

*Our Northwest
Environment 1997*



From the Regional Administrator



From the Regional Administrator

On returning home to the Pacific Northwest in 1993 after a brief stint in Vermont, I was more than a little startled at the changes this special place had undergone in such a short period of time. As a native of the Northwest, I couldn't help but notice the surprising growth that was so evident throughout much of the region: more people, more traffic, and more development. That this astonishing rate of growth is projected to continue into the foreseeable future is both a tribute to the special allure of this place and cause for concern.

For all of these remarkable changes, there is one notable and reassuring constant. The people here still care deeply about preserving the exceptional quality of life the Pacific Northwest has to offer. Maintaining a safe, diverse, and sustainable Northwest environment for ourselves and those who follow is central to this goal. It is a value and responsibility that we all share.

In one way or another, all of us are also contending with the stresses that come with growth, trying to keep pace with a world that seems to be constantly changing. We are asking our environment to absorb these mounting pressures too. How much can it take? How fast? Where? And what will we be forced to deal with as a result? Finding the proper balance between the momentum, needs, and desires of human experience and the rhythm and capacity of our environment has become an enormous ongoing challenge.

We are changing here at EPA Region 10 to better meet these challenges, to provide more innovative solutions to the growing complexity of the problems we encounter. We have reorganized the Regional Office to better position ourselves to do this. We altered only what made sense, preserving what we think is working well.

We're also changing how we do our work. From working more closely with our state, local, and tribal partners, to more systematically reaching out to the public and other stakeholders affected by our work, we are attempting to deliver environmental protection in a new, more collaborative way. We're stressing ecosystem-based strategies, pollution prevention, environmental justice, community-based solutions, and new approaches to enforcement and compliance toward sustaining our record of environmental success.

For all of these changes, we've paid attention to retaining our core values. Despite the growing social and economic dimensions of environmental issues, we're still committed to using sound science as a central feature of our decision-making. For all the changes in our relationship with others, our fundamental commitment to uphold the environmental laws of this country remains steadfast. And while the processes and other tools we use in our work may be changing, our basic commitment to action in protecting the environment has not.

Join us in blending new approaches with time-tested values to confront the challenges ahead. Together, we will not only be more effective in protecting this unique place in the American landscape - we'll make it better for ourselves and our children.

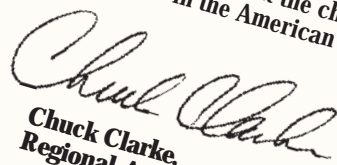














Chuck Clarke,
Regional Administrator

table of contents

	introduction	2
	water	4
	superfund	6
	air	8
	waste & chemicals	10
	ecosystems	12
	drinking water & food	14
	beyond our borders	16
	atlas	17
	more	22
	reaching us	24
	dedication	inside back cover
	student gallery	back cover

introduction



Welcome. And thanks for taking the time to read this report.

The Doppler Effect

Have you ever noticed the sound a train makes as it approaches from a distance? Its faint wail steadily builds in pitch and confidence until it achieves a blaring urgency that grips your attention. As the train passes by and recedes into the distance, its sound likewise diminishes in pitch until it is no longer audible. It's called the Doppler Effect.

Some would say that the interest in things environmental has, in Doppler terms, already crested and begun to lose its voice. This is anything but true here in the Pacific Northwest, where even casual attention would indicate that there is steadily growing interest in environmental issues.

Why? Why is there such intense interest here? It says volumes about this place, the people who live here, and the changes it is undergoing. Whether you're native-born to the area, have moved here from somewhere else, have visited here, or would just like to know that there is a place like this somewhere, this region offers

surpassing beauty, diversity, opportunity, and choice. Its special attraction stems from both what we see and how we see ourselves in it.

For all of the possible perspectives, a common thread that seems to bind all of us tightly to this place is the sheer level of care and concern it inspires about what is happening to it and to us. Regardless of our age, race, gender, or occupation, the environment is a pretty central feature of our lives by choice and necessity - we all live in it and it in us, we sustain and are sustained by it, and we change and are changed by it.

Perhaps we have chosen to pay such close attention to our environment because it's one of few things that we have all been given and will give to all those that follow. It's a mirror that reflects who we are as a society and what we mean to become.

The Doppler effect. It's about change. So is this report.

Your EPA...

The Environmental Protection Agency was created in 1970. There's nothing ambiguous about the name we were given. You expect nothing less from us than the protection of our country's rich environment, to turn the noun into a verb - to act. Your representatives in Congress enact laws from which EPA derives its basic authority and direction. These laws are by turns incredibly complex, far-reaching, and ambitious. Putting these laws into practice is no small chore.

...and EPA Region 10

While there are compelling reasons to promote basic consistency in environmental protection across the entire country, EPA also believes it is sensible to craft solutions that 'fit' more localized circumstances. In creating Regional offices throughout the country (there are ten such offices), EPA has chosen to cultivate a real familiarity with the people, the public and private organizations, and, of course, the environment its work affects. EPA Region 10 has taken this approach a bit further, locating staff in 11 offices throughout Alaska, Idaho, Oregon, and Washington.

If all of this still sounds rather bureaucratic, distant, even dull, there is also a very human face to it. Whether attempting to ensure that its actions are consistent with the spirit, as well as letter of the law, or finding the often elusive balance between the needs of the few and the welfare of the many, it is finally the people within EPA who must adopt and act on a point of view. Whatever EPA says, however it decides to act, individuals and groups of individuals are surely behind it.

This isn't easy work. There is a lot of it, and it can be tremendously difficult. We like the challenge. And it's gratifying to know we're working on something that is so vitally important to all of us.

You might ask why the presence of a federal agency like EPA Region 10 is needed when there are already an array of environmental programs run by all of the States and more than a few local communities and tribes. Aren't they in a better position to provide basic environmental protection? Isn't this redundancy both inefficient and confusing?

Our Work With Others

The answers to these questions are not simple. This is a much-discussed and complicated issue these days. While there are many points of agreement, it would be less than genuine to suggest that there are not honest, sometimes sharp differences of opinion among those of us in the business of protecting the environment.

This is a natural result of differing mandates, circumstances, and viewpoints. But they can also be seen as a healthy expression of the system of checks and balances that the public so consistently supports. And in reality, no single one of these environmental agencies really has either sufficient authority or resources to cover the entire sweep of environmental concerns.

In response to this, the Region has begun to work with these other organizations in a far more coordinated fashion than ever before. The goal is to promote greater overall effectiveness and efficiency in protecting the environment by reducing wasteful overlap and by filling gaps in coverage. This seems sensible to us: doing our jobs better and at lower cost through thoughtful collaboration with others. All while acknowledging the value of preserving our own distinctive identities.

For all too obvious reasons, this approach can be much more difficult to manage than simply working alone. Nevertheless, we're committed to it.

“When I grow up, I want the world to be clean.”

Eskeidar Angaw, 11

Our Environment

Hasn't the environment been getting cleaner over the years? Why don't we just declare victory and move on?

These are really provocative questions. We hope the following answers help.

It's true that we've all made remarkable progress over the past 25 years in cleaning up the environment. Real facts, actual data reveal that with few exceptions this is so. Our air is cleaner. Our streams, rivers, lakes, and coastal waters are cleaner. Our land is cleaner. Our food and drinking water are safer. And there is much more that can be added to this record of success for which we should all be both proud and relieved.

But this isn't the entire story because of three related challenges.

First of all, we all know that there is a difference between “cleaner” and “clean enough”. Despite real progress, there are portions of some problems that have proved stubbornly resistant to positive change. In most instances, we have already exhausted the less expensive, ‘easier’ solutions (they were anything but easy). So, it's perhaps surprising that cleaning up the last portions of the problems may actually prove more difficult, expensive, and/or controversial than when we originally addressed them - demanding more effort from us than ever before.

Secondly, we know there are problems in the environment that we haven't discovered yet or that have changed in character. The discovery process is really an ongoing activity, shaped by both limits on available resources and advances in science and technology. This region is so huge, diverse, and complex, that we've had to carefully choose what we'll look into

and when. Further, changes in the character of some problems over time require us to continually re-examine the status of our knowledge, priorities, and solutions.

Lastly, we don't want to forfeit any of our hard-won environmental successes by not paying attention to either maintenance issues or emerging problems. Maintenance isn't very glamorous stuff, but guarding against deterioration is a basic part of our work. And we take very seriously our responsibility to look forward to detect and head-off new threats to the environment. Rapid projected population growth throughout this region is one such real threat to maintaining our quality of life.

About This Report

We're responsible for letting you know how effective we are at our work. Our aim in this report is to familiarize you with the nature and results of our work and that of others we work with. We've made an attempt to show you a range of our experience: where we've been successful, where we've got work in progress, and where we're struggling.

We'd also like to stimulate a little curiosity, a desire to learn more about this amazing place, to care more about it, to act with us in trying to protect it. After all, it's your place. It's a big job. We need your help and support.

We hope you'll understand that we couldn't possibly present everything we do, everything we know in a report of this length. We've tried to highlight some of the more important trends and challenges we see in our environment. We understand that you're probably interested not only in the bigger

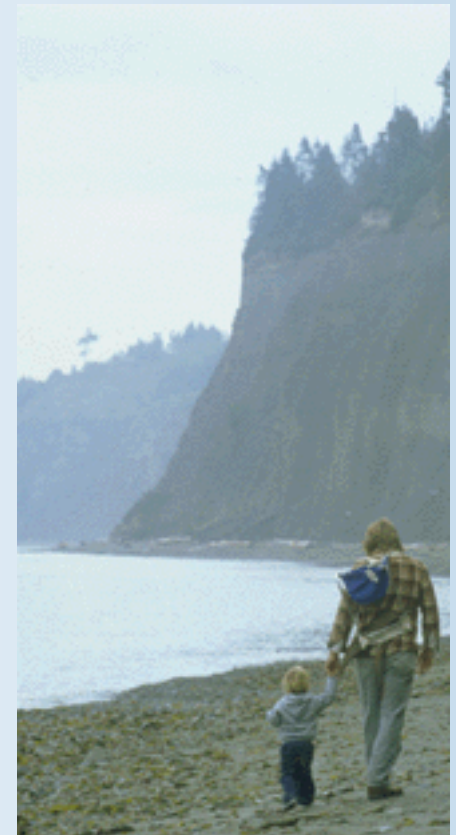
picture, but in what's happening closer to home as well. Toward that end, we've prepared an atlas of a few select environmental problems, displayed on a state-by-state basis.

We've condensed much of the information so that it “fits” into the report. This compromises both detail and some scientific accuracy. We encourage you to be mindful of this when reading the report. You should also be aware that for all the information displayed, and for all the massive amounts of additional information we possess, we have much more to learn about the environment here. This means that there are gaps, in some instances significant gaps, in our understanding of how the environment works, where the problems are, and how we should approach solving them.

We plan on preparing a report like this on a regular basis, perhaps annually. You should see both basic continuity in the information we present, and some progressive improvements that better respond to your interests. Let us know what you think.

Finally, the Region has formed a special relationship with High Point Elementary School in West Seattle. We have a number of volunteers who regularly help the teachers and kids with tutoring and the like. We've presented some of the kids' thoughts on the environment in the form of quotes in each of the chapter headings, and poster art (back cover). We think they're delightful and provocative.

Here goes...



water

Follow the water. It'll carry you through the life and times of the Pacific Northwest. Take a moment and think of it. Native Americans pulled fish, oysters, clams, and fur-bearing animals from it. Loggers rafted timber on it. Farmers irrigated crops with it. Ranchers herded cattle to it. Miners sluiced ores in it. Nuclear reactors are cooled with it. Fine wines are nurtured by it. Windsurfers sail on it. It goes on and on...

It seems that water is the engine driving much of our lives. Whether there's too little or too much of it, whether it's fouled or pure, whether it's wild or tame - we depend on water. And now, it often depends on us.

Our goal is to protect and enhance the quality and quantity of the great water resources we have in the Pacific Northwest. We're working hard so that streams, rivers, lakes, and estuaries support healthy aquatic life. We want a clean drinking water supply for all people. We want our water resources to meet all our needs.

Defining Clean (Enough)

Nowhere is the phrase - "in the eye of the beholder" - more apt than in

describing how we determine whether water is clean enough or not. We use a two step process.

We - EPA and state, local, and tribal agencies - look at a body of water and assign it a beneficial value, some use which we intend for it to fulfill. Called "beneficial use", it's expressed in terms such as swimmable, fishable, and drinkable. But that's not all. Criteria are then assigned to define what "clean" is. The criteria for water quality standards include temperature, nutrients, sediments, turbidity (cloudiness), dissolved oxygen, metals and toxics.

States and tribes are working to develop their own standards too. These standards can be different, but no less protective than the federal criteria.

Taken together, these standards establish what actions are needed to reduce pollution entering the waterbody. As you can imagine, this is extremely complicated and time-consuming.

