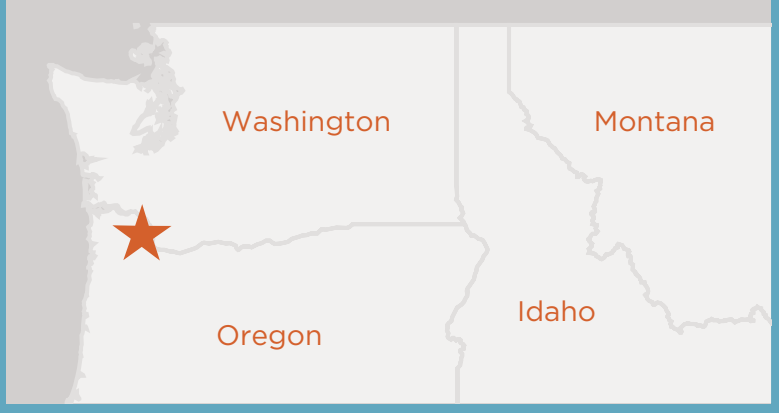

Portland

QUICK FACTS

WHO
Portland Parks & Recreation

STAFF
29 full-time staff members, including tree inspectors, arborists, an urban forestry supervisor, city forester, botanic specialist, outreach and education specialists and an administrative support position; plus seasonal staff for tree establishment, tree inventory and Dutch elm disease monitoring

CANOPY
1.2 million park trees and 236,000 street trees; 29.9 percent canopy cover in the city of Portland

KEY FORESTRY TASKS
Regulating the planting, pruning and removal of trees in public rights of way; removal of private property trees more than 12 inch DBH on certain properties; providing maintenance and care for trees on parkland; contracts for work on other city-owned trees; 24-hour emergency response for tree issues in the public right of way

PARTNERS
Bureau of Development Services, Bureau of Environmental Services, Bureau of Transportation, Water Bureau, Friends of Trees

KEY TOPICS

- Citywide Greening Initiative
- Neighborhood Improvement Projects
- Public-Private Partnership
- Public-Public Partnership
- Regional Cooperative Effort
- Stormwater and Watershed Management
- Tree Giveaways
- Tree-care Training Program
- Urban Forest Management Plan

IMAGINE living somewhere where you get 37 inches of rain annually. To that 37 inches, add the fact that as a city you've just invested more than one billion dollars to achieve compliance with a state order to reduce sewer overflows to your city's iconic river by 94 percent through a project dubbed the Big Pipe. This Big Pipe construction project was completed on time and under budget, but in less than a decade, its capacity will be exceeded, and the overflows could begin anew. This is the reality of Portland, Oregon. As a result, the city has implemented a number of programs to take stormwater off the Big Pipe, including a number of projects focused on the urban forest.

PROTECTING THE WATERSHEDS

The city of Portland contains portions of five main watersheds: Columbia Slough, Fanno Creek, Johnson Creek, Tryon Creek and Willamette River.

11,600
SQUARE MILES

land affected by Portland's five main watersheds

The Willamette River Basin houses approximately 70 percent of Oregon's population,[1] and these five watersheds combined affect more than 11,600 square miles of Oregon's real estate.[2] This means that when something happens to the water in one of these five areas in Portland, the repercussions are felt far beyond Portland's 580,000-plus residents.[3]

Despite their collective impact on Oregon's water supply, these watersheds were managed independently until the city unveiled the Portland Watershed Management Plan in 2005. As stated in the plan, "Because natural resource management responsibilities are spread across the city, it is critical that a comprehensive, coordinated system provide the structure and context for identifying priority actions and areas where attention should be focused. While this is a first attempt to bring all of the information together in one place, the 2005 Portland Watershed Management Plan proposes to provide that structure with a long-term commitment to adapt and improve over time."[4]

With this plan, for the first time, the city of Portland was able to coordinate efforts and create action plans for the overall wastewater system in the region, from the upland areas to the rivers and streams to the city blocks. The plan was also designed to inform the larger plans underway in other city bureaus — like the Public Facilities Plan, focusing on sanitary and stormwater infrastructure; the Transportation System Plan; and Parks 2020 Vision — recognizing that watersheds in the city are affected by these other issues. The plan acknowledged that by improving watershed conditions through natural systems like trees, ecoroofs and bioswales, it could positively affect stormwater management issues, improve fish and wildlife habitat, reduce pollution and improve livability in Portland's neighborhoods.

