These sites once accepted hazardous materials for disposal, but are no longer in operation. It is unclear if these sites are or could be brownfield sites.

Land Uses

The City of Oswego is approximately 5,255 acres in size, with approximately 4,158 acres having a classified land use. The largest land use (33.8%) is residential, followed by vacant (20.4%), community services (11.4%), public services (8.9%), industrial (8.6%), commercial (6.8%), and recreational/ entertainment (6.7%). Within the Waterfront Revitalization Area, the top three land uses are industrial (19.1%), residential (18.9%), and public services (16.9%).

Waterfront uses include:

- **Wright's Landing Marina**: The marina provides launching space and amenities for a range of boats.
- **Breitbeck Park**: This 15-acre park is the only waterfront park in the City. It contains walking paths and provides view of Lake Ontario and the Lighthouse
- **Veterans Memorial Park**: This park is located along the Oswego River
- **Oswego River Walk**: Located on both the east and west shores of the Oswego River, The River Walk provides a multi-use trails as well as docking and fishing locations.
- **Port of Oswego Authority**: On the average, over 50 commercial vessels pass through the port each year from the Atlantic Ocean and throughout the Great Lakes region. Over 500,000 tons of cargo is processed by the Port Authority annually, making it a significant presence on both Lake Ontario and its waterfront.

Water Uses

The Port of Oswego is the center of much water-related activity, including commercial fishing, private recreational boaters, and large freighters. The waterfront is also the site of a significant annual festival, Harborfest, which attracts over 200,000 visitors annually to the shores of Lake Ontario. The lake is also the site of a professional fishing event.

City of Oswego LWRP Vision and Goals

Through the implementation of plans, programs, and policies of it Local Waterfront Revitalization Program, the City of Oswego seeks to establish it waterfront as a "point of connection."

The primary goals of the LWRP are to:

1. Provide increased public access to the Lake Ontario and Oswego River waterfronts
2. Position the waterfront as a catalyst for new economic development and leisure recreation opportunities. The City's waterfront is one of the region's most important economic development opportunities and must be treated as such.
3. Achieve better utilization of Oswego's existing waterfront development, assets, and heritage sites, including Fort Ontario
4. Increase the frequency and duration of tourist visitations to the City and region
5. Encourage new residential development and population growth opportunities
6. Sustain and enhance the Oswego Port Authority by creating new integrated development opportunities and long-term revenue-generating prospects for Port Authority properties.

INVENTORY AND ANALYSIS WORKSHEET

Selected Goal_____

INVENTORY FACTORS	*QUESTIONS*	*SOURCE(S) OF DATA*
Existing Land Use		
Existing Water Use		
Existing Zoning & Other Local Development Controls		
Brownfield, Abandoned & Vacant Sites		
Land Ownership Patterns, Including Underwater Lands		
Public Access & Recreational Resources		
Infrastructure		
Transportation Systems		
Historic Resources		
Scenic Resources		
Topography & Geology		

INVENTORY AND ANALYSIS WORKSHEET

INVENTORY FACTORS	*QUESTIONS*	*SOURCE(S) OF DATA*
Water Quality		
Natural Resources		
Flooding & Erosion		
NYS Significant Coastal Fish & Wildlife Habitat Areas		
Important Agricultural Lands		
Environmental Issues		
Navigation & Dredging Issues		
Water-Dependent Uses & Related Issues		
Other		

PRESENTATION 4: Analysis and Synthesis of Inventory for Use in Decision Making

This presentation describes the process and methods of organizing and analyzing
different types of inventory data.

Analysis should be systematic as well as intuitive

A good analysis process is in part systematic (meaning orderly and planned) and in part intuitive (meaning based on quick insight and perception). The analysis process can be broken down into steps that are usually not perceived as separate, but rather occur in an ongoing manner throughout inventory and analysis:

• Store the data – Collected data will be in a variety of forms such as field notes, marked up maps, documents and survey forms, and usually are stored by your consultant.

• Revisit vision, goals and objectives – This will help to confirm why particular information was being gathered and will provide a perspective from which to do the analysis.

• Organize and analyze the data – There are three basic types of data quantitative, qualitative, and graphic. Each type is organized and analyzed in different ways.

• *Quantitative data* is in the form of numbers and is usually organized in table form and converted to charts and graphs for analysis.

• *Qualitative data* is in the form of people's own words and observable behavior. It is organized by transcribing it into a format that is easy to read and review, and it is analyzed by looking for and identifying key themes and issues.

• *Graphic data* is in the form of maps, drawings, photographs, and diagrams. Analysis may be quantitative if graphic data can be counted, qualitative if based on impressions and written comments, or a combination of both.

• Synthesize data – This step brings together the different data about an inventory topic to reach a more complete understanding. Synthesis also occurs in preparing a comprehensive analysis which brings together the analyses of the different inventory topics.

• From this comprehensive analysis should come a list of issues, opportunities, and constraints that will be addressed in your strategic recommendations.

• Summarize and present the data and analysis – This final step should be designed to allow review and comment by the advisory committee and other community members.

Presentation 5: Presentation and Communication of Inventory and Analysis

This presentation provides guidance and examples for effective involvement of community members for review and confirmation of in-progress and final inventory and analysis.

Present inventory and analysis for review and comment at several stages

Provide opportunities for community review and comment at key points in the inventory and analysis process, including review of the in-progress inventory, preliminary analysis, and final inventory and analysis. Involvement of community members helps confirm the accuracy of data and uncovers additional information, tests the logic and accuracy of the analysis, informs stakeholders of the project progress and maintains their interest in the revitalization effort.

The approach for presentation and communication should consider the format and requirements of the final report as well as the value of having data and findings that are accessible, comprehensible, legible and given appropriate forums for review and feedback.

Presentation of inventory data and analysis may involve several methods

Different inventory factors lend themselves to different methods of presentation. A combination of methods may be necessary to present the comprehensive picture of the inventory and analysis.

• Maps and plans are the most common form of graphic communication in planning and design, are the easiest to create, and can be used to express and record many types of information. Determine early in the process whether maps and other graphics will be produced in color or black and white.

• Aerial photographs can be used as the basis for mapping a variety of data and, as a time series, can be effective in showing changes over time.

• Photographs are useful in illustrating existing conditions and to complement other mapped and written data. Historic photographs are useful to illustrate past land uses and changes that have occurred.

• Tables, charts and graphs are used to organize and present analysis of quantitative data. Choose formats that make the analysis readily apparent to the audience.

• Text is the primary method used to document the inventory and describe the analysis in the project report. These narratives can be supplemented as necessary with graphic images, such as those previously described. For community meetings it may be helpful to have fact sheets or summaries of the findings and analysis.

• Visual analysis summaries are useful in presenting analysis findings in graphic form so that the connections and relationships between inventory factors are readily understood.

Forums for presentation of inventory and analysis

There are a number of forums that can be used to present inventory and analysis to community members and seek comment and input. The project team should determine methods and venues that are appropriate to the project and community.

• Workshops and public meetings are common ways of communicating data and findings, and obtaining comments and feedback. Care should be taken in presenting and displaying material so that people have adequate time and the appropriate means to thoughtfully review and comment.

• Displays of inventory and analysis set up in public places can provide the opportunity for people not able to attend meetings to review and comment. There should be clear information about the project and stage, as well as a way for people to comment and to contact the project team if desired.

• Websites dedicated to the project are a good way to keep many stakeholders informed throughout the planning process and into implementation. Successful project websites are updated regularly, provide the ability to make comments, and actively engage community members by asking them to respond to questions about the information presented.

SUPPLEMENTAL MATERIAL

• Insert A: Information Sources for Brownfields

• Insert B: Computerized Access to Hazardous Waste Site Information and Environmental Data

• Insert C: Community Culture and the Environment: A Guide to Understanding a Sense of Place, 2002, U.S. EPA, Office of Water, Washington, DC.
Excerpts:
Pages 81-93: Identify Assessment Methods
Pages 105-145, 172-176, 187-199: Assessment Methods
Pages 187-199: Analyze Your Results
Access online @ http://www.epa.gov/CARE/library/community_culture.pdf

•Insert D: BOA Frequently Asked Questions:Site Assessments

• Guidebook: Making the Most of Your Waterfront, 2004, NYS Department of State, Division of Coastal Resources. Access online @ www.nyswaterfronts.com

• Guidebook: Opportunities Waiting to Happen, 2004, NYS Department of State, Division of Coastal Resources. Access online @ www.nyswaterfronts.com

Insert A

INFORMATION SOURCES FOR BROWNFIELDS January 30, 2007

The following list of sources was assembled by the Department of State. It is neither exhaustive nor exclusive and should not be considered an endorsement of any firm or organization, or the information or services they provide.

Topic	***Information***	***Source***	***Contact***
Brownfield Sites	Aerial photographs	U.S. Geological Survey NYSDOT Aerial Photos	edcsns17.cr.usgs.gov/finder (518) 457-3555
	Existing records, federal	EPA, NPL EPA, CERCLIS EPA, RCRA Coast Guard, ERNS	www.epa.gov/superfund/nl/ny www.epa.gov/enviro www.epa.gov/rcraonline www.ncr.uscg.mil
	Existing records, local	Local property tax files	
	Existing records, private	EDR Environmental FirstSearch MacRae's Industr'l Directory Sanborn Fire Insurance Maps Toxics Targeting	www.edrnet.com www.efirstsearch.com www.edrnet.com/reports/historical.html www.toxicstargeting.com
	Existing records, State	NYS DEC, Inactive Hazardous Waste Sites NYS DEC, Spills NYS DEC, Solid Waste NYS DEC, Storage Tanks	www.dec.state.ny.us/website/der/ihws www.dec.state.ny.us/website/der/spills www.dec.state.ny.us/website/dshm www.dec.state.ny.us/website/bulkstor/spills
Capacity Building	Housing and local organization	Community Builders	www.communitybuilders.org
Community Information	Census data	Census tract information	www.census.gov/ftp/pub/housing/tracts/ www.census.gov/geo/www/tractez.html/
	Community features and conditions	Local planning	
	Demographic, social, economic and employment data	Empire State Dev. NYS Dept. Of Labor U.S. Census Bureau	www.nylovesbiz.com 1-800-782-8369 www.labor.state.ny.us (518) 457-9000 factfinder.census.gov www.census.gov/econ

	EPA site eligibility	Enviromapper	http://maps.epa.gov:10010/enviromapper
	Historical economic & land use dev. trends	Empire State Dev. County Planning	1-800-782-8369
	Poverty rate	Geocoding/Mapping System	www.ffiec.gov
Consultants	Various consulting	People Tree	www.cpeo.org/techtree/resource/people.htm
Environmental Review and Permits	Environmental review	CEQR (New York City) NEPA (National) SEQR (State Environmental Quality Review)	www.nyc.gov/html/moec/html/publications.html http://ceq.eh.doe.gov/nepa/nepanet.htm www.dec.state.ny.us/website/dcs/seqr/index.html
	Permits	Coastal consistency Environmental conditions National/State Register of Historic Places Online Permit Assistance and Licensing Shovel-Ready Certification State Building Code	www.nyswaterfronts.com/consistency_coastalpolicies.asp www.dec.state.ny.us www.nysparks.state.ny.us/field/projrevcomp www.nys-opal.org www.gorr.state.ny.us/shovelready.pdf www.dos.state.ny.us/code/ls-codes.html
Historic or Archeologically Significant Areas	Historic or Archeologically Significant Areas	National/State Register of Historic Places State Historic Preservation Office (SHPO)	www.nysparks.state.ny.us/field/statnatreg www.nysparks.state.ny.us/field Peebles Island, P.O. Box 219, Waterford, NY 12188 Tel: (518) 237-8643
	Historic Preservation Standards	U.S. Secretary of the Interior	www2.cr.nps.gov/tps/standguide/index.htm www2.cr.nps.gov/tps/tax/rehabstandards.htm
	Scenic Areas of Statewide Significance	NYS DOS	518-474-6000
Implementation, General	Banks	CRA/Home Mortgage Data	www.ffiec.gov
	Federal funding programs	Catalog of Federal Domestic Assistance	www.cfda.gov
	State funding programs	NYS Quality Communities Clearinghouse	www.dos.state.ny.us/qc/Revitalization/index.shtml

Implementation, Specific Purpose	Affordable housing development	NYS DHCR NYS Housing Finance Agency	www.dhcr.state.ny.us www.nyhomes.org/hfa/hfa.html
	Brownfields redevelopment	Financing Brownfields Redevelopment Projects Foundation Center	www.epa.gov/brownfields www.smartgrowth.org/library/brownfields_finance.html www.foundationcenter.org
	Environmental compliance	NYS Environmental Facilities Corporation	www.nysefc.org
	Environmental remediation	DEC Brownfields Self-Help/Financial Resources Manual	www.dec.state.ny.us/website/der/bfield/brownmanual.html
	Green Building Tax Credit	DEC NYSERDA	www.dec.state.ny.us/website/dar/ood/grnbldtxcr.html www.nyserda.org/green.html
	Historic preservation	National Trust for Historic Preservation Preservation League of NYS	www.nationaltrust.org/help/grants.html www.preservenys.org/fundinghome.htm
	Neighborhood revitalization	Governor's Office for Small Cities	www.nysmallcities.com
	Urban waterfront revitalization	NYS DOS	www.nyswaterfronts.com
Implementation, Tax Incentives	Tax Incentives	Brownfields Tax Incentive EPA Federal economic and community renewal Federal historic preservation tax incentives program NYS Empire Zones	www.irs.ustreasgov/forms_pubs/pubs/p95405.htm www.epa.gov/brownfields/html-doc/taxfaq.htm www.hud.gov/ofices/cpd/economicdevelopment/programs/index.cfm www2.cr.nps.gov/tps/tax/index.html www.nylovesbiz.com/Tax_and_Financial_Incentives/Empire_Zones
Infrastructure	Water, sewer, stormwater	Local Dept. of Public Works	
Land Ownership	Land ownership	Local assessor's office	

Land Use Controls	Land use and zoning	Local assessor's office Local planning	
	Land Use Controls	Land Use Controls	www.lucs.org
	Economic dev. zones	Empire State Dev. County IDA Local planning	www.nylovesbiz.com
Natural Resources	Significant Coastal Fish &Wildlife Habitats	DOS NYS DEC Regional NYS	Significant Coastal Fish and Wildlife Habitat narratives, 518-474-6000
	Rare plants, animals,	DEC, Natural Heritage	www.dec.state.ny.us/website/dfwma/heritage (518) 402-8935
	Bird Conservation Areas	DEC	www.dec.state.ny.us/website/dfwmr/wildlife
	Wetlands	NYS DEC Regional	Wetlands maps
	Sole source aquifers	EPA	www.epa.gov/region2/water Rinaldo.Lawrence@epamail.epa.gov
	Water quality	NYS DEC Regional NYS DEC NYSDOT Environmental Procedures Manual USEPA management measures	Priority Waterbodies List www.dec.state.ny.us/website/dow/strategy.pdf www.dot.state.ny.us/eab/epm.html www.epa.gov/owow/nps/MMGI
	Soils	Natural Resource Conservation Service Soil Conservation District	www.soils.usda.gov County office
	other	NYS DEC	www.dec.state.ny.us/website/dow/bwam (518) 402-8179 or (518) 402-8180
Transportation Systems	State roads, rail, air, etc.	Local Dept. Of Public Works Metropolitan Planning Organizations NYS Dept. of Transportation	 www.nysmpos.org www.dot.state.ny.us

Insert B

12/5/05

Computerized Access to Hazardous Waste Site Information and Environmental Data

Three firms have been identified that provide electronic access to databases for property searches. These services allow searches to be conducted on single sites or on user-defined geographic areas. The information in the reports resulting from the electronic searches is obtained from various local, state and federal government agencies. The information may not be complete, newly discovered sites are continually reported, and map locations may be approximate. Resulting reports are intended to be the first step in the process of identifying and evaluating possible environmental threats to specific properties and can only serve as a guide for conducting on-site visits or additional, more detailed toxic hazard research.

Two of the firms operate nationally, and one operates only in New York State.

1. **Environmental FirstSearch** - www.efirstsearch.com (*Nationwide Network*)
An interactive service enabling access to information on environmentally sensitive sites. Updated information can be accessed from numerous Federal, State and Local government databases.

Environmental FirstSearch is based on the ASTM Standards E-1527 and E-1528 dealing with Environmental Site Assessments and Transactions Screens. It provides an interactive software program along with a service, that gives the user access to environmental reports 24/7. Geographic information (GIS) is integrated into the *Environmental FirstSearch* software. The user is given control and flexibility in specifying, sorting, reporting and mapping. The user conducts the property search by defining the project's specific criteria. One of the unique aspects of this program/service is that the user can adjust the target location, which then automatically readjusts the entire report, (at no additional cost). Data and maps can be downloaded within minutes. Upon viewing the data online, the user has the flexibility of sorting, selecting and printing only relevant data that is needed.

Environmental FirstSearch interactive software involves a five-step process: **Locate** the property. **Request** the databases to search. **View** a summary of results. **Customize** the reporting needs. **Print** and/or export the report.

Searches can be conducted on a single property address, or a site can be plotted on a map. The user can also physically outline a defined geographic area on a map. The user will specify a radius from the plotted site(s), from 0.05 miles to 1.25 miles, for which the search will be conducted.

Cost

One-time license fee:	$	100.00
(Includes training and technical assistance.)		
Site search plotted as a point / or area search		
- for 0-10 searches		90.00 / 140.00
- for 11-20 searches		80.00 / 130.00
- for 20+ searches		70.00 / 120.00

For more information, contact Mike Costello at *Environmental FirstSearch*: 888-748-0400

2. **Toxics Targeting** www.toxicstargeting.com (*New York State only*)

Toxics Targeting is a computer mapping company that tracks more than 500,000 known and potential toxic sites in New York, including abandoned landfills, leaking tanks, hazardous waste generators and pollution discharges to air, land or water.