Charting Uncharted Waters

Since the passage of the Clean Water Act in 1972, EPA and the states have been continually updating lists of



waterbodies which do not meet water quality standards. Surveying the status of all these streams, rivers, and lakes is an enormous challenge.

Not surprisingly, we haven't finished this work yet. And we haven't re-evaluated whether the status of many

waterbodies have changed over time. More about this later.

The Regional Picture

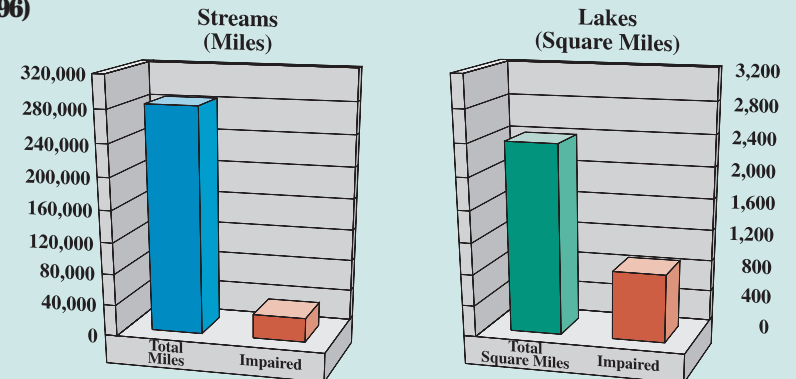
By the end of 1996, the number of waterbodies listed as impaired are: Alaska-53, Idaho-962, Oregon-867, and

What You Can Do

Here are some ways you can help us make a difference in protecting the quality of surface and ground waters:

1. Limit your use of lawn and garden chemicals; use them sparingly and apply in the recommended amounts.
2. Never dump oil, gasoline, or household chemicals down the drain or on the ground.
3. Reduce your water usage and recycle your water to your plants.
4. If you have an old heating oil tank on your property, have it checked for leaks by a professional.
5. Prevent pets and other domestic animals from entering streams, rivers or lakes.
6. If you're on a septic system, check and maintain it regularly.

Status of Water Quality in Washington, Oregon and Idaho (1996)

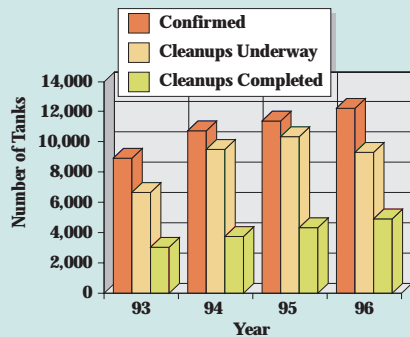


(Alaska data not available)

“I will turn off the water when I am brushing my teeth and washing my face and I will not drop garbage in the water.”

Daniel Siea, 10

Cleaning Up Underground Storage Tanks



Washington-666. This distribution can be seen in the Atlas section of the report.

Through the 1980's, we focused heavily on end-of-pipe pollution discharges, called point sources. Municipal sewage treatment plants, stormwater systems, factories, mills, mines, metal works, food processors, and some animal feedlot operations are examples of major point sources.

The states and EPA control pollution at about 1,000 point sources through permits issued under our National Pollutant Discharge Elimination System (NPDES). Congress intended for the states to assume primary responsibility for the NPDES program. Washington and Oregon have taken this on. We will continue to manage the NPDES program in Idaho and Alaska until such time as they accept responsibility for it.

We have found that buried petroleum storage tanks and injection wells are also significant sources of groundwater contamination. For example, of the 34,000 commercial underground storage tanks currently in use throughout the Northwest (not including residential heating oil tanks),

12,320 have confirmed petroleum leaks. To date, only 4,900 have been completely cleaned up. By 1998, all tanks are required to have corrosion protection to reduce the risk of future groundwater contamination.

Changing Emphasis

Give this story problem a try: If a problem at site A is caused by contributions from both sites B and C, then do we need to cleanup 1) B, 2) C, or 3) both? There's really not enough information to answer this properly - which is the basis for changing the way we go about solving problems.

In the 1990's, we began looking at water quality problems on a watershed basis (the area from which water drains into a river system). Nearly every human activity within a watershed has some impact on its water quality. Fully understanding the influence of these activities creates the best chance for us to craft effective solutions.

We also know that controlling only what comes out the end of a pipe often doesn't get the job done. Water quality can also be significantly affected by non-point sources of pollution, such as agricultural and logging activities, urban runoff, and homeowner actions. We're working with other agencies, organizations, and individuals to develop ways to reduce these kinds of impacts on water quality.

A major part of the history and economy of the Northwest, mining has also contributed to the contamination of our rivers, lakes, and ground water. It is estimated that there are over 12,500 abandoned or inactive mine sites in the Northwest, covering 64,500 acres. We recently formed a "mining team," with experts in many scientific and technical fields, to address the complex

environmental problems caused by mining activities.

Behind the Record

We're responsible for and assist other environmental agencies in enforcing clean water laws. But enforcement of environmental regulations alone will get us only part way toward the cleaner water we want. Education, technical assistance, and information sharing programs are all important aspects of our job.

We're working to develop and promote new business practices and technologies which prevent water pollution. A good example is the agreement between the Idaho Division of Environmental Quality, the Idaho Department of Agriculture, the Idaho Dairy Farmers Association, and ourselves. With over 1,400 Idaho dairy farms, we alone could not conduct annual inspections. Under this agreement, ISDA performs environmental assessments during its regular milk quality inspections, advising us if enforcement actions are needed to protect public health or the environment.

The Future

As a result of several lawsuits, federal courts have required that we find and solve water quality problems throughout the region on a very accelerated schedule. Meeting this requirement will be an exceedingly difficult challenge over the next few years since many waterbodies have not yet been evaluated.

As the Northwest grows, so do the stresses on our water resources. Waters from streams and aquifers are often being pumped or drained to levels too low to maintain healthy plant and

The Shoalwaters: A Watershed Story

The Shoalwater Bay Indian Tribe, living on the shores of Willapa Bay in Southwest Washington, recently reported an alarming array of reproductive problems, including an unusually high infant mortality rate. An abandoned dump, pesticide and herbicide spraying, runoff from cranberry farming, and drinking water were suspected sources of these problems.

To determine what was causing these problems, we went to the field and collected environmental samples, analyzed them, and performed an evaluation of the results. While no specific environmental cause could be found to explain the reproductive problems, our work did identify actions the Tribe could take to enhance the health and welfare of their community. It also revealed several significant threats to the pristine and fragile Willapa Bay ecosystem.

Our commitment to both sound, hands-on science, and collaborative problem-solving has helped this community - Tribe and local industry alike - begin working together to protect the ecosystem they share.

animal life or to ensure sufficient quantities of water for our use. As a result, some of the states are considering closing or have already closed some areas to further water withdrawal. But it's not just a quantity issue. With more people comes more stress on water quality.

We can greatly improve the quality of the water we have. We're working hard to stay ahead of the challenges.

superfund

Imagine literally thousands of junkyards, dump sites, and industrial facilities scattered across the U.S. contaminated with a remarkable variety of hazardous materials. Think of these sites, many abandoned due to safety or liability concerns, many more spreading contamination to nearby rivers, underlying groundwater, or into the air.

This was reality prior to 1980. There were no national laws regulating the disposal of hazardous waste. And although another EPA program (see RCRA in Waste Chapter) would eventually be created to prevent such problems from occurring in the future, there was no federal authority to clean up sites and facilities that were no longer operating.

A sensible person might have asked some questions. Are any of these facilities near me? Do they pose a health risk to me, to my family, to my neighbors? Are plants and animals being affected? Who created the problem? Who's responsible for solving it?

Created by Congress in 1980, Superfund is designed to protect human health and the environment through fast, effective cleanup of priority hazardous waste sites and releases. Those who created the problems are required to clean them up. If they

either can't be identified or can't afford the cleanup costs, the government moves forward with cleanup using federal money from a trust fund supported by a tax on the chemical and petroleum industries.

Searching for Superfund Sites

We work with others - state, tribal, and local agencies, and the general public - in actively searching for sites that may require cleanup under Superfund. Once identified, these sites fall into two basic categories. There are those sites which are considered such a significant hazard to human health or the environment that they require immediate cleanup, known as a removal. And there are other seriously contaminated sites that are added to the National Priorities List (NPL) and are eligible for access to Trust Fund cleanup money if necessary.

Still other sites discovered through this process, but which do not formally qualify as Superfund sites, may be referred to states or other agencies for cleanup.

The Removal Program

Removals are typically of short duration (usually less than a year) and involve transferring drums, transformers, excavated contaminated soils, and other wastes to regulated disposal facilities. Some removals are



outright emergencies stemming from fires or spills involving hazardous materials. In non-emergencies, we locate the party responsible for the contamination and direct them to perform the cleanup. If post-removal testing of soils and groundwater reveal that contamination levels are still of

concern, the site may either be listed on the NPL or referred to another agency for further cleanup.

Over 150 removals have been completed in Region 10 since 1980.

Northwest Superfund Sites

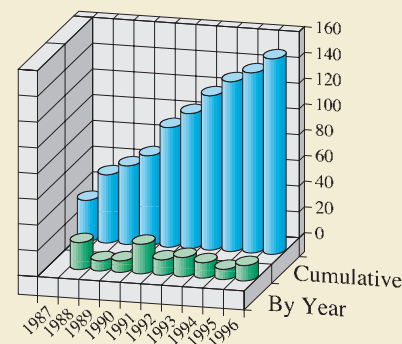
Of the 1210 Superfund sites located across the country, 88 can be found in the Pacific Northwest. Over a million people here live within two miles of one or more Superfund sites. These sites run the gamut from active industrial facilities to small businesses, from less than an acre to more than 21 square miles in size. U.S. Government facilities are not exempt from the Superfund law - there are 28 such facilities on the NPL here in the Northwest. Most of these sites belong to either the Department of Defense or the Department of Energy and are being cleaned up by them with EPA and State oversight.

What You Can Do

Here are some ways you can help us clean up hazardous waste sites:

1. Notify local authorities or EPA about a spill or a possible hazardous waste site. We'll look into it.
2. If you live near a Superfund site, ask to be put on the responsible agency's mailing list. You'll be kept informed of site activities, public meetings, and decisions. Also, community groups have been formed near some sites and may be eligible for federal funds. We welcome your participation.

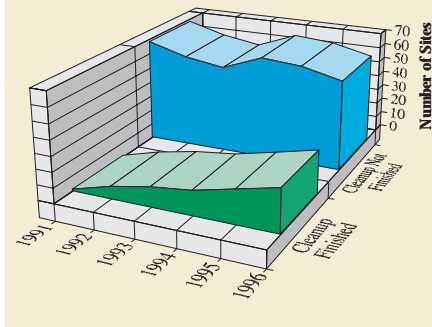
Completed Removals in Region 10



“You may also clean your neighborhood to help.”

Samantha Sterkel, 11

Progress in Superfund Cleanups



Of the region's 88 Superfund sites, 29 have been cleaned up and 14 of them have been formally deleted from the NPL. Final cleanups at another 32 sites are currently underway. With respect to the Federal Facility Superfund sites, cleanups are underway at 19 sites and have been completed at eight of them. By the end of the year 2000, nearly two thirds of today's Superfund sites will have been cleaned up.

You might ask, "If the Law was enacted in 1980, why then have so few sites actually been deleted from the NPL?" Please read on.

Behind the Record

A common criticism of Superfund is that cleanups take too long and are too expensive. It can take a long time to assess problems and negotiate cleanups. In many cases the required cleanup technology is unproven, very expensive, or doesn't even exist. All of this adds up - it can take years, in some instances decades, and a great deal of money to clean up sites.

Fortunately, our site managers, engineers, and scientists are far more experienced than ever before in solving the myriad of problems they encounter. And much of the work begun at sites in the 1980s will be completed in the 1990s.

Perhaps Superfund's greatest successes are also its least advertised. In assessing literally thousands of potential hazardous waste sites, it has returned most of them to productive use by affirming that extraordinary cleanup efforts were not in fact needed. And two states - Washington and Oregon - have created their own cleanup programs modeled on the success of Superfund.

Superfund hasn't been left behind on the innovation front either. For instance, EPA started a pilot program in 1995 to help cities and other local agencies identify and evaluate "Brownfields" sites. These are abandoned industrial sites that can be returned to productive use by new businesses. We think the potential benefits of this initiative are two-fold: creating jobs and tax revenue in previously unproductive, blighted areas and leaving more suburban 'greenfields' free from development. Region 10 currently has seven Brownfields pilots underway, with more to start soon.

Superfund has also given businesses a powerful incentive to avoid future environmental and financial liabilities through limiting waste generation and handling wastes more responsibly. Many are cleaning up existing waste sites voluntarily, with or without oversight from federal or state authorities.

Oil Spills & Public Awareness

Our Superfund and Water programs, together with the Coast Guard, are jointly responsible for cleaning up oil spills, and for enforcing laws meant to prevent spills. If a facility that stores oil reports two or more small spills, or one large one, it must submit a spill prevention and cleanup plan to EPA for review. EPA also performs inspections of such facilities to help keep spills from happening.