Mike Rosen, watershed division manager for Portland's Bureau of Environmental Services (BES), which is primarily responsible for implementing the management plan, says, "A lot of the work we do is looking for opportunities in rebuilding or maintaining the existing infrastructure to meet multiple objectives. You need to build a street, but can you build a better drainage system for it? You need to build a street, so how can we accommodate more trees?"

The 2005 Portland Watershed Management Plan gave BES the framework to consider these issues on a citywide scale, but BES would be doing this expanded work within the confines of its standard annual budget. For then-Commissioner of the Bureau of Environmental Services and now-Mayor Sam Adams, this wasn't sufficient to accomplish the city's goals.

Bioswale

CITY OF PORTLAND, OREGON BUREAU OF ENVIRONMENTAL SERVICES

KEY POINT

Natural systems, like bioswales, improve watershed conditions and livability in Portland's neighborhoods.

GREY TO GREEN INITIATIVE

Rosen relates that after seeing the Watershed Management Plan, Adams started asking questions like "How long is it going to take to implement?" and "What money do you have?" Upon hearing the answers, Adams decided that more support was needed to kick start the work, and the Grey to Green initiative was born.

$55 MILLION

to be invested in Portland from 2008 to 2013 on green infrastructure through the Grey to Green initiative

Implemented in 2008, BES' Grey to Green initiative will invest $55 million — funded directly from stormwater fees paid by city residents, as well as capital funds — over five years "to make stormwater management more sustainable, restore watershed health and enhance Portland's livability," according to an April 2009 update report.[5] It would do so through a series of seven activities: land acquisition, ecoroofs, revegetation, culvert replacement, green streets, trees and invasive plant removal.

As its name implies, Grey to Green aims to use green infrastructure activities to support needed city functions, a cultural shift away from traditional gray infrastructure. Says Rosen, "A significant part of the work we do is managing stormwater or rainfall, and the shift has been to treat it as more of a resource rather than a waste and trying to mimic natural systems where rain falls versus moving it into a pipe and sending it speeding into the river or to a wastewater treatment plant for expensive processing."

Each of the seven main activities of Grey to Green addresses concerns about stormwater management. Land acquisition allows important natural areas affecting the region's streams to be protected from future development, while removal of invasives and revegetation ensure natural areas are flourishing. Culvert replacements reduce flooding and erosion concerns, while also improving the streams to better accommodate fish and other wildlife. Ecoroofs and green streets are aimed at controlling the stormwater within the city limits. Trees, though, bridge the gaps between many of these activities, and more entities than just the city of Portland are taking notice.

In Washington County, Oregon — part of the Portland metro area — Clean Water Services is doing innovative green infrastructure work. One of the utility's water treatment plants has been releasing treated water that is too hot according to guidelines set forth in the Environmental Protection Agency's Clean Water Act. If the utility were to use gray infrastructure in the form of a "chiller" plant for the water, it would cost $50 million to build and implement. Instead, Clean Water Services received permission from the EPA to plant two million trees along the rivers and streams leading into the existing plant. By shading these waterways, the water's entry temperatures will be reduced, which will mean the treated water's temperature will be lower — saving the utility tens of millions of dollars, while also providing the region with the ancillary benefits a strong tree canopy provides.

Ecoroofs in Portland

PARTNERING FOR TREES

"For quite a long time, the city of Portland has recognized that trees are important. It shows up in a variety of places. And one of the most important places it can show up is in city planning documents," says Angie DiSalvo, botanic specialist with the Portland Parks & Recreation Bureau.

As she relates, this means that trees aren't just a component of the urban forest management plan, but also a feature in documents like Portland's comprehensive plan, climate action plan and others.

Multiple city bureaus in Portland deal with trees:

- The Bureau of Development Services addresses trees that are impacted by development-related activities in the city.
- BES handles the watershed management activities, plus has maintenance responsibilities for trees growing in a Greet Street facility, like a roadside swale.
- Portland Parks & Recreation, which includes the Urban Forestry Division, has management responsibility for all trees growing on city-owned property and city rights of way, plus some trees growing on private property. It also is responsible for the maintenance of trees on and adjacent to properties owned by Portland Parks & Recreation.
- The Bureau of Transportation is responsible for the trees that affect the light-rail system and roadways.
- The Water Bureau addresses trees that help preserve, protect and clean groundwater.

