Lower Columbia River Estuary Plan

Lower Columbia River Estuary Program
Comprehensive Conservation and Management Plan

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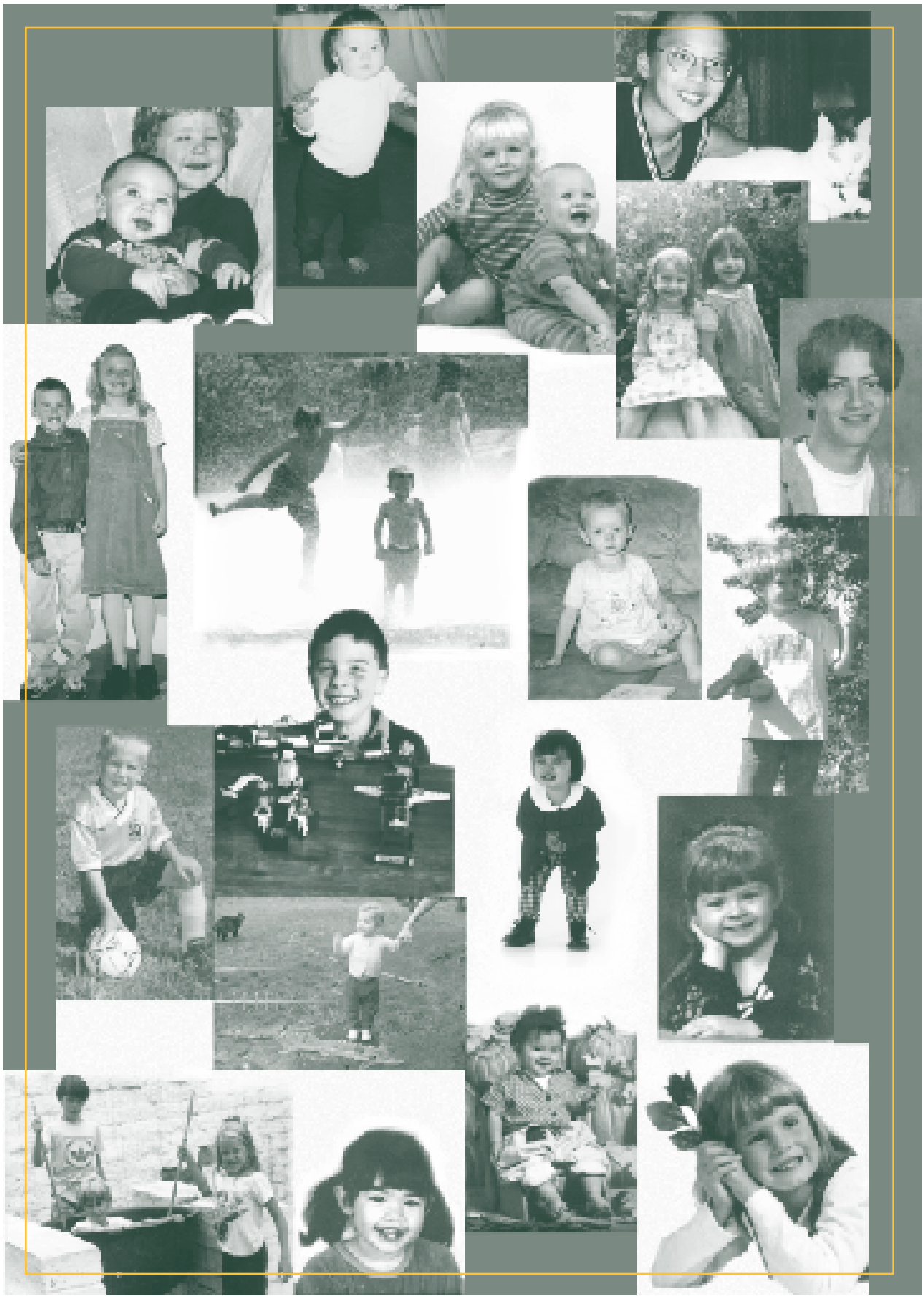
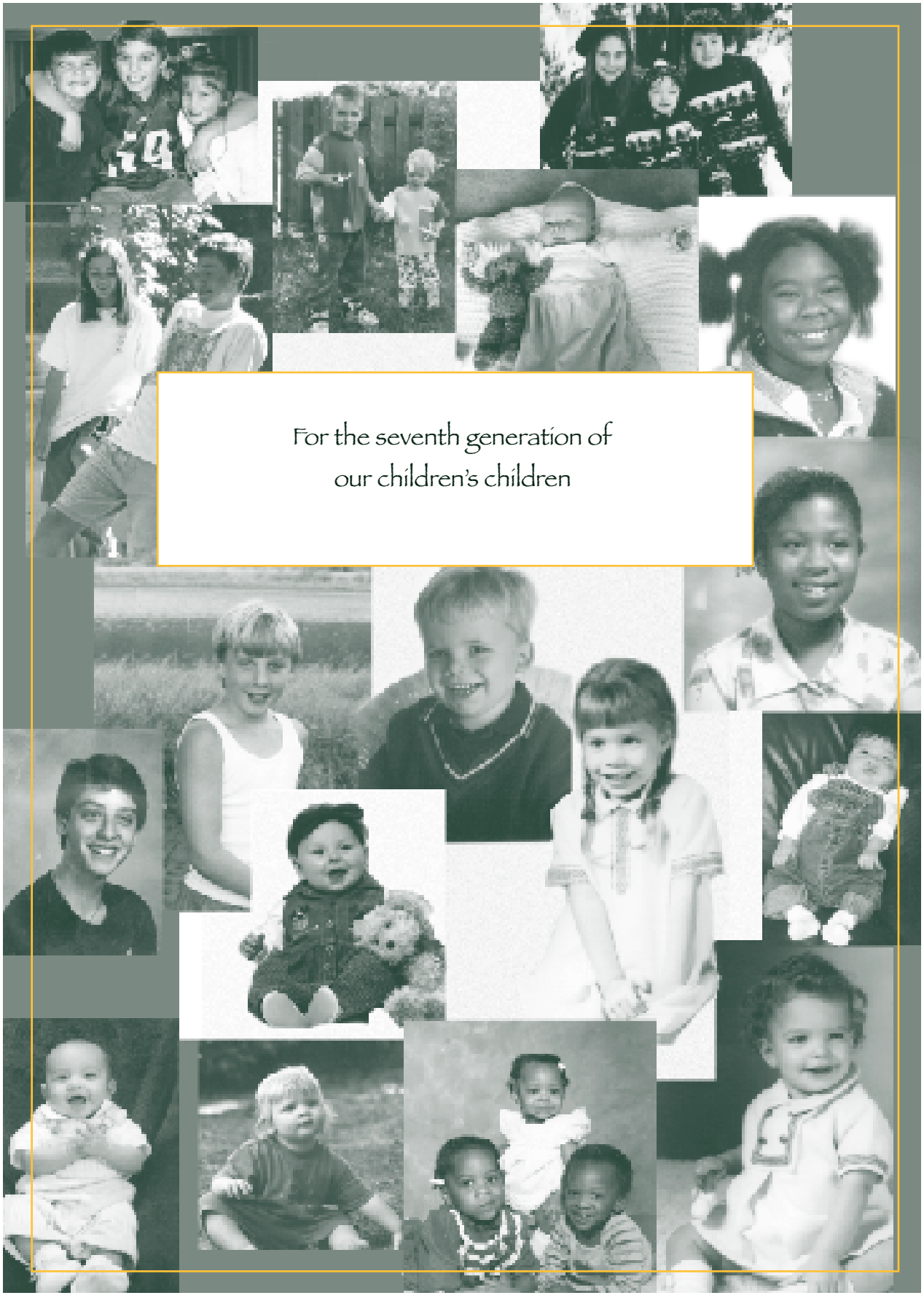
The Lower Columbia River Estuary Program is supported by the States of Oregon and Washington and the U.S. Environmental Protection Agency.

Eventually, all things merge into one,
and a river runs through it.

Norman Maclean





For the seventh generation of
our children's children

THE LOWER COLUMBIA RIVER ESTUARY PROGRAM

Comprehensive Conservation and Management Plan

VOLUME 1

JUNE 1999

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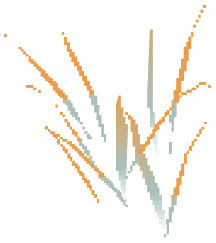

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Preface

This *Comprehensive Conservation and Management Plan* provides a broad framework for managing and protecting the lower Columbia River and estuary. It is a guide for preserving and enhancing water quality and habitat, to be implemented by federal, state, local, and tribal governments; river users; environmental interests; and citizens of the region.

As part of the National Estuary Program, the *Management Plan* focuses on the 146 miles of tidally influenced waters below Bonneville Dam. This river reach links ecosystems and economies north and south of the Oregon/Washington border, and east and west between the more heavily populated, wetter coastal valleys and mountains and the more sparsely populated, arid interior of the Columbia Basin. In addition to offering specific actions for the lower river and estuary, the plan provides a framework for coordinating the needs of the lower Columbia within broader, basin-wide considerations.

A diverse group of stakeholders participated on the Management Committee that prepared the *Management Plan*, with considerable input from the public. The plan is the product of a painstaking consensus process, which served not to dilute the decisions, but rather to create a better product. We tackled tough issues and make some bold decisions. The result is a plan that is ready for implementation, rather than requiring further debate.

The *Management Plan* defines specific actions for habitat, land use, and conventional and toxic pollutants. These actions will serve fish and wildlife habitat and water quality in three important ways: prevention of further loss, protection and enhancement of existing resources, and restoration where damage has already occurred. They focus both on solving existing problems and avoiding new ones. The goal is to achieve a net increase in water quality and habitat values.

The actions also address education and management. In our meetings with the public, we were told that education is key. Therefore, several actions call for the Estuary Program to provide hands-on education and technical and financial assistance to all parties as they work to implement this plan. Actions are also directed at both states and the federal agencies to increase consistency in setting standards, establishing regulations, and providing enforcement. Finally, the plan includes a long-term monitoring program so we can better identify problems and measure our progress.

This is an ambitious plan. Implementation of many actions can begin immediately. Success will not happen overnight, however. It will take years of diligence in many areas to see improvement. We will continually evaluate our efforts and adjust the plan to make sure it meets the river's needs. With the stewardship of all the citizens of the region, we can continue to enjoy the exemplary quality of life in the Pacific Northwest. We will be able to maintain the mutual regional goals of a vibrant economy and a healthy environment.

Glenn Vanselow, *Chair*
Lower Columbia River Estuary Program
Management Committee

Preface

The Lower Columbia River Estuary Program's *Comprehensive Conservation and Management Plan* is the work of the talented and highly dedicated members of the Management and Policy Committees. For 3 years, they have worked diligently, struggled tirelessly, and given much of themselves. The decisions did not always come easily, but after months and months of listening and learning, they make here a substantial contribution to the river and to future generations.

With completion of this *Management Plan*, we are well poised to solve problems in the lower Columbia River and estuary. Not only are the specific actions in place, they were developed in a collaborative process that will well serve their implementation. The goal has been to have the citizens guide this plan. We have often been frustrated by the size of the study area and the challenges posed by the range of cultural geography. The committee members worked very hard, using a number of innovative means, to make sure they were in fact listening to and representing all our citizenry. They took their role as representatives seriously, meeting with their constituents at critical milestones to seek guidance. While each wore a specific hat from 8:00 a.m. to 5:00 p.m., it was their 5:00 p.m. to 8:00 a.m. values that drove them. In all their public involvement efforts, the committee members never settled only for getting the public's review of their decisions; they asked for direction and guidance on issues still under debate. The plan they advance here reflects the struggles and the grace it takes to work collaboratively for a common good.

