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City Club of Portland Information Report: Endangered Fish Species in Portland

City Club of Portland (Portland, Or.)

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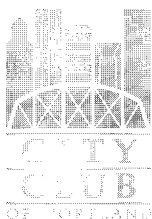
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THE CITY CLUB OF PORTLAND INFORMATION REPORT
SUBMITTED JULY 30, 1999

Endangered Fish Species in Portland

Published in the City Club of Portland *Bulletin*,
Vol. 81, No. 9, July 30, 1999.



THE CITY CLUB OF PORTLAND MISSION:

To inform its members and the community in public matters and to arouse in them a realization of the obligation of citizenship.

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EXECUTIVE SUMMARY

Migratory fish in the Willamette and Columbia Rivers are in trouble and Portland residents face an unprecedented opportunity to address this challenge. In March 1998, the National Marine Fisheries Service (NMFS) listed Willamette River steelhead as threatened under the federal Endangered Species Act (ESA). Additional chinook and other salmon and steelhead stocks were listed as threatened in March 1999. Further, coastal cutthroat trout have been proposed for listing as threatened; this could affect still more watercourses here. As a result, the Portland metropolitan area has become one of the nation's first major urban areas directly impacted by the ESA.

Few Portland area citizens are familiar with the potential impacts of these listings on activities and policies of public agencies, private businesses, organizations, and citizens. Many are also unaware of the challenges that face local and regional salmon restoration efforts. This City Club information report provides City Club members and the public with an introduction to the likely impacts and challenges that lie ahead.

What helps and harms salmon species?: Salmon species, or salmonids, have a very complex life cycle and use a variety of habitats from small inland streams to far out into the Pacific Ocean. Maintaining healthy salmon species requires access to adequate habitat appropriate to each species different life stages, and cool, clean water with plenty of oxygen and low amounts of suspended material in the water.

Many of the activities that characterize an urban community clash with salmon needs. Development can eliminate important stream margins, vegetation, and wetlands, increase water temperature, and damage spawning areas through erosion and siltation. Run off from lawns, roofs, roads, and parking lots can carry a variety of contaminants into nearby streams and rivers. Road construction often blocks fish access to habitat areas.

While the federal Endangered Species Act will be a strong catalyst for local and regional action on salmon issues, it does not require that an endangered fish species be restored, but rather that we not take actions that will further harm the species. The City of Portland, and many other local, regional, and statewide jurisdictions are committed to pursuing a higher standard—actual restoration of salmon runs.

Likely impacts of salmon restoration: Efforts to restore healthy habitat for salmonids forces us to face the potential impacts on our own lives. Some impacts may be considered negative, or costly; some may be considered opportunities. Clearly, the burden or opportunity of these impacts is “in the eye of the beholder.” Tangible impacts on city residents may include:

- Increased costs of transportation infrastructure.
- Increased water and sewer bills.
- Limitations on water use.
- Restrictions on chemicals used in the home or yard.
- New riparian protection measures.
- Impacts on businesses and industries.
- Increased time and cost for development processes.
- Impacts on land, homes, sprawl and livability.

In the short-term, impacts may appear burdensome, but, overall, in the long term, the city may realize a variety of positive impacts: restoration of salmonids to urban streams and a healthy urban sport fishery in the Willamette River; an enhanced reputation as an eco-tourism destination and attractiveness to new businesses and residents; an increase in streamside parks and recreational space for a growing urban population. Citizens may also see an increase in civic pride and growing support for a reexamination our own behaviors and our relationship with the natural environment.

Salmon protection and recovery is a complex technical problem and a significant political and social challenge. Most witnesses interviewed by our committee said that, while the ESA listings are an opportunity, successful restoration of salmon species in the Portland area and the Willamette River Basin will not be easy. Broad uncertainty clouds the current discussion about these issues and salmon restoration generally. Many witnesses noted the difficulty of moving forward given the uncertainty about the requirements that NMFS will impose and the implications of different local and regional attempts to restore endangered fish species.

Four key challenges emerged during our discussions with committee witnesses:

- **What is our shared vision for salmon?** Different groups in our society have very different ideas about how far we should go to protect or restore salmon. Without a shared vision of what we want to accomplish, it will be difficult to craft effective, long-term policies that maintain broad public support. A number of efforts are underway to craft a shared vision.
- **What works?** We do not have adequate knowledge about how to most effectively help fish in Portland and entire Willamette River Basin. While this

should not serve as a excuse to not to act, careful thought needs to be given to which actions to take, where, and when.

- **Who is in charge?** Leadership and coordination are the keys to effective action. While the committee heard about different possible options, currently no one entity has the clear mandate or authority to lead and coordinate the response to the ESA listings at the state level or in the Portland metropolitan area.
- **What information do we need to engage the public?** Success will depend partly on changing our individual behavior and on continuous popular support for salmon restoration efforts. Information and education programs will help achieve these goals.

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I. INTRODUCTION

Migratory fish in the Willamette and Columbia Rivers are in trouble and Portland residents face an unprecedented opportunity to address this challenge. In March 1998, the National Marine Fisheries Service (NMFS) listed Willamette River steelhead as threatened under the federal Endangered Species Act (ESA). Additional chinook and other salmon and steelhead stocks were listed as threatened in March 1999. Further, coastal cutthroat trout have been proposed for listing as threatened; this could affect still more watercourses here. As a result, the Portland metropolitan area has become one of the nation's first major urban areas directly impacted by the ESA. Few Portland area citizens are familiar with the potential impacts of these listings on activities and policies of public agencies, private businesses, organizations, and citizens. The federal government has provided little help; to date, there has been no official rule of what constitutes an offense under the ESA, known as the 4(d) rule.

There is a distinct difference between the ESA requirements and the policies that the State of Oregon, Metro and the City of Portland have adopted. The ESA requires that we not harm fish species by significantly modifying habitat. State, regional and city policies all go beyond this "no take" goal to emphasize restoration, but the desired level of restoration is currently undefined.

The City Club's Board of Governors determined that a short-term, information report about the context for the listings and an analysis of likely impacts in Portland will be a useful tool to help City Club members and the public better understand the implications and opportunities of the listings. The City Club commissioned a 20-member volunteer committee to produce the report.

A. Charge to the Committee

The commissioned objectives of the report are to:

- provide a context for report analysis and recommendations;
- identify the major potential impacts of compliance with the act on public agencies, private businesses and organizations, and citizens in Portland;
- raise public awareness of the possible local impacts of the listing; and to
- prepare City Club members to play an active role in developing ESA-related public policy and its implementing compliance measures.

To these ends, the City Club asked the committee to answer the following questions:

- What do fish need?
- What actions or conditions endanger fish?

- What led to the ESA listing of Willamette River steelhead and chinook?
- What are the ESA requirements regarding Willamette River steelhead and chinook?
- Who are the stakeholders and what are their roles?
- What are the likely impacts of complying with the ESA?
- How much reliable scientific information do we already have?
- What important issues may influence the success or failure of restoration efforts for Willamette River steelhead and chinook?
- What further City Club actions could help inform the public and move this issue forward?

The Committee acknowledges that for the entire Pacific Northwest region, the response to ESA-listed fish species requires greater regional cooperation throughout the four-state Columbia River Basin to restore spawning habitat; to have more fish-friendly agricultural, forestry and dam operations; and to continue restrictions on fish harvest in the ocean and rivers. That response may well affect the region's power rates and economy. While acknowledging these issues, the Committee tried to stay true to the charge of the report—actions and effects specific to Portland. Within the city's corporate limits, affected water bodies include the lower Willamette and Columbia Rivers and their tributaries, including Johnson, Tryon and Fanno Creeks, the Columbia Slough, and peripherally, the Bull Run/Sandy River watersheds.

Meeting weekly for over five months, committee members heard from representatives of government agencies, business and development industries, environmental advocacy groups and watershed councils. Committee members also conducted individual interviews to supplement the wide variety of written reports, articles and other materials available. (See the Appendices for a list of witnesses interviewed and resource materials used in preparing this report.)

II. BACKGROUND

For as long as our history has recorded the life of this region, from indigenous tribal nations to today's religious institutions, the Pacific Northwest's human inhabitants have held salmon as important to their lives. The Pacific Northwest has seen years of depletion and efforts to save fish runs. Native American peoples and western settlers have attempted to recover salmon runs, for their spirituality, sustenance and economics, especially since the runs began to severely decline in the early twentieth century. The controversy over solutions is nearly as old as the fishery itself.

The decline of salmon and steelhead populations in the Willamette Basin over the last 150 years is attributed to numerous factors. The most frequently mentioned are commonly referred to as the "four H's"—habitat, harvest, hatcheries and hydropower influences. To understand the impacts and interrelatedness of the "four H" factors of decline, a brief look at the broader ecosystem is necessary.

Basins, such as the Willamette River basin and watersheds, smaller sub-basins, like the Johnson Creek watershed, are areas that drain to common streams or rivers. Basins and watersheds follow natural landscape topography, not political boundaries, making it challenging to identify and correct critical problems.

The Willamette is a sub-basin of the Columbia River, once the crown jewel of salmon-producing rivers. Historic annual returns of 10 to 15 million salmonid species included chinook, coho, sockeye and steelhead trout. Today, on average, only about a million of these salmonids, 80 percent of them hatchery fish, return to the Columbia each year, a decline of 90 percent from their historic abundance.

At the confluence of the Willamette and Columbia Rivers, the City of Portland occupies only a small portion of the lower Willamette River basin and the listed species' Evolutionarily Significant Units (ESUs). Because of this, some people argue that urban activities are less important to salmonid recovery than activities in the upper basin. Others argue strongly that all salmonid habitat must be integrated into recovery efforts. They say both rural and urban dwellers must share recovery efforts and costs. Due to the intensity of urban land uses in the Portland area, this committee feels the city and its residents' actions have significant consequences for threatened fish.