Superfund's Emergency Planning and Community Right-to-Know Act requires businesses using hazardous chemicals to report the chemicals and their quantities to state and local emergency response and planning groups. We support these groups with grants, technical assistance, and training. Our hazardous materials response program has conducted health and safety training at eleven villages in Alaska in an effort to prepare residents for cleanup jobs at local sites.

The Future

The Superfund law expired in 1994. Reauthorization has been delayed as Congress considers the diverse demands of interested parties. For example, many businesses think the cleanup standards are too strict, while environmentalists think they should stay the same, or be made stronger. Further, Superfund liability provisions remain controversial. In some cases, people are required to pay cleanup costs for past actions that were legal at the time. But the alternative to retroactive liability is even less attractive: it means using public funds to clean up private properties.

Since most existing Superfund sites will be cleaned up within the next few

Bunker Hill

The Silver Valley in Idaho's Panhandle has long been a center of mining operations, including the Bunker Hill lead smelter which closed in 1981. Wastes were discharged into the Coeur d'Alene River, slag piles, and settling ponds in and around the town of Kellogg. These wastes in turn contaminated soils, surface water, groundwater, and the air. Many children in the area had dangerously high levels of lead in their blood.

In 1986, we began cleanup of the Bunker Hill smelter complex and the surrounding 21-square mile area, including four towns. The state of Idaho and responsible parties have also been involved. Several removal actions eliminated the worst sources of contamination, such as park and playground soils with high levels of lead. Longer term actions include removing soils from residential yards (over 1,200 so far), replanting vegetation, and addressing wastes still residing in the Bunker Hill complex.

Blood lead levels of children and adults living in the area are returning to normal levels and the natural habitat is being restored.

years, the focus of the program will change. Some of the largest and most technically challenging sites, including nuclear waste and marine sediment sites, will need active cleanup for many years to come. Others will need post-cleanup monitoring to assure that they remain safe. Finally, some new kinds of sites, such as mine waste sites, are being addressed under Superfund more often than in the past.

About 5 minutes. That's the record for holding your breath - and living to draw another. It's not a very long time. After all, a person can go several days without water, literally months without food. But breathing continuously isn't optional. What's in the air you breathe invariably winds up somewhere inside of you.

Our goal is to ensure that every person throughout the Northwest can breathe air free of pollutants that cause significant risks of cancer, respiratory distress, and other health problems. We want to clear the air of pollutants that damage our forests and crops, acidify our wilderness lakes, and obscure our view of the remarkable natural wonders we have in such abundance here.

The Big Seven

Of the literally thousands of substances that are released to or subsequently form in the air every day, EPA has chosen to set national outdoor standards for just seven of them: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), and particulate matter in two size ranges - PM-10 (particles 10 microns and smaller) and PM-2.5 (particles 2.5 microns and smaller). The reasoning behind this approach is both direct and subtle.

At certain levels, these seven pollutants are all known to be harmful to either human health or the environment. With some variation, they are also pretty common ingredients of the air in and around cities, towns, and other communities throughout the U.S. So common that EPA thought it sensible to create national standards for them.

The Regional Picture

In 1987, there were 32 areas throughout the Pacific Northwest which violated air standards for three of these seven pollutants: PM-10, CO, & O₃. Working with our state and local agency counterparts, we've reduced the number of current problem areas to 11. Levels of PM-10 and CO in the remaining problem areas have also improved, sometimes dramatically, over the past 10 years (see graphic & atlas).

Despite this progress, thousands of people in the Northwest continue to be exposed to unhealthy levels of air pollutants. Some of these people, especially infants, children, the elderly, and those with pre-existing medical conditions, suffer from their exposure to these and other air pollutants.

Although we have worked hard with our state and local agency partners to measure and control pollutants throughout as much of the Northwest as possible, there are still some areas here which we think have air quality



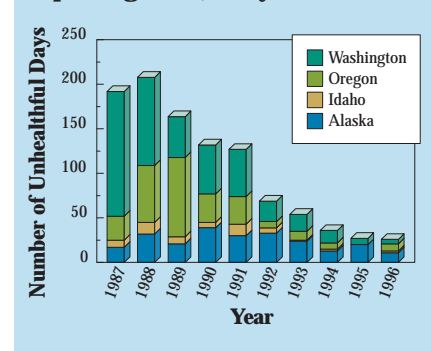
problems. Extending our programs to these 'undiscovered' areas is a challenge, requiring innovation and initiative.

What are the sources of the current PM-10 and CO problems we have here?

Causes

The answer to the burning question of what causes most of our PM-10 and CO problems is, ironically - burning. Whether individuals and industry burn gasoline, wood, vegetation, trash, or oil, air pollution results.

Improving Air Quality



What You Can Do

Your efforts in helping us improve air quality have never been more important. Here are some things you can do:

1. Drive less and smarter: carpool, take mass transit, tune your car, purchase more fuel efficient vehicles, consolidate errands, ride a bike, etc.
2. Reduce indoor air pollution at home, work, and schools by eliminating tobacco smoke, radon, molds, and excess carbon monoxide from heating and cooking appliances.
3. Weatherize your home to reduce energy-related emissions and costs. If you have a wood heating device, be sure it's certified and burn as cleanly as possible. Better yet, consider switching to a natural gas fireplace or furnace.
4. Buy 'green' consumer products and recycle whenever possible to reduce energy and other production-related emissions that impact our local and global air quality.
5. Get involved in urban planning issues to ensure that the effects of population growth on air quality are fully considered and addressed.

While the sources of our PM-10 problems can vary widely from area to area, two or more of the following types of sources are typically involved: woodstoves, industry, road dust, forest and field burning, and windblown dust. Because industrial smokestack emissions of PM-10 have often already been controlled to the greatest practical extent, the focus of our efforts has shifted toward the non-industrial sources of pollution.

The Northwest's CO problems are mostly traceable to vehicle exhaust, with smaller contributions from woodstoves, industry, and other combustion sources. There are two significant trends seen in CO impacts. The remarkable reduction of CO in car exhaust achieved over the past 20 years has, of late, been almost entirely offset by more people driving more cars more miles (see graphic). Further, as urban areas grow, problems have appeared outside the traditional downtown cores in high-traffic areas around suburban commercial and shopping centers.

Nature also figures in our air quality problems. The combination of terrain and weather contributes to poor air

quality in many areas here by trapping pollution at ground level.

Behind the Record

Remember the “thousands of substances” we discussed earlier? While not all of them are harmful to human health or the environment at typically occurring levels, some are. We're addressing releases of these substances in two ways.

The term “co-control” means that when we control emissions of one pollutant, we often achieve reductions of other pollutants that are released along with it. For instance, in controlling PM-10 from woodstoves, we get substantial reductions in CO and a host of other pollutants hazardous to human health. We have greatly reduced the levels of literally hundreds of potentially hazardous substances in the air as a result of addressing the Big Seven.

In this case, less is indeed more.

We have also begun addressing air pollutants beyond the Big Seven with a new program which controls industrial emissions of an additional 189 hazardous air pollutants. This two-phase program involves first installing basic technologies that achieve maximum pollutant reductions, followed by additional controls which may be required to eliminate any remaining human health risks.

The Inside Story

We haven't forgotten that most people, especially children, spend the majority of their time indoors, whether it's at work, in schools, or at home. Indoor air pollution consistently ranks as one of the top four environmental risks to human health in the Northwest.

In fact, air pollution levels can often be higher indoors than outdoors. Environmental tobacco smoke, CO, lead, other chemical substances, viruses and bacteria, and radon (a harmful, naturally occurring gas entering buildings through foundations) are all of concern to us here.

We've developed programs to protect children in school and day-care settings. We're assisting schools throughout the Northwest in testing for radon. We've also developed documents and training programs that will assist schools in finding simple, low-cost solutions to indoor air quality problems affecting children.

We also assist people in dealing with residential air pollution problems. We respond to hundreds of telephone requests for information and assistance made by residents from all four Northwest states. We've funded residential indoor air studies and assisted in funding public awareness-education programs.

Many people in the Northwest complain every year of workplace air pollution and related illnesses - the so-called 'sick building syndrome'. We provide states and tribal organizations a comprehensive two-day course in better managing indoor work environments to eliminate these problems.

The Future

The future of air quality in the Northwest is subject to both change and tension. We have very recently revised both our particulate and O₃ standards. More protective of human health, these revised standards may lead to a higher number of particulate and O₃ problem areas than we currently have in the Northwest.

Inner-City Asthma Programs

One of the most serious health effects associated with both indoor and outdoor air pollution is asthma. And the trends related to asthma are not encouraging. For instance, the hospitalization rate for asthma in Washington state is rising much faster than the rest of the U.S. What's more, that rate is seven times higher among minority children from the inner city than children from other communities.

In response to this problem, we have funded several special projects, including:

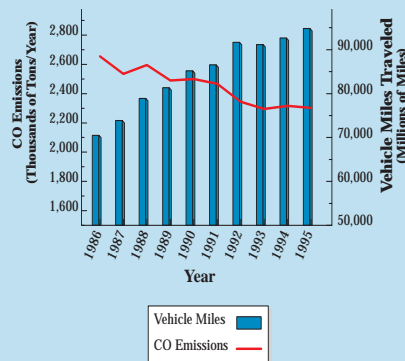
- Community-based, inner-city asthma medical intervention clinic and home visit programs.
- An inner-city asthma outreach and education program.
- Development and distribution of brochures targeting residential air pollution improvements in minority and low-income communities.

We're looking into why asthma is on the rise at a time when air pollution levels seem to have declined. In the meantime, we're doing what we can to help people with this terrible health problem breathe a little easier.

When these more stringent standards are coupled with the steady population growth projected for much of the Northwest, our work becomes that much more challenging. We're determined to do more than simply 'hold on' to what we've got - we're going to do what's necessary to ensure continued improvement.

In future reports, we plan to discuss visibility, acid rain, stratospheric ozone, and global warming issues as they relate to the Northwest.

More Driving Threatens Air Quality Improvements



waste & chemicals

An ad for a prominent chemical company once suggested that - "Without chemicals, life itself would be impossible." This is, of course, entirely true. It is also true that "life", and the chemicals upon which it depends, existed long before the dawn of chemical companies or EPA.

People can and do have honest, sometimes spirited debates about whether life has indeed been made better or worse with the introduction of man-made chemicals. However, society still makes, consumes, and disposes of chemicals and waste products in huge quantities. How do we best manage them?

Our goal is to minimize the risks to both human health and the environment from chemical usage and wastes. We think the best way to do this is to reduce the use of hazardous chemicals, encouraging the most efficient use of the safest chemicals and other precious resources, and recycling as much as we can and disposing what we can't in the safest fashion possible.

"From Cradle to Grave"

After years of experience, we realized that addressing chemical usage and disposal as if they were unrelated just didn't make sense. Too many potential threats were allowed to slip

through the cracks only to abruptly appear later like an unwelcome guest (see Superfund). A more comprehensive approach was needed, one that regulated hazardous waste through their entire 'life' cycle - from cradle to grave.

The Resource Conservation & Recovery Act (RCRA) was designed by Congress to do just that. Through it, hazardous wastes are managed as though they belong to a system having a beginning and an end: many industrial and commercial facilities are required to have permits controlling both waste treatment and disposal. Although non-hazardous wastes, such as household waste, are primarily controlled at the local level, EPA has set national standards for municipal waste disposal to ensure that problems don't arise in the future.

The Regional Picture

There are 6,818 RCRA hazardous waste handlers located throughout the Region. Congress intended for the States to have direct responsibility for running the RCRA program with EPA assuming an assistance and oversight role, providing compliance and enforcement functions where appropriate. In general, Oregon, Washington, and Idaho have assumed



their lead roles. Alaska has not.

You might be surprised to learn how much hazardous waste we generate here in the Pacific Northwest (see chart). How do these figures compare to other areas across the U.S.? In 1995, Washington ranked 8th, Oregon 39th, Idaho 17th, and Alaska 50th.

Similar to Superfund, clean-up of past releases at RCRA facilities remains a high priority for us to address unacceptable risks of exposure that these sites pose. As of 1996, 50 sites had one or more units with stabilization measures already implemented or final remedies being implemented. An additional 54 sites are in various stages of investigation or remedy selection.

Garbage & Recycling

Most of us have heard reports about the unfortunate problems that municipal landfills have created.

Whether they seep wastes into groundwater or cause odor nuisances in nearby communities, landfills are a necessary fact of modern life and we must deal with them.