Toxics Targeting offers a service that will instantly identify up to 17 categories of toxic sites on or around any address or area in New York State. All sites are mapped (GIS integrated) and profiled in a computerized environmental report that helps the user conduct Phase I Environmental site Assessments or investigate clean up liability. To meet government records requirements of the ASTM Standard and EPA's "All Appropriate Inquiries" (AAI) ruling, map-based reports identify sites with real or potential environmental issues. Almost all of the information comes from local, state and federal government databases. Turnaround time for receiving a report is typically one to two business days. The report can be supplied in PDF format.

Searches can be conducted on a single property address, or a site can be plotted on a map. The user can also outline a defined geographic area on a map. Reports are supplied with data within a radius from the plotted site(s) of 0.25 miles, 0.5 miles and 1.0 mile.

Toxics Targeting representatives characterized their service as unique in that they are located in New York State and have more accurate and reliable information than national firms. They also claim to have mapped tens of thousands of sites with incomplete addresses, that are not found in NYS and EPA databases.

Cost

$150.00 with delivery via e-mail or hard-copy. (For standard ASTM meet & exceed search.) Area-wide search is highly variable and priced on an individual basis, however it can amount to thousands of dollars.

For more information, contact Walter Hang, *Toxics Targeting*: 800-286-9427.

3. **EDR** - www.edrnet.com (*Nationwide Network*)

EDR offers current and historical environmental risk management information, and interactive mapping. To meet government records requirements of the ASTM Standard and EPA's "All Appropriate Inquiries" (AAI) ruling, map-based reports identify sites with real or potential environmental issues. Databases include federal, state, local, tribal, activity and use limitations, and more. Search parameters meet industry guidelines, and can be tailored to client specifications.

EDR offers the ability to customize searches according to selected databases, or packaged reports, depending on the needs of the user. Searches can be conducted on a single property address, or a site can be plotted on a map. The user can also physically outline a defined geographic area on a map. The user will specify a radius from the plotted site(s), generally up to 1 mile, for which the search will be conducted. Turnaround time for receiving a report is typically five to seven days, give or take depending on size and complexity of the report.

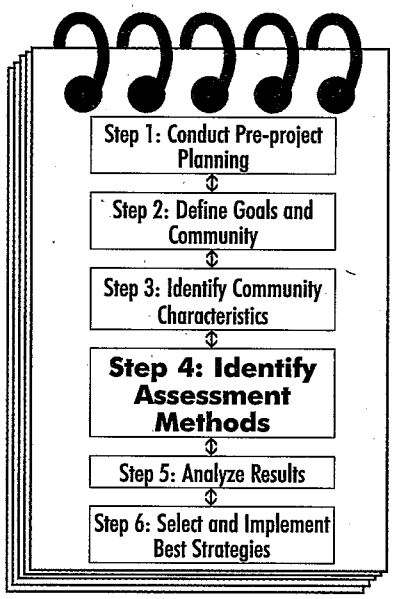
EDR representatives characterized their service as unique in that they own the Sanborn map collection, (which is also utilized by *Toxics Targeting* and *Environmental First Search*).

Cost

The cost is highly variable and will be customized depending on the size and location of the study area.

For more information, contact Eric Terranova at *EDR*: 800-265-1613.

STEP 4:
Identify Assessment Methods



Many useful methods exist to identify, collect, and interpret information about people's behaviors and values and community characteristics. This step describes 13 such methods (**Figure S4-1**). Use them to collect both qualitative and quantitative data. The information is designed to help you use the methods yourself or to equip you to work with a professional.

The methods described in this step range from methods to collect data independent of actual community involvement (unobtrusive), such as collecting census data from a local library, to methods that directly engage community members (interactive), such as focus groups and interviews. Some methods — observation, for example — can be used both ways, depending on the specific purpose and the situation in which they are conducted. A brief **Overview of Assessment Methods** will give you basic information on each method. Refer to specific instructions for more detail. The *Guide* suggests using at least three methods to compare and contrast results. Refer to **Appendix B** for more details on triangulation.

Figure S4-1—Assessment Methods

- Background Research
- Census Data Research
- Content Analysis
- Environmental Values Typology
- Focus Groups
- Interviewing
- Maps and Geographic Research
- Meetings
- Observation
- Regional Economic Data Research
- Social Mapping
  - Asset
  - Cognitive
  - Concept
  - Social Network
- Surveys and Polls
- Visual Methods

Using This Step

The instructions for each assessment method include the following:

- ☑ General explanation and usefulness of method.
- ☑ How to collect the information needed.
- ☑ Resources needed.
- ☑ Sources of extra help.
- ☑ Some pros and cons of using the method.
- ☑ Bibliographic resources.
- ☑ Matrices listing recommended methods for each community characteristic.

The instructions show you how to apply each method discussed in this chapter. **Appendix C** has a summary of method applicability, and gives the advantages and disadvantages of each method.

Refer to **Appendix B** for an introduction to the conceptual foundation for using assessment methods. It describes qualitative and quantitative data and triangulation, and introduces sampling, validity, and question design.

Use **W-5 Worksheet from Step 3** to organize your methods selection.

Overview of Assessment Methods

☑ **Background Research** is the collection of information from existing written and electronic sources. If information you seek is in a book, a current or past issue of a magazine, newspaper, or journal, or in any kind of manuscript or electronic database, background research might be an appropriate assessment tool for your needs. This might include historical accounts of local events, opinions about certain issues, or previous research on the same topic. Use background research to prepare environmental education materials, collect information on environmental issues, gather ideas, and learn more about a community.

☑ **Census Data Research** outlines the community's demographic and economic makeup to provide a solid foundation for your assessment. Census data cover 200 specific topics, including employment, education, population size, ethnic group makeup, and whether the community is rural, urban, or suburban — every aspect is important to defining a "community."

☑ **Content Analysis** helps you analyze the text of written or spoken messages to determine the attitudes and perceptions of individuals and groups within a community. You'll gain insight into cultural themes that dominate a community's perceptions of the natural environment or environmental protection. Social and cultural symbols a community uses to illustrate and talk about different issues will become apparent, as will the social context of their various activities and how members of the community communicate.

☑ **Environmental Values Typology** can be used as a data collection or analysis tool to help you distinguish among the different types of environmental values present within a community. Use this set of nine basic environmental values to categorize different environmental values held by individuals or groups. The Typology can also help you understand how these values might motivate community behavior.

☑ **Focus Groups** explore community members' feelings, beliefs, and attitudes about the environment. A moderator facilitates this structured group process in which individuals discuss issues selected by the focus group sponsor. Focus groups identify how participants feel and think about a particular issue(s) and can provide a deeper understanding of their views, experiences, beliefs, knowledge, and attitudes about the topic(s) you are investigating. The results can help design other assessment or strategic planning efforts, validate other findings, and aid in collaborative environmental problem-solving.

☑ **Interviewing** is the process of asking individuals (or small groups) questions and recording their responses. Use interviewing to gather descriptive data about community life and the lives of community members. Interviews can focus on community members' beliefs, feelings, and experiences about issues and their relationships with others. Look for patterns or themes in the responses and compare them to other data and analysis. Interviews can reveal perceptions and opinions about the issues or topics of interest.

☑ **Maps and Geographic Research** define the physical boundaries of the community and show the many different elements contained within those boundaries (e.g., homes, commercial locations, roads, natural features). Maps and geographic research can also show how the community fits within the larger context of its surroundings (e.g., its relationship to other communities or its location within a watershed) and how it has changed over time (e.g., road construction, residential and commercial development).

☑ **Meetings** assemble groups of people representing a variety of interests to discuss community issues. They can be large or small, and might be structured in many different ways depending on location, time frame, and most important, purpose. Meetings are a relatively cost-effective method to assess public opinion and local concerns, values, viewpoints, priorities, and interests. Use meetings to solicit input from various groups of people on community values, attitudes, and beliefs; identify and describe the community; define overall environmental protection goal(s); bring people together to establish a vision and action plan for the community; and identify and coordinate with potential collaborators. This method includes techniques for reaching consensus and agreement.

☑ **Observation** collects data by purposefully and selectively watching and tracking the behavior of community members or other phenomena. Use observation to understand characteristics of a community and its members that other methods might not reveal. Observation can also confirm and complement the results of other assessment methods and inform the sampling techniques and questionnaire design of such methods as surveys and focus groups.

☑ **Regional Economic Data Research** gives you useful information regarding jobs, employers, revenue, per capita income, total personal income, and other data that help construct an overview of the economic conditions and trends of a community. It organizes specific information about industries by sector (e.g., manufacturing, services, mining) and includes the number of employees for that industry and their total wages. Use regional economic data to indicate how and what natural resources support the community's economic base.

☑ **Social Maps** are tools that collect, organize, and analyze social data about a community. They illustrate different types of relationships and connections in a community and identify those related to efforts to conserve and protect the environment. These connections might be between issues and problems, causes and effects, perceptions and realities, or relationships between organizations, institutions, and individuals. You might invite community members to create social maps, or use such maps to design an assessment project or analyze the data collected by other methods.

Depending on the goal of your assessment and your information needs, you can choose from four different social maps:

- **Asset Maps** focus on identifying a community's capacities and assets. These maps can help community members recognize and tap the value of certain aspects of their community (e.g., individuals, organizations, institutions) of which they were not previously aware.
- **Cognitive Maps** graphically represent the community based on people's personal perceptions and experiences.
- **Concept Maps** identify the causes and effects of an idea, belief, concept, or problem that exists within a community.
- **Social Network Maps** describe patterns of communication, relationships, and information flow within a community.

☑ **Surveys and Polls** collect information directly from people, usually through a written questionnaire or an in-person or telephone interview guided by a written questionnaire. Use surveys to quantify various aspects of the community, such as its values and feelings about natural surroundings or its awareness of specific environmental issues. An advantage of surveys is that they can link the characteristics (e.g., race, occupation, age, income, education, community residence) of survey respondents with questionnaire responses about particular behaviors and beliefs that relate to the local environment and community-based efforts. And they collect representative data.

☑ **Visual Methods** capture social, cultural, economic, and ecological features and produce valuable information from community members who view those images. Captured through photographs, video, or illustrations, images depict the appearance of a watershed or other land area, spatial relationships, land-use patterns, and historical changes. They can include images of streets, houses, stores, open spaces, civic features, and the people that inhabit these places. Use visual methods to help community members describe and analyze their relationships with others and with their surroundings, and to stir up their thoughts and feelings about a particular place. This information can help protect existing community features or provide a tangible vision for the future of the community.

The following section contains instructions for each assessment method.

Background Research
(includes Internet)

Figure S4-2—What Formats Exist for Background Data?

- Maps
- Newspapers
- Magazines/journals
- Books
- Audiovideo cassettes
- Microfiche, microfilm, CD-ROM
- Government documents
- Topographic maps
- Local newsletters
- Photographs

Figure S4-3—Places to Conduct Background Research

- Public libraries (including federal and local libraries)
- College/university libraries
- Historical societies
- Chambers of Commerce
- Tourism offices
- Information and referral offices
- Internet
- Federal, state, county, and local government offices
- Nonprofit organizations

Background research is the gathering of information from published printed and electronic sources. If information you seek is, or might be, in a book, a current or past issue of a magazine, newspaper, journal, or any kind of manuscript or electronic database, background research might be an appropriate assessment tool for your needs (**Figures S4-2** and **S4-3**).

Background research can be a useful resource for preparing environmental education materials, collecting information on environmental issues, gathering ideas, and learning more about a specific community.

How to Collect This Information

☑ **Libraries** provide a variety of services.

- **Public libraries** have magazines, newspapers, and vertical or "clipping" files of newspaper and magazine articles organized by subject. They might also have a local history room, and they can assist in finding and obtaining documents from other sources.
- **College/university libraries** typically emphasize research and have a broad range of publications, as well as large collections of older publications not found in public libraries because of space constraints.
- **State libraries**, usually found in state capitals, can provide information about a specific state. In many cases, they have departments specifically concerned with natural resource issues.

☑ **Historical societies** have information relating to local history, arts, and traditions. Materials can include books, journals, scrapbooks, photographs, maps, and vertical files.

☑ **Chambers of Commerce** provide information about housing, transportation, demographics, recreation, tourism, and other subjects.

☑ **Tourism offices** maintain information on population, housing, transportation, and the history, arts, and traditions that make a locality unique.

☑ **Information and referral (public affairs) offices** specialize in social services such as housing, transportation,

community legal services, medical services, public assistance, and much more.

☑ The **Internet**, which includes the World Wide Web, is an international information superhighway that provides access to many communication and information services (**Figure S4-4**).

Figure S4-4—Using the Internet

- You can access the Internet through a personal computer that is linked to the Internet via an electronic connection to a regular phone line.
- You can visit a library through the Internet from a personal computer.
- Details on using the Internet can be found at a library or bookstore.

Sources of Extra Help

1. Libraries

Libraries for the Future (LFF), a nonprofit organization, has published *The Environmentalist's Guide to the Public Library* (1997) to help communities take full advantage of environmental information and electronic resources, such as databases and the Internet, available at public libraries. To order the *Guide* contact LFF at

Libraries for the Future
121 West 27th Street, Suite 1102
New York, NY 10001
Phone: (212) 352-2330
Fax: (212) 352-2342
E-mail: lff@lff.org
Web site: http://www.lff.org

2. Computers

☑ **Computerized card catalogs.** Typically, you type in key words or subjects and the system will list relevant publications. Try different related key words and subject headings for the topic you are assessing.

☑ **Remote information access with a computer and modem.** Many public libraries and college/university libraries have dial-in systems (**Telnet**) that allow outside users to browse their holdings, as well as those at affiliated libraries. An example of such a service is the "Sailor" computerized database of library sources in Maryland, a project of the Maryland public library community. The Internet address for Sailor is "http://sailor.lib.md.us," and its Telnet address is "sailor.lib.md.us."

☑ **CD-ROMs.** Many libraries have CD-ROM-dedicated computers on-site. Often the contents are bibliographies of different subject areas.

Bibliographic Resources

Balachandran, M., and S. Balachandran, eds. 1990. *State and Local Statistical Sources: 1990-1991*. Gale Research, Inc., Detroit, MI. This publication is a very useful source of guidance when identifying resources to look for once you arrive at a library or other information collection site. It is a subject guide to statistical data on states, cities, and localities covering agriculture, business, education, energy, environment, finance, labor, law enforcement, manufacturing, public welfare, real estate, taxation, transportation, and many other topics.

U.S. Department of Commerce. Recurring publication. *County and City Data Book*. Economics and Statistics Administration, Washington, DC. This publication contains similar information to the *Statistical Abstract of the United States*, but at the county and city level (only cities with populations greater than 25,000 are included).

———. Recurring publication. *State and Metropolitan Area Data Book*. U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. This publication contains similar information to the *County and City Data Book* but is organized differently.

———. Published annually. *Statistical Abstract of the United States: The National Data Book*. U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. This publication contains information at the national, regional, and state levels on population, births, life expectancy, health and nutrition, education, law enforcement, geography and environment, parks, recreation and travel, elections, state and local government finances and employment, social insurance and human services, labor force, employment and earnings, income, prices, and much more.

Whiteley, S., ed. 1994. *The American Library Association Guide to Information Access: A Complete Research Handbook and Directory*. Random House, New York, NY. The *Guide* selects more than 3,000 of the best standard and electronic sources in the 36 most researched subject categories. It tells where to find them and explains the latest research methods. This is an excellent resource for almost any type of research and is particularly useful for those who might be new to library/data research — see "Part 1, Advice to Researchers."

In addition, each state publishes various materials about itself and its localities. For example, these three sources are produced by Maryland:

Maryland Department of Economic and Employment Development. Recurring publication. *Maryland Statistical Abstract*. Office of Research, Maryland Department of Economic and Employment Development, Annapolis. MD. This publication contains information on population and vital statistics, education and health, climate and natural resources, labor force and employment, and much more.

Maryland Department of Health and Mental Hygiene. Published annually. *Maryland Vital Statistics*. Division of Health Statistics,

Maryland Department of Health and Mental Hygiene, Annapolis, MD. This report contains data on births, deaths, total population and population by age group, life expectancy, diseases, marriages, and much more.

Maryland State Government. Recurring publication. *Maryland Manual: A Guide to Maryland State Government.* Maryland State Archives, Annapolis, MD. This publication describes all parts of the state government in great detail, including details about current agency/department heads.

See the Maps and Geographic Research Instructions for more details on maps.

Census Data Research

Census data include information such as demographics, employment, education, and economic conditions and trends throughout the United States. The data are available by specific geographic location (e.g., state, county, Zip code) or by a subset of the population (e.g., Asian American, African American, Hispanic) (**Figure S4-5**). The U.S. Census Bureau collects and publishes census data every 10 years (e.g., 1990, 2000). Also, see instructions on **Maps and Geographic Research** regarding U.S. Census Bureau maps.

Figure S4-5—What Can Census Data Research Tell You?

- **Demographic information** such as number of persons or families living in an area, household size, and ethnic, sex, and age groups.
- **Economic conditions and trends** such as business activity and production, land ownership (farms), and manufacturing and retail development.
- **Employment information** such as rates of employment and unemployment and time spent commuting to work.
- **Education information** such as literacy and educational level attained.

How to Collect this Information

1. The Internet

(Refer to **Figure S4-6**.)

☑ Go to the Census Bureau's home page at http://www.census.gov.

☑ Accessing data via the Internet allows you to link to other sites that might contain relevant information. By selecting Access Tools from the Census Bureau's home page, you can access Census data and you can also select **Government Information Sharing Network**, which links to the Bureau of Economic Affairs web site. From there you can view socioeconomic data by county.

Figure S4-6—Hard Copy vs. Internet vs. CD-ROM

- **Hard Copy:** designed to answer only the most frequently asked questions.
- **Internet:** view multiple tables at one time.
- **CD-ROM:**
  - Provides more subject detail.
  - Provides more geographic detail.
  - Is released to the public faster than hard copy reports.

2. Libraries or Depositories of Government Documents

A phone call to your library or to the Census Bureau at (301) 457-4100 will identify the nearest library that is a depository of government documents. A complete listing of the Census Bureau/Department of Commerce products and services can be found in their Catalog of Products and Services available at your library or via the Internet.