We were well served by every member, past and present. The Management Committee chair and vice-chair, Glenn Vanselow and Jim Bergeron, served as great role models in representing interests and working toward consensus. Like so many members, they gave generously of their time and energy. The faith and guidance of our facilitator, Carie Fox, made all the difference. We are indebted to Jessica Cogan and Jack Gakstatter from the U.S. Environmental Protection Agency, who were generous with their time, expertise, and resources. It is teamwork such as theirs that makes the National Estuary Program a model for dealing with any environmental issue. We appreciate the confidence and support of Marilyn Katz and Debora Martin of the U.S. EPA and Kate Kramer and the Western Center for Environmental Decision Making in helping us successfully integrate a risk ranking into our efforts. We are pleased to be on time with a quality *Management Plan* that was completed under budget, leaving program money available for additional grants and special projects. The program has benefited from a highly dedicated, talented, and fun staff.

We thank Governor John Kitzhaber of Oregon and Governor Gary Locke of Washington for their leadership in watershed management and effective government. That leadership will guide this plan and us through implementation.

To the many, many citizens beyond the committees—individual, municipal, and corporate—who joined us for workshops, participated in focus groups, gave us feedback, or planted trees: please know that this document reflects your work. We could not have done this without you.

And so, to the seventh generation of our children's children, we dedicate our work.

Debrah Richard Marriott, *Director*
Lower Columbia River Estuary Program

Mission

The mission of the Lower Columbia River Estuary Program is to preserve and enhance the water quality of the estuary to support its biological and human communities.

Values

We value the biological diversity and the economic, social and aesthetic benefits of the Lower Columbia River.

We acknowledge our differences and value our ability to come together to ensure the long term prosperity and sustainability of the river.

We are united into one community by the river. Its flow carries our history, our multiple cultures, our prosperity, and our future.

We value a common sense of stewardship toward the river by all people.

Table of Contents

3 Developing a Publicly Guided Management Plan

Never doubt that a small group of citizens can change the world; indeed it's the only thing that ever has.

Margaret Mead

The National Estuary Program

The Lower Columbia River Estuary Program became one of 28 programs in the National Estuary Program (NEP) in 1995. The NEP was established in 1987 by amendments to the federal Clean Water Act. Its primary goal is "to protect estuaries of national significance that are threatened by degradation caused by human activity."

Unlike traditional regulatory approaches to environmental protection, the NEP targets a broad range of issues and engages local communities in the planning process. The program focuses not just on improving water quality in an estuary, but on maintaining the integrity of the whole system—its chemical, physical, and biological properties, as well as its economic, recreational, and aesthetic values. The NEP marks one of the first major shifts toward holistic watershed management.

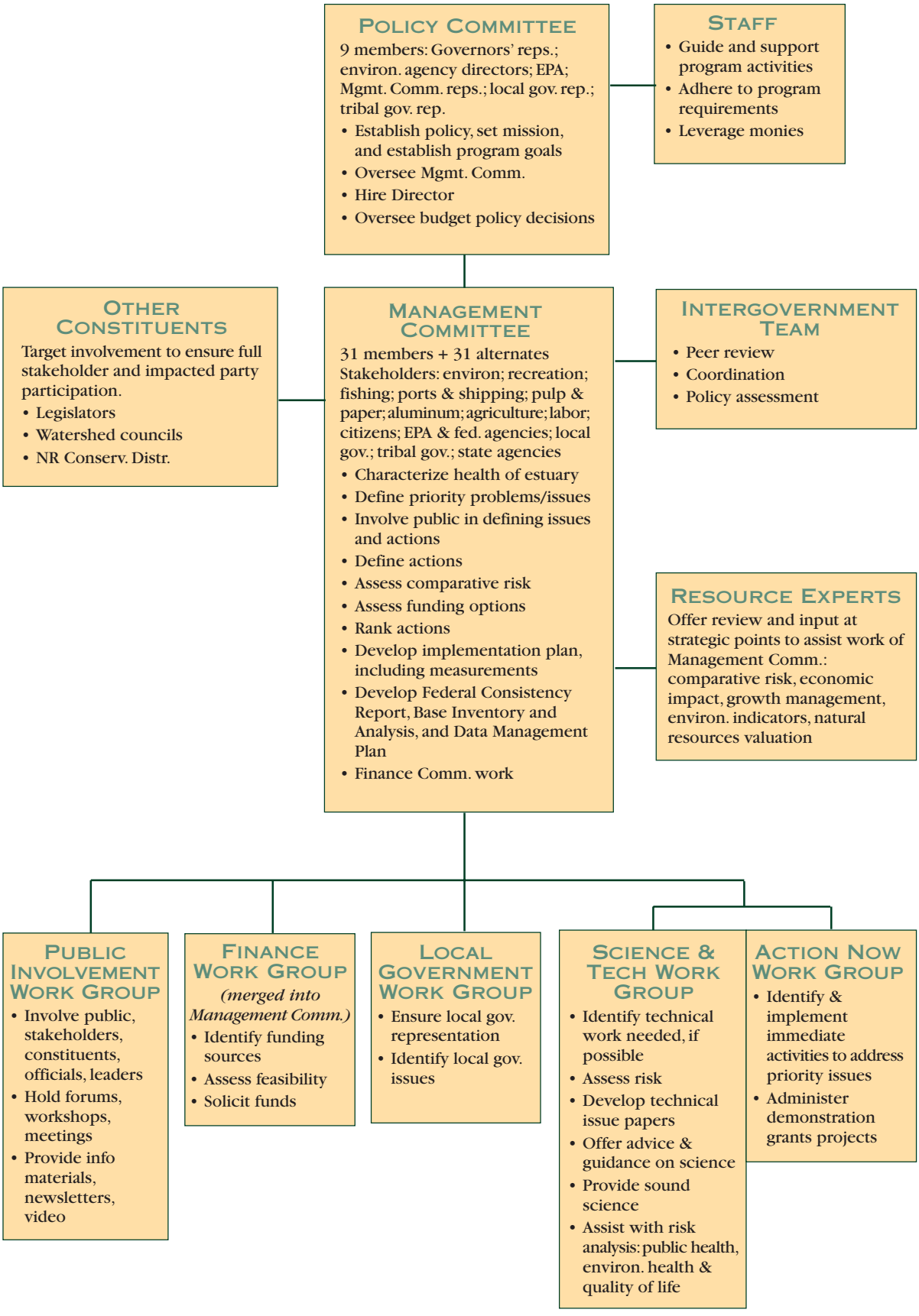
The U.S. Environmental Protection Agency (U.S. EPA) administers the National Estuary Program and provides financial and technical assistance. U.S. EPA also exchanges "lessons learned" among all the individual estuary programs. Responsibility for estuary protection is delegated to the local community. Program decisions and activities are carried out by a "Management Conference"—a group of committees representing the various public and private entities with interests in the estuary. The stakeholders work together to identify problems, determine specific actions, and develop an implementation plan for the actions. The end product is a *Comprehensive Conservation and Management Plan (Management Plan)* for protecting the estuary and its resources.

Like all National Estuary Programs, the Lower Columbia River Estuary Program consists of the four phases shown on page 30.

National Estuary Program Phases

PHASE	PURPOSE/CONTEXT	TIMEFRAME FOR LOWER COLUMBIA RIVER ESTUARY PROGRAM
Phase I: Convening the Management Conference Formation of committees responsible for developing the *Management Plan*. The Estuary Program must involve all interested and affected parties through the conference structure.	• Policy Committee: sets policy and overall direction; 9 members • Management Committee: oversees day-to-day program activity; develops plan; comprises 31 members representing environmental groups, agriculture, industry, labor, commercial fishing, recreation, ports, citizens, and agencies • Work Groups: - Finance - Science & Technology - Public Involvement - Action Now - Local Government	December 1995–May 1996
Phase II: Characterizing the Estuary; Defining Priority Problems Review of technical data and analysis; identification of seven priority issues.	• Identify priority issues • Identify pollutant sources • Identify data gaps or needs • Characterize the estuary	May 1990 (Bi-State Program studies)–June 1998
Phase III: Developing the *Comprehensive Conservation and Management Plan* Identification of immediate and long term actions needed to address the priority issues; development of the *Management Plan*.	• Identify actions • Develop implementation strategy • Determine costs and funding sources • Define performance measurements	April 1997–June 1999
Phase IV: Implementing the *Management Plan* Implementation of the *Management Plan* following its completion.	• Measure the effectiveness of actions and programs implemented as part of the Management Plan • Evaluate, refocus, redirect the *Management Plan* as needed • Provide accountability to the public	After July 1999

Lower Columbia River Estuary Program
Structure and Functions



The National Estuary Program is significant because it:

- *Makes federal technical and financial resources available for estuaries*
- *Provides a forum and structure to address environmental problems*
- *Identifies common environmental problems*
- *Develops management plans that will result in improvements to the ecological integrity of the estuary and its watershed*

The National Estuary Program is compelling because it:

- *Embodies principles of sound land-use management and environmental protection*
- *Empowers citizens to take responsibility for a natural resource, with assistance, not direction, from the federal government*
- *Calls for citizens to work together as a community and transcend individual differences*

Public Outreach and Involvement

The National Estuary Program was one of the first federal programs to employ community-based environmental planning, in which local citizens shape environmental actions. It empowers citizens to work together to take responsibility for their estuary, with assistance, not direction, from the federal government. The success of any National Estuary Program depends directly on the extent to which the public participates in developing and implementing the *Management Plan*.

The Lower Columbia River Estuary Program Management Committee—itself composed of local citizens—took this charge seriously. From the beginning of the Estuary Program, it instituted a variety of public outreach and involvement processes integral to development of the *Management Plan*.

The goal of the public process was to develop a Management Plan that was directly guided and shaped by the citizens of the study area, and to help citizens develop a sense of responsibility for the protection and care of the lower Columbia River and estuary. The Management Committee used two separate, but interrelated, components to accomplish this goal: **outreach** and **involvement.**

Outreach focused on providing information to people about conditions, causes, and solutions, as well as about the Estuary Program itself. Outreach is an essential element for building ongoing stewardship for the river.

Involvement engaged people and solicited their ideas and comments to help direct program activities. The Management Committee provided ongoing opportunities for citizens to participate meaningfully in decision-making processes. The committee also regularly returned to the public to discuss what was heard, report how public comments helped shape decisions, and obtain input for the next step.

During the Estuary Program's 3-year planning timeframe, program requirements and resources led the Management Committee to focus on public outreach and involvement specifically related to development of the *Management Plan*. Ongoing stewardship of the river and estuary was of such importance to the committee that it identified Public Awareness and Stewardship as one of seven priority issues. The *Management Plan* includes specific actions to build connections to the river and estuary and promote a continuing stewardship that will maintain and enhance the river for future generations. The public participation activities accomplished to date provide an excellent base from which to build this ongoing public commitment.

Public Involvement Considerations

A number of factors affected the types of outreach and involvement that were most useful in the Lower Columbia River Estuary Program study area. The Management Committee took the following considerations into account in determining what approaches would work best.

Size of Lower Columbia River Estuary Program Study Area

The Estuary Program study area is one of the largest in the National Estuary Program. The geography varies significantly, and the economic, social, and cultural landscapes vary even more. This presents challenges in reaching all citizens and providing opportunities for them to participate in the program. In some cases, decisions must be made about how to focus efforts and resources, and trade-offs must be weighed.

Multiple Audiences and Diverse Cultures

People of diverse backgrounds and cultures live, work, and play in the study area. Each culture has its own values, ethics, and outreach needs. To ensure the program's success, it is critical that all cultural groups feel well represented and have frequent and regular opportunities to participate in decision-making. Bringing all groups into the estuary "community" requires a firm understanding of cultural differences and needs.

Distrust

A general public distrust of government is not unique to the study area. Many people feel that "government" no longer represents them and that representatives are not connected to the ordinary citizen. Although the Estuary Program is neither a federal nor state program, it is funded by both and carries the stigma of a government agency. In addition, many of the actions in the Management Plan will be implemented by government agencies.

Disengaged Public

Voter turnout in a number of recent elections has been at an all-time low. People interviewed for a recent local newspaper series said they do not see the relevance of voting to their lives and feel it provides no immediate return to them. Instead, many are placing more energy on community service activities.[1]

Time Constraints

People are busy, with many competing personal and professional commitments. It is a challenge to devise approaches that accommodate these commitments and lifestyles and encourage participation.