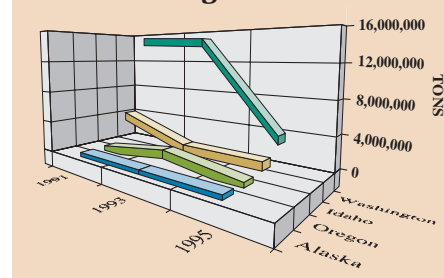
We are addressing these problems by promoting better waste management practices. From lining these landfills with high-tech barriers to prevent seepage to returning sites to valuable

What You Can Do

Here are some ways you can help us minimize risks to human health and the environment from chemical usage and waste:

1. Practice wise consumption by avoiding products with unnecessary packaging, buying products with recycled content, and buying in bulk (if possible).
2. Learn more about consumer choices and how they impact the environment.
3. Look for products made by environmentally responsible companies.
4. Recycle more materials such as paper, glass, steel, plastic.

Quantity of RCRA Hazardous Waste Generated in Region 10



“Send it to Texas ‘cause it’s bigger.”

Marcus Bell, 12

park and recreational space, the program is designed to minimize possible risks and maximize utility by encouraging these necessary facilities to become better ‘neighbors’.

Did you know that it takes an entire forest - over 500,000 trees - to supply Americans with their Sunday newspapers every week? Recycling is a vital part of any sensible waste management program. It not only reduces the volume of garbage we’d otherwise send to landfills, but also reduces demands on our natural resources and the energy required to process them. Although the trend in recycling here has been steadily moving upward, so has the per capita amount of waste generated. Your continuing support is the key.

Behind the Record

We have a keen interest in finding new ways to better manage our chemicals and waste, from using less toxic chemicals in industrial processes to voluntary cleanups of past releases. One such voluntary initiative provides incentives to companies for going beyond simple compliance with environmental requirements. Targeting 17 high-priority toxic chemicals, participating companies here have reduced releases and disposals by an astonishing 58%. Corporate consciousness and initiative accounts for much of the program’s success with over a quarter of the eligible companies participating, the highest rate in the U.S.

We don’t see economic opportunity and environmental protection as mutually exclusive propositions. In stimulating the development of businesses that use recyclable or reusable materials, new jobs and tax

revenues have been created while performing an important environmental service to society. Our support led to a national electronic marketplace for recyclables on the Chicago Board of Trade Recyclables Exchange.

Toxic Substances

Some materials are so toxic, and the threat of their release to the environment so widespread, that special toxic substances and asbestos laws were enacted to regulate them. EPA has broad authority to ensure that these substances are managed safely. Our focus in this region is on PCBs (polychlorinated biphenyls), asbestos, chemicals in commerce (import/export), and lead (Pb).

It is truly disturbing that one in every 25 children in the U.S. has dangerously high blood lead levels. This comes about in a variety of ways, including contact with leaded paints, contaminated soil, and dust. We’re working to assist tribes and states in developing programs and legislation which reduce lead exposure.

Between 1930 and 1979, PCBs were used as an insulator in a variety of electrical equipment. PCBs are a very effective insulator - and a very potent environmental hazard. Some 137 million pounds of PCBs were safely disposed of in permitted facilities in 1994.

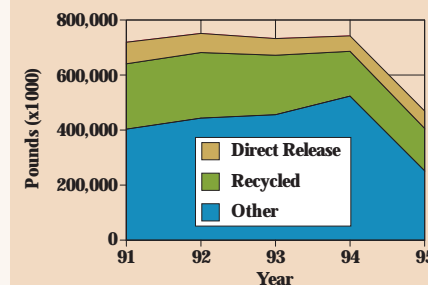
There are a number of laws that govern how asbestos materials are to be handled in schools and other public and commercial buildings. We emphasize controlling asbestos in schools where children are at greatest risk of exposure.

Emergencies & Public Awareness

We believe you have a right to know the kinds and amounts of toxic chemicals that are stored and released in your community. The Emergency Planning and Community Right-to-Know Act requires some facilities to report this data on an annual basis. The information can help communities understand chemical releases in their area and plan their responses to spills, fires, or other emergencies.

Data from the publicly accessible Toxic Release Inventory show that toxic releases in Region 10 are generally decreasing. While industry in Washington has the best record in the region, industrial operations in Oregon, Idaho and Alaska are also managing successful pollution prevention programs. The recycling component for 1995 is approximately one third of the total chemical production demonstrating that efforts to prevent pollution are paying off as more businesses find more efficient uses for their wastes.

Trend in Toxic Releases in Region 10 (reportable chemicals)



Alaska Community-Based Environmental Protection

In 1996, we gave a grant to a Native community, the Loudon Village Council in Alaska, for developing and testing a model for community-based environmental protection. The grant will assist the Council in identifying the full range of waste management risks in their community, including impacts on their subsistence food sources.

The lessons learned in Loudon will be made available to other Alaska Native communities via a documentary. We think that reaching the widest possible audience of communities facing similar problems allows EPA and the communities to better focus resources on priority needs and to make informed decisions leading to meaningful actions.

The Future

We’re constantly looking for ways to simplify waste management, use chemicals more effectively, and provide greater incentives for voluntary cleanup and recycling. There are several laws slated for revision in the near future that will help us accomplish our goals.

ecosystems

Are you fascinated by holograms, those 3-D images created by projected light? Unlike regular flat photographs, the better holograms allow you to see the different sides of a thing simply by moving around it, by changing your point of view. Because the image has a real sense of depth, it seems far more life-like.

We noticed that our work had been so focused on specific facets of the environment - air quality, waste management, water quality, etc. - that we often lost a deeper appreciation of what was happening when all its various parts were seen as they are in real life - together and related. After all, the environment is really a system of humans, plants, and animals, constantly interacting with each other and the physical and chemical world in which they live.

We needed a change in perspective.

So, we created a new ecosystems office. It looks across the work and capabilities of all of our other programs for opportunities to find 3-D solutions to real 3-D problems.

Our goal is to protect and restore the remarkable ecosystems we have here by addressing problems in specific geographic locales or issue areas with a more integrated approach. Whether we address problems by working with others at the community or watershed level, or on issues like salmon

preservation or forest management, we will employ an ecosystems approach where it makes sense. It's difficult and time-consuming work - we're still learning.

We've chosen to relate our experiences in using this approach by presenting four environmental issues that require 3-D solutions.

Issue #1: Salmon

Salmon is almost a registered trademark of the Northwest. Yet throughout much of the Northwest, native salmon stocks have been declining. In some areas, these declines are so dramatic that commercial and recreational salmon fishing have been wiped out. Many individual salmon runs have been listed as either threatened or endangered. While all of these developments are significant alarms that something is going terribly wrong in the environment, it is ultimately the actions they inspire that make all the difference.

We're taking positive steps to promote salmon restoration and preservation. We're actively weighing in on decisions dealing with a wide range of salmon-related projects through our comments on environmental impact statements. Proposed construction and management



activities such as dams, ecosystem strategies, and logging plans are examples of projects we regularly review.

For instance, our comments influenced the Coos Bay Water Board in Oregon to drop a proposed dam project which would have threatened salmon runs and destroyed over 70 acres of wetlands. Instead, they adopted a much less damaging alternative. We also contributed to a decision by the Federal Energy Regulatory Commission to deny a proposal that would have raised water levels in Washington's Rocky Reach Reservoir and jeopardized salmon stocks on the Columbia. Our continuing input is influencing projects like the Cushman Dam on the Olympic Peninsula in Washington, the Lower Snake River Salmon Migration Project and numerous others.

We've also formed a "Salmon Team." Working closely with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the U.S. Forest Service, the Bureau of Land Management and with state, local, and tribal organizations on salmon issues across the region, we identify

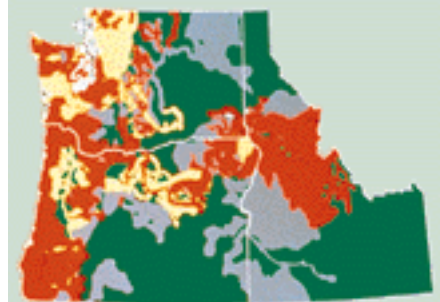
opportunities to provide technical and financial support. We promote a variety of projects and programs, especially as they relate to water quality and habitat. The overall goal is to restore and maintain our valuable salmon populations.

What You Can Do

Here are some actions you can take to protect your ecosystem.

1. Join your local watershed council.
2. Participate in citizen monitoring. EPA has developed three programs to help you monitor your environment: Wetlands Walk, Stream Walk and Lake Walk. Call us to find out how you can participate.
3. Get involved in local land use decisions and comprehensive land use planning.

Areas of At-Risk or Extinct Salmon



“When the air is polluted, it goes up to the clouds and comes down with the rain.”

Sambut Khim, 11

Issue #2: The President's Forest Plan

The President's Forest Plan is another effort that employs the ecosystem approach. It focuses on improving management practices in nine geographic areas throughout Oregon and Washington. We're working closely with other state, tribal, and federal agencies to move this Plan forward.

Saving old growth stands of trees for endangered species such as the spotted owl is only part of the issue. The overall goal is to promote forest management practices that achieve better water and air quality and healthier habitats while maintaining economically viable and sustainable timber harvests.

Issue #3: Wetlands

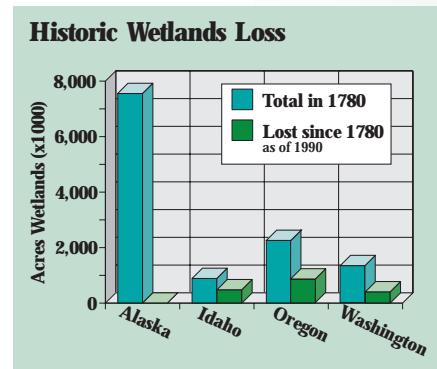
Wetlands are not only beautiful, but serve practical purposes as well. They improve water quality by removing sediments, nutrients, and some chemical contaminants from the water that filters through them. They play a vital role in flood control by soaking up heavy rains and runoff. Wetlands provide vital nursery areas for some species of salmon and are home to many other plants and animals, including a staggering 43% of all endangered species. They also occupy a critical place in the lifecycle of migratory birds.

Yet in Idaho, Oregon, and Washington, approximately 40% of our original wetlands have been lost. Our goal with these states is for “no net loss” of wetlands in the short term and a “net gain” in the long term. In Alaska, where less than 1% of wetlands have been lost, the goal is to preserve

sensitive wetlands in areas of rapid development.

Wetlands protection is a controversial, much-debated issue. Because it often limits the development of public and private property, questions concerning land ownership and stewardship inevitably arise. Although many of these issues are best resolved in political and legal forums, we have our own legal responsibilities to maintain and restore wetlands.

Working with the U.S. Army Corps of Engineers, our emphasis is on evaluating projects that have significant potential impacts on wetlands. For example, the Emerald Downs Race Track in Washington and the new University of Washington Bothell Campus were both approved on the condition that wetlands within the same



watershed be restored. On the other hand, the expansion of a hydroelectric dam on the Snake River in Idaho and a county landfill in Washington were both abandoned due in large part to their inability to preserve or compensate for the loss of wetlands.

We're actively supporting state, local, and tribal authorities who want to manage the wetlands within their own

jurisdictions. The city of Eugene, Oregon, was the first local government in the nation to receive authority to enforce federal wetlands regulations at the local level. Following this example, over twenty local governments in Oregon and Washington are now developing similar wetlands programs toward achieving our “no net loss” goal.

Issue #4: Sediments

Contamination of the sands and soils lying beneath our lakes, streams, rivers, and marine waters has been a major concern here since the 1970's. Pollutants from industry, runoff, spills, and air emissions entering the water have been accumulating in these sediments for many years, impacting fish, shellfish, and other plants and animals.

We're actively using our expertise to solve sediment cleanup and preservation challenges. In 1994, we formed a partnership with the Corps of Engineers and three Washington agencies to deal with sediment issues in the State. This group's activities include: a sediment cleanup and restoration project in Tacoma's Commencement Bay, the development of sites for contaminated sediment disposal, and a plan to restore degraded habitats throughout Puget Sound using clean sediments.

The Future

We recognize that effective solutions to environmental problems require the cooperation of many groups holding a wide range of interests. So, we've developed a strategy that focuses on actions a community can take to solve problems. This strategy brings together not only the legal and scientific aspects

Wide Hollow Creek “Classroom”

A year ago, you'd have been hard-pressed to find any fish in Wide Hollow Creek in Yakima, Washington. Streambanks and foliage critical to fish habitat were trampled by children on their way to the West Valley Middle School. Worse yet, the area was a known hot spot for drug-related activities. With funding from EPA, a 1,100 foot fence now protects the stream, a new path and foot-bridge provides children a safe way to school, and the West Valley School's new Outdoor Living Classroom at the Creek is up and running.

Accomplishments to date include:

- The release of several thousand salmon fry by students.
 - Student planting of over 900 donated native plants along the stream.
 - Reduced drug activity due to easier access by the County Sheriff and the neighborhood Block Watch.
- This project will have positive effects on the children, the community, and the environment for years to come.

of ecosystem protection, but local social and economic considerations as well.