3. Census Bureau Customer Service Line

The Census Bureau Customer Service Line (301) 457-4100 can give you Census data over the phone or assist you in finding and understanding the data.

4. CD-ROM

The Census Bureau uses the CD-ROM as its primary way to disseminate information for the 2000 Census. You can get

CD-ROM material at any library. Unlike the Internet, you will be able to view only one table at a time with the CD-ROM.

Keys to Making This Work (Lessons Learned)

1. Understanding "Universe"

Depending on the format, census data **subject table** titles also mention the universe from which the data are drawn. The universe represents the total set of Persons or Households described in the particular table. In some cases, the universe might only be a subset of the total universe of Persons. In the example subject tables that follow, the universe tells you that the data on race, sex, and age refer specifically to the portion of the total counted Persons that are Males of Hispanic Origin, in one case, and to the portion of the total counted Persons that are Females of Hispanic Origin, in the other.

Race (1) by Sex (1) by Age (31) # of data cells – 31
Universe: Males of Hispanic Origin

Race (1) by Sex (1) by Age (31) # of data cells – 31
Universe: Females of Hispanic Origin

The universe also indicates the type of data (e.g., Persons or Households) being measured. In the previous examples, Persons are being counted. Misinterpreting universe is a common mistake Census users make.

2. Making Sense of Data Cells

The total number of data cells indicates the detail in which data are reported in subject tables. The following subject tables, for example, provide data about the race of all Persons living in a particular area.

A1) Race (5) # of data cells – 5
Universe: Persons

B1) Race (25) # of data cells – 25
Universe: Persons

Although these tables measure the same subject (race), in the same universe (Persons), the B1 table, as denoted by its higher number of data cells, provides much greater detail. In this example, the Census gives its users the option of collecting data on five general categories of race, or gathering more detailed data.

☑ In the example, A1 provides five data cells, based on the general race categories used by the Census:

A1) Race (5)
Universe: Persons
White = 3,693
Black = 0
American Indian, Eskimo, or Aleut = 0
Asian or Pacific Islander = 105
Other Race = 12

☑ Whereas, B1 provides 25 data cells:

B1) Race (25)
Universe: Persons
White = 3,693
Black = 0
American Indian, Eskimo, or Aleut = 0
Asian or Pacific Islander
Asian: Chinese = 0
Filipino = 6
Japanese = 11
Korean = 6
Laotian = 82
Pacific Islander:
Polynesian = 0
Hawaiian = 0
and so on. . .

Some Pros and Cons of Using This Method

☑ **PROS:**

- Census data can be extremely useful for quantitatively characterizing a community's demographic and economic makeup.
- The data are strictly statistical but describe particular aspects of communities that would be time-consuming and expensive to quantify using other methods.
- Much of the information can be obtained at low cost and in various formats suitable for specific information needs.

☑ **CONS:**

- The biggest disadvantage to using the Census is its inaccuracy. Because the Census is taken only once per decade (e.g., 1990 and then not again until 2000), it does not reflect changes in the demographic makeup of communities in years since the previous Census.
- Another disadvantage is that the Census collects data only from documented legal citizens of the United States at the time the Census was conducted. Depending on the

community you are assessing, this could omit a sizable subpopulation.

Bibliographic Resources

Lavin, M.R. 1996. *Understanding the Census: A Guide for Marketers, Planners, Grant Writers and Other Data Users*. Epoch Books, Inc., New York, NY.

U.S. Environmental Protection Agency. 1999. *Sociodemographic Data Used for Identifying Potentially Highly Exposed Subpopulations*. EPA-600-R-99-060. Office of Research and Development, Washington, DC. Center for Environmental Research Information (CERI), (800) 490-9198. Assists scientists and concerned communities in identifying subsets of the general population who might experience more frequent contact with, and greater exposure to, environmental contaminants. The document provides specific demographic data to help users determine the number of people in these potentially highly exposed subsets of the general population.

Numerous other data sources exist in research laboratories around the country. Consult your librarian for additional sources.

Focus Groups

Focus groups are a structured group process facilitated by a moderator, during which individuals discuss issues selected by the focus group sponsor. Focus groups rely on interaction among the participants to stimulate discussion, to explore feelings and thoughts about issues, and to gain a deeper understanding of personal views, experiences, beliefs, knowledge, and attitudes about various topics. The results can help design assessment or strategic planning efforts, validate other findings, and aid in collaborative environmental problem-solving.

How to Collect This Information

The following steps will help guide you through the focus group process. You might want to seriously consider securing technical assistance from individuals who have experience in focus group design or facilitation.

Focus Group Preparation

☑ **Determine the purpose/topic(s) of the focus group(s).** Topics can be general or specific to a particular issue or combination of issues. Refer to your assessment goals.

☑ **Determine who to invite to the focus group.** You can use a variety of techniques for selecting a good sample of your community. Please refer to the description of sampling techniques in **Appendix B**. Some possible criteria to consider include community members who

- Represent different subgroups within the community.
- Are newcomers to focus groups and not "professional" respondents (e.g., politicians) who might lead or monopolize the discussion.
- Do not know the specific subject of the discussion in advance (knowing the subject beforehand allows them to form ideas ahead of time).
- Do not know each other (knowing others in the group might inhibit individuals from talking freely).
- Are from similar economic strata (people of similar income and educational backgrounds are likely to speak more freely than those with widely varying backgrounds).
- Are from similar cultural groups (when cultural affiliations such as race and gender are similar, people might speak

more freely than when large differences exist, particularly when cultural differences correspond with power in the community [e.g., minority groups, women]).

☑ **Determine the number, size, and cost of focus groups to convene.** You might need to convene several focus groups to ensure a reasonable spectrum of views. The size of each group should be large enough to foster diverse opinions and lively discussion, but limited to a number that allows all members to participate: ideally, about 8 to 12 persons.

- **Recruitment.** A professional moderator, often connected with a market research firm, might be able to assist you in identifying and recruiting participants; the cost will be between $500 and $700. These firms select focus group participants from a particular area based on specific criteria developed by the assessor.
- **Participant compensation.** Focus group participants are almost always compensated for their participation by being paid between $35 and $50 or provided refreshments or lunch, small gifts, or travel expenses. The cost of focus group moderators and participant compensation packages can range between $3,500 and $5,000 (if using a focus group firm).

☑ **Design focus group questions.** What is it you want to find out about the community, or a particular subpopulation? Brainstorm about the questions/categories of questions for which you want to find answers. Questions should be fairly simple, open-ended, and consistent with the purpose of the focus group. If conducting multiple focus groups, it is important to use the same questions for comparison. The list of questions ultimately decided upon becomes the **focus group protocol**.

Begin with more general questions to engage the participants and make them comfortable with the process. Follow with more specific questions. Save potentially controversial questions until last so as not to jeopardize the entire process. Use open-ended questions that participants cannot answer with a simple "yes" or "no" — and try to phrase them to encourage detail and elaboration. Probing questions, such as "Is there anything else . . . ?" or "Can you give me an example of what you mean by . . . ?" often reveal richer information and perhaps surprising insights. Please refer to **Appendix B** for details on question design. An experienced focus group moderator can also help you prepare the actual questions.

☑ **Determine the length of the focus group.** Focus groups generally last one to a maximum of two hours, depending on the number of questions and the degree of participant involvement. Some sponsors schedule focus groups for an hour and a half, but plan on the discussion lasting two hours. The last half-hour allows time for participants to finish their thoughts, and for the moderator to add important impromptu questions.

☑ **Select a focus group moderator(s).** A moderator facilitates the focus group discussion by keeping the discussion on track, asking participants the protocol questions, probing their responses with more specific questions to elicit greater detail, and ensuring that participants follow the rules for interacting during the discussion. A moderator must be prepared to follow new lines of discussion that are relevant to the topic and fostered by the group's discussion, but unanticipated when the questions were formulated.

A qualified moderator should be able to remain neutral, develop rapport with the participants, and exhibit strong facilitation skills. Some moderators have academic backgrounds; others are experienced in market research or conflict resolution. Professional moderators expect to be paid from $1,000 to $3,000 per focus group. This fee includes the actual moderation as well as a written summary and analysis of the recorded discussion and a written report presenting the results and conclusions. Since the effectiveness of a focus group depends heavily on the abilities of the moderator, you should seriously consider hiring one.

The level of moderator involvement is a key element. An active and aggressive moderator can help ensure that all important topics are discussed adequately but might inadvertently stifle valuable discussion on other issues. A passive moderator might allow the group to range over more topics, which can provide useful information, but the group might choose to neglect certain topics that are less popular. Trained and experienced moderators are able to be both aggressive and passive to suit the needs of the focus group sponsor.

☑ **Determine the location and time of a focus group.** A focus group should be held at a neutral and conveniently located facility, such as a local school or recreation center. The meeting room should have tables and chairs that can be arranged so that all participants have eye contact with each other. Similarly, the meeting time should be convenient for the participants you plan to invite.

Another location for focus groups is a market research facility. Especially designed for focus groups, these facilities include two-way mirrors that allow the sponsor to observe the focus group from another room. If you can't use such a facility, a professional moderator or research firm can set up some other viewing arrangement. Market research facilities normally cost between $400 and $500 per focus group.

☑ **Determine how to record the discussion.** Focus groups are generally audio- and videotaped. Both record the discussion as it occurs and preserve its subtleties for later content analysis. Recording a focus group also frees the moderator from taking notes, thus allowing him or her to listen carefully to, and ask probing questions of, participants. If you conduct your focus group at a market research/focus group facility, recording devices and a video operator will be available for about $200. Otherwise, you can rent the equipment from an audiovisual store.

☑ **Determine how to disclose the sponsor of the focus group.** The sponsor(s) of a focus group is usually anonymous. It is believed that people will respond in a less biased fashion if they do not know who is interested in their responses. In many cases, the sponsor(s) is in another room simultaneously watching the process through a two-way mirror or a TV monitor. Sometimes the moderator will reveal the sponsor at the end of the focus group, but often the sponsor is never revealed. The decision to reveal the sponsor(s) depends on the community and your assessment goals. In some situations, such as small towns and close-knit communities, preserving the sponsor's anonymity could arouse the suspicion of community members.

☑ **Invite participants.** Carefully planned notification procedures and incentives help encourage focus group attendance. Depending on your available time and resources, adapt the following steps to suit your needs:

- Send a personalized introductory letter to potential participants.
- Telephone several weeks prior to the meeting to discuss the letter and ask participants to commit to attend the focus group. During the phone call provide all pertinent information, such as incentives, date, time, and location of the focus group.
- Follow the confirmation phone call with a confirmation letter that explains the general purpose of the focus group

and gives the date, time, location, and directions to the facility.

- Telephone the day of the focus group to remind the participants.

Some participants who have confirmed their attendance might still fail to show up for the focus group. Therefore, it is safer to invite a couple more people than you need. If you want a group of 8, invite 12. If you want a group of 12, invite 15. If they all show up, you can send some home according to the sequence of their arrival. The people turned away should still receive their compensation package.

Focus Group Process

☑ **Participants arrive.** The moderator or his or her assistant greets the participants as they arrive and invites them to have something to eat or drink while they wait for the rest of the participants (preferably not in the room where the focus group will take place). When all participants are present, they take a seat in the focus group room and the moderator begins the discussion. Arrange seating in a circle or a square so that participants can see each other and the moderator.

☑ **Conduct the focus group.** The moderator begins the focus group with introductions, an overview of participants' roles, and an explanation of the process and suggested rules. Rules might include

- Time limits on speaking.
- Respect for the moderator's role in facilitating the discussion.
- Mutual respect and nonjudgment of the opinions of others.
- Other rules the participants mutually agree upon.

Following the introduction, the moderator proceeds to engage the participants in a discussion of the questions designed by the sponsor.

The moderator allows time at the end of the session for additional comments and thanks the group for participating. The moderator or his or her assistant gives participants their compensation as they leave.

Resources Needed

☑ Required:

- One or more persons suitable to serve as moderators. Such persons should be skilled at managing group interactions.
- Audio- and videotapes, recording machines, and technical assistance.
- Cash or other form of reimbursement for participants.
- Food and drink for participants when they arrive at the facility.

☑ Optional:

- A person designated to serve as a recorder.
- A designated host/hostess to welcome participants as they arrive.

Sources of Extra Help

Extra help in designing and conducting focus groups might be available from the communications and marketing departments of nearby colleges and universities. To find focus group facilities and professional moderators around the country, visit the web site at http://www.focusgroups.com.

Some Pros and Cons of Using This Method

☑ PROS:

- Group interaction can generate useful information that might not emerge from other assessment methods.
- Focus groups can give community members a sense of inclusion in the community process by providing them with a forum to express their opinion.

☑ CONS:

- Shy persons might not always express their opinions.
- Participants are sometimes influenced by their peers to agree with ideas they would normally oppose, which can skew the results and make your analysis inaccurate.
- Focus groups can be expensive: between $3,000 and $5,000 each.

Bibliographic Resources

Butler, L.M., C. DePhelps, and R.E. Howell. 1995. *Focus Groups: A Tool for Understanding Community Perceptions and Experiences.* Community Ventures circular. Western Regional Extension Publication, Washington State University, Pullman, WA.

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Interviewing

Interviewing is the process of asking individuals or small groups of community members questions and recording their responses. Use this technique to gather descriptive data about community life and the lives of community members (**Figure S4-13**). Focus on community members' thoughts, feelings, and experiences about issues and their relationships with others. Analyze interview results by looking for patterns or themes in the responses and comparing them to other data and analysis (see **Content Analysis Instructions**).

Figure S4-13—What Can Interviews Tell?

- What people are thinking, why and when.
- What people do with their lives, why and when.
- What their priorities are, both personally and about the community as a whole, and why.
- How people feel about their community, their local economy, or their watershed, and why.

How to Collect This Information

You can choose from three types of interviews, depending on your purpose, resources, and time. Each type of interview can be conducted in person or over the telephone, in groups or individually, by community members or experienced interviewers (**Figure S4-14**). The types are unstructured interviews, semistructured interviews, and structured interviews.

☑ **Unstructured interviews** do not follow a predetermined order of topics but rather the flow of the discussion with the interviewee. Sometimes it can be helpful to have a list of topics ready to keep the discussion flowing if necessary. Use unstructured interviews when you are gathering new information, such as how people think about different issues. Unstructured interviews enable an interviewer to collect in-depth information that can be used to tailor other interviews or combine with other assessment methods.

☑ **Semistructured interviews** use a predefined set of questions that, when discussed during the interview, lead to additional unplanned questions. Use semistructured interviews to explore ideas in-depth that you've already gleaned from general observation or other data.

☑ **Structured interviews** give a predefined set of questions to a specific number of respondents. Patterns of similarity and difference in responses become the basis for analysis. Similar to face-to-face and telephone surveys, structured interviews are useful when you know enough to ask fairly specific questions.

Figure S4-14—Who Interviews Whom?

Interviews can be conducted by community members or experienced interviewers. Having community members interview each other allows them to get to know one another better, possibly creates new relationships, and might even contribute to a sense of cohesion within the community. On the other hand, experienced interviewers might produce more reliable data. All interviewers involved in the assessment project, experienced or not, should go through a short training session based on this method description. Training will help ensure that a similar approach and similar techniques are used in all the interviews.

Interview Techniques

Regardless of the type of interview you decide to conduct, the following techniques will help you use this method more effectively and achieve more accurate results.

☑ **Pre-interview:**

- **Research.** Thoroughly research the background of the community, the groups, and the individuals you will be interviewing so that you can ask pertinent questions and establish rapport quickly with those you're interviewing. Knowing names and places can help keep the interview focused and can refresh an interviewee's memory.
- **Sampling.** Use sampling to determine who and how many people to interview based on your goals and resources. (Refer to the detailed discussion of sampling in **Appendix B**.)
- **Interview type.** Select the interview type — unstructured, semistructured, structured, or a combination — based on your needs. Also decide who will conduct the interviews and whether they will be over the phone or in person. Decide if the interviewers will be compensated or if their work will be in-kind.
- **Question design.** Interview questions can be broad and open-ended or specific and multiple-choice, depending on the type of interview you are conducting. Be sure to allow yourself sufficient time to develop the best questions for your purpose. Refer to the discussion of question design in **Appendix B**.
- **Pretest questions.** Pretest interview questions on members of the community to be sure that the language and subject matter are appropriate. Pretests will also double check that the wording is not confusing.
- **Recording.** Determine how you will record the interview. See **Recording** under **The Interview**. Use **Figure S4-15a Interview Log Sheet** to keep track of interviews. Use **Figure S4-15b Recording Interview Notes** when recording interview by hand.
- **Location.** Arrange a time and place that is convenient for the interviewee; you can do this by telephone. Be sure to explain the purpose of the interview and how or why the interviewee was selected. Although you can conduct the interview most anywhere that's mutually agreeable, including the interviewee's home, make sure it's a quiet place with minimal distractions. The more comfortable the interviewee, the easier it will be to build and maintain rapport.

Figure S4-15a—Interview Log Sheet

Date/Time of Interview	Interviewee Name	Organization/ Affiliation	Mailing and E-mail Addresses; Phone and Fax Numbers	Interviewer Name

Figure S4-15b—Recording Interview Notes

Post Interview Coding
Record corresponding codes

Interview
Record notes during interview

Post Interview Coding
Use to clarify or elaborate on notes recorded during the interview.
Draw arrows to corresponding text.

- **Timing.** Interviews should start and end on time. You and your interviewee should establish the time frame together: generally between 30 minutes and 1.5 hours.