[1] "Beyond the Ballot Box," *The Oregonian*, October 26-28, 1997

Environmental Challenges

The environmental problems of the 1990s are significantly different from those of 20 or 30 years ago. In the 1970s, the major sources of pollution were point sources: single entities discharging or emitting waste from pipes and stacks. Today, about 75 percent of the pollution comes from non-point sources. This includes runoff from agriculture, logging, construction, roads, and urban development. As the population grows, it generates larger amounts of pollution. Everyone—municipalities, industries, and individuals—will have to participate in reducing pollution and improving the environment.

One of the biggest challenges is helping citizens understand how everyday decisions affect the environment. If people choose a sport utility vehicle or a single serving of packaged food, are they aware of the impacts, and is that the choice they want to make? Do citizens know the full ramifications and costs of multiple one-story shopping centers throughout the urban, suburban, and rural landscape? Are they willing to bear the consequences? What burdens or limitations will be placed on future generations?

Changing Values

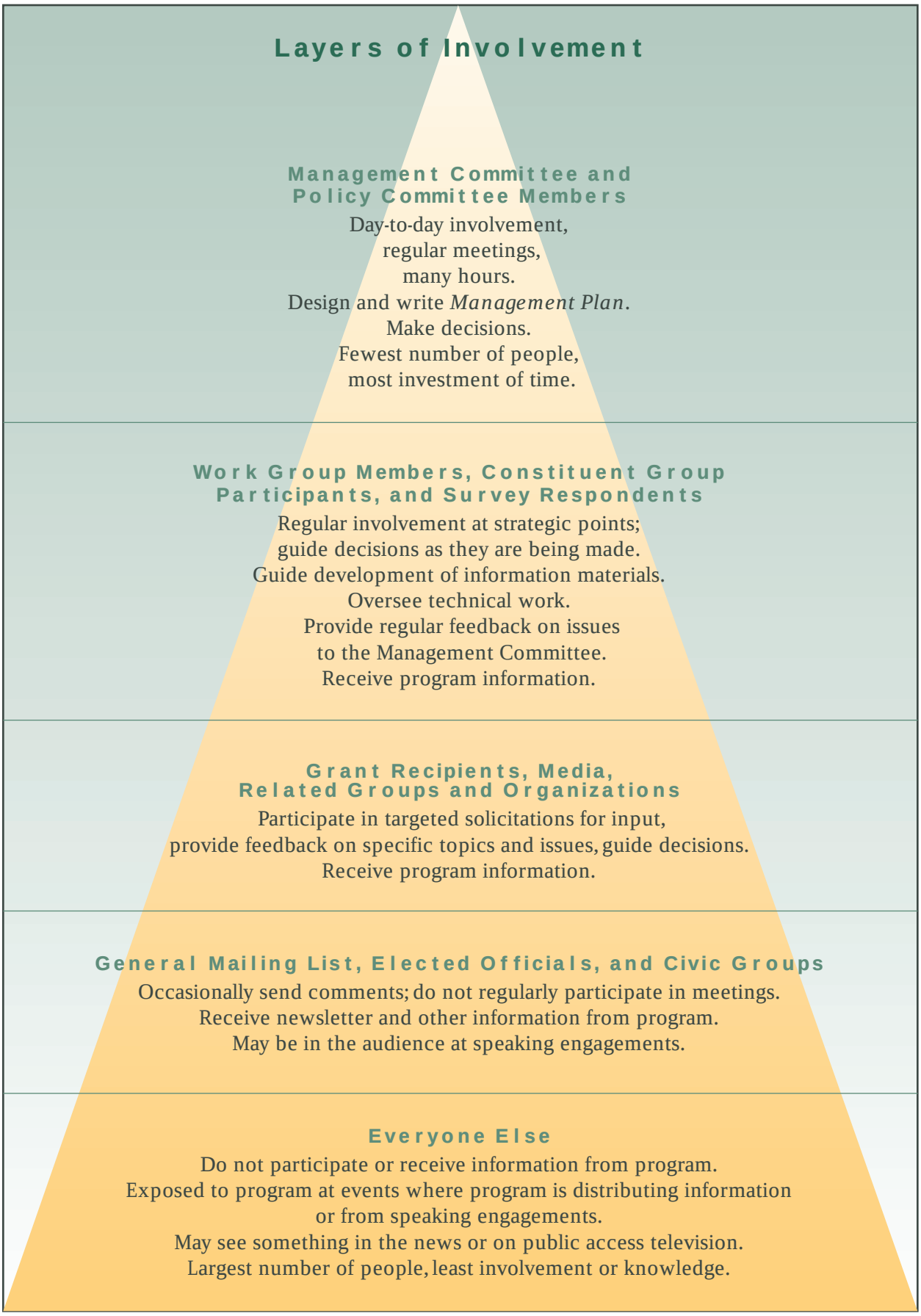
Values evolve and change. Many practices that were commonplace and widely accepted at one time are now unacceptable and perhaps even illegal, since changes in values are often reflected in laws. Examples of such changed values can be found in resource extraction (such as mining operations), timber harvest, agricultural practices, pollution abatement, land-use practices, and waterway modifications.

Layers of Involvement

Consideration of these factors led the Management Committee to adopt a multi-layered strategy for public outreach and involvement. The strategy recognized that different segments of the community participate in different ways and at different levels. To meet different needs, a variety of tools and methods were included in the strategy to provide opportunities for all citizens to be part of the process. The multiple layers of involvement are summarized on page 35.

The target audiences for public outreach and involvement included:

- *General public of all ages*
- *Elected officials*
- *Local, state, and federal officials*
- *Technical/scientific community*
- *Educators*
- *Native American tribes*
- *Environmental groups*
- *Community groups*
- *Civic organizations*
- *Industries*
- *Ports*
- *Agricultural interests*
- *Labor*
- *Recreational users*
- *Commercial fishing interests*
- *Minority populations*
- *Media*


Layers of Involvement
Management Committee and Policy Committee Members
Day-to-day involvement,
regular meetings,
many hours.
Design and write *Management Plan*.
Make decisions.
Fewest number of people,
most investment of time.
Work Group Members, Constituent Group Participants, and Survey Respondents
Regular involvement at strategic points;
guide decisions as they are being made.
Guide development of information materials.
Oversee technical work.
Provide regular feedback on issues
to the Management Committee.
Receive program information.
Grant Recipients, Media, Related Groups and Organizations
Participate in targeted solicitations for input,
provide feedback on specific topics and issues, guide decisions.
Receive program information.
General Mailing List, Elected Officials, and Civic Groups
Occasionally send comments; do not regularly participate in meetings.
Receive newsletter and other information from program.
May be in the audience at speaking engagements.
Everyone Else
Do not participate or receive information from program.
Exposed to program at events where program is distributing information
or from speaking engagements.
May see something in the news or on public access television.
Largest number of people, least involvement or knowledge.

Target Audiences

An important part of this multi-layered strategy was to identify the various target audiences, along with their interests, concerns, and information needs. These audiences have varying points of view and frames of reference related to managing and protecting natural resources. Their voices would be very important in creating a *Management Plan* that respects and reflects the diversity of the study area.

The following examples demonstrate specific cultural interests and concerns that were important to consider in developing the *Management Plan*.

Native American Tribes: Four federated tribes live along the Columbia River: the Nez Perce Tribe, the Confederated Tribes and Bands of the Yakama Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon. Other Native American tribes, including the Chinook and Cowlitz, also live in the study area. The Columbia River treaty tribes have a major interest, and have been a major force, in salmon restoration efforts. The tribes are sovereign nations, and are entitled by treaty to fish in their "usual and accustomed" fishing locations. The courts have interpreted this treaty entitlement to mean 50 percent of the harvestable fish, requiring a population of salmon healthy enough to accommodate tribal harvest. This finding, along with Endangered Species Act listings of threatened and endangered salmon stocks, have led to more concerted efforts to restore salmon in the Columbia River system.

Ethnic Minority Communities: A significant population of citizens of the former Soviet Union and a large Asian population live along the Columbia River and its tributaries. Many other minority ethnic groups also make their home in this area. Many people in these communities fish to provide an affordable and available staple to their diet or for social or cultural reasons. Contaminants detected in fish tissue have led both states to issue human health advisories about eating certain kinds of fish in certain locations. People who consume large quantities of fish are more likely to be affected by the contamination than average consumers. These population groups have specific interests and information needs that are important to address.

Tools and Techniques

Different audiences need and respond to different outreach and involvement tools and techniques. Based on the identified target audiences, the Management Committee selected a variety of tools that could achieve specific outreach and involvement objectives. For instance, flyers or displays at public places and events, radio announcements, and newspaper ads can be used to provide a limited amount of information to the general public. If the target audience has a greater level of interest, information can be more detailed, and more involvement can be expected. Constitutent focus group participants, for example, develop a history with the program and become vested in the steps and outcome. They can therefore be given more complex materials and be invited back at regular intevals. A comparative risk process provided a specific tool that enabled the Esutary Program to incorporate the public's values and perceptions concerning the relative risk of the problems. The full range of tools, along with their objectives and associated activities, is summarized on pages 38 and 39. Some of the most effective and interesting approaches used to increase public participation are discussed below.

Comparative Risk Ranking: The Estuary Program is the first National Estuary Program to integrate a comparative risk ranking into development of its *Management Plan*. Three groups of people—the general public, constituent focus group participants, and technical experts—were asked to rank 21 problems in terms of the problems' perceived risk to public health, ecological health, and quality of life. This process provided a specific public involvement tool that actively engaged members of the public and included their values and concerns in the decision-making process. (This process is further described on pages 43–46.)

Newspaper Advertisements: Concerned about low attendance at public meetings, the Management Committee looked for innovative methods to obtain more citizen input. To augment the public meetings, the committee ran a full-page advertisement in 14 study-area newspapers (with a combined circulation of 550,000), asking readers to complete and return the comparative risk ranking. Over 1,100 responses were received. While this did not provide a statistically valid sampling of people in the study area, it did elicit ten times more comments than a previous series of public meetings. A smaller follow-up advertisement presented the results of the comparative risk ranking and solicited ideas for management actions. In February 1999, a two-page advertisement was placed in the 14 newspapers to present aspects of the draft *Management Plan* and solicit comment on specific actions. Over 1,343 responses were received from the ad.

Constituent Focus Groups: Management Committee members wanted to ensure they would continue to represent the needs and issues of the people they represented throughout the 3-year planning process. Accordingly, they held a series of focus groups during various points in the process to give their constituents an opportunity to:

- Discuss the priority issues
- Participate in the comparative risk ranking
- Hear the results of the comparative risk ranking and offer potential actions to address the issues
- Review the draft *Management Plan*

Media Information: The media is an important avenue for both providing and receiving information. A number of different methods were used to involve the media. These included press releases; editor and reporter contacts; op ed pieces; radio and television public service announcements; full-page advertisements; river tours in summer 1997 out of Astoria and Portland to acquaint the media with the program, issues, and river; and media programs developed around a particular event or program milestone, such as public meetings, the comparative risk ranking, and the release of the draft *Management Plan*.

Publications: A number of publications were developed to provide various levels of information for different audiences. These included newsletters, brochures, fact sheets, reports, and a children's coloring book.

Public Meetings and Research Groups: Three sets of public meetings were held during the planning process to: 1) obtain input on the proposed priority issues and solicit ideas about possible actions, 2) complete the comparative risk ranking and further explore possible actions, and 3) review the draft *Management Plan* and solicit ideas about implementation responsibilities. Meetings were held in four locations in the study area. During the review of the draft plan, four research groups were also used to obtain a random sampling of the public in the same four locations as the public meetings.

Building the Management Plan

The public outreach and involvement strategy enabled the Management Committee to seek continual guidance from the public as it developed the *Management Plan*. The committee's goal was to consider the broadest possible range of perspectives, while at the same time using a sound and reasoned basis for decision-making. The committee defined a methodology by which it could move from a general overview of options to a defined set of actions. Each step built upon the results of previous steps, progressively sharpening the focus. The main building blocks of the 3-year management planning process are described in the text below and summarized on the Chronology on pages 40–41.