A. Salmonid Fish Lifecycle and Habitat Needs

Salmon and their related species including steelhead trout are anadromous fish. They are born in freshwater streams, migrate to the ocean, then return upstream to spawn and die. Healthy anadromous fish populations rely upon the quality and quantity of both freshwater and marine habitats. In this report, the term "salmonids" is used to refer to all of the ESA-listed salmonid species in the Lower Columbia and Willamette River Basin.

Salmonids have different habitat requirements at each phase of their life cycle. Life history strategies of different fish stocks vary. Some salmonids' life cycles are more complex than others. While salmonids exhibit general patterns in the timing of migration and spawning (laying and fertilizing eggs), there is tremendous variation in these patterns. In general, they require a variety of stream channel conditions, varying from shallow pools with gravel bottoms to large, woody debris and deep pools of water. Complex streambed environments provide refuge from predators and resting places during storms and floods. Cool water and deep pools provide a refuge when shallower areas warm up in the summer months.

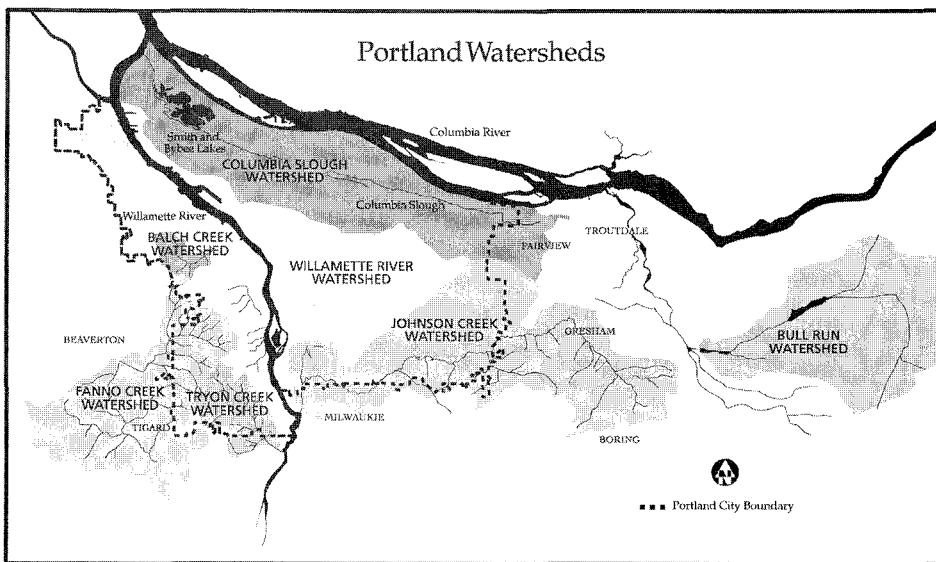
For spawning, salmonids prefer a channel habitat that is complex, usually located in high reaches of the watershed, characterized by steep slopes. Adult salmonids tend to spawn in between the higher-gradient areas where the water is more flat and gravel on the streambed is small enough to dig nests for protected egg-laying and incubation. Once the adults have spawned, all but some species of steelhead die soon after. Steelhead occasionally spawn more than once before dying.

Juvenile salmonids during the first weeks of life mostly occupy stream margins and pool areas where water velocities are slower than the fast water in stream channels. Once they have developed sufficient size and strength, they move to steeper areas where water flows more quickly. They lie in eddies behind large rocks where river currents bring them insects, salmon eggs, and small fish to eat. As they grow, young fish gradually move into deeper, swifter water with increasingly coarse streambed gravel.

In addition to the right stream channel characteristics, all salmonids need cool, clean water with plenty of oxygen and low amounts of suspended solids and contaminants. Fine sediment, and increased levels of turbidity (suspended particles in the water), such as from erosion or flooding, can be lethal to young salmon. Increased turbidity can clog the clear space between rocks and gravel, bury eggs, and prevent needed oxygen and water from reaching the eggs. Sediment in the water also damages the gills of adult salmon and hampers their ability to hunt for food.

Salmonids typically spend one to three years in freshwater such as mountain rivers and streams before migrating to the ocean to spend an average of one to three years before returning to freshwater to spawn. Even within the same species, salmonids such as steelhead have different "runs." This refers to the timing of their migration back to their freshwater homes. Summer run steelhead migrate between May and October, for example, while winter run steelhead migrate from November to April.

Figure 1. Portland Watersheds



Source: Portland Bureau of Environmental Services

B. Urban Impacts on Watersheds

Principal Portland-area waterways supporting salmon and steelhead habitats include the Columbia Slough; Fanno, Tryon and Johnson Creeks and their tributaries; and the mainstem Willamette and Columbia Rivers (see Figure 1). Thousands of Portland residents live along these streams. All Portland residents live within the watersheds of these streams and rivers.

Table 1 describes which salmonid species use these waterways and how they use them.

Table 1. Use of Portland Area Watercourses by Salmonids Listed or Proposed for Listing Under ESA

WATERCOURSE	SALMONID SPECIES	LIFESTAGES	COMMENTS, ISSUES
Mainstem Columbia	Steelhead Chinook Chum	Rearing, migration	Chum juveniles migrate to saltwater immediately.
Columbia Slough	Steelhead Chinook Chum	Rearing, migration	Migration is conceivable but unlikely. Rearing/migration is possible; local stocks may rear in slough and adults may stray into slough.
Mainstem Willamette	Steelhead Chinook	Rearing, migration (Steelhead) Spawning, rearing, migration (Chinook)	Spawning use by fall-run Chinook salmon unknown.
Johnson Creek	Steelhead Chinook	Spawning, rearing, migration.	Within species range.
Fanno Creek	Steelhead	Spawning, rearing, migration.	Within species range.
Tryon Creek	Steelhead	Spawning, rearing, migration.	Within species range.
Bull Run/ Sandy River	Steelhead Chinook	Spawning, rearing, migration.	

Source: "Appendix C," *Assessment of City of Portland Activities for Potential to Affect Steelhead*, prepared for City of Portland by Beak Consultants, Inc., September 1998.

Flowing through downtown Portland, the Willamette River serves salmonids mainly as a migration corridor and, for the most part, does not support spawning habitat for salmonids. Tributaries are more likely to provide spawning habitat, but recent finding of juvenile salmon at Ross Island has raised a debate over whether Portland's Willamette River harbor is used by salmonids for rearing habitat, as well as for migration.

The Columbia Slough in north Portland supports occasional salmonid use despite human-induced water quality impacts by urban and industrial development. Due to its character as a naturally slow-flushing backwater, it is not ideal for salmonid reproduction.

Significant portions of Johnson, Fanno, and Tryon Creeks flow through relatively intense urban development. Each supports, or potentially supports, steelhead spawning and rearing habitat for various salmonid life stages throughout the year. Johnson Creek in the past has supported chinook and coho salmon species.

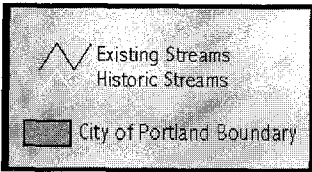
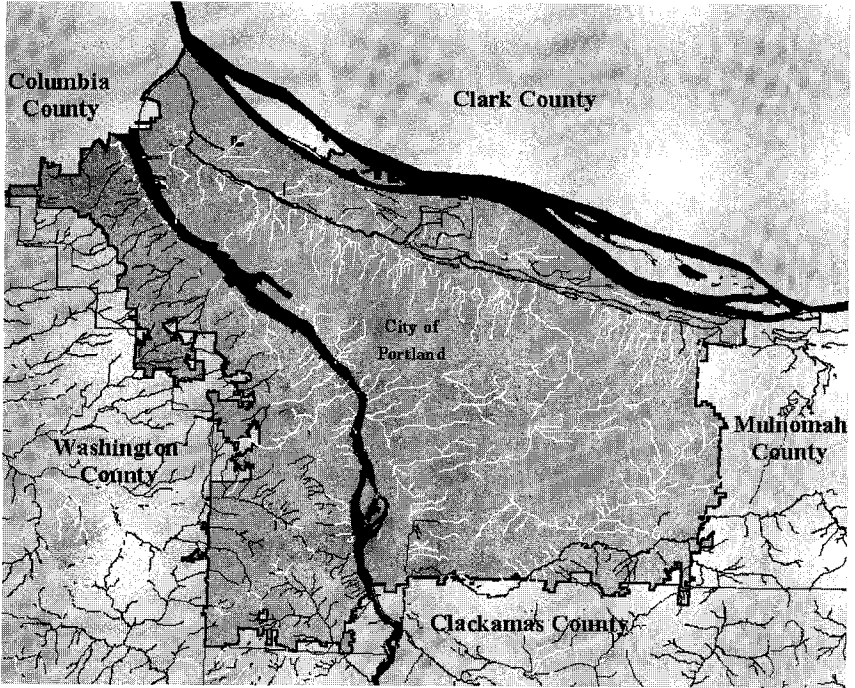
The Bull Run and Sandy Rivers are outside the city limits but are included within the lower Columbia ESU and therefore are subject to the ESA. The City's municipal water diversion reduces downstream flows in the summer, affecting habitat and raising water temperatures. Diversion dams also block upstream fish passage to the upper Bull Run watershed.

Urban activities can degrade salmonid habitat, by blocking fish passage, increasing the amount of sediment in water, and reducing water quality. Threats to fish from predators, angling, and disturbance of spawning adults are also potential limiting factors in some areas where salmonids have survived the effects of urban development.

Threats to watershed processes that support salmonid species are particularly acute where urban development has decreased natural water infiltration and retention. Asphalt (roads and parking lots) and rooftops are referred to as "impervious surfaces," those that cause greater than normal storm water runoff quantity and velocity due to reduced infiltration. Increased storm water runoff and higher peak flows alter stream channel forms that are favorable to salmonids and related species. Loss of riverine wetlands to insensitive development further reduces water retention and filtration capacity and thus both water quantity and quality. When Portland was first settled, there were some 200 streams; now all but six have been piped or "culverted" and paved over, obstructing fish passage and, in some cases, entirely eliminating aquatic and riparian habitat. Over 300 miles of stream banks have been paved over. This situation is particularly prevalent in the older areas of east, north and southwest Portland. (See Figure 2.)

