



OUR COMMON GROUND

TRANSPORTATION, JOBS, HEALTH, WEALTH, EDUCATION & ENVIRONMENT. INTERTWINED.

Intertwine Alliance Partners

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Thank You

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Animal illustration by Ryan Berkley



Incorporated in 2011, The Intertwine Alliance is a coalition of 80 prominent organizations who share a common interest in improving health, creating jobs, reducing costs, expanding transportation networks, fostering learning, and keeping our air and water clean. The stories within this report – the first of its kind – show how the partners of The Intertwine Alliance achieve these results through cost-effective investments in natural systems.

The communities of The Intertwine draw national, even international recognition for our forward-

thinking practices. But the future will demand continued leadership. While the following pages chronicle current achievements, our intent is to spark a conversation about the future.

To initiate this discussion, we offer a set of goals that are feasible, yield tremendous benefit, and enjoy broad support. We'll be talking with you about these goals over the coming months, and enlisting your active support to achieve them. The strength of The Intertwine Alliance, all 80 public, private and nonprofit organizations, will be with you.





OUR COMMON GROUND



See Mount Hood? Cross the Columbia? Hike Scouters' Mountain or fish Battle Ground Lake? You're in The Intertwine, and it's making your life better. From health and happiness, to wealth and work. From teaching our children to transporting their parents. The Intertwine is enjoyed by diverse groups of people in wildly different ways. Yet we can all agree on the rich returns of our shared investments. Everyone benefits from salmon in our streams, safer public spaces, clear air to breathe and savings in the bank. We all feel better when nature intertwines with our communities.

**FREE, EASY, & RIGHT
OUTSIDE YOUR DOOR**

The Intertwine isn't just our region's network of parks, trails and natural areas. It's a redefinition of where we live. Instead of two states, six counties, and 32 cities, it's a shared landscape of 2 mountain ranges, five watersheds, innumerable species of plants, trees, and wildlife, and 37 annual inches of cool, clean rain. The Intertwine is an idea that can bring us together. The Intertwine is our Common Ground.

**THEINTERTWINE.ORG
PARKS, TRAILS & NATURAL AREAS**





THE INTERTWINE IS A STATE OF MIND A CENTURY IN THE MAKING

First envisioned by landscape architect John Charles Olmsted in 1903, generations of our leaders have mapped the economic benefits of our ecological resources.

The area we call The Intertwine is approximately 3,000 square miles — from the North Fork of Clark County's Lewis River, south to the confluence of the Molalla and Pudding Rivers, east to the foothills of the Cascades and west to the foothills of the Coast Range.

THE INTERTWINE
— SPANS —
2 STATES 6 COUNTIES 32 CITIES
— serving —
394,969 ACRES
— BOASTS —
1,250 MILES OF TRAILS
2.1 MILLION PEOPLE.

The value of The Intertwine's ecosystem services has been conservatively placed at

\$3.3 BILLION.

"Marked economy may also be effected by laying out parkways and parks, so as to embrace streams that carry at times more water than can be taken care of by drain pipes."

— John Charles Olmsted, 1903

PHOTO: METRO



The Intertwine Alliance 2013

INVESTING IN OUR RESOURCES

Start calculating the benefits derived from the resources of The Intertwine — our parks, trails and natural areas, our urban forests and free-flowing water — and you'll find that no critical infrastructure has a return on investment like nature.



WATER
Waterways and lakes constitute only 3.1 percent of The Intertwine but play an outsize role in providing habitat, recreation, transportation and other services.



TRAILS
1,000+ miles of planned and conceptual trails, added to 1,250 miles of existing urban and rural Intertwine trails, will ensure connectivity to The Intertwine for generations to come.