☑ **The Interview:**

- **Rapport.** It is important to build rapport with interviewees to make them comfortable with your presence and your questions. This greatly increases the likelihood that they will answer your questions honestly and positively, rather than feel threatened by them. Establish good rapport by
  - Approaching interviewees properly.
  - Informing them of the purpose of the interview and the process to be followed.
  - Advising interviewees of their roles and rights in the interview process, such as confidentiality (see **Ethics of Assessment, Chapter 4, Step 1**).
  - Giving a written or verbal explanation of your project to interviewees so they fully understand what you are doing and how the information will be used.
  - Using nontechnical language and local slang when appropriate.
  - Respecting the time frame established for the interview.
- **Probing.** If the interview includes open-ended questions and is not highly structured, the interviewer might ask probing questions when interviewees respond with answers that could have multiple meanings. Probing questions ask interviewees for additional information and follow up on details and unexpected avenues of information. Examples of probing questions include: "Would you explain further?" and "Could you give me an example?" Use probing questions sparingly and carefully, not as interrogation techniques. When used properly, probing might actually build rapport by allowing the interviewee to speak in more detail about personal knowledge or concerns.
- **Restraint.** Always remember that as the interviewer, you record only what the interviewees say. Despite your own knowledge and interest, you must remain neutral, or you could bias the results of your interviews. Later, as you analyze the interview results, you can add your own comments and opinions.

- **Retreat.** Each interview deserves a graceful closing. Watch for clues during the interview that the interviewee's attention or interest is waning. You'll see these in a yawn, repetition of the same answer, or more requests that you repeat the questions. To close the interview, ask concluding questions like, "Is there anything else you would like to add?"or "Would you like to continue this discussion at another time?"
- **Recording.** Record the interview in writing or by tape (*always* ask permission to record, especially to tape an interview). You might want to use a notetaker or a recording device to free you from intensive notetaking, thereby allowing you to concentrate on what the interviewee is saying. If you use a tape recorder, position it unobtrusively. For example, a voice-activated tape recorder placed on a table between the interviewer and the interviewee is less obtrusive than a microphone held close to the interviewee's face.

☑ **Post-interview:**

- **Review.** After the interview, record your observations of the interview:
  - ➢ How did the interviewee act?
  - ➢ What was the physical setting of the interview?
  - ➢ Were there interruptions?

  Read or transcribe your notes/tapes as soon as possible while the situation is still fresh in your memory. Reviewing each interview might suggest possible themes or new probing questions for future interviews. Also, offer your interviewee the opportunity to read the transcript to make corrections or clarifications. This makes the interviewee a partner in the interview, checks the validity of the data you have collected, and generates further interest on the part of the interviewee about the outcome of the overall assessment project.

Resources Needed

☑ Experienced interviewers (either voluntary or paid).

☑ Prepared statement of introduction.

☑ Time and funding for question design and development.

☑ Office or interview space and interview materials (e.g., telephones, recording devices, pens, paper, maps).

☑ Method for storing and analyzing data (e.g., a computer).

☑ List of interviewees.

Sources of Extra Help

Local university/college departments of sociology, anthropology, psychology, political science, journalism, and marketing will often have faculty or students experienced in conducting different types of interviews. They can also provide technical assistance regarding sampling techniques, question design, and data analysis.

Some Pros and Cons of Using This Method

☑ **PROS:**

- **Telephone interviews** are useful for asking some initial questions and getting to know the interviewee, and for conducting structured interviews. Such interviews are relatively inexpensive as long as telephones are available and the survey does not require long distance calling. They are also less time consuming than in-person interviews and can reach a large number of people relatively easily.
- **In-person interviews** are more flexible than other types of survey methods because they allow the interviewer to ask questions or administer a survey in a variety of ways (e.g., on the street, by appointment, in people's homes) and to use visual materials to help respondents answer questions. In-person interviews allow the interviewer to also note the emotional reactions and non-verbal cues, such as body language, sarcasm, stance, and gestures in response to certain questions. In-person interviews are more effective in establishing rapport between the interviewer and interviewee; this is especially important when the interview is about a sensitive subject. In-person interviews also give the interviewee a greater sense of involvement in the assessment, and the interviewer can more easily probe for additional information.

☑ **CONS:**

- **Telephone interviews** are not as appropriate for in-depth interviewing. The lack of face-to face, personal contact makes it difficult for the interviewer to establish appropriate rapport with the interviewee. Question format must be kept relatively simple since the interviewee cannot see non-verbal conversational cues. It also might be difficult for someone to stay on the phone for very long.

Telephone interviews can sample only those members of a community who have telephones.

- **In-person interviews** might be more time-consuming and expensive compared to other types of methods (e.g., self-completion surveys). The presence of the interviewer can foster biased responses in cases where they have not achieved rapport with the interviewee or where some other subjective element influences the responses. Interviewers must be trained to follow the same set of interview techniques so that their personal attributes and behaviors do not inadvertently affect the collection of the data. Interviews collect a large amount of data that take time to analyze, but they usually involve only a small percentage of the community, making community-wide generalizations unreliable.

Bibliographic Resources

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Bernard, H.R. 1995. *Research Methodology in Anthropology: Qualitative and Quantitative Approaches*. 2nd ed. AltaMira Press, Walnut Creek, CA.

Frey, J.H. 1983. *Survey Research by Telephone*. Sage Publications, Beverly Hills, CA.

Hawtin, M., G. Hughes, and J. Percy-Smith. 1994. *Community Profiling: Auditing Social Needs*. Open University Press, Philadelphia, PA.

Figure S4-16—What Kinds of Information Can Maps Show?

Many features of a community can be represented on a map. Some of the most commonly mapped features include:

- **Natural resources and features of the land** such as rivers or streams, mountains, plains, wildlife habitat, mineral deposits, and soils.
- **Political or economic boundaries** such as state and county lines and the boundaries of incorporated/unincorporated municipalities.
- **Demographic information** such as population density.
- **Different land uses** such as residential, commercial, industrial, open space, or recreation areas.

Figure S4-17—Sources of Community Maps

It should not be difficult to obtain maps of communities on almost any scale desired. Good maps of a community are often published and maintained by:

- Local/county/state libraries
- Special collections
- Planning and surveyor offices
- Chambers of Commerce
- Trade associations
- Historical societies
- Banks
- Civic groups
- Similar organizations

You can also obtain geographic information by using an atlas or travel maps prepared by businesses such as Rand McNally or contacting the state highway department. Visit a local library to find out what geographic information and maps are available.

Maps and Geographic Research

Maps and geographic research can be used to define the physical boundaries of the community, including the many different social and physical elements contained within those boundaries (e.g., where people live, where businesses are located, roads, and natural features). Maps and geographic research show how the community fits within the larger context of its surroundings (e.g., the geographic relationship to other communities or its watershed) and how it has changed over time (e.g., road construction, residential and commercial development) (**Figure S4-16**).

Geographic data, such as photographs or high-resolution satellite images, can be mapped to reveal how community members have organized themselves economically, socially, or geographically. Maps and geographic research can also estimate (1) the ability of the community's natural landscape to accommodate future growth and (2) how changes in land use might affect the health of the surrounding ecosystem. A good visual tool for stimulating discussion on local identity with community members, maps and geographic research can help put the quantitative and qualitative data obtained through other methods into a geographic context.

Many government agencies and private organizations conduct geographic research and develop and use maps as part of their daily work. Unless your community assessment has unique information needs, you can save time and money by using existing sources discussed in this section (**Figures S4-17, S4-18,** and **S4-19**). Please see the **Background Research Instructions** also.

How to Collect This Information

1. Identify Community Features

List the features of the community that you want to illustrate on a map or through geographic research. These might include

☑ **Natural boundaries** (e.g., mountains, rivers and streams, watersheds, agricultural land).

☑ **Political/administrative boundaries** (e.g., city and county lines, soil and water conservation districts).

☑ **Physical/infrastructure boundaries** (e.g., transportation networks, sewersheds).

☑ **Sensitive areas and resources** you want to protect (e.g., historic sites, drinking water sources, special wildlife habitats, forest buffers).

☑ **Facilities and resources** that protect public health or environmental quality (e.g., solid waste facilities and sewage treatment plants).

☑ **Problem areas** that might have actual or potential public health and ecological impacts (e.g., Superfund sites, flood zones).

☑ **Other places** (e.g., military bases, Indian reservations).

2. Determine the Scale of the Geographic Data

To be useful, maps must show locations and distances accurately on a sheet of paper or computer screen. Simply defined, **scale** is the relationship between the distance on the map and the distance on the ground. Scale is shown as a ratio of 1 inch on the map to actual inches on the ground (e.g., a scale of 1:600 is 1 inch on the map for every 600 inches, or 50 feet, on the ground). A very detailed map, such as 1:600, can show the location of sewers, power lines, water lines, streets, and buildings drawn to scale. A smaller-scale map represents such features by symbols.

3. Determine Format and Source for Geographic Data

☑ **Format of Geographic Data**

- **Printed maps.** Geographic and other mapped information is traditionally published in printed (hard copy) format by federal, state, county, and local government agencies. City or county planning and survey offices will have the most detailed and current geographic data for your particular community.
- **GIS.** Technology makes it possible to retrieve, store, analyze, and display geographic and other data using computer-based systems called **geographic information systems** (GIS). GIS can answer the following five questions about the community you are assessing:
  - ➢ What is at [location]?
  - ➢ Where is it?
  - ➢ What has changed since [date]?

Figure S4-18—Internet Map and Geographic Research Information

Although EPA does not produce maps as part of its mission, the Agency does maintain a web site that allows for geographically based searches, or queries, regarding EPA-regulated facilities, specific watersheds, and environmental information.

- For regulated facilities: **http://www.epa.gov/enviro/html/mod/mod.html**. This web page allows users to search EPA-regulated facilities by identification number, name, ZIP code, county, or state depending on the database being searched. Each database provides an explanation of the database prior to the query.
- For watersheds: **http://www.epa.gov/surf**. The "Surf Your Watershed" web page provides users with access to geographic information and GIS projections for specific watersheds around the country.
- For environmental information: **http://www.epa.gov/enviro/wme**. The "Windows to My Environment" web page allows users to obtain air and water quality information for specific sites searchable by ZIP code or city and state. An interactive map for each site shows waterbodies, monitoring sites, and population density information.

The University of Texas at Austin has developed a Library Map Collection on the Internet. It includes information and references to map-related web sites. You'll find sources of geographic information on city maps, historical maps, cartographic maps, and others. Visit the collection at **http://www.lib.utexas.edu/maps/index.html**.

Figure S4-19—GIS Information Internet Addresses

- **http://www.urisa.org**
  Urban and Regional Information Systems Association.
- **http://www.esri.com**
  ESRI ArcView and ArcInfo.
- **http://www.epa.gov/enviro/wme**
  EPA Window to My Environment.
- **http://www.ced.berkeley.edu**
  University of California, Berkeley Environmental Planning and GIS.

- What spatial patterns exist?
- What if [specific event]?

A GIS map combines a **base map** with a series of **overlays**. The **base map** shows the geographic features of an area; an **overlay** is a set of thematically associated data, such as soil composition, stream locations, roads, or land use. A GIS can combine the base map with different overlays, separately or together, to produce a custom map of the information you want. Technically trained coordinators create GIS maps by using scanners, digitizers, and manual entry of coordinates from satellite information.

☑ **Sources of Geographic Data**

- **Federal Emergency Management Administration (FEMA).** FEMA produces maps portraying flood zones, areas that experience 100- and 50-year floods. These maps can usually be found in state or university libraries designated as depositories for government documents and in city/county planning or surveyors' offices.
- **Zoning and land-use maps.**
  - **Zoning maps** use standardized zoning codes to show restricted land uses for particular areas of the community such as " high-density, one-family, detached dwellings" or "major business, office complexes." Zoning maps overlay the zoning codes onto actual street maps of the area. Open to public comment, the ultimate decision to designate zones rests with locally elected officials.
  - **Land-use maps** characterize general land uses according to the codes used by the zoning maps (e.g., the different densities of residential, industrial, and mixed uses). Most communities also have "master plans" that will help you understand land-use restrictions and plans. Both zoning and land-use maps are usually available at the county or city government library, or at county/city planning or surveying offices.
- **Sanborn Fire Insurance maps.** In 1867 the Sanborn Map Company began developing fire insurance maps to help fire insurance agents determine the degree of hazard associated with a particular property. These regularly updated maps depict the commercial, residential, and industrial sections of some 12,000 cities and towns in the United States, including specific details about the size, shape, and construction of residential dwellings, commercial buildings, and factories. They also list street

names, property boundaries, and building use. Check your local historical society, county/city planning or surveyor's office, or courthouse for fire insurance maps of your community.

You can also buy these maps from Environmental Data Resources (800) 352-0050, which recently purchased the Sanborn Map Company.

- **State Natural Heritage Programs.** In the early 1970s, The Nature Conservancy developed the Natural Heritage Program to provide detailed, scientific information on the patterns and processes of biological and ecological diversity. Today the Natural Heritage Program is used to make wise land-use decisions that minimize the degradation of biological resources. Within the United States, the Heritage Network has grown to cover all 50 states, the District of Columbia, and the Navajo Nation. Most programs are now independent entities that work in collaboration with the Conservancy. They are housed primarily within state government agencies, public universities, and the Conservancy itself. In a few instances, the federal government has established specific data centers within national parks or national forests. For more information, contact the Conservancy's national hotline at (703) 841-6360 or visit http://nature.org.
- **U.S. Census Bureau.** The Census Bureau data are organized by census tracts and block numbers. Census maps show the location and the boundaries of these tracts and blocks. Census maps also include political boundaries and general geographic information. Local census maps might be available at public libraries, and at a local courthouse or county government library, depending on the size of the political jurisdiction.

  See the **Census Data Research Instructions** or the Bureau's mapping home page at http://www.census.gov/geo/www/tiger/index.html for more information.
- **U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS).** NRCS develops county-level soil survey maps that scientifically inventory soil resources according to the potential for, and problems with, use. Soil survey maps can be obtained through your county's Soil and Water Conservation

District or viewed at a local public library or county/city planning/surveyor's office.

For more information about the geographic data provided by NRCS, visit http://www.nrcs.usda.gov and link to its National Cartography and Geospatial Center at http://www.ftw.nrcs.usda.gov/ncg/ncg.html or contact

- USDA/NRCS Statistical Lab
  P.O. Box 2890
  Washington, DC 20013
  (202) 720-2426
- NRCS Public Affairs: (202) 720-3210
- NRCS Resources Inventory: (202) 720-5420

■ **U.S. Geological Survey (USGS).** The USGS National Mapping Program provides a variety of cartographic, geographic, earth science, and remotely sensed data, products, and services in support of federal, state, and public interests. These products and services include information about the earth's natural and cultural features, base maps and special maps in several scales, and other digital data that can be used as part of a more sophisticated geographic analysis system.

Printed USGS maps are organized into nationally standardized quadrangles. Viewing a quadrangle is like seeing the land from the air. These maps show the location of houses, churches, airports, roads, railroads, bridges, and cemeteries, elevation of the land by contours, and latitude and longitude. Topographic maps also use aerial photographs and infrared photography to show natural land cover and land-use patterns. USGS can provide older, out of date maps for tracking changes and trends in land use of a particular community. USGS maps are usually available at public libraries.

USGS operates a network of 75 Earth Science Information Centers (ESIC) around the country. An ESIC (pronounced like *seasick*) is often located within a state or federal agency other than USGS. Regardless of its location, one purpose of an ESIC is to provide state and local information about the earth, both above and below its surface. An ESIC sells USGS maps, provides available aerial photographs of a particular area, and refers inquiries about detailed geologic and hydrologic data to the information offices of the appropriate USGS division. For a

list of state ESICs, call (800) ASK-USGS or visit http://www.usgs.gov/esic/esic-index.html on the Internet.

For more information on the USGS National Mapping Program, contact USGS at

➢ USGS National Center
12201 Sunrise Valley Drive
Reston, VA 2192
Phone: (703) 648-4000
Internet: http://www.usgs.gov

Resources Needed

☑ **Required resources for Geographic Information Systems**. GIS software is a specialized tool. Several GIS software packages are commercially available on the market, among them the popular (and user-friendly) Map Info and the more advanced ArcView and ArcInfo by Environmental Systems Research Institute and CarisGIS by Universal Systems.

Bibliographic Resources

Environmental Systems Research Institute, Inc. 1993. *Understanding GIS — The ARC/INFO Method.* John Wiley & Sons, New York, NY.

The Nature Conservancy. 1996b. Web site: Natural Heritage Program. http://nature.org.

U.S. Department of Housing and Urban Development. 1997. *Mapping Your Community: Using Geographic Information to Strengthen Community Initiatives*. Washington, DC.

U.S. Department of Interior, U.S. Geological Survey. 1991. National Mapping Program: Earth Science Information Center. Reston, VA.

Figure S4-20—Potential Uses of Meetings

- Identify and coordinate with your partners.
- Define overall environmental protection goal(s).
- Plan your assessment (e.g., goals, workplan).
- Identify and describe the community you are assessing.
- Identify and select community characteristics to assess, and methods to use.
- Solicit input from various groups of people on issues of concern, visions for the future, and decisions that will affect them.
- Bring people together to conduct assessment methods (e.g., to develop an asset map).

Meetings

Meetings — whether large or small — can be used in community cultural assessments both to collect information about a community and to involve community members in all aspects of the process (e.g., defining goals, strategic planning). Meetings can be structured in many different ways depending on location, time frame, and, most important, purpose. Meetings are a cost-effective way of getting diverse input on community issues.

Types of Meetings

Figure S4-20 lists the many different ways meetings can be used in community cultural assessments. This worksheet discusses types of meetings and techniques for conducting them.

☑ **Types of meetings** discussed include

- Small group meetings
- Workshops or issue forums
- Community (public) meetings and information sessions
  - Town meetings and public hearings
  - Road shows and open houses
  - Kickoffs and summits
  - Visioning

☑ **Types of techniques** for soliciting input at meetings include

- Brainstorming
  - Free-wheeling
  - Round Robin
- Charrette
- Delphi
- Nominal Group Technique

Small Group Meetings

☑ Small group meetings provide the best setting for decision-making and consensus-building because they enable people to focus on a main topic (**Figure S4-21**).

☑ They are also useful for setting agendas for upcoming meetings and planning future events.