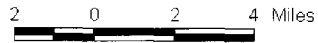
Figure 2: "Disappearing Streams"

Disappearing Streams



Source Data: Metro Growth Management Services

Development patterns throughout the Metro region have historically resulted in piping, culverting, or filling of streams and stream beds.



Source: Metro

Rainfall and surface storm water runoff within the city captures metals, oil, grease, and lawn and yard pesticides, all substances potentially detrimental to water quality and salmonid habitat. Under our current sewage and storm water system, most of these contaminants concentrate in the storm water drainage system and are often discharged directly into the river when it rains. Storm water runoff impacts are not limited to the Willamette mainstem, and include migratory habitat in both the Columbia and Willamette Rivers and all habitat in the Columbia Slough and in Johnson, Tryon, and Fanno Creeks.

Some factors that limit habitat are significant throughout the city while others are unique to particular watercourses and specific types of habitat. Sedimentation and loss of riparian shade, for example, significantly impact spawning and rearing habitat in Johnson and Tryon Creeks. Predatory warm water fish such as smallmouth bass and northern squawfish in the Columbia and Willamette Rivers and the Columbia Slough make predation a more significant limiting factor there than in areas without these predators. A table is included in Appendix C that identifies the relative potential (low, moderate, or high) of given factors affecting steelhead in Portland's major waterways. Many of the limiting factors for steelhead—loss of vegetation and increased sedimentation and pollutants from development, for example—are comparable to those for other salmonids.

In addition to sedimentation problems, Fanno, Johnson, and Tryon Creeks and the Columbia Slough all have fish passage problems. For example, a culvert at the intersection at Southeast 162nd Avenue and Foster Road obstructs the headwaters of Kelly Creek, one of the city's best potential spawning grounds for steelhead trout. Because of the culvert's negative impact and because of traffic safety problems; this area has been targeted for correction by the City in the short term. It will cost the City more to correct the fish passage problem than it would to correct only the intersection's safety problems.

Combined flows of sewage and rainwater (known as combined sewer overflows or CSOs) run directly into the Willamette and Columbia Rivers and Columbia Slough. These combined overflows impact water quality and are scheduled to be reduced 99 percent on the Columbia Slough and 94 percent on the Willamette River by 2011. The City's Bureau of Environmental Services formed an advisory group, the Willamette Stakeholders Task Force, to help solve this problem. The City has spent \$155 million to date for improvements, including separating storm water from the sewage system, installing sumps to collect storm water and let it seep into the ground, disconnecting downspouts, diverting streams away from the system, and implementing treatment plant improvements.

III. THE ENDANGERED SPECIES ACT

Historically, the most recently devised legal mechanism for salmon-protection is the Endangered Species Act (ESA). Ultimately, its most noticeable impact is that its enforcement will require us to change our behavior. Implementation of the ESA is complicated by our usual reluctance to change, as well as by Congress' underfunding the program, and by the Act's strict provisions on not harming, or "taking" threatened and endangered fish.

A. Background and Purpose

The Endangered Species Act was enacted in 1973 with nearly universal congressional support. Its purposes are "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes" of international and multi-lateral species conservation treaties and conventions that the United States has signed. Reauthorization and funding of the program have been the source of controversy among some members of Congress over the years.

B. How the Law Works

The federal government determines whether any species qualifies as endangered or threatened, as each of those terms is defined in the Act. Species are defined generally as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." Because Pacific salmonids have vast and overlapping ranges, it has been unusually difficult to apply the ESA.

After ten years of deliberation, the National Marine Fisheries Service (NMFS), the federal agency charged with ESA responsibility for protecting anadromous species, adopted a policy which considers a salmon stock a "distinct population segment" and, hence, a "species" under the ESA, if the stock represents an "evolutionarily significant unit" (ESU) of the biological species.

The Act further defines "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range," and "threatened species" as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." As noted above, the Lower Columbia River steelhead ESU and the Lower Columbia River chinook salmon ESU were listed as threatened species in 1998 and 1999, respectively. Other species listed as threatened in 1999 include Upper Willamette River steelhead trout, Middle Columbia River steelhead trout, upper Willamette River chinook salmon and Columbia River chum salmon. Upper Columbia River spring-run chinook were listed as endangered and Lower Columbia/Southwest Washington ESU cutthroat trout were proposed for listing as threatened. The ESA gives the agencies a year to determine whether to make a proposed species listing final.

For each species placed on either the endangered or threatened list, the federal government must issue a regulation designating the species' "critical habitat." Critical habitat designations are to be made on the basis of the best available scientific data as well as on the economic and other relevant impacts expected to flow from the designation.

Finally, the ESA directs the federal government to develop and implement "recovery plans" with measures necessary for the listed species' "conservation and survival," including any necessary site-specific management actions. A recovery team may be appointed to help draft and carry out a recovery plan. Few recovery plans have been developed, partly because of limited budgets for the program, partly because of political considerations, and partly because the courts have ruled that development and implementation of recovery plans is not required under the Act. Recovery plans are intended primarily as guidance.

C. Requirements and Compliance

When a species is listed under the ESA, it becomes the object of a broad array of statutory protections, some of which restrain actions that may adversely affect the species. One restraint requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the species' critical habitat. This prohibition even applies to activities of private landowners on their land if the activity requires federal authorization, like placing fill in wetlands or operating in an area of heritage and cultural significance. Federal agencies may also withhold funds for non-compliance.

Another significant restraint in the ESA applies to all projects and actions and makes it unlawful generally to "take" any endangered species within the United States, with "take" defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct."

NMFS has issued a proposed regulation to further define "harm" as it is defined in Fish and Wildlife Service (FWS) regulation; that is, "harm" includes significant habitat modification that actually injures a listed species. FWS's rule broadly construes "harm" to include injury arising from significant habitat modification that significantly impairs an "essential behavioral pattern" of a listed species, including breeding, feeding, or sheltering. Under the FWS rule, harm, or a "take," can occur even as an indirect result of a person's actions. Further, FWS has espoused the view that a person's modification of a species' habitat may result in a take even when the person has no reason to know or does not believe the modification will adversely affect the species and the person does not intend such a result. The U. S. Supreme Court recently ruled that habitat modification does not rise to the level of a prohibited take unless it actually causes death or injury to members of a listed species.

Section 4(d) of the ESA provides that, whenever a species is listed as threatened, NMFS must issue regulations to provide for the conservation of the species. These may include any and all of the prohibitions applicable to endangered species in the Act, including the prohibition against take.

NMFS has not yet issued protective regulations for any listed Lower Columbia River ESUs, although the agency said it expected to issue proposed rules for the steelhead ESU by late Spring 1999. That date passed without rules. Environmental groups in Washington and Oregon have provided notice to NMFS that they will file a legal challenge in court against the agency if it does not issue proposed rules for the endangered species in the near term. When the proposed rules are issued, NMFS intends to begin the complex, but pragmatic political process of involving the plethora of parties interested in helping develop the final rules.

D. Other Relevant Laws and Regulations

An assortment of other laws and regulations apply to the Columbia and Willamette Rivers and their tributaries running through the Portland area.

Federal Laws. A host of federal statutes apply to the waters affected by the Lower Columbia River ESU listings in the Portland area, including the Clean Water Act (which addresses, for example, stormwater discharge, combined sewer overflows, and wetlands conservation), the Safe Drinking Water Act, the National Environmental Policy Act, and many others.

State and Local Laws. Oregon State also has endangered species, clean water, land use and wetlands laws. Metro has regional jurisdiction over local land use plans and, as part of its Urban Growth Management Functional Plan, Metro has adopted a Stream and Floodplain Protection Plan setting standards and guidelines for riparian (streamside) protection for the 27 cities and counties within the Metro boundaries. The City of Portland in June 1998, passed a resolution establishing a city goal to work proactively for salmon restoration and assigned Commissioner Erik Sten to serve as the City's endangered species coordinator.

E. Compliance Strategies

Since NMFS has not yet issued rules identifying prohibitions against taking a species protected under the ESA, no ESA prohibitions are in effect for projects that do not receive federal financial or administrative support. Therefore, projects not federally funded, but completed prior to the effective date of the section 4(d) rules, will be insulated from ESA constraints.

The ESA gives governing agencies discretion to issue an Incidental Take Permit (ITP) that authorizes a prohibited take if it is "incidental to, and not the purpose of," carrying out an otherwise lawful activity. To obtain a permit, the applicant must submit a habitat conservation plan (HCP) and implementation agreement. Obtaining an ITP is a rigorous, time-consuming and often expensive process.

NMFS must issue an ITP if it finds the taking will be incidental; if the applicant will, to the maximum extent practicable, minimize and mitigate the impacts; if the applicant ensures adequate funding for the plan; if the taking will not appreciably reduce the likelihood of the species' survival and recovery; and if any additional measures NMFS determines necessary will be met.

Some types of federally-funded or –managed projects are subject to the so-called “consultation” requirement with NMFS. NMFS must evaluate these projects and issue a “Biological Opinion” with its conclusions about the likely effects of the project on any listed species. The opinion may include a finding that the project meets criteria identical to those in the Incidental Take Permit or specify “reasonable and prudent” alternatives that will avoid jeopardizing the species. The opinion may suggest modifications to avoid the likelihood of adverse affect to the fish even when not necessary to avoid jeopardy.

F. Enforcement

NMFS has three basic enforcement tools against ESA violations: NMFS may ask the U.S. Justice Department to pursue a civil action for an injunction to prevent an alleged future or ongoing violation; it may assess a civil penalty assessment for a past violation; or it can refer a matter to the Justice Department for criminal prosecution. Civil penalty fines range from \$500 to \$12,000 for “knowing” violations. Criminal violations are subject to a maximum penalty of \$25,000 or 6 months in prison, or both, per violation.