The more we know about the needs and issues of the people and environment in any given area, the more effective we'll be in crafting cooperative and efficient solutions. Toward this end, we have a number of community-based projects underway, including: Washington's Columbia Plateau, Idaho's Coeur d'Alene Basin, Oregon's Willamette Basin, and Alaska's Cook Inlet.

drinking water & food

Drinking Water

Have you ever wondered why specialty drinking water products are so popular these days? From the purchase of bottled water from faraway France to the proliferation of home water filtration systems, you'd think that Americans are really intent on having pure, clean-tasting water to drink. You'd be right.

Since only about 1% of the world's water is suitable for drinking, there is an obvious need to do all we can to protect the surface and groundwater sources from which we draw this precious necessity. While many of us may be concerned about residential water pressures, concerns about residential pressures on water are also mounting. The explosive growth projected for the Pacific Northwest has led to rising concerns about sustaining both the quality and quantity of our drinking water supplies.

Our goal is to ensure that everyone in the Northwest can expect safe drinking water every time they turn on a faucet.

The Law

The federal Safe Drinking Water Act (SDWA) enacted by Congress in 1974 is aimed at achieving this goal. In

implementing this ambitious law, EPA has developed standards for drinking water supplies covering more than 80 toxic metals, chemicals, and biological contaminants.

Washington, Oregon, Alaska, and Idaho all have drinking water laws that are essentially identical to federal law. EPA is also responsible for ensuring that drinking water laws are followed on tribal lands within the region.

How We Help

We work very closely with the states and tribes, providing enforcement and technical assistance programs to ensure coordinated protection of drinking water supply systems. We provide funding to states for source water, groundwater, and wellhead protection programs. For example, by getting local citizens involved in a wellhead protection project, the city of Yacolt, Washington, was able to identify and reduce risks from potential contamination to its wellfield for only \$25,000.

Problems with drinking water can be caused by a number of factors, such as the age of the system, the maintenance and operation of that system, and quality of the source water. We're working with state, local, and regional agencies and citizen groups to ensure

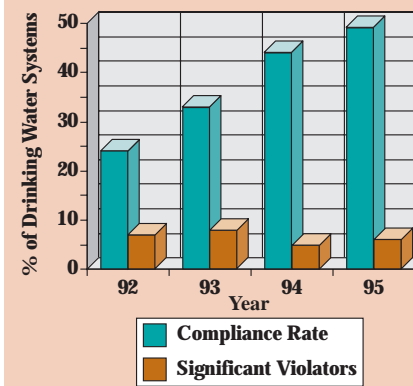
What You Can Do

Here are some ways you can help us make a difference in protecting the quality of our drinking water:

1. If you have a well, ensure that it is capped with a sanitary seal and remove any chemicals stored in your well house.
2. If you're on a septic system, inspect and pump it regularly.
3. Have your water tested.
4. Call your local water district, health department, state agency, or us if you observe any problems or potential threats to your water supply.

(note - also see recommendations in the Water section)

Improving Drinking Water Safety (microbiological contamination)



that businesses, industries, and water system operators understand both how their activities can affect nearby drinking water supplies and what can be done to correct these threats.

The Regional Picture

State and federal laws require regular monitoring of drinking water for a large number of chemicals, bacteria, and metals. As more and more water system operators understand the importance of monitoring, we have seen a reduction in the number of reported violations. The graphic shows the reduction in microbiological violations from 1992-1995. These violations are both for failure to monitor and exceeding water quality standards.

In the vast agricultural areas of the region, farming practices pose a significant problem. Agricultural land accounts for 61% of the Mid-Columbia Basin. Irrigation runoff carries nitrates from nitrogen fertilizers into shallow groundwater reservoirs. These nitrates

can cause real human health problems, especially to infants where they cause methemoglobinemia (blue-baby syndrome). About 13% of the people living in the Basin are on public water supplies which have reported at least one incidence of exceeding the nitrate standard during the period, 1993-1996.

Prevention vs. Cures

Preventing water pollution before it happens can save millions of dollars in cleanup costs. Contaminated ground water is expensive and often difficult to clean up. For example, in 1988, the city of Milwaukie, Oregon, discovered the solvent, trichloroethylene (TCE), in its well water. We've estimated that as little as five gallons of TCE, spilled from a 50 gallon drum, may have made the water unsafe for drinking. The total cleanup cost exceeded \$2 million. During the three years it took to correct the problem, Milwaukie spent another \$280,000 per year purchasing drinking water from Portland.

Prevention work will be further enhanced under the 1996 Safe Drinking Water Act Amendments. We will provide money to states for source water assessments and protection.

The Future

New challenges will arrive with all of the people expected to make the Northwest home over the next 20 years. One of the critical challenges will be working with state and local governments to ensure that water quality protection is given adequate consideration in the rapidly growing urban and suburban areas.

Having safe drinking water is not a luxury commodity - we see it as a basic right of yours that we intend to uphold.

“If the water tastes nasty, I don’t want to drink it.”

Charles Brooks, 10

Food

You can still see people at the grocery store weighing fruit and vegetables on scales. They’re usually weighing two things - the price they’ll pay and whether the food will make it out of their fruit basket or vegetable crisper before spoiling.

We do something similar when we regulate pesticides involved in food production. We weigh two basic things - the availability of an inexpensive, plentiful food supply, and the adverse effects pesticides may have on human health and the environment.

Our goal is to ensure that the people of the Northwest have foods free of unhealthy levels of pesticides. We are also committed to ensuring that human health and the environment are not negatively affected by pesticide use. We share these responsibilities with other federal agencies, state and local agencies, and thousands of farmers and related businesses.

Some History

Since World War II, the number of farmers in this country has fallen dramatically from about six million to about two million. Small diverse farms growing many different crops have given way to larger farms growing

fewer types of crops. An important factor in this transformation has been the increasing use of pesticides.

Nature’s tendency is to encourage diversity, including weeds and insects. Pre-World War II farms dealt with this tendency by growing different types of crops and employing crop rotation techniques - a very labor-intensive approach. The widespread use of pesticides and specialized machinery in modern farming allows for the cultivation of fewer crop types, over increased acreage, and involving fewer people.

The upside to this trend is the ability to grow a lot of food inexpensively. However, widespread pesticide use presents real challenges to protecting human health and the environment.

The Laws

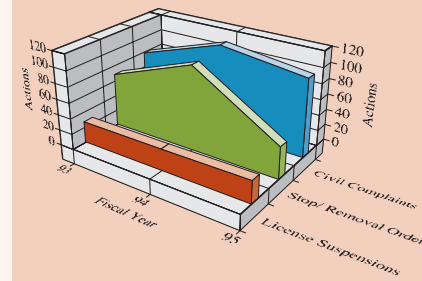
EPA regulates pesticides under two major federal statutes. Under the Federal Insecticide, Fungicide, and Rodenticide Act, EPA registers pesticides for use in the United States and prescribes labeling and other regulatory requirements to prevent adverse effects to human health or the environment. Under the Federal Food, Drug, and Cosmetic Act, EPA establishes tolerances (maximum legally permissible levels) for pesticide

residues in food. These tolerances are enforced by the Food and Drug Administration and the U.S. Department of Agriculture.

The Regional Picture

We work closely with other Federal, state, and local agencies in implementing pesticide laws and programs aimed at ensuring food, farm worker, public, and environmental safety and protection. Our cooperative enforcement program is an important feature of this effort. Often triggered by citizen complaints, the type of enforcement action can range widely based on the nature and severity of the problem. Two of the most serious actions involve suspending or revoking the licenses of pesticide applicators and ordering the removal or stopping the sale and use of illegal pesticides by manufacturers and vendors (see graphic).

Combined State and Federal Pesticide Enforcement



We’re also working with others to promote integrated pest management (IPM) which brings together several methods of pest control toward reducing total pesticide use. This approach can employ a variety of methods, including: monitoring to

The Urban Pesticide Initiative

Our Urban Pesticide Initiative (UPI) promotes reductions in pesticide use through outreach and education rather than purely regulatory means. Since 1991, this joint effort with four Washington state agencies takes on insects, weeds, and other pests where they live: in schools, along roadsides, in parks, and other urban areas.

One of the centerpieces of this work is integrated pest management (see The Regional Picture). Through small grants to state and local organizations, we’ve taken this IPM approach to schools, low-income housing, and other areas where pest management would otherwise be addressed using traditional means or not at all. UPI has been successful - we plan to expand it to the rest of the Northwest.

determine whether there is in fact a pest problem, using natural predators to reduce a pest problem, using baits and traps instead of employing broadcast spraying, etc. We think that these integrated approaches are more effective in controlling pests and minimizing the release of pesticides to the environment than traditional approaches.

The Future

Pesticide use will continue to be a major factor in how we grow food and control pests. New pesticides will continue to be developed and certified. The need to ensure their safe use and promote alternatives will be an ongoing challenge in the years ahead.

What You Can Do

Here are some ways you can help us make a difference in promoting minimal and safe pesticide use:

1. Consider employing alternatives to pesticides by trying integrated pest management techniques at home.
2. If you do use a pesticide, read the label carefully for precautions and environmental hazards before purchasing. Carefully follow all label directions.
3. Safely discard old or residual pesticides by taking them to hazardous waste disposal sites or calling your local health department for disposal instructions.

beyond our borders

“We should care about the air in Canada too!”

Samuel Tuitoelau, 10

Chernobyl - 1986. Kuwait - 1991. Remember?

These spectacular environmental catastrophes conjure up memories of bold-print headlines and startling footage on the evening news. For weeks, even months, they brought us to an awareness of what a small, vulnerable place the world really is. But for all their special notoriety, they might also have diverted our attention from the more mundane, everyday releases of pollutants into the global environment. Are they a problem? And why should we care here in the Pacific Northwest?

Pollution moves about the environment where it will, with absolutely no regard to political boundaries. All of it goes somewhere. Sometimes pollution crosses directly from one country to another, sometimes not. But increasingly, whether or not a single molecule of pollution ever makes it across some border, our borders, its effects inevitably do. How is this so?

The world is interconnected. Whether it's put in environmental, economic, or social terms, what we do - the way we make things, consume things, dispose of things, take care of things - eventually affects other people in other places. It could be the transport of airborne pollutants, trade in endangered species, loss of habitat to deforestation, ocean-dumping of toxic wastes - what happens 'there' seems more and more to affect in some way what happens 'here'.

What We Contribute & Get

We think that whoever said - "If not us, who? If not now, when?" - was absolutely right. This ethic of

involvement extends to our interest in international work as well. There are several ways to look at what we contribute and what we get as a result.

We know that the Pacific Northwest contributes so-called greenhouse gases (e.g., CO₂) that can in turn lead to global warming. We also know that others outside this region contribute to this global environmental problem, affecting our weather and other natural systems. Similarly, our activities combined with others elsewhere contribute to stratospheric ozone depletion, which may lead to increased incidences of skin cancers, cataracts, and other health and welfare concerns. These are everyone's problems, and we mean to participate in solving them. We plan to track the status of these particular contributions and effects in future reports.

Closer to home, our record of cooperation with our Canadian neighbors in addressing transborder environmental issues continues to grow. We regularly work with them on issues related to salmon, water quality, air quality, and chemical management. For example, we are an active participant in the British Columbia-Washington Environmental Cooperation Council, created to cooperatively manage shared environmental problems. Several task forces have been formed by the Council to address specific issues, including: the management of the shared inland marine waters of British Columbia and Washington, coordinated groundwater management, Columbia River/Lake Roosevelt water quality, and regional air quality management.

We also devote a small fraction of our resources to helping others

around the world. Over the past 3 years, we have sent our experts to over 17 countries to provide assistance in dealing with the often profound environmental problems they face. And we've hosted officials from over 35 countries with whom we share our environmental management experiences.

Behind the Record

For the many benefits that this modest investment yields, we think it is clearly worthwhile. Our efforts often lead to direct improvements in the health and welfare of people in host countries. Our work often leads to more efficient use of natural resources and the energy required to process them. Our involvement in technical pollution control issues often opens doors to the purchase of American environmental products and services, stimulating our economy. And as host countries begin to shoulder the real costs of responsible environmental

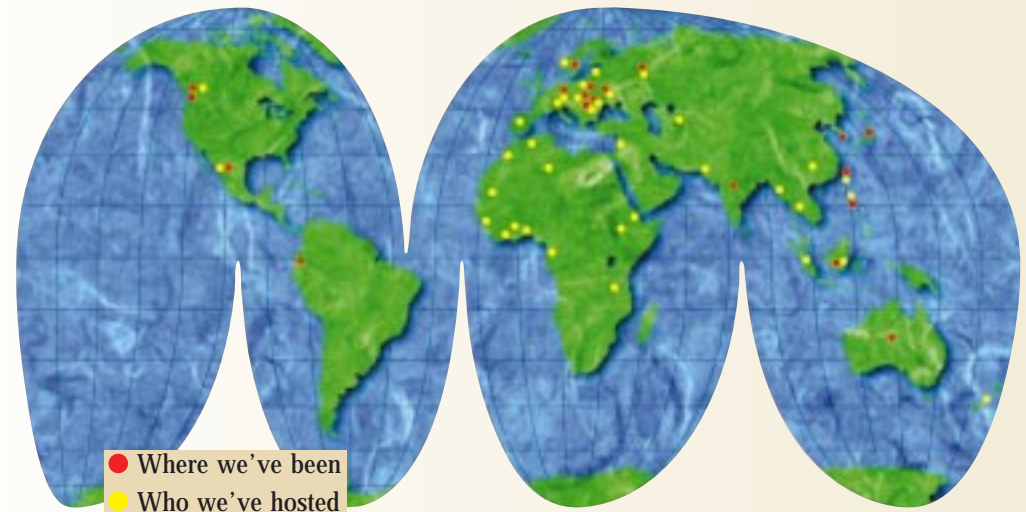
stewardship, the increased price of their products results in a more level international marketplace.