KEY POINT

A team comprised of members from the city's various bureaus works to address items in Portland's Urban Forest Action Plan.

With so many different players impacting trees throughout the city, in 2007, Portland formed an interagency group that would focus on addressing items in the Urban Forest Action Plan that was developed out of the city's 2004 Urban Forest Management Plan.

"Coming together for some common goals through our management plan has been helpful," says DiSalvo. "Having trees addressed in a regulatory program across the city has been helpful. Knowing that we have to interact to reach all of those goals has been helpful. I don't think we're 100 percent there yet. I think — like lots of cities — we still struggle with what's the best way to bring this large group together and be consistent."

Adds Jennifer Karps, the Grey to Green canopy coordinator with BES, "We do our best work when we work together. It takes a long time, but it works best when we've all bought into the product we put out."

Portland Parks & Recreation has had an urban forestry division since the 1970s. However, some of those early years involved a lot of planting without a plan. The wrong kinds of trees were put in the wrong locations, resulting in damage to sidewalks, poor survival rates and more. Complicating matters is that Portland's tree codes and ordinances require residents to care for the public street trees adjacent to their properties. In the early years, the city would plant trees without input from the local residents. They learned quickly from these mistakes, instituting an opt-in approach for new trees, while any tree removal now requires a permit and must involve a replacement.

Friends of Trees planting in Mt. Tabor Neighborhood

NAOMI TSURUMI

Helping the city in these efforts is the 22-year-old nonprofit Friends of Trees. Over the years, Friends of Trees has worked with both Urban Forestry and BES to help increase Portland's tree canopy. There are an estimated 250,000 street trees alone in Portland, plus 10,000 acres of parkland. Since the implementation of Portland's Grey to Green initiative, Friends of Trees' commitment to the city's planting efforts has gone from planting 2,240 trees during the 2008-2009 planting season to 4,663 trees in 2011-2012. In fact, the nonprofit has an $8 million, eight-year contract with BES to help plant trees as part of Grey to Green.

Friends of Trees started "as just somebody [Richard Seidman] who wanted to plant trees with his neighbors," says Brighton West, program director for Friends of Trees. "It's really grown from a grassroots type of level. For a long time, it was just planting street trees with Urban Forestry and getting homeowners to come out together and plant street trees, so that's always been the model. It's a very community-driven model."

And, the model seems to be serving the city well. Each year, Friends of Trees coordinates Neighborhood Planting Days in many of Portland's neighborhoods. On these days, trained volunteers help local residents plant between 150 and 250 street and yard trees. Friends of Trees then works with a cadre of volunteers, called summer inspectors, that survey the trees in the first summer to keep track of how well the new trees are doing; these trees have a 97 percent survival rate in their first year.

The biggest challenge that the program faces is getting residents to opt-in to trees. West explains that in an opt-in model for tree distribution, residents are informed that trees are available and then must reach out to Friends of Trees to request the tree, resulting in a 20-30 percent planting rate among those residents contacted. If the residents have to purchase or pay for those trees, the planting rate drops to five percent. In comparison, opt-out models in other cities — meaning citizens are told the trees are coming, but must tell the planting entity if they don't want the tree — result in a 60 percent planting rate. Based on these conversion rates, it might appear that the opt-out model would be preferable, but since residents must care for the public trees adjacent to their property in Portland, it's important for survival rates that the residents want the trees — even if this means a smaller percentage of trees is planted each year.

West also cautions that "the harder you make it for someone to get a tree planted, the fewer and fewer people that will do it."

Coinciding with Friends of Trees' neighborhood programs is Urban Forestry's Neighborhood Tree Steward program. This program is a seven-session training course that teaches volunteers about general tree care, tree biology, tree planting, preservation and more. These volunteers then work with their Neighborhood Tree Steward Coalition to accomplish necessary urban forest projects, such as street tree pruning.

This is part of a movement in the bureau to "start looking at neighborhoods as forest management units," says Urban Forestry's DiSalvo. "We can talk about canopy cover for the entire city, but that doesn't necessarily resonate with an individual who lives in one specific neighborhood." DiSalvo relates that by doing neighborhood-specific inventories and analysis of canopies, they've been successful at getting neighborhood associations involved in caring about their trees and developing unique Tree Plans with action items for that community.