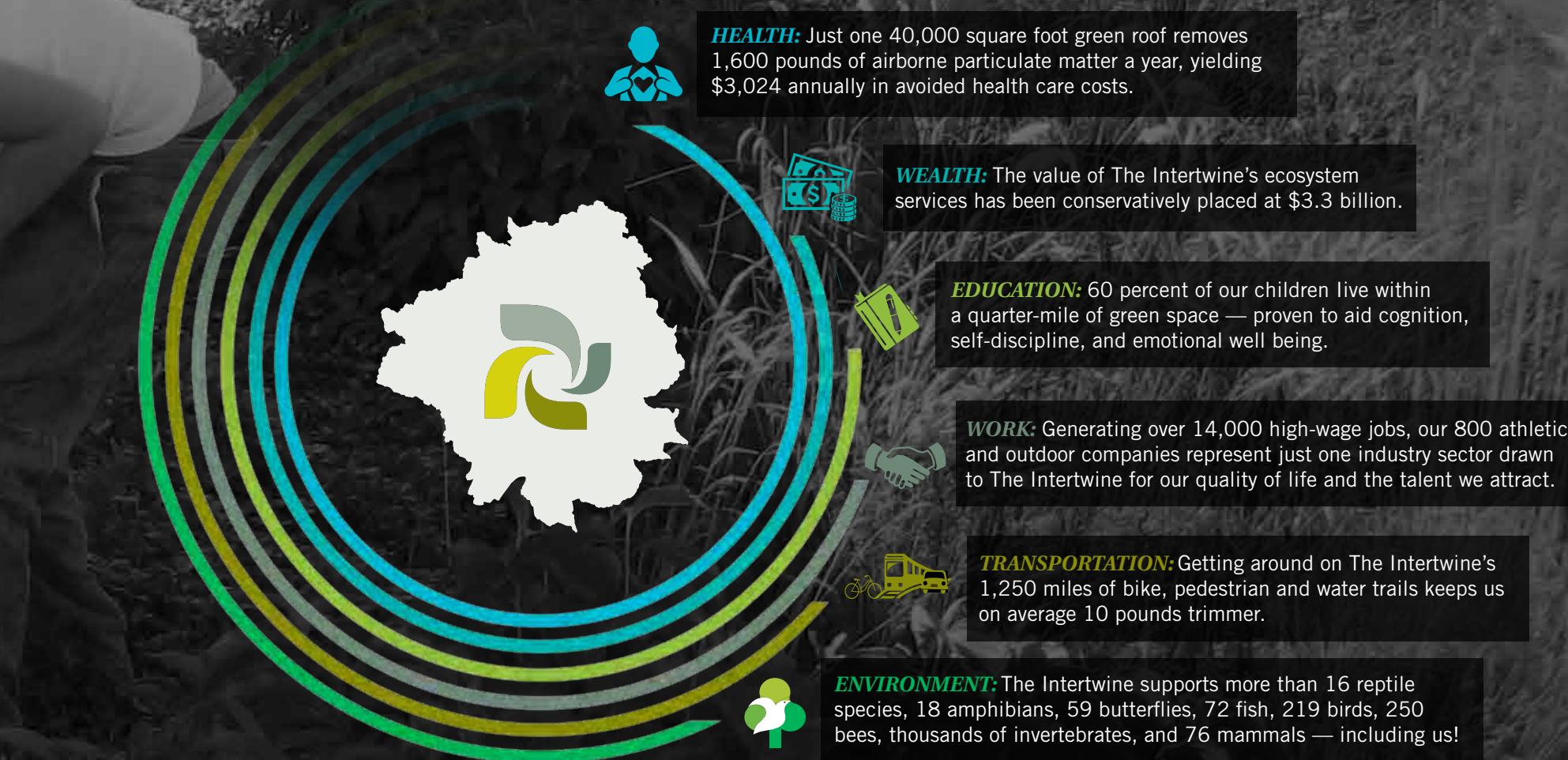
PARKS
The 2.1 million people that call The Intertwine home have access to over 49,896 acres of parks, including 1,800 acres within the most highly developed urban areas.



NATURAL AREAS
345,073 acres of preserves and restored wilderness area provide habitat for thousands of important species — from pearlshell mussels to the American beaver.



FOREST
54 percent of The Intertwine is tree cover and forested lands, while only 39 percent of our urban areas boast canopy. We can do better.



146 quadrillion drops of water. Each has their own story.

LIKE RAINDROPS, OUR INDIVIDUAL
INTERTWINE EXPERIENCE IS UNIQUE.
BUT WE CAN ALL AGREE ON IMPROVED
WATER, HEALTH, WORK, AND PLAY.