Among all of these benefits, perhaps the most subtle is this - we learn. In working with people elsewhere under difficult, sometimes desperate circumstances, we get ideas for new, often low-tech solutions that can be applied to some of the problems we still encounter here.

The Future

We think that helping other countries through our expertise and experience is ultimately in our own best interest. We plan to continue our work in the international arena.

Several EPA Regional Offices have created special continuing relationships with certain countries around the world. We are also considering doing this with a country in the Pacific Rim, a region experiencing explosive industrial growth and mounting environmental pressures.



Modern recording techniques used in the music industry involve a process of layering sounds. For example, voices, strings, brass, and percussion are each recorded on separate tracks and then layered one on top of another to yield a single, blended composition. The result is richly complex.

We've used a similar approach in preparing the following environmental atlas. Several different types of information have been layered on a series of maps toward composing a more complete picture of the environmental concerns we all face here in the Pacific Northwest.

General Notes

Six layers of environmental information are superimposed onto the maps of each of the four Northwest states. While we could have added other layers to the maps, we selected these for presentation because they reflect concerns common to each state, they consume the larger portion of our time and resources, and adding more layers would only obscure detail in already densely covered areas.

A brief description of each of these layers can be found in the section that follows. Two basic types of information are presented. Three of the layers primarily reflect measured impacts at levels assumed to pose a threat to human health or the environment (Air, Water, Drinking Water). The other three layers focus on active or inactive facilities that release or may release pollutants of concern to the environment (Superfund, the Resource Conservation and Recovery Act, and Toxic Release Inventory).

We know that gaining an understanding of transborder problems is compromised by presenting

information on a separate state-by-state basis. However, we've elected to preserve detail by focusing on individual states and making those maps as large as possible.

The maps are surrounded by a set of graphs depicting trends or other notable features seen in four of the six layers. In making comparisons between the states, please note that a few graphs have different scales due to widely dissimilar ranges seen in the featured data.

In previous chapters of this report we alerted you to the possibility that environmental problems may exist here in the Pacific Northwest that have yet to be discovered. This caution applies to the atlas as well.

Air

Areas not attaining compliance with air quality standards at any time during the last six years (1991-1996) are depicted on the map in yellow. This time frame was selected due to year-to-year fluctuations often seen in air quality and because pollutant levels in many areas remain close to the standard.

The accompanying air graphic shows a 10-year trend in the number of days during the year when an area's air quality was deemed unhealthy for at least one of the seven primary air pollutants. Areas were selected for presentation on the basis of historical concerns, anticipated interest, and available data.

Water

Streams, rivers, and lakes that as of 1996 were not meeting designated beneficial uses or water quality standards are shown on the map in

purple. The manner in which these waters were ultimately designated can vary widely across the region and within states. In some instances, there was a great volume of data leading to this determination. In other cases, very little data existed and a great deal of professional judgement was used to make the determination. Alaska data and impaired marine waters and estuaries are not depicted due to the lack of related digitized computer coverages.

The accompanying water graphic portrays how much of the total water resource is impaired.

Drinking Water

Levels of nitrates exceeding Federal drinking water standards that have been detected in supply systems throughout each of the states at least once over the last five years (1992-1996) are depicted by a green "x" icon. Excessive nitrates in drinking water can cause blue-baby syndrome (methemoglobinemia). Only test results on drinking water systems that are regulated by the Federal government are shown here (systems with 15 or more connections). High nitrate levels found in one of a number of wells serving a system do not necessarily mean that people are drinking unhealthy water.

Toxic Releases

Facilities using, producing, and/or emitting quantities of toxic chemicals above certain reporting thresholds are denoted by a red "+" icon. It is not assumed that toxic releases pose a certain threat to either human health or the environment, only that there may be reason for concern.

The accompanying graphic portrays the five-year trend in the amount of reportable toxic chemicals (1991-1996). The graphic tracks three categories: "direct releases" of chemicals to the environment, chemicals that have been "recycled" either on- or off-site, and chemicals that have "other" fates (transfer to disposal facilities, use in energy generation, etc.).

Superfund

Active Superfund sites are shown on the map as blue triangles. While our emergency removal program eliminates immediate threats to human health and the environment associated with these sites, low level chemical releases from these sites may still pose a threat.

The companion graphic shows the six-year trend in the status of site cleanup.

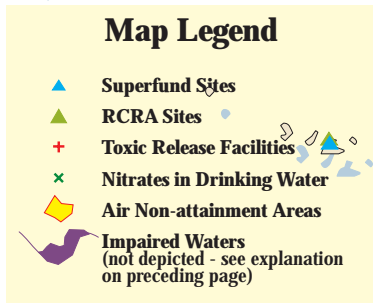
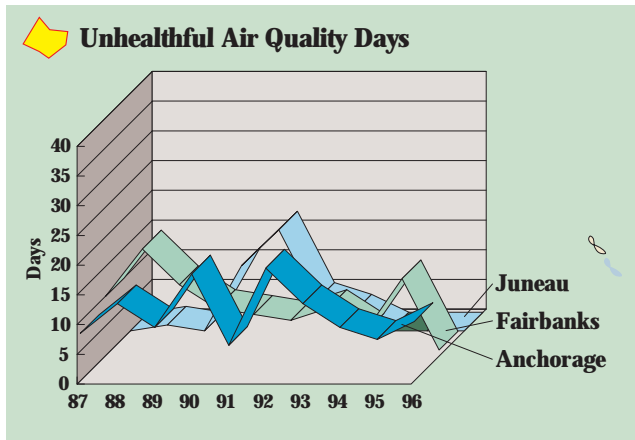
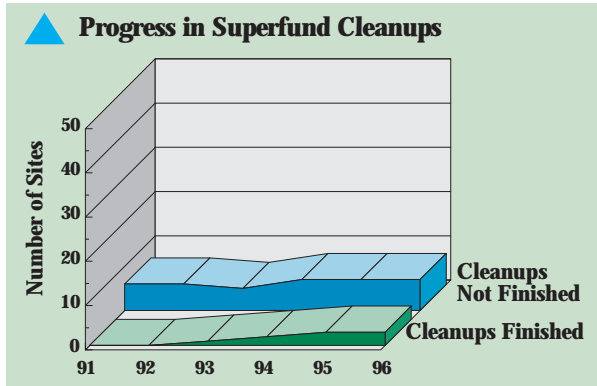
RCRA

The locations of RCRA high-priority Corrective Action Sites (CAS) are shown on the map by a green triangle icon. We have targeted these sites for special corrective action, cleanup, and surveillance due to the potential threat their releases pose to human health and the environment.

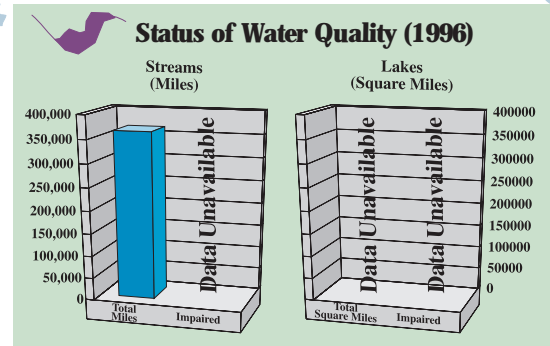
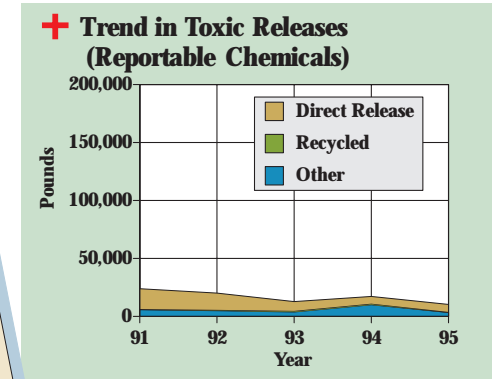
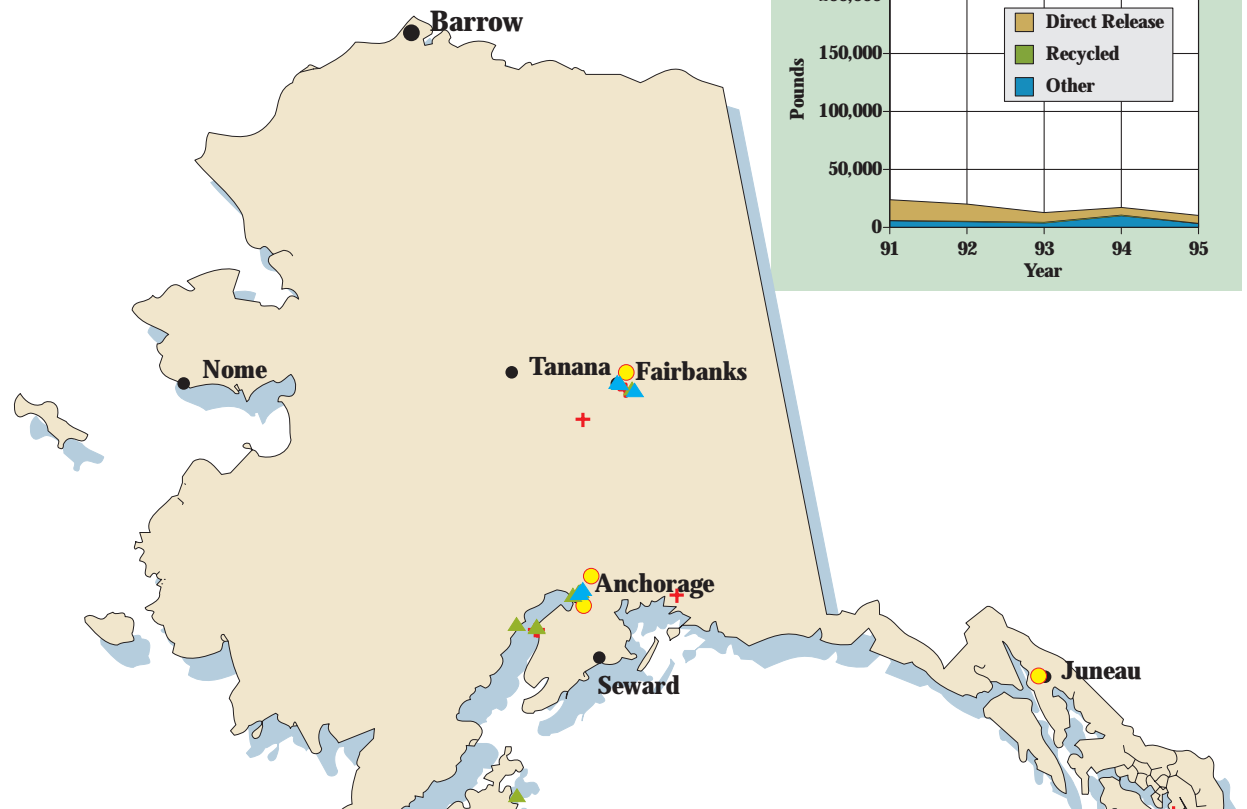
Summary

We understand that the information presented in this section is limited. But we hope that it begins to create both a visual impression of the types and locations of environmental concerns we deal with, and a curiosity that prompts subsequent inquiry.