Public Participation Tools and Objectives
May 1996 - June 1999

Involvement Tools

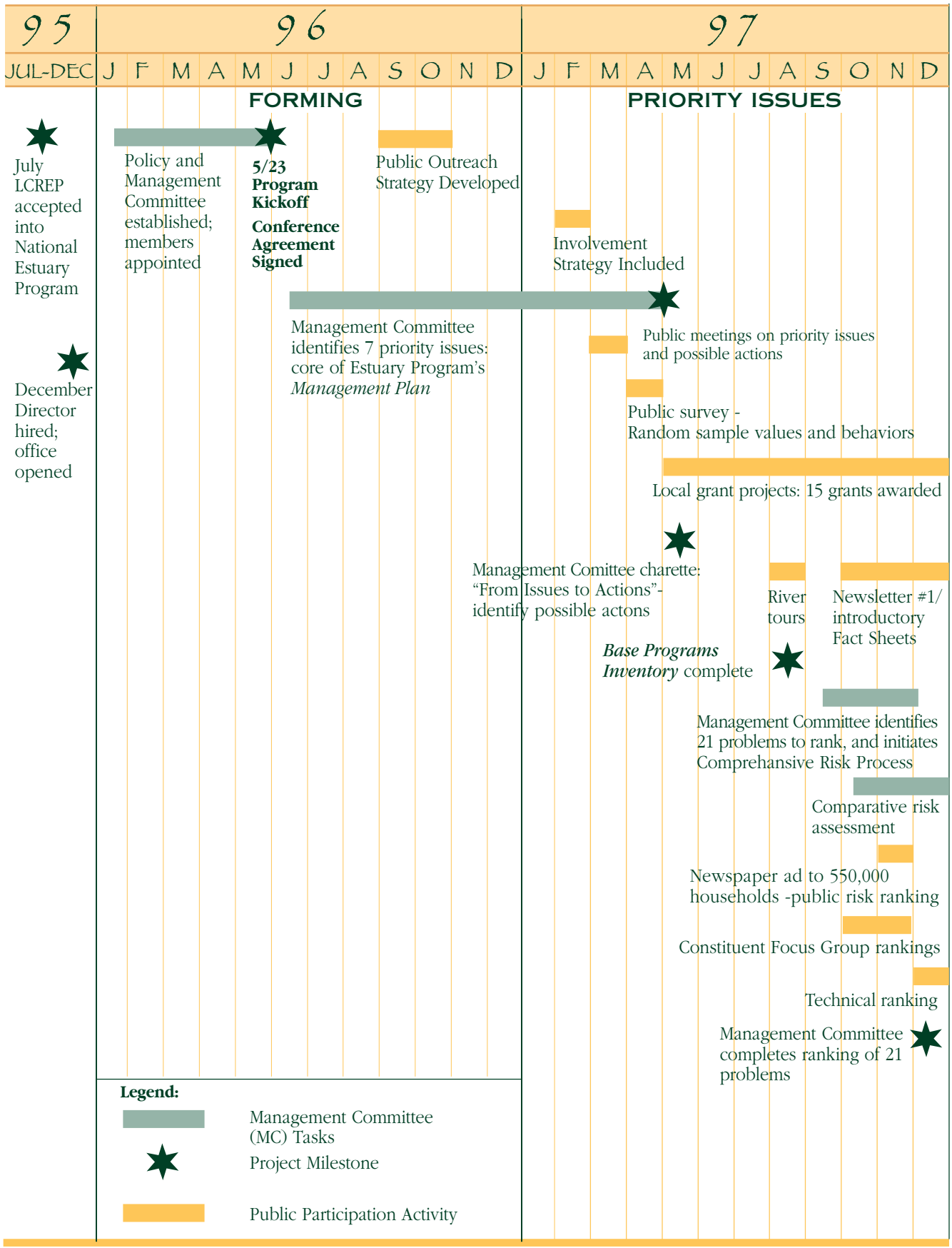
TOOL	OBJECTIVE	AUDIENCE	TIMEFRAME
Survey	Baseline knowledge: Public's beliefs about environmental problems; their environmental values; their individual behaviors that affect the estuary	Random general public	April 1997
Public Meetings	Announce milestones; to solicit broad input	General public, invited experts	Identify pollution problems & recommendations: June 1996 Seven priority issues: March 1997 Risk ranking: October 1997 Draft *Management Plan*: March 1999
Management Committee Workshops	Address specific issues; bring results from round tables; solicit input; test ideas	Management Committee and Work Group members	Issues, visions, objectives & actions: May 1997 Comparative risk training & risk ranking: Sept–Dec 1997 *Management Plan* implementation framework: Jan 1998 Actions: May 1998 Forum with agencies and local officials: January 1999
Constituent Focus Group Meetings	Constituent group meetings to achieve broader representation than standing committees or work groups; listen; test ideas	Groups and people represented by Management Committee members and other stakeholders	Priority issues: March 1997 Risk ranking & actions: October 1997 Draft *Management Plan*: March 1999
Comparative Risk Ranking	Rank problems by risk posed to public and ecological health; understand public values. Ranking guided actions and education program	General public, constituent focus groups, technical experts	September–December 1991
Government Meetings	Keep agency directors and local officials involved with work and solicit input	Agency directors and local officials	Periodically throughout process at milestones
Expert Resources	Review and advise technical work	Scientists, economists, land use planners	Issues, visions, objectives & actions: May 1997 Review of risk ranking and possible actions: Winter 1997–98
Governance Summit	Work on vision for river and commitment to implementing the *Management Plan*	Federal, tribal, state and local officials	Draft *Management Plan*: January 1999
Newspaper Insert/Ad	Reach maximum audience; offer draft *Management Plan* and solicit feedback	General public, targeted audiences	Risk ranking: Fall 1997 Ranking results & actions: Winter 1998 Draft *Management Plan* Public Review: Winter 1999
Local Grants – Action, Planning, & Demonstration	Provide monies to environmental projects that address priority issues	Local civic groups, schools, local governments	Annually
Citizen Monitoring	Actively involve trained volunteers; instill ownership; provide data	General public	Assessment of existing volunteer monitoring programs: 1998

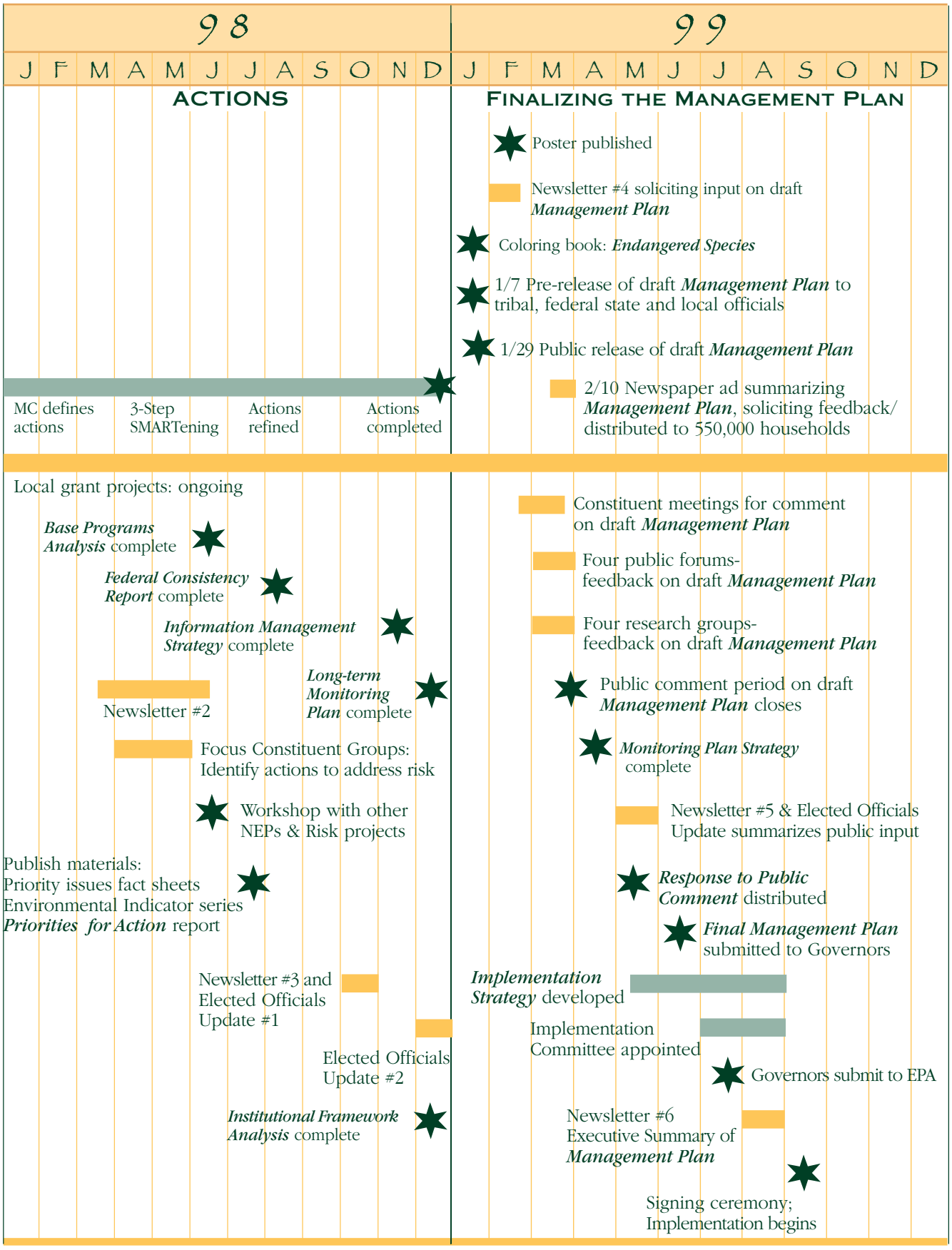
Public Participation Tools and Objectives
May 1996 - June 1999

Outreach Tools

TOOL	OBJECTIVE	AUDIENCE	TIME FRAME
Formal Events at Major Milestones	Provide public focus on program; generate media coverage	Invited guests: agency and local officials, elected officials	Governors' kick-off: May 23, 1996 River tours: August 1997 Comparative risk ranking: late Fall 1997 Governance summit: January 1999 Presentation of *Management Plan* to governors: Summer 1999 Signing of *Management Plan*: Fall 1999
Program Brochure	General introduction to NEP	All targeted audiences	Summer 1997
Newsletter: Common Waters	Information on regular basis; wide audience	All targeted audiences	Quarterly; first edition Fall 1997
Elected Officials Update	Provide information on important issues	Elected officials	Periodically
Video	Graphic representation of the river and its status	Grant recipients, media, educators, libraries	Fall 1997
Fact Sheets	Timely information about technical findings, priority problems, actions, indicators, risk, implementation options	Grant recipients, mailing list, media, all targeted audiences	Periodically
Program Display	Program promotion	General public	Fall 1998
Environmental Indicator Series	Provide general public with summary of technical information	Citizens interested in technical information, all targeted audiences	July 1998
Atlas	Graphic display of study area; series of overlays depicting layers of information	All targeted audiences, educators	Fall 1999
Priorities for Action Report	Provide information about the priority issues	All targeted audiences, media, elected officials, grant recipients	Summer 1998
Poster	Program promotion	General public, all targeted audiences	February 1999
Reports Back	Provide feedback to participants in focus groups or meetings	General public and meeting participants, media, elected officials	Issues and objectives: March 1997 Comparative risk results: Dec 1997 Actions: July 1998
Radio/TV	Information to wide audience; interviews and public service announcements	Young citizens, educators	Endangered species coloring book: February 1999
Speakers Bureau	Core group to discuss program	General public, civic organizations	Ongoing
Web Site	Provide information to broad audience	General public	Established Summer 1998
Media Campaign	Ongoing relationships with reporters and papers (op ed, editorial boards, interviews)	General public, all targeted audiences, civic groups	Implemented for comparative risk process: Fall 1997 Ongoing Draft *Management Plan*: Winter 1999