In addition to enforcement actions, the ESA authorizes civil suits by any person seeking to enjoin any other person alleged to be in violation of any provision of ESA statutes or regulations.

IV. STAKEHOLDERS AND POTENTIAL IMPACTS ON THEM

A. Stakeholders

The study committee recognizes that, under the ESA, all residents of Portland are stakeholders who will, one way or another, be involved in Oregon’s stream restoration and salmon recovery efforts. Citizens collectively choose our societal course of action through individual behavior and as voters and taxpayers. Business and non-profit advocacy groups present a wide array of interests. Table 2 summarizes key stakeholders and their roles in ESA compliance.

Federal. Federal regulatory stakeholders include the US Fish and Wildlife Service as well as the National Marine Fisheries Service (NMFS). Whereas the US Fish and Wildlife Service was responsible for the listing of the Northern Spotted Owl in the late 1980’s, NMFS has ultimate regulatory authority over salmonid species because they migrate to the ocean and depend on that environment for their habitat as well. Other federal regulatory stakeholders include the federal Environmental Protection Agency (water quality), Army Corps of Engineers (water supply and flood control), Bonneville Power Administration (hydro power, fish and wildlife restoration funding), the Northwest Power Planning Council (energy supply and species conservation), the U. S. Forest Service (national forest management), and the U.S. Department

Table 2: ESA Key Players Responsibility Matrix

Stakeholder Groups \ Responsibility	Governing/Regulatory	Impacted	Advocacy	Integrating
Governing/Regulatory Entities				
Tribes	>	!	!	!
Federal Government				
NMFS	>		!	
EPA	>	!		
USF&W	>	!		
State of Oregon				
DEQ	>	!		!
Governor's Executive Order		!	>	!
GWEB		!	!	!
Water Congress		!		
Legislature		!		
Regional				
Metro	>	!	!	!
Northwest Power Planning Council	>			
City of Portland				
Portland CSO Stakeholder's Group	>	!	>	!
Impacted Groups				
Business		>	!	
Industry		>	!	
Port of Portland		>		
Tri-Met		>		
Advocacy Groups				
Save the Salmon		!	>	
Oregon Trout		!	>	
The River Keepers		!	>	
Stream or Friends Groups		!	>	
Fans of Fanno Creek		!	>	
League of Oregon Cities		!	>	
Homebuilders Association		!	>	!
Associated Oregon Industries		!	>	!
Oregon Business Council		!	>	!
Oregon Environmental Council		!	>	
Integrating Groups				
Basin Councils		!	!	>
Willamette Restoration Initiative		!	!	>
SOLV		!	!	>

> = Primary ! = Secondary Role Including Providing Information Coordinator

of Agriculture's Natural Resources Conservation Services (restoration and wetlands).

Tribal Governments. Native American tribes have long-held values regarding the meaning and importance of the natural environment. Many of their cultures and traditions have emphasized the heritage and gift of salmonid species. Tribes often support and advocate for effected recovery initiatives. Many tribes are sovereign governments that are endowed with sovereign fishing and treaty rights to harvest salmon.

State. *GWEB.* There are a number of state and regional regulatory and coordinating stakeholder groups, including the Governor's Watershed Enhancement Board (GWEB), legislatively created in 1987 to ensure the "long-term protection of the water resources of this state, including sustainable watershed functions." GWEB's mandate is to coordinate more effectively the activities of the variety of state and federal agencies and boards involved in water policy issues and to aid communities in riparian, watershed and salmon restorations. Limited GWEB funding is available to local communities and watershed councils. The 1999 Oregon Legislature, the Governor and several interested groups are cooperating on a bill, HB 3225, to revamp GWEB and use it as the state's oversight agency for restoring fish runs.

The Oregon Plan. Governor Kitzhaber unveiled his Oregon Plan for coastal salmon recovery in August 1996. This plan and a subsequent steelhead supplement and Executive Order in January 1999, committed state agencies to enforce environmental laws, to coordinate activities for protecting listed salmonids, and to provide technical assistance to local conservation activities. The plan's stated goal is "to restore salmon to a level at which they can once again be part of people's lives." The Oregon Plan identified how private interests could work through local watershed councils, identified restoration activities on forest lands to be completed by forest industries and identified water quality planning opportunities at a basin level. This plan is still being implemented, though funding at the legislative level is uncertain. Key state agencies involved in salmon restoration include the Oregon Department of Fish & Wildlife (ODF&W), the Oregon Department of Transportation (ODOT), the Oregon Department of Forest (ODF), the Oregon Water Resources Department (WRD), the Oregon Department of Agriculture (ODA), the Division of State Lands (DSL), the Department of Environmental Quality (DEQ), and the Department of Land Conservation and Development (DLCD). The Oregon State Police, the Oregon Parks and Recreation Department and the Oregon Marine Board were also identified with work tasks to protect salmon and steelhead.

WRI. The Willamette Basin Restoration Initiative (WRI), a "501(c)(3)" organization, was created by executive order and is a broad-based basin-wide coordinating council. The Governor formed the WRI in 1998, acting on a recommendation of the prior Willamette River Basin Task Force (created in 1995). The WRI's members, appointed by the Governor, are business and agricultural representatives, state agency personnel, conservationists, local officials and other key leaders from around the Willamette basin. They include Portland City Commissioner Erik Sten, Metro Executive Mike Burton and

Oregon Business Council President Duncan Wyse. NMFS is also represented on the WRI. The WRI will work to provide a basis for restoration in the Willamette Basin by spreading understanding of the actions that will most effectively restore key components of watershed health. The WRI hopes to ensure that dollars will be spent strategically to improve basin ecological and economic health.

Watershed. *Watershed Councils.* Created by Oregon law in 1993 and expanded in 1995, the approximately 85 local watershed councils in Oregon are also important stakeholder groups. Councils are generally composed of local volunteers, advocacy, business, and government interests. Each council is unique. Often, they operate by consensus. Councils undertake a range of activities including education and consciousness raising about watershed issues. They are not regulatory and do not currently have a consistent funding source to implement assessment and action plans, but may receive GWEB funds or donations from other public or private sources.

Soil and Water Conservation Districts. With their locally-elected boards, Oregon's 45 soil and water conservation districts have also begun to play a role in salmon recovery, often in concert with watershed councils. They receive funding from the federal Natural Resources Conservation Service.

Regional. *Metro.* Through its regional jurisdiction, including growth management, solid waste management, land use and transportation planning functions, some people suggest Metro is well positioned to promote stream and fish-friendly growth management strategies on a regional basis. Metro Executive Officer Mike Burton has stated the agency's commitment to salmonid recovery and Metro has recently hired a full-time salmon recovery coordinator to assist this effort. Metro has developed a model water quality protection ordinance for the region designed to implement resource protection goals and is currently developing regional fish and wildlife protection strategies. When protective regulations are adopted, Metro's guidance can provide some regional consistency in developing local compliance strategies. Cities and counties will need to develop strategies for restoration as part of their compliance with Metro's regional land use plans. Metro's Parks and Greenspaces program also acquires strategically located tracts of land using voter-approved funds and sponsors community educational efforts to promote awareness and participation in habitat restoration. Metro's solid and hazardous waste management program provides education and information on safe waste disposal practices.

City of Portland. Like Metro, the City of Portland has stated unequivocal support for a regional approach to salmon recovery. The City's adopted strategy to restore salmonid species includes measures already underway such as the identification of problem culverts in the city, and funding watershed planning and associated restoration activities. Affected and involved City bureaus include Environmental Services (watershed planning, stormwater, sewer), Planning (building and development), Water (supply and regulation), Transportation (streets and roads), Parks, and commissions such as the Portland Development and Sustainable Portland Commissions. Regional and

basin-wide coordination is another key component of the City's response.

Other strategies include monitoring flows in Bull Run, particularly during the summer, reducing use of pesticides in city parks, better management of herbicides, review of building and stormwater regulations, and inventories of fish passage problem areas and greenway protection opportunities along streams and wetland areas.

Business and Industry. Individual businesses and industries also face impact and change due to the ESA. To understand the magnitude of this challenge, the committee interviewed representatives of the heavy construction and aggregate industry, computer chip manufacturing, pesticide application, water transportation, downtown business groups, an environmental attorney representing business interests, the home building industry, and the Oregon Business Council, a broad-based association of business interests. Businesses say generally that they support salmonid recovery but they worry about the uncertain impact new regulations will have on them, how conflicting goals and regulations may effect them, and how much they may need to pass on to their customers.

Fear of the unknown is worrisome to the business sector. Business sector witnesses raised concerns over uncertainty about what "taking" means in the ESA, over DEQ's unknown standards for sedimentation and over the EPA's potential listing of the Portland Harbor as a superfund site because of the presence of sediments contaminated with toxic wastes. They asked who may be responsible and who will pay. Concerns were raised about length of time to resolve issues and whether lawsuits will drag out much-needed legal clarifications and definitions.

Regulatory requirements such as riparian (stream-side) setbacks could result in lower efficiency and higher cost for real estate development and increase residential and commercial building costs if unmitigated. Entry level and low cost housing could be impacted by higher costs, as well as commercial and industrial projects. Interview respondents said that storm water run-off regulations as well as increased sewage standards could increase time and costs for the permit process. Pesticides and other chemical uses could be subject to additional regulations, though the perception seems to be that they are subject to tight standards now. Transportation costs may also increase for river-borne, as well as ground transportation.

Not to be overlooked is the sport fishing industry, which has relied heavily upon Willamette River salmonids, particularly the prized spring chinook. Willamette River "springers" are fished in both the Columbia and Willamette Rivers. This industry injects millions of dollars into the Pacific Northwest economy each year.

Port of Portland. The Port of Portland says it will deal with salmonid species protection by continuing to develop dredge plans prior to dredging and by working cooperatively with state and federal regulatory agencies to minimize potential impacts to salmonid species as well as testing sediments at all dredge

sites for contaminants. The Port must also comply with the ESA in other activities such as de-icing and wetland fill at Portland International Airport and rip-rap, bioengineering and ship terminal activities on the Willamette and Columbia Rivers.