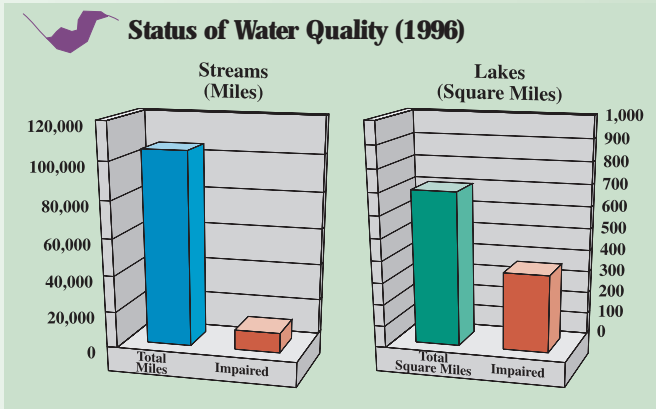
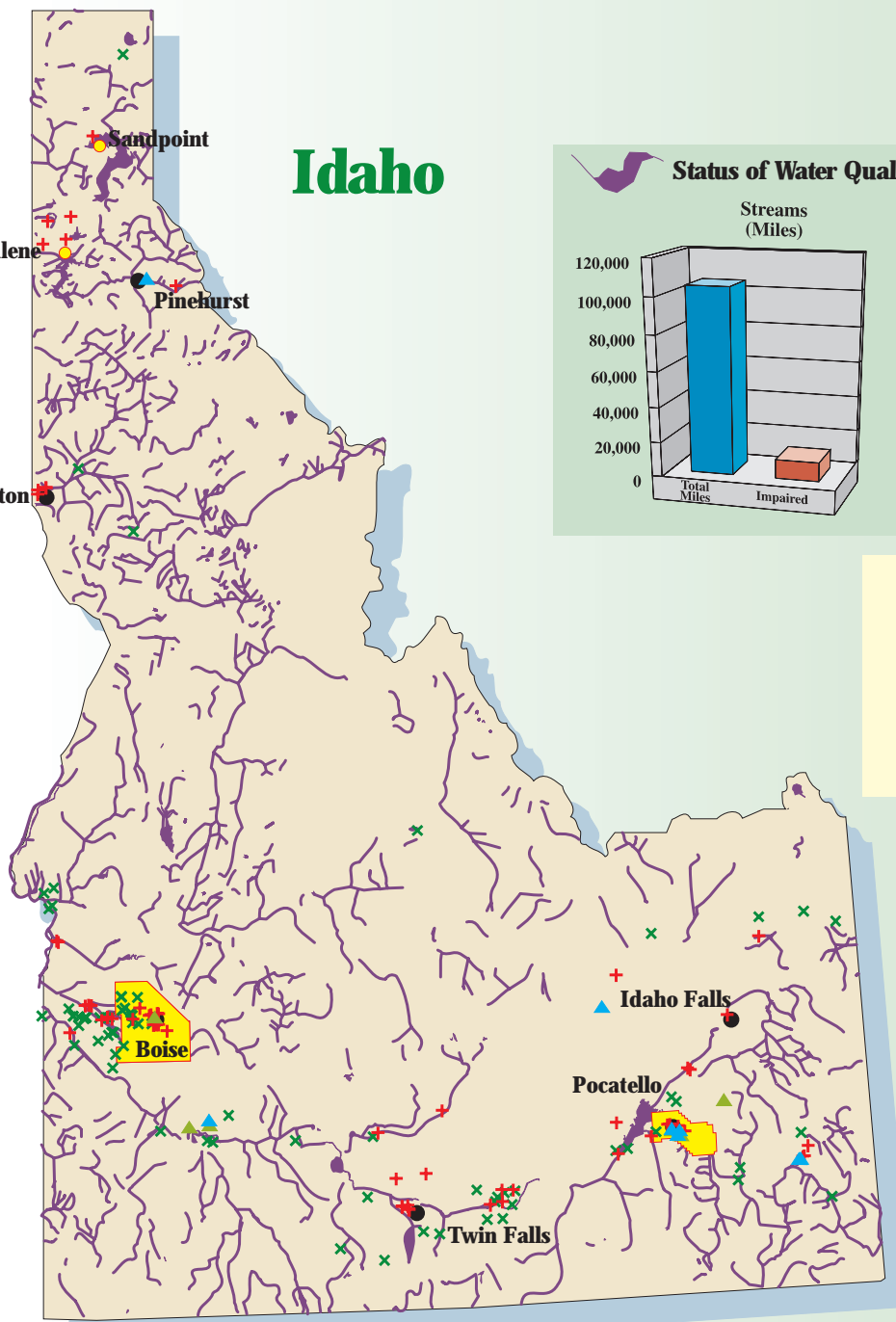
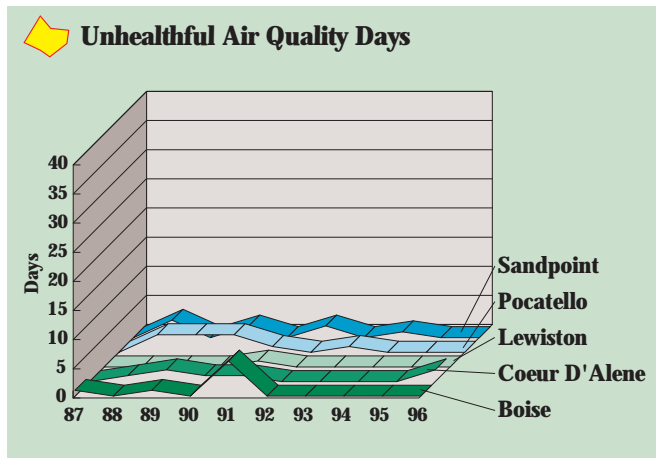
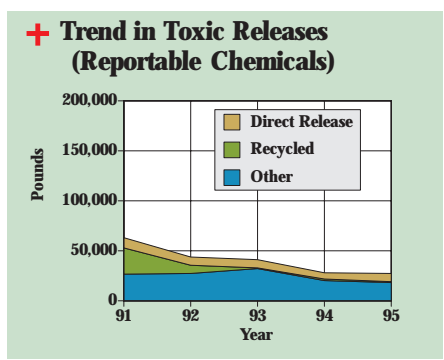
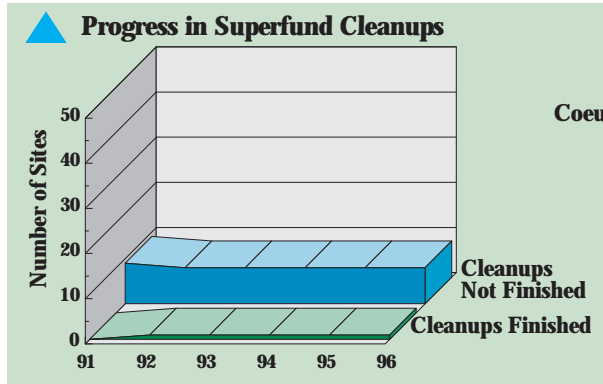
atlas



Alaska



Idaho



atlas

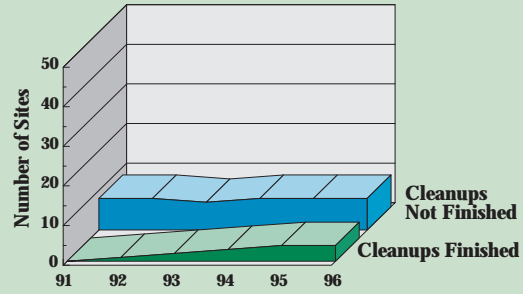
Oregon

Map Legend

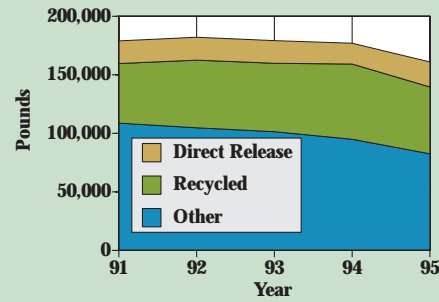
- ▲ Superfund Sites
- ▲ RCRA Sites
- + Toxic Release Facilities
- x Nitrates in Drinking Water
- ◆ Air Non-attainment Areas
- ~ Impaired Waters



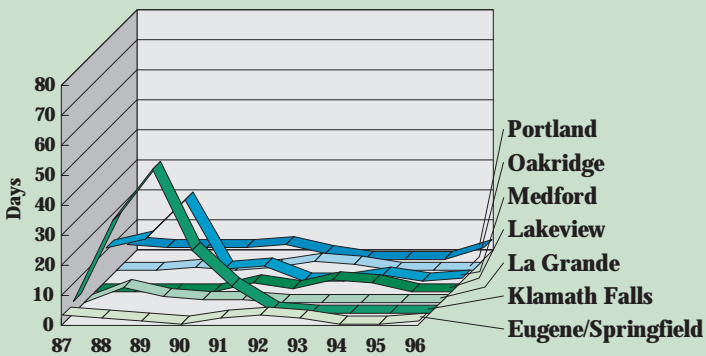
▲ Progress in Superfund Cleanups



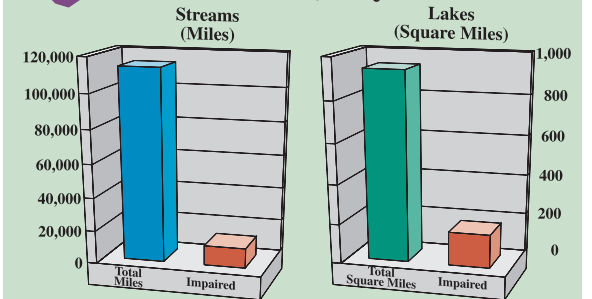
+ Trend in Toxic Releases (Reportable Chemicals)



◆ Unhealthy Air Quality Days



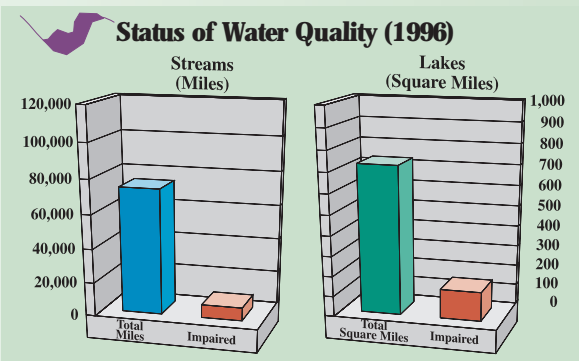
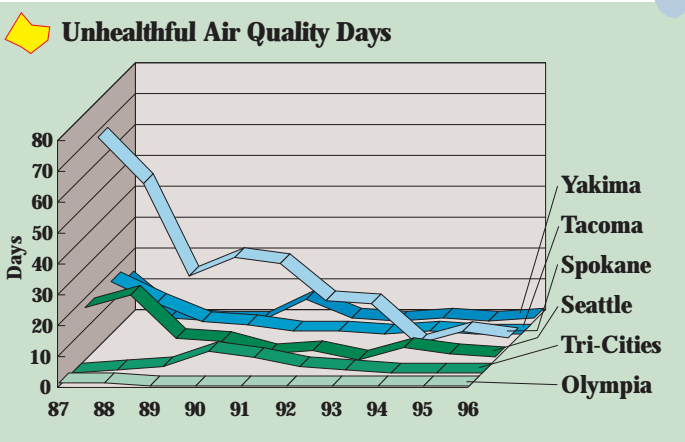
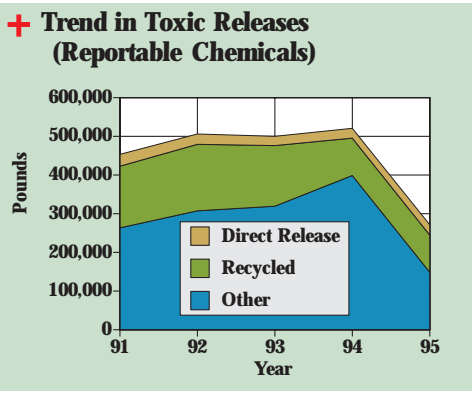
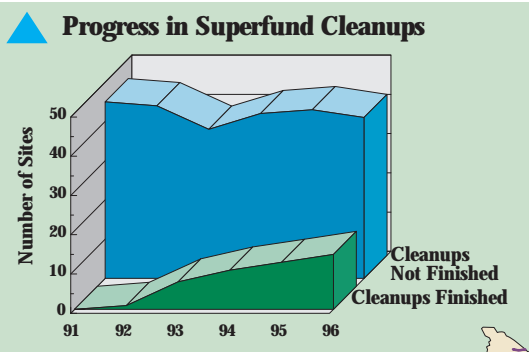
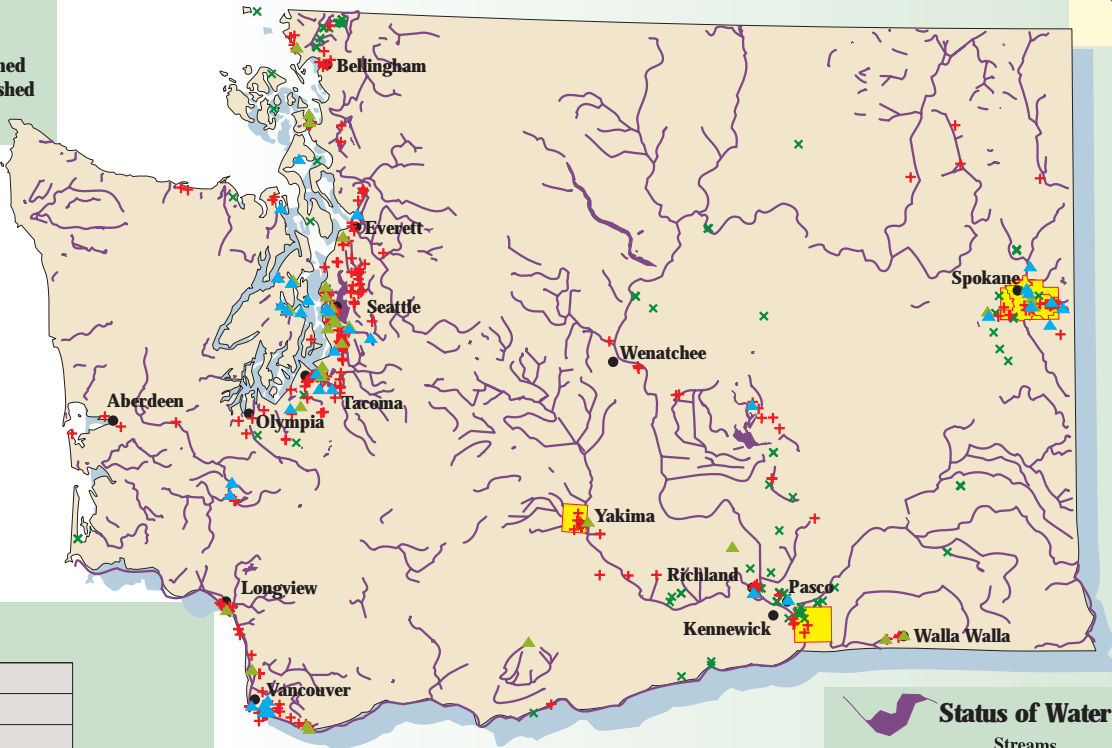
~ Status of Water Quality (1996)



Washington

Map Legend

- ▲ Superfund Sites
- ▲ RCRA Sites
- + Toxic Release Facilities
- x Nitrates in Drinking Water
- ◆ Air Non-attainment Areas
- Impaired Waters



As promised in the Introduction, we've given you a partial glimpse into the work we do. There is much more. But we thought you might want to know a little about our budget, the changes we see the Northwest undergoing, and what we find ourselves contending with as we attempt to protect your environment.