Chronology of Estuary Program Activities




98
99
J F M A M J J A S O N D J F M A M J J A S O N D
ACTIONS
FINALIZING THE MANAGEMENT PLAN
Poster published
Newsletter #4 soliciting input on draft Management Plan
Coloring book: Endangered Species
1/7 Pre-release of draft Management Plan to tribal, federal state and local officials
1/29 Public release of draft Management Plan
2/10 Newspaper ad summarizing Management Plan, soliciting feedback/ distributed to 550,000 households
MC defines actions
3-Step SMARTening
Actions refined
Actions completed
Local grant projects: ongoing
Base Programs Analysis complete
Federal Consistency Report complete
Information Management Strategy complete
Long-term Monitoring Plan complete
Newsletter #2
Focus Constituent Groups: Identify actions to address risk
Workshop with other NEPs & Risk projects
Publish materials:
Priority issues fact sheets
Environmental Indicator series
Priorities for Action report
Newsletter #3 and Elected Officials Update #1
Elected Officials Update #2
Institutional Framework Analysis complete
Constituent meetings for comment on draft Management Plan
Four public forums- feedback on draft Management Plan
Four research groups- feedback on draft Management Plan
Public comment period on draft Management Plan closes
Monitoring Plan Strategy complete
Newsletter #5 & Elected Officials Update summarizes public input
Response to Public Comment distributed
Final Management Plan submitted to Governors
Implementation Strategy developed
Implementation Committee appointed
Governors submit to EPA
Newsletter #6 Executive Summary of Management Plan
Signing ceremony; Implementation begins

Reviewing the Issues and Thinking about Actions: Public Input

The Management Committee began its public involvement efforts in March 1997 by conducting a random sample survey of residents in the study area. The primary purpose of the survey was to establish citizen opinion data on the lower Columbia River and its environs. The intent was to determine the level of "connection" residents of the study area had to the river. The top three threats reported by the respondents were shoreline development, industrial pollution, and pollution in general. Generally, non-urban respondents tended to identify industrial pollution as the biggest threat to the river, while urban respondents tended to identify shoreline development as the greatest threat. The Management Committee used the survey results as it shaped the priority issues and developed actions.

The Management Committee also held a series of eight public meetings throughout the study area in March 1997. The purpose of the meetings was to present the seven priority issues the committee had developed, discuss the preliminary goals and objectives for each issue, and ask what possible actions could be taken to address the issues. This first step was intended to encompass a wide range of ideas, so all possibilities could be considered. The meetings were held in Astoria, Kelso, Portland, and Stevenson, and drew 124 participants. The input from the meetings confirmed that these seven issues had a high priority, and helped refine them. In addition, many ideas for possible actions were drawn from the discussions.

What Was Asked:

- *Have the priority issues been adequately addressed?*
- *Are the goals and objectives identified for each issue the right ones?*
- *What actions would accomplish the goals?*

What Was Learned:

- *Participants had diverse opinions, some of them directly contradictory. Many comments addressed specific localities or activities. Some general themes, however, emerged:*
- *Goals and actions need to address the wide range of activities contributing to the problems.*
- *Broad public involvement and education are key. Everyone is part of the problem and part of the solution.*
- *Objectives and actions need to be specific and measurable, with identified timeframes, resources, and responsible parties.*
- *Preventing pollution should be a priority.*
- *A consistent and coordinated approach is needed to address the problems.*
- *Implementation at the local level should be stressed.*

Identifying Preliminary Actions: "From Issues to Action" Charette

Management Committee members, their alternates, and work group members met with scientific and technical experts in biology, ecology, land use planning, economics, and other disciplines in May 1997. This day-long "From Issues to Action" charette (interactive meeting) explored possible actions, based on the participants' technical expertise and the input from the March 1997 public meetings. About 100 people participated. The inclusion of these experts helped Management Committee members gain a broader perspective on the issues, which in turn helped them formulate potential actions. The experts' input refined the overall goal, or vision, for each priority issue and helped identify objectives for each. A preliminary list of 180 possible actions was developed, providing a full range of options to consider.

What Was Asked:

- *How do the technical information and the public input on the seven issues compare?*
- *What are the objectives for each of the seven issues? What is the vision for each issue?*
- *What actions might accomplish the objectives?*

What Was Accomplished:

- *Goals and objectives were defined for the seven issues.*
- *A preliminary list of over 180 actions was developed to address the seven issues.*
- *Ideas were discussed for helping the public understand the connection between the issues and the actions.*

Defining and Ranking Problems: Comparative Risk Ranking

Management Committee members recognized the need to narrow the list of potential actions to a more workable size. By removing duplicates and consolidating similar ideas, they reduced the number of potential actions to 125. The list was still too cumbersome. To provide a more formal assessment of the problems, the Management Committee implemented a comparative risk ranking.

The Lower Columbia River Estuary Program is the first National Estuary Program to integrate a comparative risk ranking into development of its *Management Plan*. The comparative risk ranking allowed the Management Committee to explore how citizens and technical experts perceive the state of the river, understand what is important to them, and compare their viewpoints.

Three separate rankings were done during October and November 1997:

- Public ranking—completed by more than 1,100 citizens who filled out a survey published in 14 area newspapers and by 20 citizens who attended public meetings in Vancouver, Washington, and Astoria, Oregon.
- Constituent focus group ranking—completed by 267 people who attended 27 focus group meetings hosted by individual Management Committee members for their constituents.
- Technical ranking—completed by the 31-member Management Committee with the help of the program's science and technical work group experts, using the technical work of the Bi-State Program.

Using the seven priority issues as the basis, the Management Committee identified 21 problems (see page 46). Participants were asked to rank these problems according to their perceived risk to public health, ecological health, and quality of life. The Management Committee developed a set of criteria to help the focus groups and technical group guide their ranking (see page 45). The ways in which individuals employed these criteria was recorded as part of the discussion, and was an important consideration in evaluating the ranking process and results.

The comparative risk ranking helped focus attention on the most significant problems on the basis of risk, identify where resources can best be placed, and determine where educational efforts are most needed. It also provided other valuable benefits that will continue throughout implementation of the *Management Plan*:

- It required participants to think about how the problems compare with one another, rather than thinking in terms of all problems being equally important.
- It introduced the discussion of risk into the thought process. This brings factual, scientific information to the forefront.
- It brought the public's values and concerns into the discussion. The comparative risk ranking provided a specific public involvement tool that actively engaged the public.

What Was Asked:

- *How do you rank the 21 problems in terms of the risk they pose to public health, ecological health, and quality of life?*
- *How did you apply the criteria in deciding your ranking? (for focus groups and technical group)*

What Was Learned:

- *The results of the rankings varied significantly among the three groups, as shown on page 46.This was expected, considering the mix of knowledge, experience, and emotions involved.*
- *Notable, however, was that all three groups ranked loss of wetlands and other habitat as the problem posing the greatest risk.*

Ranking Results

Every group ranked "loss of wetland and habitat" as the number-one problem, posing the greatest threat to human health, ecosystem health, and quality of life.

Lack of public knowledge and inadequate government coordination ranked near the top for the technical and the constituent focus groups. This was consistent with input received from the public in more general meetings; they have consistently said that education is one of the primary keys to improving environmental protection. Decline and loss of species, impacts from agricultural practices, and stormwater runoff were also ranked high by these two groups. The focus groups and the technical rankings were most similar, suggesting that more information is helpful in understanding the problems. The greatest disparity was between the public and the two other rankings.

The Management Committee used the results of the rankings in three ways. First, the rankings helped identify actions to address the priority issues. Second, the committee used the risk ranking to help define the role of the Estuary Program in implementing actions. Third, the risk rankings were used to design objectives and components of the Estuary Program's education efforts.

Criteria for Risk Ranking

These criteria are offered to assist in completing the ranking. They should be used to prompt one's thinking; not every criterion has to be used or considered for each problem. They are meant only to help one think about the risk posed by the problem.

Human and Ecosystem Health

Extent of the Problem: How widespread is the problem?

Consequences of Delay: What happens if we do not address the problem? Will the cost to repair the problem escalate? Will we reach a point of irreparable harm? Will we affect disproportionately the health of future generations?

Nature of the Impact or Effect: What is it and how bad is it?

Permanence: How permanent is the impact? Is it recoverable; if so, how long to recover?

Likelihood of Occurrence: How likely is an environmental event to occur?

Trends: Is the situation worsening, stable, improving, or unknown?

Uncertainties: Do we have ample data, and how good are the data we have? How secure are we in the assumptions underlying the assessment—i.e., the continuance of regulations or programs which may be controlling the risk?

Relationship to Other Issue Areas: Is this a fundamental or underlying issue—i.e., one that is the cause of other problems (issues) on the list? Are there synergistic effects?

Quality of Life

Economic Well Being: Are there lost jobs, increased health care costs, or lowered incomes?

Fairness: Are the costs and benefits unequally distributed?

Future Generations: Have the costs of today's activities been shifted to people unable to vote or not yet born?

Peace of Mind: Do we feel individually threatened by the impacts of this environmental problem or do we feel that we have done less than we should to address it?

Recreation: Are recreational opportunities and enjoyment reduced because of lack of access to recreational lands or a loss in aesthetic values?

Sense of Place: Does the problem result in a loss of heritage, or will the heritage of the place remain intact? Is the continuity of place and history evident? Is the rate of change affecting the sense of place? Does the problem result in a loss of mutual respect, cooperation, or the ability or willingness to solve problems together? Is there a reduced feeling of connection, belonging, or responsibility to a specific geographic area?

Comparative Risk Ranking Results

	GENERAL PUBLIC	FOCUS GROUPS	TECHNICAL
1	Loss of wetlands & habitat	Loss of wetlands & habitat	Loss of wetlands & habitat
2	Discharges from industrial facilities	Decline and loss of species	Decline and loss of species
3	Agricultural activities	Agricultural activities	Altered stream flow
4	Leaks and spills of hazardous materials	Stormwater runoff	Stormwater runoff
5	Forestry activities	Loss of riparian vegetation	Lack of knowledge
6	Bacteria	Lack of knowledge	Inadequate government coordination
7	Loss of riparian vegetation	Discharges from industrial facilities	Contaminated fish tissue
8	Contaminated sediment	Forestry practices	Agricultural activities
9	Contaminated fish tissue	Inadequate government coordination	Changes in water temperature
10	Altered stream flow	Altered stream flow	Construction activities
11	Radioactivity	Contaminated fish tissue	Loss of riparian vegetation
12	Decline and loss of species	Construction activities	Forestry practices
13	Inadequate government coordination	Contaminated sediment	Contaminated sediments
14	Lack of knowledge	Leaks and spills of hazardous materials	Introduction of exotic species
15	Construction activities	Changes in water temperature	Increases in dissolved gases
16	Stormwater runoff	Introduction of exotic species	Discharges from industrial facilities
17	Changes in water temperature	Discharges from municipal wastewater facilities	Leaks and spills of hazardous materials
18	Discharges from municipal wastewater facilities	Bacteria	Bacteria
19	Introduction of exotic species	Radioactivity	Nearshore and instream activities
20	Nearshore and instream activities	Increases in dissolved gases	Discharges from municipal wastewater facilities
21	Increases in dissolved gases	Nearshore and instream activities	Radioactivity

Refining Actions: Focus Groups

The Management Committee conducted 17 constituent focus groups in April and May 1998, with participants drawn largely from the previous focus groups held for the comparative risk ranking. The participants were asked to consider the list of 125 actions developed to date, as well as the results of the comparative risk ranking. They provided valuable input needed to refine the actions and sharpen the focus to meet specific needs.