Figure S4-21—Suggestion for Decision-making Criteria Process

Although you should adopt the approach that will best suit your overall project needs, a typical problemsolving or decision-making approach comprises the following steps:

- Define the problem to be solved or the decision to be made.
- Determine the decision-making process (e.g., straw vote, majority rules, total consensus).
- Review your situation, issues, and needs (e.g., What are the environmental problems and goals you are trying to address in your assessment project?).
- Develop criteria with which to evaluate the options. The criteria should be determined near the beginning of the meeting so the choice of criteria is not influenced by the outcome of the brainstorming process.
  - For example, one commonly used criterion is cost (i.e., given the budget available for my project, how much can I expect to accomplish?).
  - Choose a reasonable number of criteria (three to six are generally recommended).
  - Once overall criteria are defined, weigh each to show how important it is relative to the others. Weights might be qualitative, like "high, medium, low," or quantitative, where a number is applied to each criterion so that the total equals 100.
- Brainstorm all possible options/solutions without judgment or evaluation.
- Apply evaluation criteria to help you prioritize your options.
- Select your options.

EXAMPLE CRITERIA RATING FORM

Criteria	Weight	Alternative Options (rating scale: 1 to 10)		
		Option A	Option B	Option C
Cost	30%			
Applicability	40%			
Other Resources (labor)	10%			
Time	20%			

☑ To optimize the opportunity for thoughtful dialogue, this type of meeting should be limited to 20 participants, preferably 7 to 15.

Workshops or Issue Forums

Workshops and issue forums are good techniques for soliciting feedback on a narrow selection of issues. Workshops and forums generally seek input on a series of predetermined questions or topics. Use workshops and forums to bring together technical experts, carefully selected stakeholders, or the public.

Community (Public) Meetings and Information Sessions

Community meetings engage a wide range of people in open discussion about a particular issue or topic and are typically larger than small group meetings, workshops, and forums. Public meetings take a variety of forms: town meetings, public hearings, road shows, open houses, kickoffs and summits, and visioning.

☑ **Town meetings and public hearings** are typically presented in a highly organized format that allots community members specific amounts of time to voice their opinions. Participants normally prepare and submit written testimony or comments for the official record. Testimony is usually preserved for the public record; such transcripts might be useful sources of data for your assessment.

☑ **Road shows and open houses** also seek input from a wide variety of community members, but in less formal ways than town meetings or public hearings. Road shows and open houses use exhibits and other types of visual or verbal presentations (e.g., slide shows, maps, and drawings) to solicit comments. Road shows usually visit community groups and neighborhoods; open houses invite community members to a specified location. Open-house sponsors might hand out prepared issue briefs, abstracts, or summary statements about environmental issues facing the community — and engage attendees in informal discussions. These types of meetings are good for informally collecting responses to ideas or proposals that can be visually presented.

☑ **Kickoffs and summits** are community-wide meetings that initiate projects or indicate the transition from one phase of a project to another. They can also increase public awareness of an issue by attracting media coverage. For maximum exposure, link these community-wide events with traditional local events, such as Earth Day, Rural–Urban Day, or an annual fair. These are opportunities to bring speakers into a

community to present expert vision on addressing environmental issues.

☑ **Visioning** is a series of open, collaborative, community-wide meetings bringing citizens and community leaders together to form a shared vision of what they would like their community to look like in 20 to 50 years. This "vision" then becomes the guiding force for short- and long-term action plans.

Publicize public meetings through newspaper advertisements, radio announcements, flyers, leaflets, and word of mouth within existing community and business entities. Make your meetings accessible by scheduling them at well-known locations and at a time convenient for most people, such as a weekday evening or a weekend morning. Offering child care and transportation also promotes participation.

General Hints for Running Successful Meetings

Regardless of the type of meeting selected, its effectiveness will depend on an organized approach that includes a well-planned agenda (**Figure S4-22**) and clearly defines roles and responsibilities for all participants (**Figure S4-23**). Careful planning prevents participants from feeling rushed or thinking that their attendance and input are insignificant. Participants must know why they should attend and what is expected of them. Time the mailing of any pre-meeting materials to allow them enough time for thoughtful review. Depending on the size and the purpose of the meeting, you might want to consider using a leader and a facilitator, plus one or more recorders.

Ensuring Balanced and Representative Participation

Any meeting will benefit from full community participation. Generally, you can identify who to include by determining who has an interest in or might be affected by the meeting topic or issue being addressed. These community members are called "stakeholders." By including all stakeholders, you have a better chance of capturing the range of opinions and interests in the community and thus conducting a more complete and accurate assessment.

Figure S4-22—Basic Considerations for Conducting Effective Meetings

- **Identify goals and objectives.** What do you want to accomplish in the meeting? Consider how much time you have and what is reasonable to accomplish.
- **Develop an agenda** that provides the following information:
  - Statement of meeting goals and objectives.
  - Action items (i.e., list of items to achieve meeting goals and objectives).
  - Anticipated attendee list, roles and responsibilities (defining leader, facilitator, recorder).
  - Logistics.
  - Allocated time.
- **Determine appropriate participants.** Depending on your goals, you might invite the public, technical specialists, select community leaders, and so on. If your meeting is a large public meeting, identify which community members should be included (e.g., certain segments of the community, specific neighborhoods, or a random sampling of the whole community).
  - *Invite or advertise.* Carefully advertise the meeting so that the target population knows about it and has sufficient time to plan for it. Make sure you understand your population well enough to identify the best ways to inform people about the location, time, and content of meetings. Advertising is especially important for large public meetings. Written invitations, e-mails, phone calls, general mailings, and public notices can be useful for ensuring participation of key people and for inviting people to smaller meetings.
- **Distribute necessary background materials,** including the agenda, to meeting participants sufficiently in advance of the meeting.
- **Clearly define and reach agreement on roles and responsibilities** for all meeting participants, including meeting leader(s), facilitator, recorder, and participants; establish the meeting schedule, ground rules, and guidelines.
- **Review the agenda and ground rules** at the beginning of the meeting and follow the agreed-upon agenda.
- **Keep meetings focused** on priority issues.
- **Allow sufficient time** to cover the subject.
  - *Plan for facilitated discussions* for idea generation and refinement and open and balanced participation from all participants.
  - *Plan for meeting closure* with summary of discussion and next steps.
- **Produce and distribute meeting summaries.**
- **Evaluate the meeting** to ensure that participants were satisfied with the approach.
- **Fully consider each stage of meeting development:**
  - Preparing for the meeting
  - Conducting the meeting
  - Evaluating the meeting

  No stage should be ignored or minimized.

Sources: Chang, 1994; Fisher, 1991; Chechile, 1991; Doyle, 1976.

Figure S4-23—Meeting Roles and Responsibilities

MEETING LEADER OR COLEADERS

- Establish meeting objectives and agendas and designate person responsible for the overall direction of the meeting.
- Start meeting on time.
- Provide introductions, summarize meeting objectives and agenda items, and define roles and responsibilities.
- Facilitate or work with facilitator to ensure meeting agenda is followed in a timely manner.
- Participate as a group member.
- Summarize key decisions and actions.

MEETING PARTICIPANTS

- Review agenda and other meeting materials before attending meetings.
- Know purpose of meeting ahead of time and do "homework" to prepare.
- Confirm attendance and designate an alternate if cannot attend.
- Attend meeting on time and participate in a timely fashion.
- Keep an open mind, avoid premature judgment, and try to understand other perspectives.
- Provide technical input when necessary.
- Speak up; share useful ideas.
- Help facilitator eliminate distractions and encourage active involvement.
- Support ground rules and other meeting guidelines.
- Volunteer for tasks only if capable of follow-through.
- Agree to participate in consensus-building exercises.

FACILITATOR

- Coordinate with leaders and get any needed background/preparatory information.
- Review planned agenda and action items.
- Review team's ground rules.
- Manage how people work and communicate in the meeting.
- Guide the flow of the meeting.
- Focus the group.
- Monitor participation.
- Evaluate effectiveness of process and suggest alternatives as necessary.
- Protect people from "attack" and deal with problem people.
- Remain neutral at all times, particularly during disagreements.

RECORDER

- Keep track of important information throughout the meeting, prepare flip charts and other necessary visual aids during the meeting, and prepare post-meeting summaries and action items.
- Capture ideas visually without editing or paraphrasing.
- Check to ensure that appropriate information has been recorded; obtain clarification from the participant if needed.
- Help leader and facilitator keep track of information.

Source: Adapted from Chang, 1994.

Figure S4-24—Balanced and Representative Stakeholders Are . . .

Individuals or groups that have a stake, or interest, in the topic of interest and its intended outcome. To ensure balance and representation, it is important to understand the end goal of any project (e.g., to develop a river protection strategy) so that all potential players affecting or being affected by the decision-making process, as well as those key to implementing the results, are included. It is essential to represent all sides of the community so no one group or opinion will dominate.

How to Identify Stakeholders

☑ **Assess Issues and Goals.** Identify the key issues surrounding the meeting and identify who might be interested in, or affected by, the issues (**Figure S4-24**).

☑ **Identify Potential Stakeholder Categories.** Information on issues and goals provides the basis for identifying the types of stakeholders that should be represented in the meeting, such as fishing or chemical industry representatives, property owners, or environmental groups.

☑ **Identify Actual Representatives from Stakeholder Categories.** Analyze available information on stakeholder groups and identify and invite specific people. Personal knowledge and recommendations from affiliated groups or individuals will help identify specific persons associated with each stakeholder category.

☑ **Consideration When Selecting Participants.** Consider who they are as individuals, their position in their organization, whom they represent, their area of expertise, their possible contribution, and so forth.

Techniques for Soliciting Input at Meetings

☑ **Brainstorming.** A brainstorming session is an open discussion among a group of people designed to produce as many ideas as possible (free of judgment). Two common techniques for brainstorming are

- **Free-wheeling**: Share ideas in a free-form way and make a flipchart list as they are offered.
- **Round Robin**: Go around the room in an orderly fashion, giving everyone an opportunity to present one idea (people can pass on their turn, if so desired). Keep going around the room until ideas are exhausted or time is up. Make a flipchart list of all the ideas as they are offered.

Basic ground rules for brainstorming sessions include the following:

- Avoid judging or criticizing ideas.
- Keep discussion of ideas to a minimum.
- Try to generate as many ideas as practical in the allocated time.
- Try to build on the ideas of others.
- Use a recorder to list ideas.

☑ **Charrette.** A charrette is a series of small working group meetings — usually over 3 to 5 days — within a larger meeting. Based on intensive, around-the-clock meetings of participants with different points of view, a charrette is designed to solve problems, resolve conflicts, and produce a set of recommendations in a short period of time. A charrette can also establish new lines of communication, produce new insights into solving problems, and build relationships between participants.

☑ **Delphi Technique.** This technique is useful for bringing a diverse group of people to consensus. In a Delphi sequence, the interaction between members of the group is handled anonymously through a series of written questionnaires relating to the particular issue. Through the process, participants are informed only of the group's collective opinion and the arguments for and against each point of view, but not individual opinions or responses. Participants can express their opinions and change their minds without publicly admitting to it. Each subsequent questionnaire is based on the previous set of responses until consensus is ultimately reached. The technique can be used at a meeting or workshop, through the mail, or over the Internet to bring a group to consensus on priorities, goals, or plans of action.

A typical Delphi sequence entails four rounds of questionnaires:

- **Round 1**: Participants complete questionnaire on various aspects of the issue. The facilitator develops the questionnaire and summarizes the responses.
- **Round 2**: The facilitator presents the summary to the group, and participants complete a second questionnaire developed by the facilitator. The second questionnaire is based on the summary of the previous responses.
- **Round 3**: The facilitator again summarizes responses and uses the summary to develop a third round of questionnaires. Participants complete the questionnaire.
- **Round 4**: The facilitator summarizes responses for the final time. This time the issues are either voted upon or ranked by participants.

☑ **Nominal Group Technique.** This structured process is most useful for generating ideas, thoughts, and concerns about a specific issue(s) that might be contentious or difficult to talk about. It is essentially a brainstorming exercise in which

people write their ideas independently on pieces of paper and a facilitator compiles and categorizes the ideas. This approach prevents more outspoken participants from dominating the group's decisions. Discussion might follow or participants should repeatedly write down ideas until all ideas merge into some agreed-upon set.

To collect information using the nominal group technique, use the following 6-step approach (or some version of it) with groups of 5 to 10 participants:

1. **State or write on a flipchart the question or problem** to be addressed by the group. The question or problem should be clearly defined and followed by an explanation, if necessary.
2. **Generate ideas** for 5 to 10 minutes by having each participant, working independently, write down ideas and thoughts on pieces of paper or cards.
3. **Submit ideas** to facilitator, who categorizes ideas and thoughts on a large sheet of paper or flipchart.
4. **Clarify ideas** listed on the flipchart by allowing the group to discuss categories, if necessary.
5. **Prioritize the list** by asking each member to select two to seven items and rate them on a small piece of paper or card. The facilitator shuffles the cards or paper to preserve anonymity, tallies the votes, and lists results on the flipchart in front of the group.
6. **Discuss and vote** on the priorities. This phase allows participants to discuss the priorities, make clarifications, and voice agreement or disagreement. Finally, the group should vote on the priorities independently and anonymously.

Some Pros and Cons of Using This Method

☑ **PROS:**

- **Small group meetings** enhance the democratic process of community decision-making by creating a more intimate environment than public meetings. They are useful for working on issues and concerns in some depth; more voices can be heard with less competition for speaking time. Small group meetings encourage attendees to participate, get involved and informed, and contribute to a sense of community. Because these are more informal

than large public meetings, they often can be conducted at fairly low cost.

- **Workshop or issue forums** allow greater depth of insight and learning about specific topics of concern to the public (e.g., forestry, agriculture, water quality issues).
- **Community (public) meetings and information sessions** engage the public in their local setting. They bring together larger numbers of people than small group meetings, workshops, or forums. If planned and executed effectively (e.g., scheduled at times and locations convenient to large numbers of people and well publicized) these larger community meetings provide a way to obtain information from a variety of people in a "one-shot" setting. Road shows and open houses provide opportunities for more personal contact with stakeholders and the public. They allow for interaction, flexibility, and mutual exchange and education about respective interests.

☑ **CONS:**

- **Small group meetings** sometimes limit participants' opportunity to understand a wide range of other views since they include only a small number of people. This concern can be minimized by including a balanced and representative stakeholder group at the meeting. Depending on the size of the community and the complexity of the issue, it might be necessary to have more than one small group meeting. Since these types of meetings benefit greatly from experienced facilitation, you should consider the cost of multiple meetings if you plan to use a professional facilitator.
- **Workshop or issue forums** are limited in scope and might alienate community members who have not been involved in the project all along. Participants might not feel like they can voice their concerns if the agenda does not cover an issue of interest to them.
- **Community (public) meetings and information sessions** are time-consuming to organize and conduct. They might not provide comprehensive community input since some participants might not have an opportunity to voice their concerns or opinions. Attendance at community meetings might be too low to justify the effort, despite the quality of information gathered. In addition, public meetings, especially road shows and open houses, might require the presenter to respond to a range of questions,

some not necessarily on the agenda. Lack of preparedness on many issues might lead the audience to draw false conclusions or develop unrealistic expectations.

Sources of Extra Help

Many organizations provide meeting and facilitation support. In addition, a number of nationally recognized organizations offer meeting support and facilitation experience, including:

☑ **National Civic League**
1445 Market Street, Suite 300
Denver, CO 80202-1728
Phone: (303) 571-4343
Fax: (303) 571-4404

☑ **Program for Community Problem Solving**
915 15th Street, NW, Suite 601
Washington, DC 20005
Phone: (202) 783-2961
Fax: (202) 347-2161

☑ **The Keystone Center, Science and Public Policy Program**
P.O. Box 8606
Keystone, CO 80435-7998
Phone: (303) 468-5822
Fax: (303) 262-0152

☑ **CDR Associates**
100 Arapahoe Avenue, Suite 12
Boulder, CO 80302
Phone: (303) 442-7367

☑ **Resolve, Inc.**
2828 Pennsylvania Avenue, NW
Suite 402
Washington, DC 20007
Phone: (202) 965-6211

☑ **Interaction Associates**
600 Memorial Drive
Cambridge, MA 02139
Phone: (617) 761-3400

Some organizations have used a community visioning process to set goals for long-term community planning:

☑ **Atlanta Regional Commission**
3715 Northside Parkway
200 Northcreek, Suite 300
Atlanta, GA 30327
Phone: (404) 364-2525

☑ **Chattanooga Venture**
506 Broad Street
Chattanooga, TN 37402
Phone: (615) 267-8687

☑ **Tempe 2000**
City of Tempe
Office of the City Manager
P.O. Box 5002, 31 East Fifth Street
Tempe, AZ 85280
Phone: (602) 350-8522

Bibliographic Resources

Chang, R., and K. Kehoe. 1994. *Meetings That Work!* Richard Chang Associates, Inc., Irvine, CA.

Chang, R., and K. Kelly. 1995. *Step-by-Step Problem Solving*. Richard Chang Associates, Inc., Irvine, CA.

Chechile and Carlisle. 1991. *Environmental Decision-Making: A Multidisciplinary Prespective*. Van Hostand Reinhold, New York, NY.

Doyle, M., and D. Straus. 1976. *How to Make Meetings Work!* Berkeley Books, New York, NY.

Fisher, R., W. Ury, and B. Patton, eds. 1991. *Getting to Yes: Negotiating Agreement Without Giving In*. 2nd ed. Penguin Books, New York, NY.

Shipley Associates. 1995. *Environmental Public Involvement Strategies*. Franklin Quest Co., Bountiful, UT.

U.S. Department of Agriculture. 1993. *Strengthening Public Involvement: A National Model for Building Long-Term Relationships with the Public*. Washington, DC.

Western Center for Environmental Decision-Making. 1996. *Public Involvement in Comparative Risk Projects: Principles and Best Practices: A Sourcebook for Project Managers*. Meridian West Institute, Boulder, CO.

In addition, the following publications might be helpful in considering community visioning:

Ames, S., ed. 1993. *A Guide to Community Visioning: Hands On Information for Local Communities*. Oregon Visions Project. Oregon Chapter, American Planning Association, Portland, OR.