Nearly 2 trillion gallons of rain course through The Intertwine each year — enough to sink our entire state in a puddle of water. Water is the element that defines our home, from soggy lawns to the roar of Willamette Falls.

Our story starts with the raindrops that fall within The Intertwine. Each travels a unique path, one shaped by decisions that we make — around our tables, at the park, in meeting halls, and with our votes.

You already know it's wise to protect this elemental resource. But did you know that smart water policy can lower utility bills, raise property values, enrich our cities and employ our citizens?

From stormwater management to natural areas and trees, innovative infrastructure means putting our water to work — making our infrastructure absorbent, planting our streetscapes with green.

Every drop can make a splash. Come with us and we'll show you how.





WATER



COOLER BY NATURE

In 2001, the Oregon Department of Environmental Quality announced that high water temperatures were threatening steelhead habitat along the Tualatin River.

Faced with installing costly, energy-intensive cooling units, Washington County-based public utility Clean Water Services opted for trees — investments now shading the river, stabilizing its banks, providing diverse wildlife habitat, and saving ratepayers more than \$100 million.

"We've become experts on the Tualatin River watershed, and are using Mother Nature to replace steel and concrete with better solutions," said Bill Gaffi, CWS General Manager.

Fast-forward a decade from Oregon DEQ's mandate, and Washington County residents continue to enjoy low water/sewer utility rates, thanks to natural areas now heavily seeded with native plants: up to 700,000 a year, lining 36 miles of restored stream corridor.

According to Bruce Roll, CWS director of watershed management, the tree project's total cost — just \$6 million since 2004 — represents a fraction of the chillers' projected \$150 million price tag, not including heavy annual energy costs and chemical byproducts like phosphorus.

At Beaverton's Englewood Park — a restored CWS site wedged between business parks and single-family homes — a raindrop now flows into Fanno Creek under 8-year-old Oregon ash and red alder. The new canopy generates shade credits to offset thermal loads from Durham and Rock Creek water treatment facilities, and also supports wildlife like the American beaver, whose ponds trap pollutants and reduce stream temperature swings.

Exploring the creek's curves under leafy saplings, this raindrop passes Englewood residents on footpath, marveling at their newest neighbors — beavers industriously damming one very cool creek.

Benefits:



DAYLIGHT AND SPRINGWATER

The formidable rains that fall within The Intertwine flow inexorably toward the Willamette and Columbia Rivers. Channeled by our 13 watersheds and sub-basins — from the Lewis in Washington State to the Molalla in Oregon's Clackamas County — every drop of water is drawn toward this confluence.

Wending through the heart of The Intertwine is Johnson Creek, with headwaters not far from the Cascade foothills. Passing 26 miles through five cities — Gresham, Portland, Milwaukie, Damascus, and Happy Valley — this watershed supports steelhead and cutthroat trout, coho and Chinook salmon, red-legged frogs and pileated woodpeckers.

Johnson Creek hasn't been this healthy in years. Once shunted down a Depression-era rock-lined channel, this partially urbanized waterway still regularly inundated 475 acres of neighborhood. Meanwhile, manmade degradation saw creek temperatures rise, water quality decline, and fish runs dwindle. In 1998, the entire stream was placed under watch by the Oregon Department of Environmental Quality.

Yet today, a raindrop falling not far from stream headwaters at Southeast 307th in Gresham lands near beds of pearlshell mussels. These long-lived freshwater mollusks indicate returning river health — the result of successful bond measures, neighborhood grants, and years of successful collaboration among citizens across six jurisdictions.

Today, a raindrop rolls down a calmer creek: reconnected to floodplain wetlands, free of invasive species, revisited by coho salmon and river otters. A restored Johnson Creek is simple stormwater management — a natural example of the The Intertwine at work.



Before



After

PHOTO: JOHNSON CREEK WATERSHED COUNCIL

"Each of the past floods cost us between \$15,000 and \$20,000 to replace lost or damaged items, and make repairs to the building. Water would come in from two different directions. Now, we know we're good up to the 13.2 feet flood level. We're ecstatic!"

— Gary Sargent, Sr., Sargent's Motorsports, SE Foster Road, Portland



What is green infrastructure?

"At the scale of a city or county, green infrastructure refers to natural areas that provide habitat, flood protection, cleaner air and water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water."