What Was Asked:

- *What actions are missing from the list that should be included?*
- *Of the long list, what are the top five or ten actions? Which ones should stay in the Management Plan? Which ones should be dropped?*
- *Which actions could citizens help implement? This question was important because much of the pollution in the lower Columbia River and estuary comes from the cumulative impact of hundreds of individual actions. Changed practices and behaviors from the region's citizens will be vital to the success of the Management Plan.*

What Was Learned:

In addition to specific responses about priorities for action, a number of valuable suggestions resulted from each focus group. Highlights included:

- *People encouraged the Estuary Program to set performance standards and goals and offer technical assistance to help achieve the goals.*
- *Many constituencies wanted to make sure the Estuary Program recognized other related efforts and that coordination among these efforts would be improved.*
- *Many groups encouraged the Estuary Program to make habitat protection a high priority.*
- *Participants placed a strong emphasis on providing educational opportunities, especially those that bring people to the river to learn about it. Education about how to carry out environmentally responsible activities was also encouraged.*

Selecting Actions and Defining Implementation: Management Committee

Using the results of the technical and public input, the Management Committee used a three-step process to determine which actions to include in the *Management Plan* and how they will be implemented.

Step 1: Determining "Smart" Actions

The Management Committee screened the list of 125 actions to determine which actions are **SMART: S**pecific, **M**easurable, **A**chievable, **R**esponsive, and **T**rackable. This included a review of the Bi-State Program's technical findings and recommendations.

Step 2: Refining the List of Actions

Those actions determined to be SMART were screened further, using the criteria listed below. This process involved considerable discussion of policy and consistency. As a result of steps 1 and 2, the list of actions was refined from 125 to 92. Each remaining action was defined in terms that are action-oriented and specific.

Step 3 Criteria:

- *Is the action addressing a high-risk problem?*
- *Is the action technically feasible?*
- *What are the action's political implications?*
- *Does the action require regulation/ legislation?*
- *What is the action's probability of success?*
- *What are the action's economic and environmental impacts?*
- *What resources are available to implement the action?*
- *Is there a party who will be responsible for implementing the action?*
- *Is the action within the authority of an existing active body? What are the legal implications?*
- *Are others working on the action?*
- *What is the timeframe for implementation of the action? When would results be realized?*
- *Will the action have immediate success?*
- *Is the action "bold" and action-oriented?*

Step 2 Criteria:

- *Will the action help accomplish Estuary Program visions?*
- *Will the action make a difference/have the ability to affect or influence change?*
- *Is the action technically rooted?*
- *Is the action addressing a high-risk problem?*
- *Is the action within the scope of the National Estuary Program?*
- *What are the action's social impacts and impact on quality of life?*
- *Will the action help protect or restore the lower Columbia River and estuary?*

Step 3: Developing an Implementation Plan for Each Action

The Management Committee's last step was to develop an implementation plan to specify who will implement each action, how much it will cost, and how it will be funded. This step included applying a final set of criteria to each action.

The step 3 process reduced the number of actions to 43. Although no specific action was eliminated, several were found to be related or interdependent and were combined.

The final 43 actions are detailed in Chapter 5. They are the heart of the *Management Plan*. Each action has an identified funding source, and each is supported by the parties responsible for implementing it. The emphasis is on measurable, achievable actions that will make a tangible difference.

Reviewing the Draft *Management Plan*

Input from Government Agencies—Pre-Release

The draft *Management Plan* underwent extensive review before it was made final. In early January 1999, the Management Committee invited leaders of tribal, federal, state, and local governments and agencies to provide early feedback on the draft *Management Plan* before its formal release to the public. Nearly 100 people attended this leadership forum. They were asked to review the plan and comment on how environmental protection of the lower river and estuary should be achieved. In particular, they focused on the issues of institutional constraints and coordination and what role the Estuary Program should play in the region. Participants also reviewed five existing Columbia River fish recovery plans in relation to the Estuary Program *Management Plan*. A number of questions were asked to facilitate the discussions.

What was asked?

- *Looking at the various plans and activities, where does your agency currently place its resources and focus?*
- *Given your expertise and experience with government and the environmental issues of the lower Columbia River and estuary, where would you like to be spending your energy and resources?*
- *What role do you think the Estuary Program can play?*

The leadership forum discussions were extremely helpful to the Estuary Program.
The Management Committee incorporated numerous comments into the draft *Management Plan*, significantly improving its quality before its formal release.
Some broad conclusions resulted from the forum.

What was learned?

- *Although much is being done with wetland and habitat restoration, the Estuary Program should establish a constant vigil to achieve desired protection levels.*
- *Coordination is a key issue for species recovery and watershed protection.*
- *Long-term monitoring and evaluation of the river is needed.*
- *Education is a significant factor in environmental protection.*

The leadership forum is discussed in more detail in Chapter 6.

Public and Constituent Input

The draft *Management Plan* was formally released to the public on January 29, 1999. It was mailed to area libraries, posted on the Estuary Program Web site, available through the Estuary Program office, and mailed to various interested parties and stakeholders.

Public review involved more than making the plan available. To solicit maximum public comment, the Estuary Program designed a series of meetings.

Four traditional open public meetings were held throughout the study area, in Astoria, Kelso, Portland, and Stevenson. They were held on either a Tuesday or Thursday evening, from 7:00 p.m. to 8:30 p.m., to maximize the public's ability to attend. A total of 84 people attended these public meetings.

The Management Committee also solicited comment by returning to their constituent groups for another round of meetings. The constituent groups included state agencies, recreational and environmental interests, watershed coordinators, and local governments. In all, 156 people attended the 18 constituent meetings.

Four research/focus groups were also held in each city hosting a public meeting. Each focus group was a statistical representation of the population in that area. Thirty-nine people participated in these meetings, which followed a similar format to the public meetings.

The Estuary Program also ran a two-page newspaper advertisement in 14 study-area newspapers that reached approximately 550,000 households. The ad discussed the draft *Management Plan*, specified where to find the plan, provided the public meeting schedule, and included a questionnaire concerning a number of proposed actions. Over 1,300 people returned the questionnaire; nearly half included handwritten comments.

All of the meetings were designed to focus people's attention on the draft *Management Plan* and its implementation. After a brief overview of the Estuary Program, participants participated in a structured exercise to consider the 43 actions and discuss implementation roles and responsibilities. The majority of each meeting was left for a general discussion about the *Management Plan*. Both the exercise and the discussion aimed at soliciting comment on the following questions.

What Was Asked?

- *Reviewing the proposed 43 actions, which ones are important for individuals to implement, for government to implement, and for industry to implement?*
- *What role do you see for the Estuary Program?*
- *What comments do you have on the draft Management Plan? What do you support? What will pose challenges? What should change?*

Results of the Review Process: What Was Learned?

During the 2-month public input period, the Estuary Program heard from 1,581 people. Given the large number of comments, the diverse range of issues mentioned was not surprising. Comment topics ranged from specific issues to specific actions, from form to process, from overarching policies to historical reflections. Many thought the *Management Plan* provided a good framework for individuals, government, and industry to follow. Other participants focused on how the actions will be implemented. Many people stressed that implementation of the *Management Plan* will need to be coordinated with other activities, with no new regulatory agency or layer of government added. People recognized that implementation will require the participation of many different sectors of the Columbia River community.

The following discussion identifies some general themes that were expressed.

The role of the Estuary Program, particularly during the implementation phase, was a discussion point. People want the program to serve as a clearinghouse and a watchdog. Some people want it to press industry and government to work on toxic contaminants. Others stressed the need for it to exert influence and coordinate work on habitat issues and monitoring. People thought the Estuary Program could also help develop and promote a common vision. They want the Estuary Program to work with local governments to provide education, coordinate environmental efforts, and monitor the lower river.

Local government was another topic mentioned. People want government to become more efficient and provide higher levels of natural resources protection. They emphasized local government as the most effective level to address environmental problems and protect natural resources. Many people, including local officials, liked the Estuary Program's emphasis on helping local officials implement land use and environmental laws. Local officials encouraged the Estuary Program to sponsor hands-on workshops and seminars that provide real "how-to" demonstrations. They also encouraged the use of performance standards to allow creative alternatives for achieving the desired ecosystem protection.

Education came up frequently, particularly in reference to implementation. Many people suggested that education should be the major focus of the Estuary Program during implementation. They encouraged Estuary Program education efforts to dovetail with existing education efforts to maximize resources. Additionally, people want education efforts to recognize and incorporate the knowledge of local residents who live and work on the river. People had definitive ideas about the education program, requesting that it be focused, timely, creative, engaging, and tailored to common goals and specific groups. They want the education program to create a sense of personal responsibility, encouraging people to modify their behavior to become more river-friendly. The education program should also provoke discussion, be truthful and hard hitting, and illuminate the potential negative consequences of certain actions. The program should target all segments of society and focus primarily on children.

Coordination was an important topic for people. They encouraged the Estuary Program to recognize and coordinate with existing activities and avoid duplication of efforts. People thought the Estuary Program could really make a difference, since effective coordination is currently lacking. Some felt the Estuary Program would be the most suitable entity to coordinate a bi-state response to Endangered Species Act listings. They thought the Estuary Program's bi-state focus and multi-stakeholder composition made it uniquely qualified to address difficult issues that cross political boundaries. Some people believed the Estuary Program could bring Oregon and Washington and the federal government together to create a vision for the river and spur citizens and industry into action.

Monitoring was also cited as a critical need. People thought the Estuary Program could play a vital role in developing and maintaining a long-term environmental monitoring program. They responded positively to the Estuary Program's long-term monitoring plan. They also suggested that the long-term monitoring plan should build on existing monitoring efforts, with the resulting data forming the basis of education efforts.

The study area of the Estuary Program generated discussion. As used by the National Estuary Program for the Lower Columbia River Estuary Program, the term estuary includes the tidally influenced portions of the river. This is a broader definition than that generally used by people: the place where salt water and fresh water meet. This modified definition, plus a poor study-area map, caused confusion. Another discussion focused on how the Estuary Program relates to problems outside the study area. Some people thought a focus solely on the lower river and

estuary was inadequate to deal with problems affecting the study area. Others thought that some of the identified actions overstep the study area, and the *Management Plan* should focus solely on the lower 146 river miles.

Some people commented that **Native Americans'** historical and current role in the region, role in the draft *Management Plan* planning process, and participation in the Columbia River Inter-Tribal Fish Commission all needed to be further addressed. Participants suggested including more discussion on Native American culture, land use ethic, and settlement patterns in the *Management Plan*.

Fairness was an issue heard at numerous public meetings. People were concerned that only one sector was being held responsible for the problems. For example, some people felt that agriculture was being singled out, while others felt that forestry practices were singled out. People agreed that all sectors, including municipal governments, need to do their fair share to adjust practices that cause degradation and work on preventing pollution. In particular, the City of Portland was mentioned, with people critical of the City's combined sewer overflows. They were concerned about the City reprioritizing some of its focus from combined sewer overflows to habitat protection. They want to make sure that all municipalities, including Portland, are actively addressing their problems.

The U.S. Corps of Engineers' Columbia and Lower Willamette Channel-Deepening Project also came up. People expressed frustration that the Estuary Program is not taking a position on major projects—in particular, the channel-deepening project. People did not agree with or fully understand the Estuary Program's current policy of commenting on the potential impacts of large projects rather than taking an outright position for or against them.

Toxic contaminants were a topic for some people. Generally, they thought that toxic contamination should be the sole focus of the program. Their rational was that if toxic contaminants are not addressed, all the other good work will be for naught. They suggested that the plan de-emphasize habitat degradation and restoration, and focus resources on toxic pollutants.

Finally, people had concerns with the **public input process.** Some people thought that the 2-month public comment period was too short to adequately review the *Management Plan*. There was also frustration that the program did not hold meetings in Hood River. Some people thought the newspaper questionnaire was biased and resulted in a self-selected response group. The exercise used at the meetings to generate discussion about who should implement actions also received comments. People generally participated in the exercise without comment, but people at a few meetings questioned its usefulness and appropriateness.