Nelessen, A. 1994. *Visions for an American Dream*. American Planning Association, Chicago, IL.

Walzer, N., S.C. Deller, H. Fossum, et al. 1995. *Community Visioning/Strategic Planning Programs: State of the Art.* North Central Regional Center for Rural Development, Ames, IA.

Observation

Observation is the purposeful and selective watching and tracking of human behavior or other phenomena (**Figure S4-25**). Observation can help you understand behavior patterns of a community that might not be revealed through other methods. Observation can also confirm and complement other assessment methods and inform sampling techniques and questionnaire design.

Observational data can be collected during all phases of a study, but primarily during actual visits to the community. The assessor documents "everyday" events and occurrences such as interactions between people (e.g., language and body language, the use or lack of humor, the structure of an event). Observation is especially valuable for studying small communities and organizations in action, and for assessing how people live and behave in various situations. It can reveal what community members are actually doing, such as how they respect and treat their natural environment.

Figure S4-25—What Does Observation Show?

- Social relationships between individuals and within groups.
- Social roles.
- Individual behavior patterns/practices.
- Priorities and modes of communication between members of the community.

How to Collect This Information

1. Identify the Subject(s) of Your Observation

(Refer to **Figure S4-26**.)

- ☑ General community features (e.g., landscape, layout, location and condition of parks).
- ☑ Community behavior in a specific situation (e.g., Saturday morning use of the local park, weekly community meeting in the community center, special events, recreational activities).
- ☑ Both.

Figure S4-26—Examples of Observable Community Features and Events

FEATURES:

- Condition of streets.
- Existence of curbs and sidewalks.
- Existence of bike paths.
- Size, quality, type, and condition of housing.
- Existence of gardens, trees, and parks.

EVENTS:

- Community meetings (e.g., PTA, Civic Association).
- Organizational meetings (e.g., environmental groups, Rotary Club).
- Block parties.
- Holiday celebrations.
- Athletic games.
- Music festivals and carnivals.
- Craft fairs.
- School events.
- Earth Day celebrations.
- Community cleanups.
- Religious events (worship services, retreats, community service).

2. Develop an Observation Strategy

- ☑ Determine when (schedule dates and times).
- ☑ Determine where (plan for observation at various locations, events, or times at the same location).

3. Determine Your Role

Determine your role based on the particular situation you are observing. Observations can be conducted in four different ways. Different situations require different roles:

- ☑ **Complete participant.** In this role the assessor is a genuine participant in what he/she is observing. Other participants see the assessor as a participant rather than as an observer. For example, a complete participant observing a riverside cleanup actually participates in the cleanup but does not tell others that they are also gathering observational data. The advantage of this role is that it allows the assessor to observe other participants without influencing their behaviors. A disadvantage of this role is that the presence of the assessor can affect the social situation in which the observation is taking place. For example, a complete participant at a community meeting will affect the social situation in some way by what they say, or do not say. Professional social scientists tend to avoid this role because of its ethical implications.

- ☑ **Participant as observer.** In this role the assessor participates fully with the group under study, but makes it clear that he/she is also collecting observational data. In this role, the assessor tends to already be a part of the group being observed, such as an assessor who is also a member of a local environmental group observing one of its organizational meetings. The advantage here is ethical compliance. A potential disadvantage is that the assessor's presence might cause people to behave unusually, thereby affecting the data that the assessor collects.

- ☑ **Observer as participant.** In this role the assessor clearly identifies him or herself as an observer while interacting with the people being observed. In this role the assessor does not claim to be an actual participant. For example, an observer might participate in a river cleanup day, but their primary role is to observe. Again, a potential disadvantage is the impact of the assessor on the situation.

- ☑ **Complete observer.** In this role the assessor observes a social process or event but does not participate. Those being observed might not be aware that the assessor is collecting data about their behavior. For example, an assessor directly observes the number, age group, and race of people who use a newly created bike path. The advantage of this role is that the observer will not affect those being studied. A potential disadvantage is that the observer will not fully understand why people behave as they do in a given situation.

4. Select Tools/Techniques in Conducting Observation

Use the following tools and techniques to collect information through observation:

☑ **Recording and measuring instruments.** Hand-written notes, video, camera, tape recorder, thermometer, noise meter, stopwatch, map, and ruler are useful tools for collecting information (**Figure S4-27**).

☑ **Community walk.** Simply walking around the community might lend useful insight into the character and people of a place. The layout of the community, types of residences, and residents themselves, or discussions with residents, can contribute significantly to a community assessment.

☑ **Windshield survey.** Driving slowly through a community is another technique that uses observation to learn about a community. In this technique, an assessor uses a local map and simply drives through the community, area by area, recording observations by hand or dictating them to a tape recorder.

5. Record Observation(s)

Adapt **Table S4-3** to suit your needs, using one of these techniques:

☑ By video

☑ Dictation to tape recorder

☑ By hand

Figure S4-27—Observing the Community Using Video

Going out into a community with a video camera can encourage people to express their views and opinions about their community. You can also capture events graphically as they happen. Photos of children playing outside, people shopping at malls, and people crossing busy roads or sitting on porch swings can all influence the community assessment.

With little knowledge and skill you can edit the tapes to produce a strong graphic record of those views and events. However, producing a good-quality video can be time-consuming and expensive. Video cameras can also make people nervous and suspicious about your intentions for videotaping them. Please refer to the **Visual Methods Instructions** for additional information about how to use video and other visual methods to collect data about a community.

Table S4-3—Observation Record

Date: _____

Time: from: _____ to: _____

Place: _____

Role of observer: _____

Features Observed (e.g., what, where)	Behaviors Observed (e.g., who, when, where, what, why)	Events Observed (e.g., what, who, when)

Sources of Extra Help

Technical assistance is available at college or university departments of sociology, anthropology, and history. You might even be able to recruit a college or university methods class to conduct the observation as a class project.

Some Pros and Cons of Using This Method

☑ PROS:

- Observation is a useful method for obtaining information about actual behavior in a community.
- It is relatively inexpensive and can be done any time that the behaviors in which you are interested are occurring.
- Participatory observation can help build rapport between assessors and community members.

☑ CONS:

- Observation is not reliable as a single source of information on a community. It is best used to complement other assessment methods.
- It is time-consuming and usually requires that observers have some level of experience so that they know which community features and behaviors to observe.
- Not all activities and behaviors are demonstrated in public or frequently enough to be observed consistently.

Bibliographic Resources

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Burton, T.L., and G.E. Cherry. 1970. *Social Research Techniques for Planners*. George Allen and Unwin Ltd., London.

Hawtin, M., G. Hughes, and J. Percy-Smith. 1994. *Community Profiling: Auditing Social Needs*. Open University Press, Philadelphia, PA.

National Association of Conservation Districts. 1994. *Information Gathering Techniques*. League City, TX.

Regional Economic Data Research

Regional Economic Data Research provides useful information regarding jobs, employers, revenue, per capita income, total personal income, and other data that can help you understand the economic conditions and trends within a community. Information about industries within a county, the number of employees for that industry, and their total wages are specific examples of information that can describe economic conditions. Regional economic data might indicate how and what natural resources are used to support the community's economic base and can suggest why certain environmental values or perceptions exist in the community.

How to Collect This Information

The Census Bureau publishes *County Business Patterns*. And, the Bureau of Economic Affairs (BEA) provides data from its Regional Economics Program called the *Regional Economic Information System (REIS)*.

County Business Patterns

County Business Patterns provides the following information for each county in the country:

- ☑ The types of industries within the county (e.g., manufacturing, services, mining).
- ☑ The number of people employed in each industry category.

This information is available at federal depository libraries and on the Internet at http://www.census.gov. Or call the Census Bureau at (301) 457-4100 or 1305 for assistance.

BEA Regional Economic Information System (REIS)

BEA's regional economic program provides economic estimates, analyses, and projections by region, state, metropolitan area, and county. *REIS* can give you several different reports:

- ☑ **Total Personal Income by Type of Income and Earnings by Industry,** including total personal income of county/state residents, per capita personal income, and personal income by industry (such as manufacturing, services, and mining).

☑ **Full and Part-time Employment by Industry.**

☑ **Regional Economic Profiles,** including total personal income, per capita income, place of work assessment, total employment (full and part-time), and average earnings per job.

☑ **Transfer Payments by Type of Payment,** including government payments to individuals, medical payments, income maintenance benefit payments (SSI, food stamps, etc.), unemployment benefit payments, and veterans' benefit payments.

☑ **Farm Income and Expenses.**

Also included in the system are one-page worksheets called **BEARFACTS** that summarize economic conditions for an area. **BEARFACTS** give you a simple, but comprehensive overview of the economic trends and conditions of a county and how its economy compares statewide and nationally.

The *REIS* is available via the Internet or on a CD-ROM that can be purchased from BEA's Regional Economic Program by calling (202) 606-5360, or reviewed at a library with CD-ROM materials or government documents. One of the most user-friendly Internet links is **http://sasquatch.kerr.orst.edu/reis-stateis.html.** This site is maintained by the Oregon State University Information Services as part of the Government Information Sharing Project.

Some Pros and Cons of Using This Method

☑ **PROS:**

- Collecting regional economic data is one of the least expensive ways to obtain detailed information about a community's economic makeup.
- It includes information that might not be provided through standard demographic information from the U.S. Census Bureau.
- It can be easily obtained by visiting the library.

☑ **CONS:**

- Data gathered at the regional level mask the economic variations that might be apparent in town or community data.

Bibliographic Resources

U.S. Department of Commerce. Recurring pulication. *County Business Patterns.* U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. For a complete listing of the U.S. Census Bureau Department of Commerce products and services, review their Catalog of Products and Services available at the library or via the Internet.

For information regarding BEA's additional products and reports, call (202) 606-9900.

Surveys and Polls

A survey (or poll) collects information directly from people, usually through a written questionnaire or an in-person or telephone survey guided by a written questionnaire. Survey results can describe community perspectives, such as the percentage of people who like their natural surroundings or who care about specific environmental issues (**Figure S4-39**). One advantage of surveys is that they can link the characteristics (e.g., race, occupation, age, income, education, community residence) of the sampled population with particular responses about actions and opinions that relate to the local environment and community-based environmental protection efforts. They also collect data representative of the given population.

Figure S4-39—What Can Surveys and Polls Tell You?

- Opinions/knowledge about a particular environmental issue.
- Beliefs and perceptions.
- Actions taken or that would be taken under certain circumstances.
- Social, educational, and economic characteristics of respondents.
- Percentages of people who support/believe something about a particular issue.
- Willingness to do certain things.

There are two general types of surveys, self-completed and administered. Both types have their advantages and disadvantages, but neither has been shown to be better or more accurate than the other. Your decision about the type of survey you conduct will depend on the purpose of your survey, available time and financial resources, convenience, and the types of questions you are asking. The following will help you understand the detail involved with both types.

☑ **Self-completed surveys** are written questionnaires with closed or open-ended questions or statements and scales. They are either mailed or hand delivered to the homes of the sampled population and include instructions and paid postage to return them in the mail. They can also be distributed and picked up at convenient locations, such as homes, the post office, or a drop-off box at a park. Another variation of a self-completed survey is one conducted in a group setting, such as a community meeting. In this setting, the survey is distributed to, and completed by, a particular group at a particular time. The methods you use to distribute and retrieve the questionnaire depend on the population you want to sample (e.g., a representative sample of the entire community or only those who visit a riverside park or attend community meetings). (Refer to **Example 1** at the end of this section.)

☑ **Administered surveys** involve one-on-one communication between the person conducting the survey and the person(s) being surveyed. This can be done face to face or over the telephone. In this method, the assessor reads the questionnaire word for word to the person being surveyed and precisely

records the responses. Like the self-completed survey, face-to-face and telephone surveys ask each participant exactly the same questions in the same order, based on a written questionnaire. (Refer to **Example 2** at the end of this section.)

How to Collect This Information

Since the effectiveness of this method depends on its technical design at every stage (e.g., the language and placement of questions, sampling techniques, analysis of results), technical assistance from a professional social scientist, market researcher, or professional pollster is strongly recommended. Please review **Appendix B** for **Conceptual Foundation for Assessment Methods**. The "Extra Help" and "Bibliographic Resources" sections are also useful resources to review before deciding to do this on your own.

1. Steps for Conducting a Survey

☑ **Decide on topics for the survey.** Think about your purpose for conducting the assessment. What do you want to find out about the community, or a particular subpopulation within it? Brainstorm about the questions you want to ask.

☑ **Determine the timeline for administering and completing the survey.**

☑ **Decide on the type of survey** (self-completed, administered) (**Figure S4-40**).

☑ **Select a sample: Probability or Non-probability.** Refer to **Appendix B** for more information.

☑ **Design an introductory letter (for a self-completed survey) or script (for an administered survey)** that explains the reason for the survey, how respondents were selected, the importance of completing and returning the survey, the mechanics of returning the survey, and the guarantee of respondent anonymity/confidentiality.

☑ **Design the survey questionnaire (write questions, instructions).** Test the design of the questionnaire and the wording of questions for clear instructions, clarity, and conciseness with a colleague or a familiar community member.

☑ **Decide whether to identify the survey sponsor.** Standard practice is to identify the sponsor. However, you might choose not to identify the sponsor to protect against

Figure S4-40—Things to Consider when Deciding on Survey Type

- The purpose of the assessment.
- The types of information you want to collect — quantitative or qualitative, facts or perceptions, numbers or reasons.
- Whom you want to obtain information from — individual residents, groups of residents, community representatives.
- Available resources — time, money, staff, or volunteers.
- Available skill base in your group of assessors — questionnaire design, surveying skills, data analysis.

bias. Be sure to consider the ethical implications of your decision. See **Ethics of Assessment in Chapter 4, Step 1**.

☑ **Administer the survey** (mail, drop-off/pick-up, group, face-to-face, or telephone).

☑ **If the survey is self-completed, send out followup mailings to encourage returns.** A 50 percent response rate is the minimum for the results to be representative of the sample.

☑ **Collect the completed surveys.**

☑ **Analyze and interpret the results.**

Resources Needed

☑ Staff or volunteers to help design and conduct the survey. You might want to consider hiring a professional firm.

☑ Updated phone and mailing lists from which to sample the population. Lists can be purchased from marketing firms, such as Donnelley Marketing, the firm that publishes telephone books across the country. These lists define residents by census block and cost approximately $60 for 1,000 names. Lists of residents of a particular locale are also available from telemarketing centers, which use computer software to generate lists based on the desired sample size.

The cost of conducting a survey can vary widely, depending on such factors as the amount of pre-survey planning and preparation required, the type of survey, the sample size of the population being surveyed, and the type of data analysis to be conducted.

Sources of Extra Help

Local university/college departments of sociology, anthropology, political science, psychology, and marketing often have faculty or students who have experience in conducting surveys and polls. They might have already surveyed the same group you are assessing and can share valuable knowledge and data. Other possible sources of technical assistance include county planning departments/commissions, county cooperative extension offices, regional councils of government, state departments of community development, and private survey consultants.

Some Pros and Cons of Using This Method

☑ PROS:

- **Self-completed surveys** are usually quick and easy to administer. They are particularly useful for obtaining a broad-brush indication of issues from a relatively large group of people. The anonymity of a self-completed survey reduces assessor bias and encourages honest responses.
- **Administered surveys** are more flexible than self-completed surveys because of the actual interaction between the assessor and the respondent. Their structure can vary, as well as the way in which they are administered (e.g., in people's homes or at a meeting place, in groups, or on an individual basis). Administered surveys generally yield a higher response rate since they establish an actual human connection. Administered surveys allow the assessor to clarify unclear questions and to use probing questions to collect more complete data.
- **Telephone-administered surveys** can reach a large number of people and reduce surveyor bias while still fostering a degree of the human connection of face-to-face surveys. (Refer to the **Interviewing Instructions** for additional details.)

☑ CONS:

- **Self-completed surveys** tend to result in low response rates because most people never get around to completing or returning the survey to its sender. At least a 50 percent response rate is required for results to be representative of the sample. Otherwise, you'll have to send follow-up letters (along with a new copy of the survey) to encourage respondents to complete and return the survey. Self-completed surveys also require a literate audience. They can be problematic to analyze and compare if open-ended questions are asked.
- **Administered surveys** are more time-consuming and expensive than self-completed surveys because they require trained surveyors and personal contact with every person being surveyed. For this reason, face-to-face administered surveys cannot reach as large a sample as self-completed surveys. Administered surveys are sometimes considered intrusive, and the presence of the surveyor can bias the data being collected.

- **Telephone-administered surveys** assume that every person in the sampled population has a telephone. A sample drawn from a local phone book might overlook those residents without telephones and others with unlisted numbers. Telephone surveys must be relatively short, or respondents will hang up if they think the survey is taking too much time or conflicting with other activities. Generally, a telephone survey should not last more than 20 minutes, although some last as long as an hour.

Bibliographic Resources

Backstrom, C.H., and G. Hursh-Cesar. 1981. *Survey Research*. 2nd ed. John Wiley & Sons, New York, NY.

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Salant, P., and D.A. Dillman. 1994. *How to Conduct Your Own Survey*. John Wiley & Sons, New York, NY.

Visual Methods

Visual images of a community capture social, cultural, ecological, and economic features. Photographs, videos, or drawings can describe the appearance of a watershed or other land area and be used to quickly analyze spatial relationships, land-use patterns, and historical changes. Images of streets, houses, stores, open spaces, civic features, and the people who inhabit these places might stir up an individual's thoughts and feelings about a particular place. This information can be used to assist in protecting existing community features, to identify popular or vulnerable environmental elements of the community, or to provide a tangible vision for the future of the community. You can produce the images yourself or use visual images already made by community members.

Community photo or video projects can also be excellent ways of getting community members to identify what they like, generate pride in their community and environment, and share talent as a community asset.

How to Collect This Information

A visual method uses an image to obtain information about a community — either from the image itself or through an individual's interpretation of or reaction to the image. Visual methods include

- ☑ Visual Preference Survey
- ☑ Community Photographic Mapping
- ☑ Photo-interviewing

These three visual methods might seem familiar to you because, in fact, they are adaptations of other assessment methods — surveying, mapping, and interviewing.