"We are rethinking what trees are in the city," adds DiSalvo. "Are they landscaping or are they a liability or are they an asset? Coming up with a new method of accounting and a new way of looking at trees that really gives them value in the city and opens us up to new funding mechanisms is important."

"The harder you make it for someone to get a tree planted, the fewer and fewer people that will do it."

BRIGHTON WEST
Program Director
Friends of Trees

KEY POINT

Overlapping programs from nonprofits and city entities foster learning in the community, as well as a greater stake in the health and care of the urban forest.

IT COMES BACK TO WATER

Portland just completed one of its biggest infrastructure projects in the city's history: a $1.4 billion main pipe, the Big Pipe, that delivers sewage and stormwater to the city's treatment plant. BES' Rosen relates that to keep this pipe below capacity, the city must keep stormwater off the system. "The credo is that it's a lot cheaper to protect infrastructure than it is to restore it," he says.

"Planting trees is tantamount to pipe work, but is less expensive and you get all of the complementary benefits urban trees provide."

JENNIFER KARPS
Grey to Green Canopy Coordinator
Portland BES

"People understand pipes," adds Karps. "One of the things that we do is a lot of outreach and education to try to bring people up to speed about the importance of planting a tree. Planting trees is tantamount to pipe work, but is less expensive and you get all of the complementary benefits urban trees provide."

Hence, Grey to Green's emphasis on planting trees. Approximately 83,000 trees will be planted under Grey to Green to help remove stormwater from the grid. BES isn't limiting its efforts, though, to public trees, as they're trying to get private citizens to help mitigate stormwater effects through a program called Treebate.

Treebate is an incentive program for private landowners to plant trees. The concept is simple: Homeowners plant any tree they want from an approved list of eligible tree species. Then, they submit the receipt to BES. As a result, the homeowner receives a credit on his utility bill for half the purchase price of the tree up to $50. For a city with some of the highest stormwater rates in the country, this is no small incentive.

Grey to Green, though, isn't the only BES program looking to reduce stormwater in the city. In 2008, BES began work on Tabor to the River, described by BES' Naomi Tsurumi as "our most advanced integration of sewer and watershed as one in both predesign and implementation." While the Big Pipe was designed to improve overflow problems for the city at large, localized pipe problems that could result in things like flooding basements are still an issue, which is what Tabor to the River is designed to address.

Focusing on 1,400 acres of the city from Mt. Tabor Park to the Willamette River, the 10-year Tabor to the River project will plant nearly 3,600 trees, create 500 green street facilities (such as street-side planters that collect stormwater runoff), remove invasive vegetation, repair or replace 81,000 feet of sewer pipe and work with property owners to collect and manage roof and parking lot stormwater runoff. The project's designers determined the number of trees needed for the project, Tsurumi relates, by calculating the number of available spaces for trees and then comparing those locations with pipes with hydraulic problems — such as pipes that were too small to handle the flow of water during peak times. It's estimated that by using a combination of gray and green infrastructure to solve the sewage and stormwater issues in this area of the city, Portland will save almost $63 million compared to the cost of pipe-only solutions. According to Tsurumi, a hallmark of Tabor to the River is that it was the first time that BES incorporated both engineering and watershed goals, objectives and tools from the beginning of a project.

This type of joint work is imperative to continued success, expresses Karps. "The strength of our program certainly is our partnerships. Not just our public-private partnerships, but also our public-public partnerships. When we reach across our bureau boundaries and work together, it's not always easy to do, but those projects that span bureau boundaries are the most satisfying. That's when we really achieve something that's meaningful and lasting."

Adds BES Watershed Manager Rosen, "We're interested in planning well, and we value green resources. We don't have all the answers, but we see these resources as part of the solution. We're very good about aspiring to integrate green infrastructure with traditional gray infrastructure."

SPECIAL THANKS TO:

Angie DiSalvo, botanic specialist, City of Portland Parks & Recreation Bureau

Mike Houck, executive director, Urban Greenspaces Institute

Jennifer Karps, Grey to Green canopy coordinator, City of Portland Bureau of Environmental Services

Mike Rosen, watershed division manager, City of Portland Bureau of Environmental Services

Naomi Tsurumi, environmental specialist, City of Portland Bureau of Environmental Services