Brief Summary of Significant Revisions

All comments were equally important and carefully considered. Although not all resulted in a specific text change in the *Management Plan*, the Management Committee responded to each comment.[2] Public comments led to extensive revisions to the draft *Management Plan*. Some changes involved substituting one word for another. In other cases, the comments led to more extensive rewrites.

[2] The complete public comment record and the Management Committee's responses are compiled in *Response to Public Comment*, a companion document available from the Estuary Program office.

Summary of Revisions to Actions

- *Language was added to clarify that the Management Plan is a three-volume set and identify the contents of Volumes 2 and 3.*
- *The discussion of the Native American treaty tribes in Chapter 2 was expanded.*
- *A discussion of the Management Plan's technical foundation was added to Chapter 4. This includes a profile of the Bi-State Program's technical studies and an explanation of how environmental indicators were selected.*
- *The introduction to Chapter 5 was expanded to provide a better link between the technical data of Chapter 4 and the actions of Chapter 5.*
- *The focus of the first few habitat actions was changed to place a greater emphasis on function and performance standards to protect habitat.*
- *The discussion of existing agency activities at the end of each action (Chapter 5) was expanded.*
- *Chapter 6 was revised to better define how the Management Plan will be implemented and the Estuary Program's role in implementation.*
- *The format was improved, including adding a glossary, citations, and maps and reducing acronyms.*

Changes to specific actions included:

- *Action 7: Language was added to include educating homebuyers about flood risks.*
- *Action 8: Language was added to provide information about native landscaping.*
- *Action 9: The wording was changed to clarify that the focus is on land use practices that ensure environmentally sensitive development, not on encouraging growth.*
- *Action 11: The word "control" was substituted for "manage" in regard to exotic species. Nurseries were added to the parties targeted for information to help control exotic species.*
- *Action 12: The language was strengthened to state that projects that alter the Columbia River morphology "require" no harm rather than "ensure" no harm.*
- *Action 14: The list of interested parties was expanded to ensure that citizens are involved in defining the common vision.*
- *Action 15: To emphasize the Estuary Program's strong role in education, the word "provide" was substituted for "maintain" in regard to education programs.*
- *Action 29: The date in the action measurement was moved forward, so the study of human health impacts is targeted for completion by 2010 rather than 2020.*
- *Action 38: The action was revised to promote the use of low-sulfur fuels and encourage alternatives to metals in brake pads where alternatives are available.*
- *Action 43: A date (2001) was added to the action measurement for nuclear clean-up schedules and budgets.*

In the end, results are measured not only by how many people participate in the public comment process, but by how insightful, informative and helpful the comments are. The Estuary Program succeeded on both counts, receiving both a large number of responses and many helpful insights. The impressive public response indicates the wealth of knowledgeable citizens committed to the Columbia River and its health.

Public comment has significantly shaped the final *Management Plan*. As at other critical decision points, the Management Committee heard from a range of interests with a variety of ideas. The *Management Plan* reflects that scope and diversity. The Management Committee greatly appreciates and thanks the citizens of the study area for their thoughtful help and participation. This document could not have been completed without it.

Observations

The National Estuary Program offers a tested method for community-based environmental planning. The federal program offers technical and financial assistance and sets specific guidelines, but does not define the environmental problems or prescribe the solutions. Rather, it provides a structure for bringing local citizens together to assess their natural resource, consider the problems and impacts, and decide themselves how to protect the resource and maintain a high quality of life for all.

The four phases of the NEP offer a methodical approach for consensus building by diverse local parties. Once the committee structure is set and members appointed, the process requires careful assessment and collaborative decision-making. Taking the time to study environmental health, articulate the problems, and establish a vision helps prevent jumping to inappropriate or ineffective solutions.

While science is the foundation of the NEP, the program is not focused on study and research with no action. The NEP requires the *Management Plan* to identify specific actions that will be ready to implement. The collaborative process moves issues forward. These are often the same issues that have been argued over in adversarial settings for years. The process also helps build a team that shares common goals. The cooperation and shared vision that are developed become critical during the hard process of defining final actions toward the end of the program. They are also an essential element for successfully implementing the *Management Plan*.

The greatest challenge to public participation has been to devise creative methods for citizens to become involved in the management planning process. It is relatively easy to conduct outreach activities that do not require active involvement. Outreach is very important for increasing awareness, gaining support, and building ongoing stewardship. The goal in the planning phase of the Estuary Program, however, was to have citizens contribute to the actual development of the *Management Plan* and help guide the Management Committee in its work. New approaches were needed to obtain public opinions and ideas about what is wrong, what problems should be addressed, and how these problems should be resolved. The Estuary Program's multi-layered public involvement strategy recognized different segments of the community who participate in different ways at different levels, and identified the need to use a variety of tools.

It was important to go beyond traditional public involvement methods, especially public forums and meetings. Over the past 20 years, public meetings have become almost mandatory in every government effort. Yet, they are often poorly attended (unless dealing with a highly controversial subject); participants are "self-selected" (i.e., only those with a strong interest or point of view attend); and they are held to obtain comment on a plan or proposal. Active listening and learning among people of divergent opinions rarely occurs at such meetings.

Only 124 people attended a series of eight such meetings held throughout the Estuary Program study area in March 1997. The meeting in the Portland metropolitan area drew fewer than two dozen people out of a population of almost 1 million. The two public meetings held as part of the comparative risk ranking attracted a total of 20 people, compared with over 1,100 people who returned the newspaper advertisement risk ranking. Both groups responding to the risk ranking were self-selected, and neither represented a statistical sampling of the population. Clearly, however, the newspaper response provided feedback from a significantly greater number of citizens than either series of public meetings.

Targeted groups, where people are personally invited to participate and receive information in advance, offer a viable alternative for input. The Estuary Program's constituent focus groups involved over 200 of the Management Committee's constituents who live, work, and play in the study area—again, significantly more people than attended the public meetings. These meetings also provided an opportunity for Management Committee members to ensure they were still in touch with their constituents' viewpoints and needs. Meeting with the same people at several intervals enabled the participants to establish and build on a knowledge base.

Both the constituent focus groups and the newspaper advertisements were also an opportunity to provide follow-up and take the participants to the next step. Constituent group participants were sent the results of their meetings and invited back for consultation at subsequent decision points. They provided continuity and developed into a valuable resource for the program. Follow-up newspaper ads presented survey results to both the participants and the general public. This kind of timely response demonstrates commitment to the participants and the public involvement process.

The comparative risk ranking was a very useful tool. It gave the Management Committee a better understanding of the public's perceptions, concerns, and needs. It also encouraged citizens to think more about how problems and risks relate to each other, rather than simply citing the issues that worry them. This exercise offered a new set of data to consider. Understanding the gaps between technical/scientific and public perceptions can also help shape targeted education programs.

The ongoing challenge is to continue education and involvement efforts that will result in all people owning the solutions and sharing in protecting the resource. With 75 percent of pollution coming from non-point sources, everyone will need to take responsibility for their share. Gaining that support in a world of government distrust and disengagement is no less a challenge than restoring salmon or improving water quality.

The *Management Plan* is the result of a collaborative process, and will require ongoing cooperation to succeed in implementation. It calls for us to come together, transcend individual differences, and think and work as a community to shape what is best for us and the lower Columbia River and estuary.

Glossary

Algal growths: Growths of microscopic aquatic plants.

Alluvial: Relating to clay, silt, sand, gravel, or similar material deposited by running water.

Ambient: Refers to overall conditions surrounding a place or thing. For example, ambient monitoring refers to routine water quality monitoring.

Anadromous: Describes fish that are born in fresh water, migrate to the sea, and return to fresh water to spawn (reproduce). Examples include salmon, sturgeon, shad, smelt, and steelhead.

Aquatic: Living in or around water.

Arsenic: A naturally occurring chemical element, currently used primarily in the production of pesticides and wood preservatives. In some areas, levels of arsenic are increasing in groundwater because of seepage from hazardous waste sites. In sufficient quantities, arsenic is highly toxic to fish, wildlife, and humans.

Basin: An area of land drained by a river and its tributaries.

Bathymetry: The measurement of water depths in water bodies.

Beneficial uses: The specific uses of a river by people and wildlife, defined by state laws and regulations, and protected by state agencies. Oregon and Washington's defined beneficial uses for the lower Columbia River are: public and private drinking water supply, irrigation, stock watering, fish migration and spawning, other fish wildlife and aquatic plant uses, wildlife usage, preservation of significant and unique habitats, water contact sports, fishing and hunting, aesthetic quality, hydroelectric power, navigation and transportation, marinas and related commercial activity, and commercial fishing.

Benthic: Bottom-dwelling or substrate-oriented; at or in the bottom of a body of water.

Best Management Practice (BMP): A practice or combination of practices that are determined to be the most effective and practical means of controlling point and non-point source pollutants at levels compatible with environmental quality goals.

Bioaccumulative: Contaminants that accumulate in the tissues of individual organisms.

Bioassay: A laboratory test using live organisms to measure biological effects of a substance, factor, or condition.

Biodiversity: The number and abundance of species found within a common environment. This includes the variety of genus, species, ecosystems, and the ecological processes that connect everything in a common environment.

Biological integrity: The capacity of the river system to support and maintain an integrated, adaptive community of plant and animal life.

Biota: All living organisms that exist in a region.

Bis (2-ethyl hexyl) phthalate: A common plasticizer used in a wide variety of industrial processes.

Carcinogenic: Capable of causing or inciting cancer.

Chronic toxicity: Measured as the concentrations of toxics that cause long-term sublethal effects such as impaired growth or reproduction.

Clean Water Act: The 1973 Federal Water Pollution Control Act and Amendments are concerned with the pollution of surface water and groundwater and basically call for fishable and swimmable water everywhere. Permits are required for discharges into waters. The law provides for pretreatment standards, plans involving non-point source pollution, and effluent limitations to effectuate the statutory purpose.

Environmental Protection Agency Cluster Rule: An integrated, multi-media regulation to control the release of pollutants to air and water from the pulp and paper industry. The Cluster Rule sets new baseline limits for releases of toxics and non-conventional pollutants.

Columbia River Basin: All tributaries and their watersheds that drain into the Columbia River along its entire 1,200-mile length. The Columbia River Basin drains approximately 259,000 square miles.

Combined Sewer Overflow (CSO): Untreated overflow from commingled sanitary and storm sewers.

Confluence: The place where two or more streams or rivers meet.

Conventional Pollutants: Constituents or characteristics of the water that occur naturally but become problematic to aquatic organisms and humans due to human activity or, in some cases, natural events. Examples include high water temperatures and high levels of total dissolved gas.

Crustaceans: Invertebrates (animals without backbones) of the phylum Arthropoda, including amphipods, shrimps, crabs, barnacles, and other animals that have segmented bodies, jointed legs, and hard external shells.

Cumulative impacts: The combined environmental impacts that accrue over time and space from a series of similar or related individual actions, contaminants, or projects. Although each action may seem to have a negligible impact, the combined effect can be severe.

DDD: See DDT.

DDE: See DDT.

DDT (Dichloro-diphenyl-trichloroethane): The first chlorinated hydrocarbon insecticide (pesticide). DDT collects in the fatty tissue of some animals and was responsible for eggshell thinning and reproductive failure in eagles. The U.S Environmental Protection Agency banned registration and interstate sale of DDT in 1972 because of its persistence in the environment and accumulation in the food chain. In the environment, DDT breaks down to form DDD and DDE, which are also toxic.

Diking: A method of artificially changing the direction of a course of water or confining water.

Dioxin: A chlorinated organic compound that is widespread and persistent in the environment, some forms of which are highly toxic to fish, wildlife, and humans.

Dissolved oxygen (DO): Oxygen dissolved in water; necessary for the life of fish and most other aquatic organisms. The measurement of dissolved oxygen can be an important indicator of the condition of a water body.

Dredging: The removal of sediments from a river, estuary, or ocean, usually for navigation or docking purposes.

Ecology: The interrelationships of living things to one another and to their environment, or the study of these interrelationships.