- EPA

Eco roofs replace conventional roofing materials with a living, breathing vegetated roof system.

Green streets are vegetated curb extensions, planters, or rain gardens that clean streetside stormwater runoff.

Trees protect watershed health by absorbing rain, preventing erosion, and protecting water quality.

Invasive plant removal improves fish and wildlife habitat, tree cover, and water quality while mitigating fire risk and costs.

Natural area acquisition preserves watershed and floodplain function and prevents landslides and erosion that harm water quality and habitat.

Planting native trees, shrubs, grasses, and wildflowers filters pollutants, cools streams, and provides diverse fish and wildlife habitat.

Did you know...

Each year, The Intertwine's
237,900 IMPERVIOUS ACRES DISPLACE
240 BILLION GALLONS OF RAIN.

Watershed health degrades when total impervious surface exceeds

10%

We're not alone.

In March, Seattle Mayor Mike McGinn announced the goal to manage

700 MILLION

gallons of Seattle stormwater runoff with natural drainage systems. He plans to achieve this goal by 2025.

Once complete, Tabor to the River Program will boast

500 GREEN STREETS & 3,500 STREET TREES

But even today, Southeast Portland residents can see the program's progress:

61

ACRES OF INVASIVE PLANTS REMOVED

32

PRIVATE STORMWATER FACILITIES, OF 100 PLANNED

6,000

NATIVE SHRUBS AND TREES PLANTED IN NATURAL AREAS

137

GREEN STREET FACILITIES COMPLETED

660

STREET TREES PLANTED TO DATE

8,000

FEET OF SEWER PIPE REPLACED OR REPAIRED, OF 81,000 FEET PLANNED

\$58,000,000

Tabor to River's Green Streets will save City of Portland ratepayers

THE NEW TRICKLE-DOWN ECONOMICS

First, the old math. Heavy rainfall plus 100-year-old combined stormwater/sewer pipes means nasty flooding in Southeast Portland. Solution? Repair and upsize the pipes. Price tag? \$144 million.

Now, the new math. Repair the pipes and install 500 Green Streets. Price tag? \$85 million, with benefits: replenished groundwater; good air quality; protected rivers and streams; calm traffic; improved pedestrian and bicycle safety; urban habitat creation; attractive neighborhoods.

This winning equation is the rationale for Portland's innovative Tabor to the River program. Launched in 2009 to manage stormwater within 1,400 flood-prone acres of the Brooklyn Creek Basin, program work will eventually span 2.3 miles — from the cone of Mount Tabor, west through dense city neighborhoods, to the banks of the Willamette River.

Thanks to early progress, a drop that falls here sees fewer sump pumps, more rain gardens, and a cleaner future.

Benefits:



WEALTH

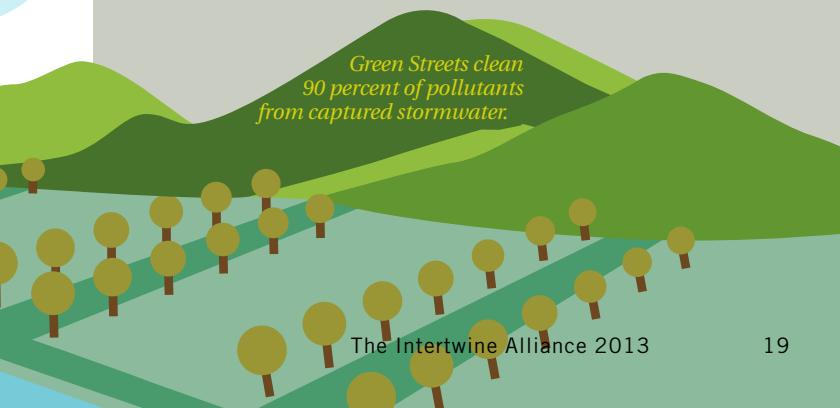


TRANSPORTATION



ENVIRONMENT

Tabor to the River program, launched in 2009 to manage stormwater within 1,400 acres of the Brooklyn Creek Basin



The Intertwine Alliance 2013



Fast and Furious

In Portland - Rain City, USA - stormwater management policy counts on 13 miles of new pipes to control once-frequent wastewater spills into rivers and sloughs.