Advocacy Groups. Many advocacy groups are involved in the salmon recovery effort. They include non-profit organizations such as Save Our Wild Salmon, the Pacific River Council, For the Sake of the Salmon, Oregon Trout, the Oregon Environmental Council, Northwest Environmental Advocates, Stop Oregon Litter and Vandalism (SOLV), Audubon Society of Portland, Tualatin Riverkeepers, Fans of Fanno Creek, Friends of Smith and Bybee Lakes, Friends of Forest Park, Willamette Riverkeepers, Friends of Johnson Creek, Oregon Environmental Council, River Network, Native Fish Society, Trout Unlimited, Friends of Arnold Creek, Ash Creek Neighborhood Association, Coalition for A Livable Future, and others.

B. Potential Impacts

Efforts to restore healthy habitat for salmonids forces us to face the potential impacts on our own lives. Some impacts may be considered negative, or costly; some may be considered opportunities. Clearly, the burden or opportunity of these impacts is “in the eye of the beholder.”

Costs. Possible financial impacts of ESA compliance in the Portland area could include increased utility fees and taxes, increased business costs or loss of federal funding. Regulations may affect private homeowner activity as well as management and development practices on public and private land. Tangible impacts on city residents may include:

- *Increased costs of transportation infrastructure.* Less expensive culverts that prohibit fish migration may have to be replaced. If the City is found in non-compliance with ESA regulations, it could suffer loss of federal transportation funding.
- *Increased water and sewer bills.* The City is developing alternatives to current water management strategies.
- *Limitations on water use.* Residents may be encouraged to plant more drought-resistant species and restrict lawn and garden watering, particularly during summer.
- *Restrictions on chemicals used in the home or yard.* The City has already changed its landscaping and maintenance practices to set an example to residents.
- *New riparian protection measures.* Property owners will experience development restrictions in riparian areas as required by Metro’s Regional Framework Plan. Incentives may encourage setbacks, conservation easements, and “greener” building practices.
- *Impacts on businesses and industries.* These include the current uncertainty and

possible increases in protective regulation. These costs will likely be passed on to consumers.

- *Increased time and cost for development processes.* Local planning and building administrators will add ESA review to the process of review and issuance of development and building permits.
- *Impacts on land, homes, sprawl and livability.* Increased regulatory burden on infill and redevelopment could impact land values, raise new home prices, encourage urban sprawl, decrease livability and inhibit in-migration.

Opportunities. In the short-term, impacts may appear burdensome but, overall, in the long term the city may realize a positive impact. The listing could provide regulatory backing necessary to restore salmonids to urban streams such as Tryon, Johnson, and Fanno Creeks as well as the Columbia Slough and Willamette and Columbia Rivers. The city might eventually restore a healthy urban sport fishery in the Willamette River and stands to further its reputation as an eco-tourism destination. Portland can also enhance its image as a city dedicated to a healthy environment, providing a powerful tool to attract new businesses and residents interested in enjoying and maintaining a high quality of life.

Streamside parks could proliferate as the treasures of the city if the ESA listing requires more greenspaces adjacent to streams. Carefully protected and restored, these salmonid habitats could also provide public recreational space for a growing urban population. It is inspiring to imagine a Willamette River once again a safe and refreshing place for swimming.

The listings may motivate a new level of citizen involvement with civic pride growing as efforts succeed. Citizens also face an opportunity to re-examine their ideas about existing geo-political boundaries within the context of watershed and basin-wide recovery strategies, as well as to examine the range and impacts of our own behaviors.

V. DISCUSSION

Salmon protection and recovery is a complex technical problem and a significant political and social challenge. Most witnesses the committee interviewed said that, while the ESA listings are an opportunity, successful restoration of salmon species in the Portland area and the Willamette River Basin will not be easy. Four key challenges emerged during our discussions with committee witnesses:

- **What’s our shared vision for salmon?** Different groups in our society have very different ideas about how far we should go to protect or restore salmon. Without a shared vision of what we want to accomplish, it will be difficult to craft effective, long-term policies that maintain broad public support.
- **What works?** We do not have adequate knowledge about how to most effectively help fish in Portland and throughout the Willamette River Basin.
- **Who’s in charge?** Leadership and coordination are the keys to effective action. Currently no one entity has the mandate or authority to lead and coordinate the response to the ESA listings.
- **What information do we need to engage the public?** Success will depend partly on changing our individual behavior and on continuous popular support for salmon restoration efforts. Information and education programs will help achieve these goals.

Broad uncertainty clouds the current discussion about these issues and salmon restoration generally. In addition to the four issues raised above, many witnesses noted the difficulty of moving forward given the uncertainty over NMFS’ rules and the uncertain implications of different local and regional attempts to restore endangered fish species.

This section reports what we heard on each of these themes and summarizes recommendations for responding to these challenges and opportunities.

A. What is Our Shared Vision for Salmon?

How far will residents, businesses and governments go to save endangered salmonids? This question lies at the heart of the policy challenge. What is our societal goal? Is it survival of all remaining salmon species? Are we attempting to restore all historical runs to their previously abundant levels? Is the goal broader watershed restoration and protection? A number of witnesses said a successful response to the ESA listings will require agreement on a vision and overall goals. As one said, “We need to take the time up front to be very clear about our visions, our goals, our measurement systems, and have a system of accountability” for implementing a recovery effort.

We did not find a common vision among the people we interviewed. Instead we found a wide range of views on how far we should go to protect and restore salmon and where to target the most effort and resources.

Our differing priorities, values and philosophies should be expressed and collectively explored.

Some interviewees suggest that we do the minimum to comply with the ESA's "no take" requirement, and go no further until there is a coordinated vision that will actually make a difference for fish. Some believe it is unrealistic to try to accommodate wild fish in an urban setting at all. Others see the ESA listings as an opportunity to save wild salmonid species locally, and to dramatically reorient our communities toward a more environmentally sustainable way of life. A number of groups believe we must take significant steps to improve conditions for fish, but in balance with other public and economic goals.

How far the public will go in support of the general goal of helping restore salmon remains to be seen. For example, although the recent state, local and industry agreement to remove two dams in the Little Sandy River basin will improve salmonid access to 22 miles of habitat, some are concerned about the likely resulting loss of a popular recreational lake. If agreement is reached on a broad commitment to restore salmon in our region, that agreement will need to be actively reaffirmed and maintained as restoration efforts move forward.

"No Take" vs. Restoration. While many citizens may believe that the ESA will lead to a regional restoration of salmonids, a number of witnesses emphasized that the functional goal of the ESA is not restoration, but rather limiting further harm to the remaining population. This substantial—but more limited—standard, commonly known as "no take," does not require the broad actions needed to effectively prevent extinction or to restore healthy salmon runs. The interpretation of the actual meaning and implications of the ESA's minimal "no take" standard is the subject of much controversy and litigation around the country. The "no take" standard applies to activities by private entities and by many public agencies. The ESA does require federal projects—and state and local government projects that receive federal funds—to meet higher standards that encourage actual restoration of a species. Significant uncertainty exists over which state and local projects or programs NMFS will decide should be included in this "federal project" category. These decisions will have significant policy and budget implications.

According to a number of witnesses, how far we go to save endangered fish depends much more on state and local government actions than on NMFS. While many people are waiting for NMFS to issue its mandated requirements (the "4d rules"), NMFS is looking to state and local governments and other stakeholders to work out an agreement to establish requirements that go beyond the minimum toward the restoration of endangered fish runs.

NMFS has only limited, fairly blunt regulatory tools with which to protect and restore endangered species. NMFS can stop some projects and development but cannot shape the form of development. Other witnesses note that NMFS is woefully understaffed and unable in most cases to take a strong and proactive role in developing and implementing recovery plans. They say NMFS' principal role will be to enforce, to help leverage federal funding, and to help coordinate response among other federal agencies. NMFS is unlikely to actually develop a

recovery plan for the Willamette Basin because of budget limitations and political pressures. Without such a road map, some witnesses say NMFS is likely to engage in an uncoordinated, ad hoc, somewhat arbitrary process of consultations on and requirements for individual projects.

What is “Restoration?” A number of organizations, including the City of Portland, Metro, the Oregon Business Council and the Willamette Restoration Initiative, have adopted broad visions that go beyond “no take” and set salmonid restoration as a goal. This decision raises two fundamental questions: What is meant by “restoration?” And where in the region should we put our emphasis—in urban areas where fish habitat is already severely degraded or in more rural areas where much more intact habitat exists?

In his June 1999 presentation to the City Club, Portland City Commissioner Erik Sten said the City’s goal is “to do everything we can to restore the fish. It’s an important distinction from ‘respond to the law.’ The law essentially says you can’t make things worse. What we would like to do is to make things better.” Sten argued that taking a proactive approach would give Portland more flexibility and better results than waiting for lawsuits and court-mandated actions. While City officials are clearly committed to going beyond “no take,” some witnesses questioned whether City Council members and the public understand the full extent of the policy and its public and private fiscal implications.

While there appears to be broad public support for saving salmon statewide and in the city, some residents question how far the City should go toward restoring habitat. It is doubtful Portlanders will support ripping out streets and sidewalks to “daylight” streams. It is more likely they will support restoring habitat in the remaining uncovered streams. Many questions remain unanswered: What scientific basis will the city use to measure and evaluate restoration? What public processes will the city use to engage citizens and shape city policy on restoration? How will regulations be applied?

Restoration also needs to be set into a geographic context. The committee heard repeatedly that saving fish is a regional, basin-wide problem, not one just for Portland, or even the metropolitan area. Some note that while the greatest concentrations of wealth and technical resources in Oregon are in the urban areas, only three percent of the remaining intact salmonid habitat is in the Portland area. The majority of viable fish habitat needing protection is in rural areas of the Willamette River Basin, especially in the watersheds of the Clackamas, MacKenzie, and Santiam Rivers. They warn that, while many resources could be spent in urban areas, they may have a minimal effect toward saving threatened salmonids. Should Portlanders send money into other parts of the Willamette Basin, in a shared, basin-wide restoration effort? Many questions remain about where targeted restoration efforts should focus.