Brighton West, program director, Friends of Trees

Improving the Portland Metro Area

Like many metropolitan areas around the country, Portland is more than just the technical city limits. When areas of the country have high population densities and close economic and social ties, they are dubbed Metropolitan Statistical Areas (MSA) by the U.S. Office of Management and Budget. The city of Portland finds itself in the Portland-Vancouver-Hillsboro MSA, more commonly referred to as the Portland metro area. This area encompasses seven counties in northern Oregon and southern Washington, and more than 2.2 million people call it home.[7]

Back in the mid-1900s, the Portland metro area first recognized the unique challenges that coordinating efforts between multiple counties and dozens of cities would pose. As a result, organizations like the Metropolitan Planning Commission and the Columbia Region Association of Governments were formed to help planning and government on a regional level. Then, in 1978, Metro was created, an organization whose mission was to offer regional planning and management services to the Portland area. Today, Metro is an Oregon regional government agency comprised of seven elected members — a president and six councilors — who provide management on issues that cross jurisdictional lines. One of those issues is natural resources related to Portland's urban growth boundary (UGB).[8]

By Oregon state law, all metropolitan areas in the state must have a UGB, which is designed to separate urban land from rural land and will prevent urban sprawl from invading natural landscapes being used for farming and recreation. Portland's UGB appears to be doing exactly that: From 1990 to 2010, the Portland metro area's population grew by more than 46 percent,[9] but from 1992 to 2006, the urban growth area only grew by approximately nine percent.[10] This success isn't without pitfalls, though. While promoting compact urban form has been supported by the region's conservation community, those concerned with ecological health and livability inside the UGB have significant concerns regarding the loss of nature in the city.

"The conundrum is that if you're going to have a compact urban area," says Mike Houck, executive director of the Urban Greenspaces Institute, "then you must simultaneously protect natural resources and quality of life within that urban growth boundary."

Houck, a native Portlander, has spent his career working in the Portland-Vancouver region on urban park and greenspace issues, and his Urban Greenspaces Institute promotes the integration of gray and green infrastructure. He relates how it has taken years to get full buy-in from elected officials on the importance of protecting, restoring and managing greenspace within the UGB, as well as outside. These efforts have been strongly supported by the region's residents, including the passage of two property tax measures totaling $363 million, which Metro and local park providers have used to purchase more than 15,000 acres of natural areas and build a regional trail network.

"The general public did not want to see only densification inside the city without the attendant parks, trails and natural areas," says Houck. "People no longer see parks, trails and natural areas as amenities, but as essential elements of the urban fabric."

Concern over the loss of urban natural areas led to the creation of the Metropolitan Greenspaces Program in 1991. This bi-state partnership, funded by Congress and administered jointly by Metro and the U.S. Fish and Wildlife Service (FWS), focused on land acquisition, active (non-motorized) transportation, environmental education and habitat restoration within the context of Metro's Region 2040 growth management program. According to the program's 1992 master plan, "The protection, acquisition and active stewardship of greenspaces must become just as important as planning highways, transit, water and sewer lines and other basic public services."[11]

While this program no longer gets the bulk of its funding from federal sources, the programs and ideas it instituted are being carried forward by The Intertwine Alliance, a coalition of government, nonprofit and business partners.

> "People no longer see parks, trails and natural areas as amenities, but as essential elements of the urban fabric."
>
> **MIKE HOUCK**
> Executive Director,
> Urban Greenspaces Institute

While officially incorporated in July 2011, The Intertwine Alliance first started in 2006 as an ad-hoc coalition of regional organizations that joined together for natural area acquisition. Since then, the alliance has grown to include more than 70 partners and focuses on key issues like acquisition, conservation, conservation education and creating the regional system. All of these activities are geared toward a primary goal of creating "a powerful coalition capable of championing a world-caliber network of parks, trails and natural areas," according to the alliance's 2010-11 Annual Report.[12] It plans to accomplish this by bringing together elected officials, civic leaders, environmental nonprofits, park professionals, businesses and others to create regional initiatives aimed at improving the bi-state region's natural resources. Among the alliance's partners are Portland's BES, Friends of Trees, Hillsboro Parks & Recreation, Metro, Portland Parks & Recreation, Kaiser Permanente, Vancouver Watersheds Council, Audubon Society of Portland and Urban Greenspaces Institute, as well as federal agencies like the National Park Service and FWS.

As Houck, an alliance board member, puts it, "Basically, what we're trying to do is duplicate or expand what the Bureau of Environmental Services, Metro, Portland Parks and Clean Water Services are doing to the entire Portland-Vancouver metropolitan region."

Street trees

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