Completed in 2011, the \$1.44 billion Big Pipe is the largest public works project in Portland history. But if not safeguarded, the Big Pipe's capacity could be exceeded before its time.

Landing with a splat on North Portland asphalt, a raindrop chutes past construction and cars – impervious surfaces that testify to our growing population. Slipping through the sewer grate, our drop, slick with mercury and oil, plastics and grease, needs a good scrubbing at the treatment plant before cannoning into the Columbia.

Each year in The Intertwine, over 15 quadrillion raindrops take the fast lane, displaced by our impervious surfaces. In doing so, this water bypasses some innovative, cost-effective ways we're managing our hydropower.

SMART CEILING

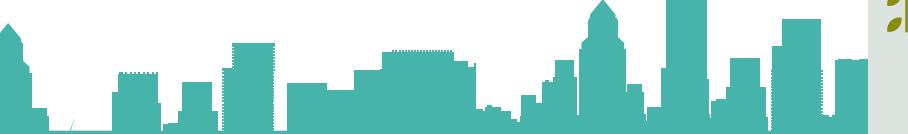
A garden grows 10 stories up, a spot of green in the downtown Portland skyline. With its sedums and swaying grasses, the roof of the Hamilton West Apartments invites honeybees and chickadees to a high rise business district.

More than a penthouse picnic spot, this is a working garden, one that retains half the water that lands within its 7,800 square foot catchment area.

A raindrop falls softly here, between succulents and flowers, and sinks into the lightweight substrate of the most closely monitored ecoroof in Portland. Our drop is in good company; the Hamilton retains 768,000 gallons of stormwater a year.

The Hamilton's ecoroof, one of nearly 400 in Portland, reaps the rewards of long-term investment. Over the next 40 years, the Hamilton will reduce annual stormwater runoff by half, lower energy costs for residents, improve local air quality and provide habitat for birds and pollinators. Factor in a lifespan twice that of a conventional roof, and the Hamilton's owner can expect to save \$404,000.

Benefits:

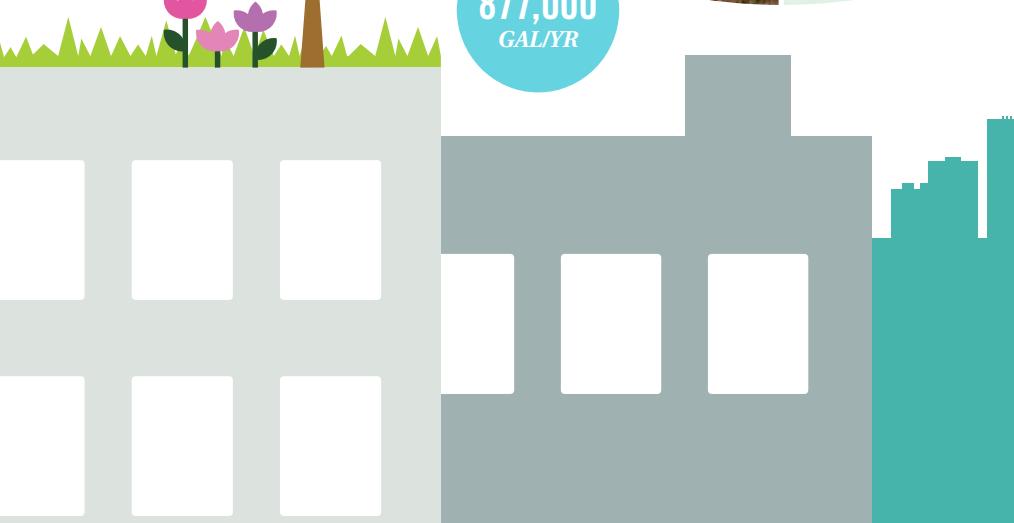
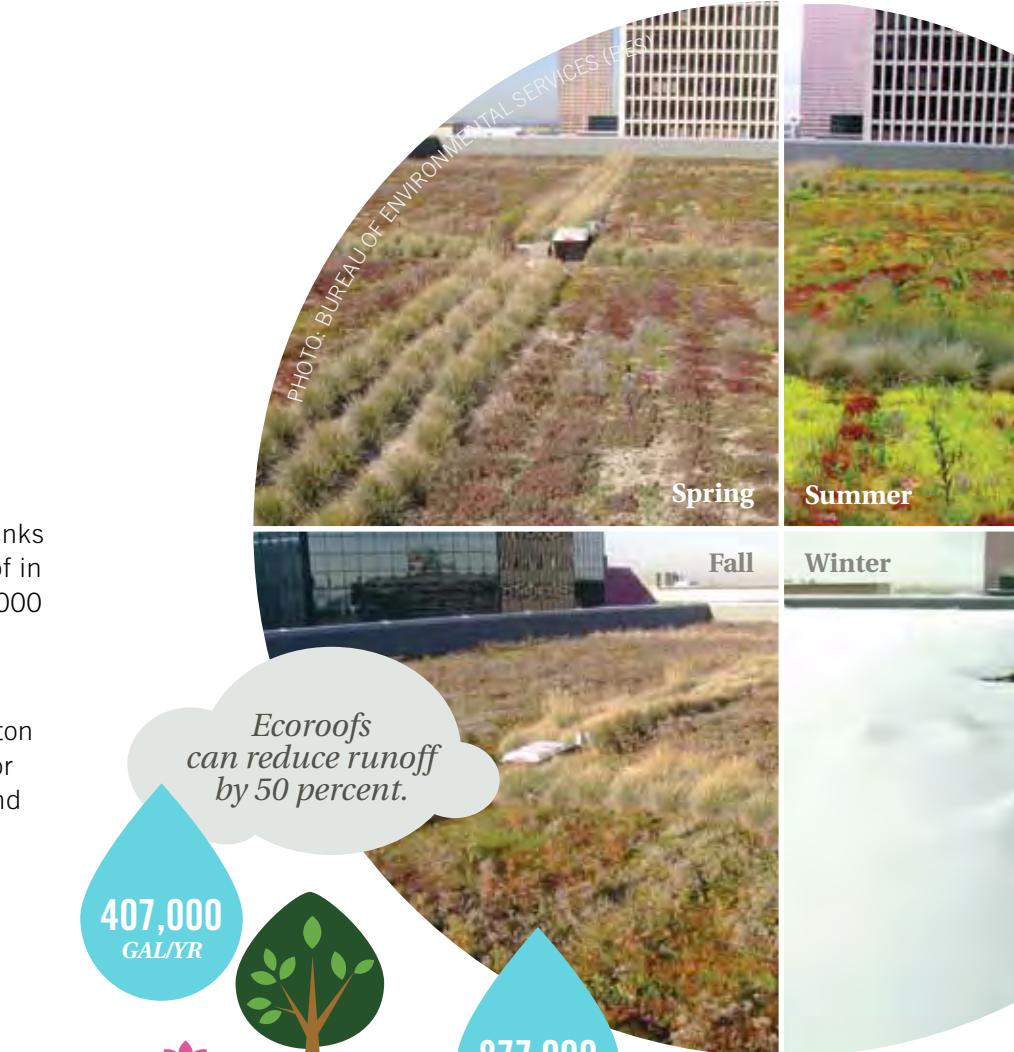


Covering 50% of New York City's flat rooftops with green roofs would result in a city-wide temperature decrease of 1.4°F.

"Banking on Green" ALSA study

Every square foot of Intertwine green roof removes 0.04 pounds of dust and particulate matter from the air.

BES



WHAT ARE

Ecosystem Services?

Ecosystem services are the manifold benefits that people derive from nature.

- Drinking water
- Timber, wood fuel, natural gas and oils
- Medicine
- Plant-based clothing and other materials
- Pollination
- Decomposition
- Carbon storage and climate regulation
- Water purification
- Recreation
- Erosion and flood control
- Culture, knowledge, nature-borne creativity

"Lacking a formal market, these natural assets are traditionally absent from society's balance sheet; their critical contributions are often overlooked in public, corporate, and individual decision-making."

— USDA Forest Service



NATURAL AREAS



WILDBLUFF: THE WAY WE LIVED

200 years ago, the idea of a “natural area” might have sounded odd to tribal members taking in the wooded expanse of The Intertwine from the heights of Canemah Bluff.