Other witnesses emphasized that there is plenty that could and should be done in the Portland area, and warned that a basin-wide focus not be an excuse for taking little action on serious problems in urban areas. They note that there is valuable existing and potential fish habitat in urban streams and that

significant improvements can be made to protect and enhance habitat and water quality. Recent studies in the San Francisco and Puget Sound metropolitan areas have found that urban areas may contribute more contaminants and toxins into streams and rivers than agricultural areas.

Balancing fish goals with other public goals. As one witness said, "Here's where good public policies collide." Restoring endangered species can conflict with other federal and state environmental goals and funding commitments. For example, the Portland region's 2040 Growth Management Plan calls for concentrating urban development within the urban growth boundary (UGB), but regulations that help threatened salmonids may restrict development opportunities. Transportation projects that facilitate development inside the UGB may be held up by NMFS until state and local transportation officials satisfy the federal concerns about the impact these projects have on fish passage and water quality.

Several witnesses emphasized the need for integrated planning that would coordinate the ESA response with other planning efforts. Commissioner Sten noted in his June address to the Club that "We need to rethink how we do things in relation to the rivers and streams.... Although we may have the best example of land use planning and thinking.... the way we treat rivers and streams is the glaring underbelly.... If we can...think...of rivers and streams the way we have worked with our other statewide goals, I think we can get there.... Portland's massive project to address CSO problems is a response to the requirements of the federal Clean Water Act and has no relation to the ESA. We are just about ready to spend \$500 million on the Clean Water Act, but we have [no similar] budget set aside for the ESA. We ought to meld those two."

Most witnesses agreed that Portland needs to rethink the CSO project in light of ESA requirements. The City is moving in this direction with the development of an "Integrated Watershed Plan (IWP)." The purpose of the Plan is to provide "a vehicle for the City to diverge from the current practice of addressing each problem in a watershed in isolation. Instead the plan allows the City to identify all the needs throughout all the watersheds within the City's jurisdiction over the next twenty years and to develop a plan that addresses multiple objectives and provides multiple environmental and community benefits." This integrated approach is intended to allow the City to prioritize its investments in watersheds and infrastructure, leverage its resources and monitor projects to ensure maximum results. The City has developed three alternatives for the IWP and is taking these out for public comment in the summer of 1999. The City plans to choose one of the alternatives in the fall of 1999.

Funding—the engine of restoration. The best of visions fall short without resources for implementation. Witnesses told us that Oregon's spending goals do not currently support natural resources protection. As one witness noted, "We say we highly value these salmon, but the Oregon Legislature will invest less than two percent of the general fund in all of the state's natural resource management... at the same time they will cut the funding for the regulators" who are responsible for implementing the policies. Legislative funding for enforcement of existing regulations is another problem area.

Clearly, achieving agreement on a shared vision at the local, watershed level and at the regional basin level is an important step toward effective salmon restoration. As Duncan Wyse, president of the Oregon Business Council, told a June 1999 City Club audience, "If you try to operate with two visions in mind...you will work at cross purposes....We need to come together and grapple with competing ideas and competing visions—we can't ignore them—if we are really going to solve this problem." Getting this agreement may depend on having better information on what really works.

B. What Works?

We heard from many witnesses that, while we have good basic knowledge about what harms or helps salmon species, we still do not have good information on which specific actions would be most beneficial for fish and which are the most cost effective to pursue. Without this information, it is difficult to evaluate and prioritize different policy options.

Some witnesses cautioned against moving too quickly to implement new regulations and programs before we know the likely benefits of different options. Other witnesses had concerns about the ESA's impact on new and expanding businesses. Will development come to a halt, or be delayed so long that Portland becomes a place less desirable to do business? One suggested, "Portland ought to cool its jets. You could stop development in Portland and not do a...thing for fish." Another witness said it is important to be honest with the public and stakeholders about the real benefits of different programs and then to deliver results. Anything less runs the danger of creating or increasing public cynicism about salmon recovery efforts.

What Do We Need to Know? The Committee heard from nearly all witnesses that more information is needed to help guide salmon recovery efforts. Many people disagree about the implications of the information we currently have—and do not have—and therefore about appropriate short-term and long-term policy actions. Duncan Wyse urged the City Club, "to be humble about what we know about the fish.... There is a lot we do not know." He said that we must move quickly to develop a matrix of actions and weigh the strategies up and down the river to find the highest priority actions for immediate implementation.

Geoff Pampush, executive director of Oregon Trout, said to the Club in June 1999, "To thrive, salmon need the entire watershed to be functioning...from the bottom to the top...their needs are simple: clean water, cool water, pools, backwater areas. If those four conditions are met salmon will do fine. The way we live is at odds with those basic needs." He pointed out that the "listings are not just about chinook and steelhead. They are about water, about the way we use our water, the way we live around the water, and the way we use the land that drains into the water." Pampush agreed that we need more research because we have invested so little into it over the past 50 years.

There is heated debate over the impact hatcheries have on salmonid species. Some people insist that the use of hatchery stocks from other geographic areas,

coupled with the unnatural conditions of the hatchery environment, including the susceptibility of disease, have worked to compromise the genetic integrity of wild fish when the two species interbreed. Other people claim hatcheries have an important role in the species' survival, particularly given the small numbers of remaining wild fish. All parties recognize the need to reform past hatchery practices, but there is still considerable debate over these. One goal of Governor Kitzhaber's Oregon Plan, addressed briefly later in the report, is to reduce releases of hatchery fish. Current hatchery practices in Oregon are also being modified to reduce interbreeding between wild and hatchery fish.

Disagreement is legion about which problems are the most pressing or have the most negative effects on fish. Some say it is the combined sewer overflows, others say siltation of stream habitat, others say stormwater runoff, especially the contaminated runoff from thousands of miles of roads in the urban area. Some feel water temperature, or wetlands, or riparian quality must be the top priority. Others say better management of the Corps of Engineer's dams in the headwaters of the Willamette Basin is the most promising restoration strategy.

Scientists' opinions vary on how to fix salmon habitat problems. Some think the first and most critical step is to change the activities that cause degradation or prevent recovery. This so-called passive restoration allows nature to do the work. When this approach is not enough, more active restoration may be needed to improve conditions. Some say a carefully timed combination of these approaches may be most effective.

Commissioner Sten summed up the issue by saying, "We need to understand... all the things we do right and wrong and how can they change and we also need to commit to a relatively long-term process because we're not going to turn around... 100-years' worth of urban development by next year, although we can make dramatic efforts almost immediately like we have on the Little Sandy and Marmot Dams."

Portland's Assessment of the Impact of City Government Activities. The City of Portland is using the recent assessment of the impact of City practices on fish to develop short-term and long-term action plans that the City will present to NMFS and the community (The Beak Report). Some witnesses said the Beak Report is a good model that other local governments might consider using of how to assess the impacts of city government activities on salmon. Commissioner Sten divided the assessment results into two categories:

- *Day to day paradigms shifts or small actions that harm the river or streams but that can be fixed relatively easily at relatively low costs:* Governor Kitzhaber often says the Willamette River is dying the death of a 1000 cuts. Sten said that quite a few of those cuts are in Portland and can be relatively easily remedied, such as using different chemicals to maintain Waterfront Park and to clear sewer lines.
- *Major systems that are large, costly and complex:* Sten says that City leaders and staff will **need to consult** with the community about what is the right approach **in these areas**. He listed four primary systems:

1. *Bull Run:* Sten noted that 800,000 people depend on Bull Run for drinking water. Fish passage is blocked, and there is not enough water in the summer for fish. The City is looking at getting five percent of its water in the summer from well fields to give fish water they need and is looking long-term at expanding supply by building another dam. The City in partnership with PGE and NMFS recently reached an agreement will provide immediate benefits for fish. PGE will remove two dams on the Little Sandy and the Sandy Rivers thereby opening up 20 miles of fish habitat, and the City will get a reprieve from addressing fish concerns on the Bull Run.
2. *Sewer system:* "By the end of the year no more sewage overflows will enter the Columbia Slough. The City is in the middle of looking at right way to balance the existing \$500 million plans to meet the requirements of the Clean Water Act with the need to also meet the requirements of the ESA."
3. *Transportation system.* "Roads have a terrible effect. They are engineered to get water off as quickly as possible to wherever it goes to keep roads safe. While this is a noble aim, in some cases all stuff from cars goes directly into streams. We cannot fix this overnight but as we rebuild roads we can start thinking about better designs. We also need to be thinking about how to get culverts out of streams like Johnson Creek."
4. *Development standards:* "The City issues permits. The standards under which you can develop are decided by the rules and interstate building code. We're doing lots of work on North Macadam. What is the right way to treat the bank? We've heard lots of creative ideas, but no obvious answer. The City is redeveloping, booming, giving us the opportunity to redevelop sites in more fish-friendly way. We can do that while still enjoying some of urban densities we've come to expect. Redevelopment will be the engine that gives us that money to use along the banks in the Willamette. In places like Johnson Creek though, we just need to back away. On the Willamette, we need to lessen impact of what's going in" to the river.

Sten said that with all "Portland has done in the last year, we may not have all the answers.... We [do] have a little bit of a blueprint that...should work as we partner with Metro, and hopefully will work, modified a little bit, with business and community ventures...."

Assessment of current conditions. Most local governments do not have the resources to do the complex impact assessment done by Portland. While Portland is far ahead of most other jurisdictions in this respect, some witnesses said the City needs to go farther. One witness said Portland now needs to identify and catalog the characteristics of existing key salmonid habitat areas and where the fish are now. He also suggested Portland needs to do system

assessments of habitat quality to identify the level of fish population that a stream like Johnson Creek can support. He suggested similar assessments should happen in other watersheds and for the entire Willamette Basin.