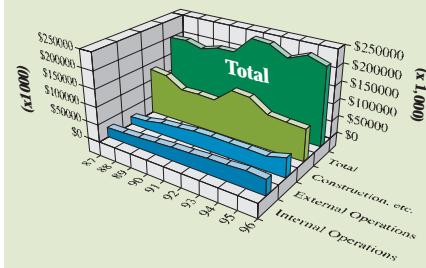
Our Budget

There is an old rule to solving mysteries in detective novels - follow the money. Although how we spend the money we receive is certainly no mystery (we are, after all, a public agency), following the rule can still be instructive. We can briefly tell you what has happened over time and why, and what we see ahead.

EPA's total investment in protecting the Pacific Northwest environment has grown about 15% over the last decade (see figure).

One of the more notable features seen in these trends is the growth in funding we send to external recipients for ongoing program support. Between 1987 and 1996, this funding doubled.

**EPA Region 10's Budget
(In '96 dollars)**



At a time when spending in most Federal programs has been declining, why has there been growth in environmental investment? And why are we sending more money to external parties?

National opinion polls consistently show that environmental protection enjoys enormous public interest and support. However, in this era of balanced budget goals, it's likely that EPA's budget will diminish in the years ahead. We think the same will hold true for most state and local agency budgets.

At the same time, just as the environmental laws enacted by Congress have relentlessly grown in scope and complexity, so has the burden of implementing them. This trend shows no signs of easing. But it is widely held that the growth in funding for environmental protection has not kept pace with the growth in responsibilities we and especially the states have been asked to assume over the last decade. We expect the gap to widen in the years ahead.

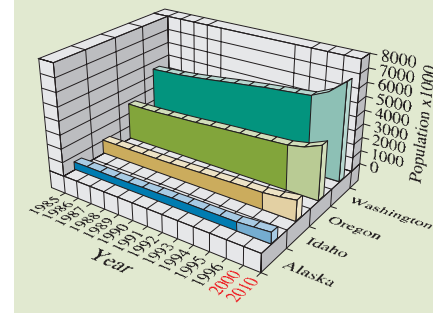
Our plans then? We're just going to have to work smarter. We're committed to developing innovative ways to make our work more efficient and effective. But even at that, we won't be able to do all that needs to be done.

We've begun a comparative risk analysis that will help guide us in addressing the most serious existing and projected threats to human health and the environment on a worst-come, worst-serve basis.

Changes Here

Changes in both the number of people that live here and our economy are closely related, affecting our environment and the nature of the challenges we face.

More People Moving Here



One thing is clear - a growing population means more pressure on the environment. Between 1985 and 1996, each of the four states in Region 10 experienced population growth (see graphic) that outstripped the national rate of 11.5%. During this period, Alaska's population grew by 12%, Idaho's and Oregon's by 20% each, and Washington's by 25%.

And more people are expected to move here in the years ahead. All of these states are forecasting population growth rates that exceed the projected national average. Through 2010, Alaska's population is projected to grow by another 20%, Idaho's by 22%, Oregon's by 21%, and Washington's by 27%.

Why are so many people coming here? One reason is the remarkable quality of life the Northwest has to offer, including our natural environment. Another reason for growing populations here is our economy - it is vibrant. Over the last decade, employment growth here has outperformed the national average by a factor of more than 2 to 1 despite dramatic declines in two important sectors of our economy, aerospace and timber, during the late '80s and early '90s.

The impact on the environment? Increased demand for living and business space will force communities to expand into undeveloped areas. The capacity of our basic infrastructure to meet these rapidly growing demands will be sorely tested, creating stresses on air and water quality, drinking water supplies, and solid waste, sewage, and stormwater treatment and disposal.

The basic structure of our economy has also changed. There has been a gradual move away from what has been heavy reliance on natural resource-related industries toward a more diversified economic base. Tourism and service-related businesses are expanding in Alaska. High-tech and other white collar firms are moving to or expanding in Oregon, Washington and Idaho. And we have recently witnessed a resurgent aerospace industry here that has stable, if not bright, long-term prospects.

Less reliance on industries that extract and process natural resources means that neither the location or quantity of these resources is the powerful job-limiting factor it once was. If a business not dependant on

“So go out there and make a difference!!!!!!”

Samantha Sterkel, 11



natural resources can operate and create jobs just about anywhere (can you spell ‘software?’), why not locate to an attractive region like the Pacific Northwest?

The continued projected growth of both the region’s population and economy poses an enormous challenge to our efforts to protect and enhance our environment. As the type, quantity, and location of environmental pressures change, we will change our response as well.

Our Work

An economist once said something to the effect that - ‘The only truly effective pollution control is economics.’ While this provocative notion is more than a little cynical, it is also more than a little true. When economic considerations are taken together with other social and political factors in making environmental decisions, a potent crowd of other-than-environmental factors clamors for our attention.

It would be misleading to suggest that we have never had to deal with these considerations. We have. It would also be misleading to maintain that these considerations were always on equal footing with the pursuit of environmental objectives. They weren’t. And finally, it would be less than genuine to suggest that a healthy environment and a healthy economy cannot go hand in hand. Some of the arguments we hear lately say it isn’t necessarily so.

Times are changing. The pressures on EPA to take these other-than-environmental factors into greater account have grown immeasurably over the last few years. They are now truly formidable factors vying for a position in our decisions: protection at what social, political, and economic costs? for what justifiably beneficial reduction in risk? We welcome both the dialogue and challenges that come with these important questions.

On a related score, the basic science from which EPA moves forward with its actions is receiving increasingly aggressive scrutiny. Uncertainty, a constant companion of science, is no longer seen as just giving proper pause and perspective to our decisions. As concerns over the social and economic effects of our actions have become increasingly powerful, our struggle in deciding whether to provide more or less environmental protection when faced with scientific uncertainty has deepened.

You can be sure that as a public agency, we will follow the public’s will. But while we’re mindful of the effects our actions have on the economy and society, we’re also mindful of those people and things in our environment that won’t be

protected without our help. We will continue to act using a combination of the soundest science and least socially and economically disruptive means possible.

Another important trend we see continuing in our work is the increasing level of collaboration we have with other organizations. We’ve referred to these partnerships in virtually every section of this report. As with most things in life, there are both pros and cons associated with this development.

Our involvement with others at the outset of an issue or initiative offers a variety of benefits. It often yields better harmonized, more synchronized actions than if we worked alone. The resources that can be amassed by a group can far outstrip those that any one of us could ever hope to bring to the table. And early collaboration can help reduce the unwelcome surprises that can undermine the timeliness and effectiveness of resulting actions.

On the other hand, partnering can have its downsides. Carefully considering the different objectives of various groups takes time, often slowing the delivery of environmental protection. Further, accommodating these different perspectives can affect an agency’s autonomy in fulfilling responsibilities for which it is uniquely accountable.

We think that the benefits of collaboration clearly outweigh the problems. Faced with looming budget declines and increasingly complex problems, our commitment to forging effective partnerships wherever and whenever possible will only continue to grow.

Doppler II

For sheer symmetry, a report that began with the Doppler Effect should also end with it.

There are all manner of noises competing for our attention these days. Some are rising in urgency, some fading, others just droning on in irritating static. Beneath it all, usually in the quieter spaces, there is the relentless sound of nature.

The Doppler Effect works as long as the listener and the sound source are in motion relative to one another. If these two move toward or away from one another, the Effect is at play. But if they move in the same direction, at the same speed, the Effect goes away.

Many of us are hard-bound to this place - we’ll be staying. Wouldn’t it be great if we moved in step with our environment, where what we heard from it were neither high-pitched shrieks nor low, beaten whimpers, but something a lot more soothing to the ear?

Our environment has done right by us. Let’s do right by it.

reaching us

“Please stop polluting the world! Hear what Anthony has to say. The world is yours.”

Anthony Vargas, 11

We'd welcome hearing from you about this report and any other interests or questions you might have regarding the state of the environment and our work. Here's how you can contact us.



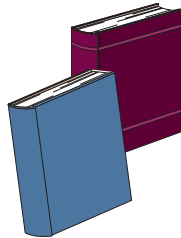
Our Public Environmental Resource Center will assist you in locating most of the information you need. The number is toll free outside of the Seattle area: **1-800-424-4EPA**. For the Seattle metropolitan area, the number is: **206-553-1200**.

If you're hearing or speech impaired, you can reach us through EPA's telecommunications device (TDD) at: **(206) 553-1698**.



For current information on the state of the environment in Region 10, log on to our Web Site at **www.epa.gov/r10earth**. Our Home Page includes information for the citizen as well as the scientist with links to other environmental sites around the Northwest. Current information about the environment in your neighborhood or across the nation, can be browsed, searched and downloaded with any Web browser.

Online maps, charts and data are available through SITEINFO, an easy to use Geographic Information System on our Home Page. This application can be used to create informative reports and map displays of EPA data for any given location in the Region. Examples of data that can be displayed include: Superfund-CERCLA, RCRA, TRI, NPDES Sites, Parks/Recreation Areas, Wetlands, Fisheries Resources, Water Supplies, Population Demographics and more.



If you'd like more information related to environmental protection, visit or write our regional library at:

**U.S. EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101**



1942 - 1996

**This report is
dedicated to our friend
and colleague,
Bill Mullen.**

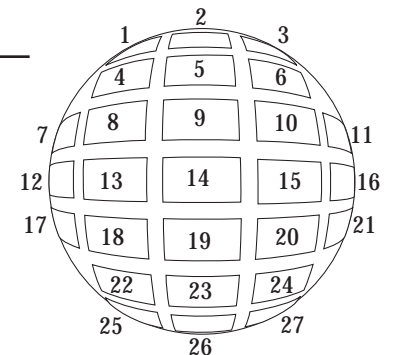
Publication Information

Printing:
This publication was printed on recycled and recyclable paper using vegetable-based inks.

Cover Photo:
“Even the clouds find rest among the marsh grass” taken by Erik Schweiss Ambjor on the North Fork of the Skagit River near La Conner, Washington.

World Art in the Student Gallery Created by:

- | | | |
|-------------------------|-----------------------------|--------------------------|
| 1. Jennifer Pigott, 10 | 10. Samantha Sterkel, 11 | 19. Eskedar Angaw, 11 |
| 2. Charles Brooks, 10 | 11. Daniel Siea, 10 | 20. Samuel Tuitoelau, 10 |
| 3. Marcus Bell, 12 | 12. Shartay Houpe, 10 | 21. Charles Brooks, 10 |
| 4. Eskedar Angaw, 11 | 13. Aleksandr Veremchuk, 10 | 22. Nichtelia Pines, 11 |
| 5. Eskedar Angaw, 11 | 14. Aleksandr Veremchuk, 10 | 23. Sambuth Khim, 11 |
| 6. Marcus Bell, 12 | 15. Samuel Tuitoelau, 10 | 24. Shartay Houpe, 10 |
| 7. Christina Sim, 10 | 16. Jennifer Pigott, 10 | 25. Jace Harris, 12 |
| 8. Anthony Vargas, 11 | 17. Christina Sim, 10 | 26. Anthony Vargas, 11 |
| 9. Abdias Rodrigues, 10 | 18. Jennifer Pigott, 10 | 27. Jace Harris, 12 |



Student Gallery