It was a popular view. Within view of thundering Willamette Falls, Canemah annually hosted between 30,000 and 60,000 members of various tribes, negotiating for fishing rights, visiting relatives and trading for goods from throughout the region. Canoe loads of camas bulbs would come to the Clow-we-wal-la village of Canemah from the Willamette Valley Kalapuya tribes — camas that still colors this bluff blue each spring.

Ceded to the U.S. government in 1854 by the Tumwata Band of the Clow-we-wal-la People, the bluff witnessed the rapid industrial-ization of Oregon City — from railroad lines and sternwheelers to the sawmills powered by the falls. In the process, Canemah lost much evidence of its past — along with vital habitat for native white oaks and Pacific madrones.

Now encircled by development, Canemah gives meaning to the phrase “natural area.” For two decades, Metro has bought chunks along the bluff, acquiring the missing link in January 2013 — a 22-acre parcel stitching together 330 acres of publicly-owned wilderness in the city. Today, Canemah Bluff is the last relatively undisturbed traditional ecological landscape along this now urban ridgeline.

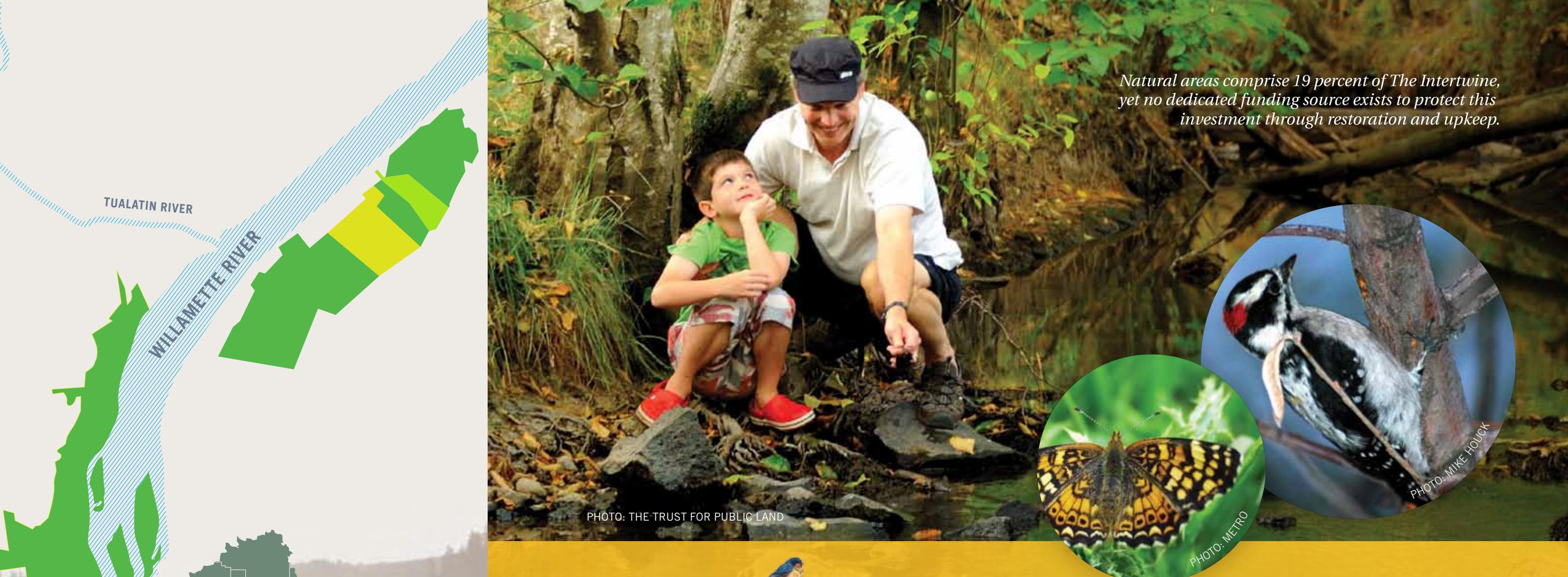
“With its cultural history, its rich forest, the view of the river, Canemah truly is a unique site, and we want it restored and protected,” said Jim Desmond, director of the regional agency’s Sustainability Center.