Monitoring progress. Given the lack of adequate information, some witnesses stressed the importance of establishing benchmarks and monitoring systems to measure the impacts of different restoration strategies. One witness praised the approach used by the Oregon Plan, which emphasizes tracking habitat indicators over counting the number of fish. Tracking habitat characteristics like water temperature, vegetation, availability of insects for food, shading, pools, and fish passage can give a better sense of progress in habitat improvement than simply tracking changes in the number of fish. In many cases, significant improvements in the health of salmon runs will only happen over the long-term. Researchers may find it difficult, in the short term, to track improvement reliably because yearly fish populations can fluctuate widely because of ocean conditions or other factors without indicating long-term increases or declines in fish populations. One witness cautioned that even monitoring programs can be highly political. Some groups or public agencies may resist specific monitoring projects because of concerns of who will pay for the monitoring and the potential changes that may be required based on the results.

C. Who is in Charge?

Who's in charge of restoring salmon and steelhead in the Willamette River Basin, or the Portland metropolitan area, or even in local watersheds? The committee heard that currently, no one entity is. Almost all witnesses told us that successful restoration of salmon species requires a coordinated, cross-jurisdictional response. We heard that we need to think ecosystem wide, not in terms of political boundaries—fish don't know or care about political boundaries; they need a supportive ecosystem.

In contrast to this vision of coordinated action, local and regional governments, special districts and utilities, state agencies, citizen groups, watershed councils, and soil and water conservation districts currently are spending time and money on a multitude of rather spontaneous, uncoordinated actions that may or may not lead to overall salmon recovery. Many witnesses emphasized that there are no easy answers, no clear entity to take charge, and no single entity with the necessary expertise, experience, and jurisdiction to effectively lead this effort. Some efforts are underway, however, to create mechanisms that will foster greater cooperation and provide the leadership needed to move forward.

A leading fisheries scientist who describes the Pacific Northwest as “the world's extinction epicenter for ocean fishes,” says the Northwest is also “the best place in the world. . . to study finger-pointing elevated to an art.” It is an admonishment to remember. The ESA is a big stick that can help bring people to the table, but as individual “oxen” are gored with regulations, will coalitions and consensus stick together or break apart? What will it take to hold consensus together over the long term?

One witness advised that successful coordination comes down to the quality of the relationships between individual decision-makers who represent different stakeholder entities and groups. Simply establishing a coordination framework will not lead to effective cooperation; trust and understanding must be built among the many stakeholders who affect each watershed and the overall Willamette Basin. A few witnesses predicted that the obstacles to establishing an effective coordination mechanism may prove too great. In the absence of broader coordination, jurisdictions will likely move forward in the short-term with salmon recovery projects within their own jurisdictions. These, at least, should be supported.

Our committee was asked to focus on salmon recovery in Portland, but salmon recovery requires coordinated actions on a broader scale, so we took a look at coordination issues both in the Portland metropolitan region and at the state level.

Portland Metropolitan Region: Portland is farther ahead than other jurisdictions in the development of an assessment of current activities that may impact salmonids, but lacks a prioritized action plan for responding to the ESA. Also, none of the major watersheds in the metropolitan area lie exclusively within Portland's boundary or that of any other city or county or Metro. A variety of jurisdictions, entities, and organizations all have a piece of the regional puzzle—cities, counties, sewer districts, soil and water conservation districts, watershed councils, environmental and business organizations, etc. These entities have not agreed on any particular mechanism to coordinate their activities.

In the Tualatin River Watershed, the Unified Sewerage Agency (USA) has played a major role in bringing together urban and rural interests to build relationships between the different stakeholders in the watershed. A USA representative suggested similar processes are needed in each major watershed, but cautioned that no single jurisdiction can drive this process for the region.

We heard different points of view on the appropriate level and means of coordination across the Portland metropolitan area. A number of witnesses said that Metro is the logical choice to coordinate the Portland region's sub-basin salmon restoration effort. Metro has important roles and responsibilities in areas important to fish recovery including development, transportation, parks and open spaces, and provides needed environmental education on appropriate use and disposal of chemicals and toxic materials through its solid and hazardous waste management role.

Others say stakeholders in the individual sub-basins should take the lead themselves. They say Metro's boundaries only encompass small parts of the Clackamas, Tualatin, and overall Willamette watersheds, and Metro does not have the necessary relationships with crucial players outside Metro boundaries. A USA representative suggested that Metro has an important role to play in defining land use strategies to move toward better treatment of stream corridors, and that the most constructive role for Metro is to provide **technical assistance and guidance** rather than try to regulate or control the process **across the region**.

“This is a multifaceted issue and land use is only one piece of it.” He recommended that the state is the appropriate entity to coordinate the work done by stakeholders at the sub-basin level. He suggested that watershed councils are the most likely mechanism to bring together the players in each basin.

Another witness countered that “voluntary and non-regulatory and watershed council based initiatives cannot be relied on as either primary or sole responses. We need a mix of regulatory and non-regulatory approaches. We need to maximize both the force and legal authority of the ESA and Clean Water Act to ratchet up enforcement of existing regulations and put in place new regulations to govern development in floodplains, storm water management, comprehensive watershed planning in urban and urbanizing areas, and fish and wildlife habitat protection.”

A Metro representative said he is aware of the sensitivity of Metro’s perceived role and that the regional government is moving away from declaring itself as the formal leader in the region on the ESA issue. Metro recognizes that watershed boundaries extend far beyond the Metro district boundary and that planning on a watershed basis is needed to identify what makes the most sense ecologically. But he emphasized Metro’s legitimate and legal role in development, transportation, and environmental planning areas. He said a number of smaller jurisdictions are looking to Metro for technical assistance and expertise. He said Metro may provide the most likely forum for inter-jurisdictional ESA discussions in the region because “It doesn’t make sense to try to duplicate” an existing forum such as the Metro Policy Advisory Committee (MPAC) that already serves as such a forum for local officials. He cautioned that it would be hard for the state to step in to coordinate activities at this level because so many key responsibilities, such as land use and development regulation, lie with local jurisdictions.

Metro is currently focusing its ESA response on the implementation of the recent regulations on water quality and flood plain management (Metro Title 3), development of regulations for riparian zones (State Goals 5, 6, 7), the ongoing parks and greenspaces acquisition program, solid and hazardous waste management to reduce toxics going into streams, and programs to encourage citizens to switch to natural gardening, using natural fertilizers, compost, and pesticides. Like Portland, Metro is also assessing what changes it can make in the way it manages its facilities, such as water use at Zoo, and the management of storm water from its large parking lots. Metro representatives also recognize the need to follow Portland’s lead in developing regional standards for storm water management.

Watershed Councils. A lot is expected of watershed councils, especially at the state government level. However, witnesses agreed that the effectiveness of the councils is hampered by a number of factors. Councils are seen as important venues for promoting dialogue among disparate interests and for promoting the creation of vision documents and public education. They also act as an important catalyst for “people power.” Some expressed concerns that many councils engage in “random acts of kindness” rather than prioritized work

programs. They have limited power, do not have good mechanisms for reaching decisions on controversial issues, and are primarily limited to working with willing land owners. Other noted that few councils are adequately funded to undertake necessary watershed assessments, on-the-ground restoration and pollution prevention projects, and monitoring. Councils can have great impact on bringing stakeholders together, raising public awareness, providing education, and engaging activists, but most witnesses said they are not currently set up to take on the role of effectively coordinating watershed and sub-basin salmon restoration programs and activities.

Coordination at the State and Basin-wide Level:

The complex life cycles of salmonids means that recovery efforts in every part of their broad range must be coordinated. We could do much to restore healthy runs on the McKenzie and Clackamas Rivers, only to have fish struggle to make it past Portland Harbor, or past the predators and hatchery impacts in the lower Columbia. It's clear that salmon use all of the Willamette River system. No single jurisdiction or region can solve the salmon problem in isolation.

Coordination of local efforts is hampered by ongoing and historical tensions between urban and rural areas, "up-valley" and "down-valley" perceptions, and past finger pointing over who is to blame for poor water quality in the Willamette and who should pay to fix the problems. There is a clear need for some sort of unifying mechanism. Several witnesses said it is essential to have strong leadership from the governor's office and a formal mechanism for coordinating the ESA response

One witness said that, in an ideal world, we would create a new entity with control over all water quantity and quality issues in the entire Willamette Basin and give it resources and authority to coordinate the many pieces of the system presently controlled by different state agencies, local governments, and public and private entities. He noted, though, that this was politically impossible and would never happen.

Oregon Plan for Salmon and Watersheds/GWEB/HB3225. The Oregon Plan, which originally focused on coastal coho, now encompasses the entire state with a mission to "restore and protect Oregon's watersheds through locally-driven, voluntary, cooperative efforts." The Governor's natural resources staff coordinate the policy work of the Oregon Plan. GWEB administers watershed enhancement grants that help support the work of the watershed councils and other fish recovery projects.

Despite the Oregon Plan, some witnesses told us it is still unclear just who in Oregon is "in charge" of salmon recovery efforts and what the priorities are for action and expenditures and by whom. Some witnesses said that governor is clearly in charge, while others say it's not actually clear who in the Governor's office is taking the lead on the issue. Others warned that state agencies are not coordinating their activities with one another and that effective progress is still hampered by the traditional turf boundaries between agencies.

A number of people expressed concern because the Governor's staff continues to retain control of the policy and coordination of the Oregon Plan. They suggested that when Governor Kitzhaber leaves office and his staff leaves with him, they will leave behind a policy and leadership vacuum that will impede progress on salmon recovery. They strongly support institutionalizing the work of the Oregon Plan in the state government structure. One witness observed that "this is a 10-20-30-year project...and we've got to find a way to do the necessary analysis and to create a system to allow that to happen on a regular basis."