Evolutionary Significant Unit (ESU): A population or group of populations that is considered distinct (and hence a "species") for purposes of conservation under the Endangered Species Act. To qualify as an ESU, a population must: 1) be reproductively isolated from other conspecific (of the same species) populations, and 2) represent an important component in the evolutionary legacy of the biological species.

Ecosystem: A community of organisms in a given area together with their physical environment and its characteristic climate.

Effluent: Wastewater discharged into a body of water from point sources.

Endangered Species: A plant or animal that is in danger of extinction throughout all or a significant portion of its range, as identified in accordance with the Endangered Species Act of 1973.

Endangered Species Act: A federal act to protect plant and animal species whose continued existence is in jeopardy. When species are listed under the Act as threatened or endangered, certain actions must be taken for their conservation.

Enhancement: Making changes or improvements to habitat to replace functions or values lost or damaged.

Environmental Indicators: Conditions or occurrences that indicate the health or degradation of the environment.

Erosion: Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical and chemical forces. Human activities can greatly speed this detachment.

Estuary: The area where the fresh water of a river meets the salt water of an ocean. In the National Estuary Program, this definition is extended to include the tidally influenced waters of the river.

Fecal Coliform: Bacteria associated with the feces of warm-blooded animals, including livestock and humans.

Fertilizers: Material added to the soil to supply chemical elements needed for plant nutrition.

Fill: Soil, sand, and debris deposited in aquatic areas, such as wetlands, to create dry land, usually for agricultural or commercial development purposes.

Flip lips: A structure added to the sloping surface of a spillway to change the downward direction of flow and "flip" it outward. This minimizes deep plunging of water, thereby reducing gas supersaturation and minimizing gas bubble disease in both juvenile and adult migrating fish. Also called spill flow detectors.

Floodplain: The area along a stream or river that is subject to flooding.

Food chain: An arrangement of the organisms of an ecological community according to the order of predation in which each uses the next (usually lower) member as a food source.

Furan: A chlorinated organic compound closely related to dioxin.

Gas bubble disease: A potentially fatal disease affecting fish, triggered by exposure to elevated levels of dissolved gas when water is spilled over dams.

Groundwater recharge: Replenishment of water that circulates in underground aquifers.

Habitat: Places where plants and animals live, feed, find shelter, and reproduce.

Infiltration: The downward movement of water from the atmosphere into soil or porous rock.

Instream water rights: Rights that establish flow levels to stay in a stream on a month-by-month basis, and are usually set for a certain stream reach and measurement at a specific point on the stream. Instream water rights have a priority date and are regulated in the same way as other water rights.

Lower Columbia River Basin: All tributaries and their watersheds that drain into the Columbia River from its mouth to river mile 146. It is larger than the Lower Columbia River Estuary Program study area because it includes the entire watersheds of the tributaries, beyond the waters that are tidally influenced. The Lower Columbia River Basin drains approximately 18,000 square miles, about 7 percent of the entire Columbia River Basin.

Lower Columbia River Estuary Program Study Area: Those portions of the Columbia River and its tributaries that are tidally influenced. The study area extends from the Pacific Ocean to Bonneville Dam at river mile 146. It also includes near-coastal waters from the mouth of the Columbia to the 3-mile limit, to the extent that those waters are influenced by the plume of fresh water flowing out of the Columbia River to the sea. The study area covers approximately 4,300 square miles. It is also referred to as the lower Columbia River and estuary.

Macro-invertebrates: Invertebrates large enough to be seen with the naked eye (i.e., most aquatic insects, snails, and amphipods).

Mainstem: The main course of a stream or river.

Marsh: A wetland where the dominant vegetation is non-woody plants such as grasses and sedges, as opposed to a swamp, where the dominant vegetation is woody plants and trees.

Metabolite: The product of the physical and chemical processes by which foodstuffs are synthesized into complex elements, complex substances are transformed into simple ones, and energy is made available for use by an organism.

Metadata: Information about data, such as their source, sampling protocol, and standards.

Metals: A group of elements found in rocks and minerals that are naturally released to the environment by erosion, as well as generated by human activities. Certain metals, such as mercury, lead, zinc, and cadmium, are of environmental concern because they are released into the environment in excessive amounts by human activity and can produce toxic effects.

Mitigation: Measures taken to reduce the severity of impacts resulting from an action or practice.

Morphology: The form and structure of a stream or river.

Mouth: The place where a stream or river enters a larger body of water (e.g., the ocean).

Native species: Species that are indigenous to the local region and have evolved to thrive in local conditions.

Natural flood storage capacity: The natural capacity of lands surrounding a river to absorb floodwaters and excess runoff.

National Estuary Program (NEP): A federal program established in 1987 by amendments to the Clean Water Act and administered by the U.S. Environmental Protection Agency. The NEP's primary goal is "to protect estuaries of national significance that are threatened by degradation caused by human activity." The NEP employs community-based environmental planning, designating primary responsibility for program development and implementation to the local community.

Non-indigenous species: Species not naturally growing or living in a particular area. Their introduction and expansion can destroy or deplete habitat and food needed by native populations. Also referred to as exotic or non-native species.

Non-point source pollution: Pollution entering waterways from broad land areas as a result of the way the land is used—for example, runoff from agricultural practices, construction and road-building, logging, and urban development.

National Pollutant Discharge Elimination System (NPDES) permit program: A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by U.S. EPA, a state, or another delegated agency.

Nutrients: Essential chemicals needed by plants and animals for growth. Enriched nutrient loads from sewage, land runoff, and atmospheric deposition can result in excessive growth of algae and lead to degradation of water quality.

PAHs (Polycyclic or polynuclear aromatic hydrocarbons): A class of complex organic compounds, some of which are persistent and cause cancer. These compounds are formed from the combustion of organic material and are ubiquitous in the environment. PAHs are commonly formed by forest fires and by the combustion of gasoline and other petroleum products. They often reach the environment through atmospheric fallout and highway runoff.

Particulate matter: Material composed of minute separate particles.

PCBs (polychlorinated biphenyls): A group of manufactured colorless and odorless chemicals made up of carbon, hydrogen, and chlorine. Because of their insulating and nonflammable properties, PCBs were widely used as coolants and lubricants in transformers, capacitors, and other electrical equipment. Banned from production in the United States in 1976, PCBs found today are from historical use or spills. PCBs are suspected of causing cancer in humans and other animals.

Performance standards: Standards based on meeting certain desirable outcomes through flexible methods.

PBTs (persistent bioaccumulative chemicals): Toxic and long-lasting substances that can build up in the food chain to levels that can be harmful to human and ecological health. Many of these substances are man-made and have been in existence for a relatively short period. A few, such as mercury and cadmium, are naturally occurring.

Pesticides: Pesticides include herbicides, insecticides, fungicides, and rodenticides that are used to control unwanted plants, insects, fungi, or rodents, respectively. Most of these chemicals are manufactured and are not found naturally in the environment.

pH: Measure of the negative logarithm of the hydrogen ion concentration to determine the acidity or alkalinity of water. Water of pH 7 is neutral; lesser values are acidic; higher values (pH 14 maximum) are alkaline.

Plankton: Microscopic plants and animals that drift with currents.

Plume: An elongated column or cloud of water or suspended sediment.

Point source pollution: A source of pollutants from a single point of conveyance, such as a pipe. For example, the discharge from a sewage treatment plant or a factory is a point source.

Radionuclides: Decayed products of radioactive materials.

Redds: Nests made in gravel (particularly by salmonids), consisting of a depression that is

created and then covered.

Restoration: Returning a damaged habitat, as nearly as possible, to its condition prior to being damaged.

Riparian zone: The land bordering a stream or river, and the vegetation typical of those borders.

Riprap: Large rocks, broken concrete, or other structure used to stabilize streambanks and other slopes.

Riverine: On or near the banks of a river.

River mile: The mile marking a particular point along or in a river, measured from the mouth of a river to its source.

Rock barbs: Rock structures placed in a stream that alter flow to protect streambanks and create new aquatic and riparian habitats.

Runoff: Water from precipitation, snowmelt, and agricultural or landscape irrigation that runs off the land into water bodies.

Salmonid: Fish of the family Salmonidae, including salmon, trout, chars, whitefish, ciscoes, and grayling.

Sanitary Sewer Overflow (SSO): Overflow resulting from a municipal sanitary sewer system exceeding its capacity, due to unintended inflow and infiltration of storm water.

Sediment: Mud, sand, silt, clay and other particles that settle on the bottoms of waterways.

Self-sustaining: Species able to reproduce and rear successfully in their natural habitats and survive the remainder of their life stages.

Sensitive species: Those species that 1) have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species, or 2) are on an official state list, or 3) are recognized as needing special management to prevent their being placed on a federal or state list.

Slough: A channel through a marsh or mudflat.

Spawn: The act of reproduction of fish, which includes egg laying and fertilization, and sometimes nest building (e.g., salmon).

Stewardship: Taking care of the earth for ourselves and others; sharing knowledge and enthusiasm about that care with others.

Stormwater: Surface water resulting from all natural forms of precipitation.

Substrate: Material that forms a stream or lake bed (silt, sand, gravel, cobble, etc.).

Supersaturation: Water is supersaturated when concentrations of dissolved gas exceed 100 percent. This can occur when gas is forced into the water under pressure, such as when water spills over dams and forces gas into the water.

Suspended solids: Solid inorganic and organic materials that remain suspended in the water column.

Synergistically toxic: Chemicals that become toxic as they mix with other chemicals.

303(d) lists: State-compiled lists of stream segments that do not meet water quality standards.

They are called 303(d) lists after the section of the Clean Water Act that makes the requirement.

Tidal wetlands: Wetlands that have a direct connection to or are influenced by the ocean's tides. For the purposes of the *Management Plan*, tidal wetlands are defined as wetlands below river mile 46.

Tide flats: Flat areas of land exposed during low tides.

Tide gate: A structure designed to allow drainage of diked areas while preventing their inundation by the ocean's tides.

Threatened species: A plant or animal species likely to become endangered throughout all or a specific portion of its range within the foreseeable future, as identified in accordance with the Endangered Species Act of 1973.

Total dissolved gas: A measurement of the amount of nitrogen and oxygen gas dissolved in water. Water is saturated when it can hold no more dissolved gas under normal atmospheric conditions.

Total Maximum Daily Loads (TMDLs): Allocated measures that ensure compliance with water quality standards for 303(d)-listed water bodies.

Toxic chlorinated hydrocarbons: Toxic compounds resulting from the mixing of chlorine, carbon, and water.

Toxic: Poisonous, carcinogenic, or otherwise directly harmful to life.

Tributary: A stream or river feeding a larger body of water.

Tributylitin: An organic compound used as an additive in many marine anti-foulant plants to prevent algal and barnacle growth. Tributylitin is highly toxic to many marine organisms.

Turbidity: A measure of the amount of suspended material in the water, based on the material's refractory characteristics.

Urban growth boundaries: Generally state-wide, land use planning programs that mark the separation between rural and urban land. They are intended to encompass an adequate supply of buildable land that can be efficiently provided with urban services (such as roads, sewers, water lines, and street lights) to accommodate the expected growth during a specific time period.

Waste load allocations: The portion of a receiving water's loading capacity that is allocated to existing or future point source discharges.

Water column: The layer of water between surface and bottom sediments; the moving mass of water contained by a stream or river bed. The water column contains dissolved and particulate matter and provides habitat for plankton, fish, and marine mammals.

Watershed: A geographic area within which all surface water drains to a particular body of water.

Wetland: An area that is saturated by a surface of groundwater and subsequently is characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions.

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Historical Photographs

Page 12 - Fish net seining. Earl Moore photo, Oregon Historical Society, #OrHi GI 7185 #390-D

Page 143 - The Rapids, Upper Cascades. Charles E. Watkins photo, Oregon Historical Society, #OrHi 21089 #1100B

In memory of Terry Husseman

whose vision and commitment inspires us still.
Terry served as Deputy Director of the Washington Department of Ecology
and was a founding member of the Estuary Program Policy Committee.
In large part, it was Terry's vision and guidance for a two-state comprehensive
environmental program that shaped the Estuary Program.
He is missed.