Surveying

- ☑ **Visual preference surveys** rely on visual images from a particular community or region that illustrate a wide range of conditions, including current and ideal, in the community. Images can be photographs, video clips, or even illustrations of community features. As few as 40 images can be used for the survey. The following steps outline how to conduct a visual preference survey:

1. Ask survey participants to view each image for a few seconds (by slide projector, overhead, or actual picture, depending on your resources). After briefly viewing the image, ask each participant to rate the image on a scale (e.g., -10 to +10, with 0 being neutral), depending on how well he or she likes or dislikes the image. Be sure to tell participants there are no right or wrong answers.
2. Record the scores for each image.
3. Add the scores for each image and calculate the group's average score. The average score for each image might be considered the group's collective opinion. Images with the highest negative and positive averages might have group consensus.
4. Show each image again to participants, disclosing the average score. Ask them why they rated each image the way they did. By asking for further explanation on each image, you can learn what community qualities are important to each individual.

Mapping

☑ **Community photographic mapping** uses photographs to capture many aspects of a community — physical characteristics, economic well-being, and cultural vitality — that do not appear on geophysical maps. Photographic mapping of a community can be done over both time and space and can answer many questions (**Figure S4-41** contains more details). These maps can also be displayed publicly for feedback and discussion about preferences, which can help establish a vision for the community. Two common methods of photographically mapping a community are (1) compiling a pictorial map and (2) creating a photographic overlay for geophysical maps.

- **Pictorial maps** consist of a variety of photographs (e.g., angle shots, medium-range shots, and detailed shots) taken from a particular area. You can photograph an area alone or ask other people to participate in this activity. Mount photographs on a wall or poster board in appropriate geographical relationship to one another. Depending on the number and size of photographs, a pictorial map might stretch up to 20 feet in length. In addition to your own observations, you can use questions from **Figure S4-41** to guide the shooting of community photographs and facilitate a group discussion of the resulting pictorial map.

Figure S4-41—What Should I Try to Capture in Visual Images of a Community?

Location: Show boundaries, landmarks, geographical features, signs, anything that defines location.

Appearance: Record the range of building types, character of streets, and visible subsections. Is it hilly or flat? Are streets straight, winding, or a mix? Are buildings short, tall, narrow, old, new? In repair or run down?

Organization: What are the components of the community? How is it arranged? Where are businesses, public places, religious institutions, residences, and the like? Capture wide shots to define relative location and closeups to show detail.

Functions: Record a range of activities, services, functions. Who do businesses, residences, restaurants, schools, and recreational facilities serve? Record the orientation of places toward clientele and the character of who comes, goes, for what, where, when? Wide shots show relationships and context; closer shots show details and identification.

People: Who lives here? Who comes here? Works here? Is the population homogeneous? Mixed? Young? Old? Transient?

Transportation: How do people get around? What are the major transport arteries and pedestrian routes? Where are bus lines, crossroads, transfer points, parking lots, congestion?

Residential Areas: What are the character and condition of buildings, sidewalks, and streets? What is the range of building styles, age, nature of units (single, double, multiple)? Look for details that might provide clues as to the cultural and economic character of inhabitants, age ranges, living styles.

Daily Cycles: Record the flow of people, activities, functions during the cycle of a day. Who goes, comes, when and where? When and where are the peaks of activities?

History: What can be seen that reflects the past? Old buildings, signs, statues, sidewalk markings, stores with declining patronage, physical characteristics of past functions.

Change: What is changing and what is not? What is newly constructed and where? What is demolished and where? Are people and businesses moving in or out? How has the landscape changed?

Source: Adapted from Collier, 1986

- **Photographic overlays** actually transfer photographs of a community to geophysical maps, showing a more detailed layer of information about the community. The primary difference between this method and pictorial maps is the use of a geophysical map to provide context. In this method, photographs can relate culture, ecology, and economy to a community as it is depicted on a geophysical map. Obtain or develop an enlarged map of your community. Photograph the selected area to capture the aspects you want to examine (e.g., housing conditions or mix of building types). Use push pins or clear tape to arrange the photographs along the boundaries defined on the map. The resulting photographic overlay provides a reference for comparison between actual conditions described by the photographs and the geophysical features delineated by the map.

Interviewing

☑ **Photo-interviewing** integrates visual images with interviewing to reveal an individual's thoughts and emotions about a particular event, place, or relationship. In photo-interviewing, the photos you choose serve as reference points in the interview. Your questions might center on one photo or a series of photos, depending on the type of information you want to gather from the interviewee. Photos can also be used creatively in focus groups, surveys, and other methods. See appropriate instructions for more detail.

Resources Needed

Visual Preference Survey

☑ **Required:**

- Visual images of the community. Images might include photographs, video clips, drawings, slides, and so forth. Depending on time and resources, you might choose to shoot or draw the images yourself, enlist the help of local artists, or ask community members to contribute images they might have collected over time.

☑ **Optional:**

- Slide projector.

Community Photographic Mapping

☑ **Required:**

- Photographs of the community.
- Pictorial maps — material for mounting photographs (e.g., foam board, long rolls of paper, push pins, tape).
- Photographic overlays — enlarged maps of the photographed area, push pins.

Photo-interviewing

☑ **Required:**

- Visual images of the community. If you want to collect information on a particular topic or feature, the images used should focus on that topic or feature.

Some Pros and Cons of Using This Method

☑ PROS:

- Photographic images provide something tangible for a person to comment on and are easier to provide feedback on than a verbal description.
- People might feel less pressure/stress when asked to answer questions about a picture than about themselves or the people around them.
- Gives people the opportunity to see places and people in their communities for the first time or from a new perspective.
- Provides a reference point for discussion — people can say, "See, look at this."
- Provides a visual analysis of trends that might not be readily apparent otherwise.

☑ CONS:

- Time to compile enough photos that thoroughly describe a community.
- In a group setting, people might be reluctant to offend others or speak negatively of an area.

Bibliographic Resources

The Center for Livable Communities. *The Community Image Survey.* http://www.lgc.org/techserve/cis/index.html or 1414 K Street, Suite 250, Sacramento, CA 95814; fax (916) 448-8246.

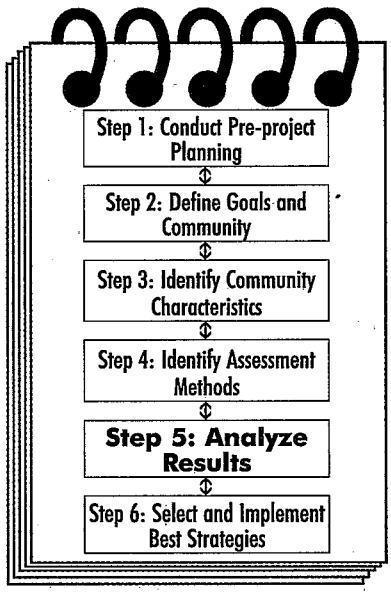
Collier, J., and M. Collier. 1986. *Visual Anthropology: Photography as a Research Method.* University of New Mexico Press, Albuquerque, NM.

Kaplan, R., and S. Kaplan. 1989. *The Experience of Nature: A Psychological Perspective.* Cambridge University Press, Cambridge, MA.

Nelessen, A. 1994. *Visions for an American Dream.* American Planning Association, Chicago, IL.

Project for Public Spaces, Inc. http://www.pps.org or 153 Waverly Place, 4th Floor, New York, NY 10014; phone: (212) 620-5660; fax: (212) 620-3821; e-mail: pps@pps.org. This organization has an extensive slide library consisting of more than 500,000 slides of public spaces from cities in the United States, and around the world. These slides are available as a resource for a fee. Project for Public Spaces (PPS) organizes its slide library into the following categories: amenities, public art, markets, open spaces, gardens, transportation, buildings, geographic locations, management, parks, people, and retail.

STEP 5:
Analyze Results



This step provides an overview of how to transform raw or partially analyzed data into meaningful information and an accurate assessment of a community. **Figure S5-1** presents some hypothetical scenarios that you might be facing at this stage of your assessment project.

As you take the next steps, consider data storage, organization, analysis, and presentation simultaneously so that you choose compatible formats.

1. **Store** the data you have collected in a way (e.g., paper, a computer diskette) that makes it readily accessible.
2. **Revisit** Goals, Community Characteristics, and Questions to reestablish what you originally wanted to know.
3. **Organize** the data by method.
4. **Analyze** the data by type (quantitative, qualitative, graphic). Use the simplest methods that will accomplish your needs. This chapter discusses methods that don't require extensive knowledge of data analysis and more complicated methods for which you might need a consultant.
5. **Summarize and present** your findings in a way others can understand.

During and upon completion of Step 5, refer back to **Chapter 3** for **Step 6: Select and Implement Best Strategies**.

Figure S5-1—Hypothetical Scenarios After Data Collection

- You conducted a series of interviews and surveys to answer specific questions about the community. You now have stacks of interview notes and completed surveys organized in no particular order.
- You downloaded a large amount of demographic data on a particular county from the Census Bureau's World Wide Web site onto a computer diskette. You have done nothing further with the data and are unsure about how to proceed.
- You conducted public meetings to solicit community input on the future of a national forest adjoining the community. You summarized your notes from these meetings into a written report, and you feel you are now ready to recommend a management plan for the forest area to the local U.S. Forest Service field office.

General Comments on Data Analysis

Comparing Results from Different Methods to Confirm Validity (Triangulation)

Triangulation is a technique used to ensure that assessment results are consistent, lessening the chance of bias. Triangulation is accomplished by comparing the results from at least three methods. Analysis of the results of only one assessment method might not fully answer specific questions, or might be misleading. In the triangulation process, you can also combine quantitative and qualitative data to tell a more complete story about a particular topic. For example, a poll shows that 69 percent favor a recreational park; a vote observed during a

school PTA meeting showed a majority of parents favored a recreational park; select interviews with county decision-makers, local residents, and the organizers of the local adult softball league also found support for a recreational park. Comparison of these data confirms without a doubt the presence of support for a recreational park. Further information on triangulation can be found in **Appendix B**.

What if Clear Answers to Your Questions Are Not Emerging?

What should you do if, in the course of analyzing your data, no clear answers to your questions emerge? Before you panic, remember that the answers you don't find are sometimes as important as the ones you do find. References at the end of this chapter can help you understand and deal with uncertainty in your analysis; however, you might only need to look a bit harder at your data.

Raw data, particularly in large quantities, will not provide easy answers without effort on your part. If you carefully organize and analyze your data, many clear answers should emerge. However, you might find ambiguous, seemingly conflicting answers, or no answers at all. For example, respondents might have conflicting opinions on the same issue(s). To resolve this problem, try to determine the characteristics of the people surveyed to see if they are from different neighborhoods or socioeconomic backgrounds. Or analyze the answers to other questions to see if they suggest the reasons behind conflicting opinions. In general, you can usually use other data you have gathered about the individual, group, or topic to help clarify the picture.

Sometimes, however, you won't have enough data on the individual, group, or topic; in other words, a data gap exists. In this situation, you should take the following steps:

- ☑ Determine if your analysis has answered your questions.
- ☑ Determine if you have missed any key groups or sources of data.
- ☑ Examine your sampling techniques (**Appendix B** contains information about sample size and composition) to make sure you properly sampled your targeted groups.

- ☑ If gaps are in critical areas (e.g., who the community decision-makers are), or if results highlight new important questions, revisit the methods and gather more data.
- ☑ If gaps are not critical, decide if you can leave them unfilled.

Reaching Agreement/Consensus on Results

Always remember that your assessment team is just that — a team. Moreover, it's a team with a variety of backgrounds and training. One or more members of the assessment team might not be satisfied with the results of the analysis or might feel that important questions were ignored. To avoid conflict within the team, and possible dispute about key findings, the entire team should answer and agree on the following questions before the analysis phase is completed:

- ☑ Did we miss anything important?
- ☑ Is there anything else we want to know?
- ☑ Do we all agree on the findings from our assessment?
- ☑ Other questions (think of any other potential sources of disagreement among team members, and try to address them before bringing this phase of the project to a close).

Use tools in **Step 4, Meetings**, to assist you if needed.

Storing Information

You must store your data in a way that will facilitate data analysis and answer your specific questions. The data you've gathered from individuals, documents, and databases probably exist as piles of documents, lists of numbers, recorded audiotapes, written meeting notes, completed questionnaires, newspaper clippings, marked-up paper maps, or computer data. In storing data, think in terms of both their immediate and long-term use.

Paper Documents and Files

You'll probably use paper to organize and store much of your data, such as interview responses and notes from meetings and workshops. Be sure to include information about the source of the data (e.g., the date and time of an interview, the name of an interviewer, the author and date of a newspaper article). Store all documents so they can be quickly and easily found.

Computerized Documents and Files

When dealing with anything more than a small amount of data, you really should store it in a computer. This makes finding, and later analyzing, data much faster than handling sheets of paper. Even a small survey with only 10 questions mailed to a sample of 200 individuals can easily result in 2,000 answers that must be organized and analyzed. To avoid duplicating the effort of writing on paper and later entering data into a computer, try (when possible) to enter data directly into a computer as they are collected. An example would be an interviewer typing into a computer while conducting a telephone interview.

Computer programs can also help you store and analyze data. Spreadsheet programs like Microsoft Excel, Lotus 1-2-3, and Quattro Pro, and databases like Microsoft Access, dBASE, and SPSS can store information and perform fairly sophisticated statistical analyses.

Revisiting Goals, Community Characteristics, and Questions

As you organize and analyze your data, remember your goals and your original community characteristics and questions. Use these to guide your analysis. Did you get answers to your questions? Also allow your findings to direct you to ask new questions. Pay attention to data that do not necessarily support your goals. These data can help you understand how community perception and sentiment about an issue might differ from your own.

Conduct quality assurance and quality control (QA/QC) checks. After entering all of your data, check the accuracy of your data entry. One way to do this is to have somebody other than the person who entered the data review it. Or use "redundant data entry," whereby you enter your data several times (thereby creating copies of the same data on different pieces of paper or separate computer data sets) and then compare the results. You can also look for inconsistencies visually or have a computer find them for you. QA/QC is critical to the accuracy of the conclusions you draw from your analyses.

Organizing Data by Method

Data from each method should be organized independently. For example, survey data are organized separate from focus group results. You might want to write a summary statement for each assessment method you used; this can help answer specific questions about the results of a particular method. Categorizing data

by methods allow you to check the validity of the data by comparing the results of one method against those of other methods, known as triangulation (refer to **Appendix B** for more details).

Analyzing Data by Type

Depending on the format of the raw data you have collected, the data might be numbers (quantitative), words (qualitative), or pictures (graphic). Certain methods collect certain types of data (e.g., focus groups collect qualitative data, census research collects quantitative data). To be of use in answering your questions about the community, these types of raw data need to be properly organized and analyzed.

Analysis is the systematic examination of raw data for themes and patterns, and explanations about why they exist (i.e., relationships). **Analysis attaches *meaning* to the raw data.**

Although you should be able to use most of the techniques described here, you might eventually need help with analysis. Some particularly useful texts on data analysis are listed at the end of this chapter. Seek professional expertise if you are not confident in your ability to accurately analyze your data.

Organizing Quantitative Data

☑ **Quantitative data** are data in the form of numbers. They measure units such as money, time, and number of people. For example, a survey on environmental values might generate the following quantitative data:

- Number of people surveyed: 400
- Number of respondents responding "Yes" to the question "Do you favor the cessation of logging in forests that have been identified as habitat for endangered species?": 275
- Number of males responding "Yes" to that question: 123
- Number of females responding "Yes" to that question: 152

In general, quantitative data should be entered into tables because such data are much easier to analyze when organized into columns and rows on paper or computer. The following steps are recommended for organizing quantitative data into tables.

☑ **Create tables to store data.** Tables are simply collections of rows and columns designed to store data in an organized manner. Design your tables to be compatible with the analytical methods you plan to use. The first two rows of a

table of survey data could look like **Table S5-1**, with the columns labeled C1 through C5:

Table S5-1—Survey Data (Sample)

C1: ID#	C2: Gender	C3: Age	C4: Years of Education	C5: Annual Income
0001	F	31	16	$ 38,000
0002	M	56	12	$ 51,000

☑ **Document the way data will be organized in the table.** It is important to document the way you organize data from a particular assessment method in a table. In the example table, labels describe different columns. For instance, Column label C1 lists the identification number unique to each completed survey (keeping the identity of each respondent confidential). Column label C2 lists the gender of the respondent, label C3 lists the age of the respondent, and so on. Labeling your data in this way facilitates rapid analysis.

☑ **Clean data/prepare data for analysis.** It is quite common for mistakes to be made when data are collected. In this step, you visually scan the data for apparently inappropriate values or responses. For instance, if a self-completed survey question asked, "On average, how many hours per week do you typically spend at the office?" and a respondent answered, "400," you should flag the answer as inappropriate, review the original data source, and correct it or leave the particular answer blank. This step is critical because inaccurate data can lead to faulty analyses and inaccurate results.

When using computer software to perform statistical analyses, you must assign a **missing variable** to inappropriate or missing answers rather than leaving them blank or inserting what you assume to be the correct answer. Missing variables are numbers that you choose to designate inaccurate or incomplete responses when performing quantitative analysis. The numbers themselves should be so high or low that you will not confuse them as an actual answer to the question. For example, if a few respondents did not answer a question about their age, you might insert the arbitrary number "00" into the spreadsheet and designate "00" as a missing variable. Failure to create and use missing variables will make your results inaccurate because the computer will not correctly factor in the missing responses when it performs statistical operations.

☑ **Enter data into tables.** There are two primary ways you can accomplish this:

- If there is a relatively small amount of data or you feel more comfortable working on paper, you can enter the data on paper.
- If there is a moderate to large amount of data, you should enter the data into a computer since this will make analysis much easier. Useful computer programs are mentioned under "Storing Information: Computerized Documents and Files."