A coalition of business, environmental, and forestry interests developed HB3225 as an effort to create and institutionalize a strong mechanism that would serve as the long-term, overall coordinating body for watershed restoration efforts in the state. Some watershed council members have expressed concern that state-mandated centralized coordination may damage fragile watershed council relationships with local landowners. As of the publication of our report, the 1999 Oregon Legislature is still in session, and the final outcome of this effort is unclear. Witnesses told us that at a minimum it appears that GWEB will be renamed the Oregon Watershed Enhancement Board and assume GWEB's grant administration duties. It is unclear whether other elements of the original bill that would have given OWEB authority over the Oregon Plan will survive the legislative process. If they do not survive, supporters have said they will reintroduce these elements in the 2001 legislative session.

Willamette Restoration Initiative (WRI): Some witnesses said that the Willamette Restoration Initiative is one of the most promising vehicles for basin-wide coordination. It provides the only forum in which stakeholder representatives from throughout the Willamette Basin can sit down together to raise issues and concerns and to consider and develop a vision, goals, and objectives for a basin-wide ESA strategy. Others noted that WRI has some significant limitations. It is very new (formed in October 1998) and is only a creature of executive order with no legal clout or substantive popular knowledge and support.

Some witnesses raised concerns about the atmosphere in which WRI was created. One witness said the need to get something in place quickly did not allow an opportunity for more bipartisan approach to creating WRI and selecting its members. Others raised the concern that all the decision-makers are not at the table. Entire categories of stakeholders (e.g. small cities, counties) are often represented by single individuals from only one jurisdiction. One witness suggested, as a better model, a tri-county ESA planning forum in Puget Sound. This forum includes representation and participation by all affected jurisdictions, tribes, and other stakeholders. He said that, although it is a voluntary organization with no formal power, it is very effective at getting the people who have the ability to make things happen to talk together. One witness criticized the slow progress of the WRI on even limited tasks, such as submitting the formal application for the Willamette River's Heritage River designation.

As noted earlier, much of the success of local and regional salmon recovery efforts will depend on building positive working relationships between stakeholders and voluntary cooperation and coordination. Some witnesses believe that the state should take a clear lead and use a strengthened Willamette Restoration Initiative to lead basin-wide efforts. Clear and forceful leadership in the Governor's office is needed to get state agencies and stakeholders to work together.

Funding. In addition to the need for better coordination, many witnesses stressed the need for adequate funding to plan and implement salmon recovery projects. A number of supporters of salmon recovery expressed strong concerns about the moves by the legislature and governor to use lottery money earmarked by 1998's Ballot Measure 66 for salmon habitat restoration, only to replace previous levels of general fund expenditures rather than increasing the total amount of funding available for salmon recovery.

Oregon Business Council President Duncan Wyse told the City Club that "we do not have unlimited resources to spend on any public or private enterprise.... We have to make choices.... We need to try to understand both the benefits and costs of any particular initiative and ask ourselves is this the highest priority piece of work to be doing."

On the local level, few jurisdictions have the funds needed to engage in extensive assessment, restoration, and monitoring. When asked about the state level politics around funding for salmon recovery, Erik Sten said "The politics are terrible." Historical suspicions and tensions between political leaders of urban and rural communities in Oregon are a major obstacle. He noted that we have an opportunity to bridge this gap through forums like the WRI. Sten reported that Portland is not asking the state for any funds for salmon recovery and will fund these programs primarily with water, sewer and general fund money. He said that, "To the extent that the state gets federal funds for salmon recovery...we would like...any projects in Portland that we cannot fund on our own to be evaluated objectively against how much they would help fish compared to other proposed projects around the state. If a Portland project is a higher priority, we should use federal funds to do it. But our message to the state is we will get our share done if the rest of the communities will pitch in."

Some witnesses observed that while much of state's wealth is in urban areas much of the existing salmon habitat lies in rural areas with few resources. They encouraged creative thinking about ways to shift resources to where they can do the most good for fish. One idea is to establish a basin-wide "Restoration Bank" where funds from all entities could be banked and prioritized for spending. Another was to establish a credit program, similar to a pollution credit program. The credits could be tied to temperature load, stream canopy, habitat acquisition, etc. Another witness suggested stronger support and funding for the Conservation Reserve Enhancement Program, a program that leases land from farmers for 15 years for restoration purposes and limits the need for farmers to pick up the full cost of restoration. He also suggested creating a program to coordinate donation of plant material and irrigation supplies for restoration projects, possibly through SOLV, as a good opportunity for urban/

rural partnership. Another witness suggested a local option gas tax for mitigating contaminated run-off from roads.

D. What information do we need to engage the public?

Public understanding of and support for salmon restoration is vital to the long-term success of salmon recovery efforts. What must we do to educate ourselves about this vital issue? How can we help individually and collectively? People are motivated to save and restore fish runs, but do not necessarily understand their role in either the problem or the solution. Individual actions and responsibility are needed, but it is difficult to connect urban residents with their relationship to clean water and the land when concrete seems to stand in the way. We heard that much more attention needs to be given to educating and engaging the public on this issue.

Some ideas the committee heard for Portland include having the City:

- Help neighborhoods organize to adopt historic, paved over streams and raise public awareness of the impacts residents have on these waterways and their connection to broader watershed system.
- Develop a “Fish-Friendly Neighborhood” designation that would be awarded when a neighborhood carries out a list of actions.
- Identify a symbol or method to motivate public action the same way the yellow recycle bins have become the vehicle and symbol for Portland’s dramatically successful residential recycling program.
- Create “stream teams” that will adopt existing, above ground streams, and help restore, monitor and maintain these streams.

This report is a very small step toward educating members of one community group. We all need to stay alert for more information about the issue and what we can responsibly do to help maintain ecosystem and salmon health in our homes, in our schools, in our businesses and in our governments.

VI. RECOMMENDATIONS TO THE CITY CLUB

Salmon recovery is an issue where City Club members should involve themselves, in as many ways as possible. The City Club should keep members informed and follow the issue closely. The Club should launch a study of this issue and recommend actions that Portlanders can urge and support. The study should clarify the City Club's goals about endangered salmonids and habitat and consider actions and strategies to achieve the goals.

Respectfully submitted by,

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VII. APPENDICES

A. Witness List

Gail Achterman, attorney, Stoel Rives, Boley, Jones and Grey

Mary Abrams, ESA coordinator, City of Portland

Erich Bloch, Oregon council member, Northwest Power Planning Council

Bill Bradbury, executive director, For the Sake of Salmon

Ken Carlson, senior water resources scientist, CH2M-Hill

John Chandler, governmental affairs director, Metro Portland Home Builders Association

Bill Gaffi, general manager, Unified Sewerage Agency

Mike Houck, urban naturalist, Audubon Society

Bill Hutchison, Portland CSO Stakeholder's Group; attorney, Tooze Duden Creamer Frank & Hutchinson,

Greg Jones, transportation manager, City of Portland

Jim Martin, assistant to director for salmon and watershed recovery, Oregon Department of Fish and Wildlife

David Moskowitz, salmon recovery coordinator, Metro

Jay Mower, coordinator, Columbia Slough Watershed Council

Geoff Pampush, executive director, Oregon Trout

Bill Parfitt, vice president/general manager, Northwest Region, Lone Star Cement; and board member, Oregon Aggregate and Cement Producers Association

John Phihas, Phihas and Partners, board member, Association for Portland Progress

Donald H. Pyle, Esq., environmental attorney, Lane Powell Spears Lubersky

Bob Roth, coordinator, Johnson Creek Watershed Council

Mike Salsgiver, government affairs manager, Intel (Oregon)

Erik Sten, commissioner, City of Portland

Dawn Uchiyama, member, Tyron Creek Watershed Council

Terry Witt, executive director, Oregonians for Food and Shelter (Pesticide Applicators)

Duncan Wyse, president, Oregon Business Council

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C. Factors Affecting Steelhead Habitat

The “Beak Report” states that:

The City’s potential to affect or influence steelhead is dependent upon the existing conditions within a given watercourse as they relate to fish and the City’s ability to change or influence those conditions....This overall potential for the City to affect or influence conditions is presented in Table 1 as either low, moderate, or high. Those factors indicated as having a potentially moderate or high effect or influence on the factors that affect steelhead represent the areas where adjustments in the City’s activities or planning processes could have the greatest potential to benefit steelhead, and where resources and effort should initially be focused.

Table 1. Summary of the relative potential for City activities and processes to change or influence the factors that affect steelhead.^a

Factor	Columbia River	Columbia Slough	Willamette River	Johnson Creek	Fanno Creek	Tyron Creek	Bull Run / Sandy R.
Toxics	LOW	MOD	MOD	MOD	LOW	LOW	LOW
Nutrients	LOW	MOD	LOW	MOD	MOD	LOW	LOW
Sediment	LOW	LOW	LOW	MOD	HIGH	MOD	LOW
Organic	LOW	MOD	LOW	MOD	LOW	LOW	LOW
Flow	MOD	HIGH	MOD	HIGH	MOD	MOD	HIGH
Temperature	MOD	HIGH	MOD	HIGH	HIGH	HIGH	HIGH
Riparian	LOW	MOD	MOD	HIGH	HIGH	MOD	HIGH
Predation	MOD	MOD	MOD	LOW	LOW	LOW	LOW
Passage	LOW	MOD	LOW	MOD	MOD	MOD	HIGH
Disturbance	LOW	LOW	LOW	LOW	LOW	LOW	LOW

^aThe objective of this assessment is to focus attention on those activities and locations where the City could achieve the greatest benefit to steelhead. The screening-level nature of the assessment is intended to help the City decide where to initially direct resources. Activities were not examined in detail. Rather, this assessment focuses on potential effects and influences and does not determine whether the anticipated effect or influence to steelhead is actually occurring.

Source: *Assessment of City of Portland Activities for Potential to Affect Steelhead*, Prepared for City of Portland, Prepared by Beak Consultants Inc., Portland, OR, September 15, 1998, p. 8.