Performing Quantitative Analysis

Statistics — both descriptive and inferential — are commonly used in quantitative analysis.

☑ **Descriptive statistics** draw a picture of the study sample or population using summary data such as counts, averages, and percentages. These types of statistics can also show the relationships between multiple variables, such as gender, recreational activity, and environmental values. For example, statistical analysis of survey questions asking about each of these three variables can tell you the percentage of surveyed women who both fish and care about the environment. Depending on the question you are trying to answer, you might want to compare this percentage with the percentage of surveyed men who fish and care about the environment. This comparison allows you to look for similarities and differences related to the gender of the respondent. Or, you might compare the percentage of women who fish and care about the environment with the percentage of women who do not fish but do care about the environment. This comparison could shed some light on the relation between fishing and environmental values among women. Descriptive statistics are generally easy to use and can help answer many common questions about raw data.

☑ **Inferential statistics** are primarily used to further analyze the results from descriptive statistics, such as how accurate the average you calculated actually is, how it differs from another sample, whether there are correlations between the two samples, and so forth. It is less common for inferential statistics to be used in an assessment, but they are sometimes used, depending on the needs of the assessment. See **Table S5-2** for guidance on using descriptive and inferential statistics.

Table S5-2—Types of Statistics Used for Quantitative Analysis

TYPE OF STATISTIC		WHEN TO USE	COMMON MEASURES OR TESTS
Descriptive Statistics		To answer simple questions about your raw data by calculating a summary measure of one group of data, looking at one element, or variable, at a time. Examples include "how many people said...," "what's the average number of...."	• Mean (average) • Median (midpoint) • Percentage (proportion) • Minimum • Maximum
Inferential Statistics	**Parametric Analysis**	To compare the elements or variables related to two or more groups of people, or the same group before and after an event. Example: to determine whether the percentage of people supporting a particular idea differs between several groups; or, to determine whether sentiments differ before and after a public presentation on the issue.	• T-test (to compare two averages or percentages between two groups) • Paired T-test (to compare two averages or percentages of the same group before and after an event) • Analysis of Variance (to compare averages between two or more groups) • Chi-Square (to compare percentages between two or more groups)
	Nonparametric Analysis	Use when your data cannot meet the assumptions of parametric statistical tests, such as when the size of your sample is small.	Wilcoxon rank sum test (the nonparametric equivalent to a T-test)

Computer software programs can help you organize and code data and perform specific operations. However, none of these software packages will analyze the data for you. The decisions about which operations and which data to use and how to understand the results will still depend on your own analytical capabilities. If you want to perform statistical operations on your data, such as cross-tabulations and tests of statistical significance, use SAS, Systat, STATA, dBASE, or Statistical Package for Social Sciences (SPSS) software. Cross-tabulations allow you to control for one variable, such as gender, while comparing two other variables. Tests of statistical significance determine the extent to which the relationship between two variables is real or coincidental. Other software programs — such as ETHNOGRAPH — can help you organize, code, and analyze qualitative data. The information resources listed at the end of this chapter provide more details on the methods described in **Table S5-2**.

Just as quantitative data are numerical, so is quantitative analysis. Quantitative analysis techniques can analyze qualitative data as well, provided the data are coded appropriately. If you

wanted to quantitatively analyze interview responses about river use, you would assign numerical or letter codes to each answer:

- ☑ 1 = fishing
- ☑ 2 = swimming
- ☑ 3 = boating
- ☑ 4 = peace of mind

These numbers are codes for the actual words and can be entered into a computer database. This process prepares qualitative data for quantitative analysis; even though the original data are qualitative, the coding process has translated it into numbers and the end product will be numerical (e.g., 75 percent of those interviewed said they use the river because it gives them "peace of mind").

Quantitative analysis can be applied only to data derived from one method at a time. For instance, if you conducted a self-completed survey of a random representative sample of 200 people and you also personally interviewed 15 people selected by a snowball sampling technique, you cannot quantitatively analyze the raw data from both methods together. In this case, you would have to analyze the surveys and the interviews separately and then compare the results and summarize the similarities or differences, trends, and patterns. Even if you asked identical questions in the survey and the interviews, the different sampling techniques (random vs. snowball) and different methods (self-completed vs. face-to-face) would affect the data you collected. Were you to combine these raw data before analyzing them, your results would be skewed and your conclusions would be inaccurate.

Organizing Qualitative Data

Qualitative data are in the form of words (e.g., terms, notes, stories, quotations). Qualitative data are usually not as easy to analyze and summarize as quantitative data but are often crucial to describing certain aspects of a community that quantitative data cannot. You can organize qualitative data through the following general steps:

- ☑ **Produce a written transcript** of audiotapes or videotapes of interviews, focus groups, meetings, and other sources of raw data that were not originally recorded in writing. To create a written transcript, listen to the audio/video recordings and write down (preferably on a computer word processor)

exactly what you hear on the tapes. Transcribing audio/video tapes will make it easier for you to compare such data with data from written sources, or other tapes, as you look for common themes and patterns.

☑ **Create codes,** or labels, that represent themes that are of interest to you, that keep "popping up," or are answers to particular questions asked in an interview or a survey. Codes serve as shorthand to help you conveniently organize data. The codes can be recorded in the margins of your written transcript, or you can create a separate "code book" that lists each code and what it represents. See **Chapter 4, Step 4 Content Analysis** for more details.

Codes can be assigned by hand, or computers can code transcripts for you. If you choose to use a computer, the required programs can be somewhat expensive, but necessary when you have large amounts of data. One publisher of such software programs is Sage Publications. Further information is available at http://www.sage.pub.com.

Performing Qualitative Analysis

Just as qualitative data are in the form of words, so is their analysis. Although not as straightforward as quantitative analysis, qualitative analysis produces very useful results. It can combine different sources of qualitative data, such as interview responses, observations, and conclusions from cognitive maps. In the analysis, you can review the combined raw qualitative data, looking for patterns, themes, or relationships. Keep an open mind about what the raw data might reveal.

One of the benefits of qualitative analysis is that it allows you to include the contextual meaning of collected data in the analysis. For example, you ask community members, "How do you use the nearby river?" Their responses might include "fishing," "swimming," "boating," and "for peace of mind." These answers are qualitative data because they are expressed in words. Should you choose to qualitatively analyze these data, you might choose "recreation" and "spirituality" as codes to categorize the different responses. In this case, "fishing," "swimming," and "boating" could be coded as "recreation" and "peace of mind" as "spirituality." However, if you learn in an interview that one of the respondents is a long-time waterman who considers "boating" to be a spiritual connection with God's creation, you might prefer to code that data as "spirituality" rather than

"recreation." In some cases, the context of data can give the data a different meaning.

Some common qualitative analysis methods include the following:

- ☑ **Content analysis** enables you to organize and analyze key themes and patterns. For example, conducting content analysis on a long focus group transcript might reveal that community members have several types of complaints about a new recycling center. These can be categorized and coded as "complaints" and then further subcategorized and coded by the most common complaints as "noise," "inconvenient location," "bad smell," and "other." Other sources of raw data, such as meeting notes and interview responses, can be examined to see if the data collected by these methods also fit into, and support the use of, these codes. See the **Chapter 4, Step 4 Content Analysis** for step-by-step guidance on using this method to both collect and analyze qualitative data.
- ☑ **Issue analysis** can be done by summarizing all data on a particular topic, such as a community characteristic or perceptions of the value of a riverside cleanup project. These summaries can be used to get the "full picture" on any given topic. Summaries can help you determine the relative value of an issue by comparing different issue summaries.

Organizing and Analyzing Graphic Data

Graphic data can include pictures, maps, and diagrams. Graphic data are collected by such methods as background research, maps and geographic research, visual methods, and social mapping.

Organize and analyze graphic data in ways that make sense to you. For example, if you use a street map to count the number of parks in a community, you have collected quantitative data. If you note from a concept map created by community members that they perceive the cause of their drinking water contamination to be "rusted pipes," you have collected qualitative data.

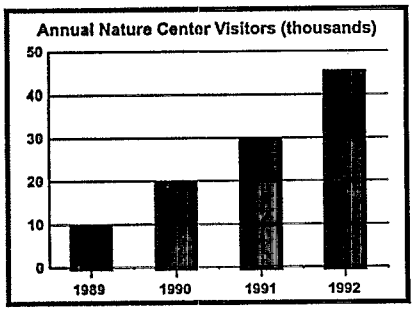
Summarizing and Presenting Results

Present your results so that they are understandable and useful for decision-making. Here are suggestions for presenting your analyzed data most effectively.

Written Summaries

Almost every presentation of analyzed results involves some written text. And there are a variety of formats from which to choose. If your purpose is informal, use brief fact sheets, short summaries, memoranda, or letters. If the results are being reviewed by a wider audience, it might be appropriate to write a summary report on your findings. Summary documents usually contain some of the elements of visual summaries, such as tables, graphs, and charts. Written reports and other documents can include comprehensive information that allows the reader to delve deeper into the assessment detail, thus possibly arriving at more sophisticated understandings.

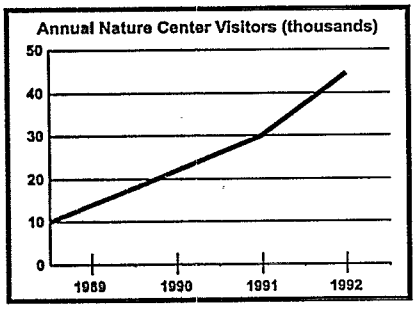
Bar Chart



Visual Summaries

Visual summaries present data in ways that are quickly understood. Common formats include tables, charts, graphs, maps, drawings, and photographs — all dedicated to the premise that "One picture is worth a thousand words" (see the three examples that follow). Visual summaries needn't be expensive or high tech, but if done well, they will likely be understood, thus producing feedback on your assessment efforts and project goals.

Line Graph



Table

Annual Nature Center Visitors	1989	1990	1991	1992
Number of visitors per year	10,000	20,000	30,000	45,000

Disclosure

At this stage of the project, you must consider how to release the results of your analysis to those outside your team. Community cultural assessment is grounded in the philosophy that community members are partners in the project. Therefore, they have a right to know the findings, especially since they have contributed their own time to answer your questions. At the same time, once the results of a community assessment are released, you will lose control of how and by whom they are used. For this reason it is important to be sensitive to the ethics discussed in **Chapter 4, Step 1**. You must especially protect the identities and privacy of those who participated in your project. In addition, when using the assessment results, you should be

sensitive to community concerns, including business concerns about proprietary information. Further discussion on communicating with the public can be found in **Chapter 3, How to Use Results from the *Guide*.** Review this discussion before releasing results to a larger audience.

Bibliographic Resources

☑ Internet:

In addition, the following web site contains links to descriptions of numerous computer statistical programs: http://ourworld.compuserve.com/homepages/Rainer_Wuerlaender/statsoft.htm.

☑ Publications:

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Insert D

New York State
Department of Environmental Conservation / Department of State

Brownfield Opportunity Areas (BOA) Program
Frequently Asked Questions: Site Assessments

1. What is a BOA site assessment and how should it be utilized in conjunction with the BOA program?

A BOA site assessment is comparable to a Phase II Environmental Site Assessment (ESA). BOA site assessments should be conducted in accordance with ASTM E1903-97 (2002), the industry standard for Phase II site assessments. Additional information on the ASTM standard for Phase II ESAs can be found at http://www.astm.org/ (search for "Phase II Active Standard").

As with a Phase II ESA, the primary objective of conducting a BOA site assessment is to provide sufficient information regarding contamination to assist in making an informed business decision about the property. In order to be eligible for a site assessment, the State must determine that additional environmental information regarding contamination for the property is necessary to determine a technically and economically viable land use for the BOA.

While ASTM E1903-97 (2002) provides flexibility in determining the level of assessment for each site, Phase II ESAs are typically not sufficient for remedy selection. However, a Phase II level of assessment is sufficient for land use planning purposes, and allows assessment to be completed more quickly. The level of assessment required may depend on the proposed land use; for example, a site proposed for residential use may require more work than a site proposed for industrial use.

2. What factors should be considered when selecting property for a site assessment? How is the site defined and can it include multiple tax parcels?

First of all, the site must be a strategic brownfield site in the context of the BOA program as determined by the grantee in consultation with the State. Secondly, the State must concur that additional environmental information regarding contamination for the site is necessary to determine a technically and economically viable land use for the BOA. If multiple site assessments are requested, the applicant should provide a prioritized list of sites.

In identifying a property or properties within a BOA for a site assessment, the "site" should have definite and identifiable boundaries. A property can be defined for the purposes of a site assessment around one or more area(s) of concern and may include one or more tax parcels. Please note that if multiple tax parcels are included in the site, the site assessment report will relate to the site and not each tax parcel (although the report may be structured to summarize results by tax parcel if appropriate). The budget requested should be for the site and not broken down by tax parcel.

3. What factors should be used to identify a site as a strategic brownfield site?

Factors that grantees may use to identify strategic sites may include but are not limited to:

- overall importance to the community and the revitalization effort;
- location;
- ownership and willingness of owner to allow access;
- property size and capacity for redevelopment;
- potential to spur additional economic development or positive change in the community;
- potential to improve quality of life or include new public amenities;
- community support for proposed projects for the site; and
- adequacy of supporting or nearby infrastructure, utilities and transportation system.

For a strategic site to be eligible for site assessment funds, it must meet the following additional criteria:

- be any real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant;
- additional environmental information must be necessary to determine a technically and economically viable land use for the BOA;
- must be owned by a volunteer (as defined at 6NYCCR 375-3.2) or a municipality (as defined at 6NYCCR 375-4.2);
- cannot be a Class 1 or 2 site on the Registry of Inactive Hazardous Waste Disposal Sites in New York;
- cannot be on the Federal National Priority List;
- cannot be a permitted Resource Conservation and Recovery Act site (note: interim status sites are eligible);
- cannot be subject to an order for cleanup under Article 12 of the Navigation Law or Article 17 Title 10 of the Environmental Conservation Law;
- cannot be subject to an enforcement action under another State or Federal remedial program.

4. Does the applicant have to document that it is either the owner of the property or has a written access agreement with the owner(s) of the property to perform a site assessment?

The applicant must include with its Step 3 application proof of ownership (deed) or certification that the site owner will allow access. A certification form is available from the State.

5. What activities/tasks are eligible under a BOA site assessment?

Eligible activities are those tasks normally performed under a Phase II ESA (see question #1). Please note that the assessment of indoor contamination (e.g. asbestos containing materials), while not addressed by ASTM E1903-97 (2002), is often performed as part of a Phase II ESA and may be eligible for a BOA site assessment if this information is necessary to determine a technically and economically viable land use for the BOA.

6. Can site assessment funding be used to evaluate environmental information to determine a technically and economically viable land use?

While this activity is eligible for BOA funding, it would not be reimbursed with site assessment funds. Funding for this activity should be included in the budget for the development of the BOA plan.

7. If a grant is awarded that includes funds for site assessments, can a site be replaced after the award?

The decision would be made on a case by case basis. Factors to be considered would be the reason for replacing the site, what work was performed, how much money was spent on the site that is being replaced and whether sufficient time and money exists to start another site. In addition, the proposed site would have to be reviewed and approved following the same process used during the grant application process.

8. Can one contractor be procured to perform multiple site assessments?

Yes, one contractor can be procured to perform multiple site assessments. A site assessment report (Phase II report) would be required for each site.

9. What information is required to apply for a site assessment?

Funding for a site assessments must be requested as part of a Step 3 grant application. The applicant must complete a Step 3 Application Site Assessment Supplement for each site assessment and include it with its Step 3 application.

The goal of a Phase II ESA as defined in ASTM E1903-97 (2002) is to evaluate recognized environmental conditions identified in a Phase I ESA or transaction screen process (industry standards ASTM E1527-05 and ASTM E1528-06, respectively). Activities required to develop reports comparable to a Phase I ESA or transaction screen are eligible under Step 2 of the BOA process, once a property has been identified as a potential strategic site.

10. Is there a limit to the number of site assessments that will be approved under one BOA? Is there a dollar amount limit for each site assessment or the total dollar value of site assessments that will be approved under one BOA?

There are no strict limitations however, the average cost for a Phase II typically ranges from $75,000 - $150,000 depending on the size, location and complexity of the previous site uses. The number of site assessments and the total amount approved for site assessments under one BOA would depend upon the size of the BOA and the justification for the site assessments. The availability of funding will also play a factor.

11. What state agency will oversee the performance of the site assessment? Can the grantee delegate its grantee responsibility for the performance of the site assessment?

The New York State Department of Environmental Conservation (DEC) will oversee the performance of site assessments. The grantee can not delegate any of its grantee responsibility

regarding site assessments. The grantee can procure a contractor to perform the site assessment; however, the grantee would be responsible for making sure the work was done appropriately, in accordance with the grant requirements, within budget and that it resulted in acceptable work products.

12. Does the BOA program provide any liability releases in regards to performing site assessments?

No; there are no liability releases provided under the BOA program.

13. What happens if during the course of the BOA planning process an environmental situation is uncovered that may require immediate action?

DEC should be notified of any environmental situations that may require immediate action in the time frames set forth in Environmental Conservation Law. DEC's response will depend on the situation.

If the site assessment findings give DEC reason to believe the site may be a significant threat to public health and the environment, DEC would be obligated to follow up on this information. If the site is determined a significant threat, appropriate parties would be given the opportunity to address the site under one of the State's brownfield programs (Brownfield Cleanup Program (BCP), Environmental Restoration Program) before the State would consider listing the site on the Superfund Registry and addressing the site under the Superfund Program. If the contamination includes petroleum, the site would be referred to DEC's Spill Response program.

Please note that all petroleum, chemical storage, and out-of-service tanks discovered as part of the BOA site assessment must be registered and/or closed in accordance with existing regulations. Furthermore, any containment vessels discovered containing any contaminant must be removed and disposed of in accordance with all applicable State and federal requirements.

14. Are there different eligibility criteria under the BCP for sites within a BOA?

No, the eligibility criteria under the BCP is the same for all proposed sites whether within a BOA or not.