And that green we see today, gazing out from the bluff and across The Intertwine? That’s our investment in the future, inspired by the past.

Benefits:



PHOTO: OREGON HISTORICAL SOCIETY



Natural areas comprise 19 percent of The Intertwine, yet no dedicated funding source exists to protect this investment through restoration and upkeep.

URBAN WILD

In 2012, the City of Tigard dedicated 48 urban acres at the confluence of Fanno and Summer Creeks to former Mayor Craig Dirksen, an active proponent of open space. Bordered by Fowler Middle School, plans for the new Dirksen Nature Park – the city’s largest natural area – include an environmental education center, children’s nature play area, community gardens and oak savannah habitat restoration.

The Intertwine Alliance 2013

A BETTER BRIDGE

To hike from Johnson Creek home to picnic on the ecoroof of Hamilton West, let's face it: we're going to have to cross a bridge.

The opposite of pervious, concrete bridges like the 87-year-old Sellwood jettison their untreated stormwater into the river below. So enter in a magical confluence for a dirty drop poised on the truss: an old marina, new bridge construction, creative landscape architects and collaborative public agencies.

In 2011, Multnomah County had a brainstorm while budgeting to replace the aging Sellwood bridge. Why not buy Staff Jennings Marina, a degraded boat ramp on the bridge's west side, and put it to double use — first as a staging area for construction, and later, into a natural area to manage the new bridge's stormwater?

Landscape architecture firm Walker Macy drew up the plans, calling for stormwater swales, trails, native plants, picnic spots and kayak tie-ups. Factoring in the costs of acquisition, demolition and landscape remediation, the County estimates the new natural area will represent just one percent the total bridge budget — yet save the project \$30-40 million for a ten-fold return on investment.

Factor in the future natural area's contiguity with Portland Parks and Recreation's plans for an adjacent westside park, and rain falling on the future Sellwood bridge in 2015 — when swale construction is set to begin — will benefit from an unprecedented collaboration between county transportation and city parks.

Now



SOURCE: WALKER MACY

Restoring Natural Areas

SOURCE: GREEN SEATTLE PARTNERSHIP

If natural areas are not restored



Present

Forested natural areas are dominated by deciduous trees, mainly big-leaf maples and alders, nearing the end of their life. After decades of neglect, non-native invasive plants such as English ivy now dominate the tree canopy, making the trees weak, top heavy and susceptible to windfall. Eventually, trees die or fall over.

In 20 Years

Invasive plants outcompete and grow over existing native vegetation, blocking the sunlight plants and trees need to thrive. English ivy now dominates the tree canopy, making the trees weak, top heavy and susceptible to windfall. Eventually, trees die or fall over.

In 50 Years

The trees are gone. Only a few native shrubs struggle to survive the stress of competition with invasive plants.

In 100 Years

The forest is destroyed. Native trees can no longer establish on their own. We are left with a dense "ivy desert." Very few plant species can live, and forest biodiversity is gone. Such conditions provide homes for rats and scarce habitat for more desirable urban wildlife.

If natural areas are restored



Present

Forested natural areas are dominated by deciduous trees, mainly big-leaf maples and alders, nearing the end of their life. After decades of neglect, non-native invasive plants such as English ivy are smothering native vegetation and weakening native trees.

In 20 Years

Through restoration efforts and long-term maintenance, the non-native plants are removed. Native groundcovers, shrubs and evergreen trees such as Douglas firs and Western red cedars and hemlocks are planted.

In 50 Years

As the evergreen trees grow, they shade out sun-loving invasive plants such as blackberry. Native understory plants thrive.

In 100 Years

With continued stewardship, the maturing forest requires less care and provides greater benefits to the city.

An aerial photograph showing a large, modern building complex with multiple wings and glass windows. The buildings are surrounded by a dense canopy of mature trees, creating a green buffer between the urban structures and the foreground. A paved area with some small structures or vehicles is visible at the base of the trees.

TREES



HOME RUN AT HOCKINSON

Splat! A raindrop hits a child's baseball bat as she takes a swing on the diamond at Hockinson Meadows in Vancouver.

This drop flies across stormwater-filtering turf grass framing tee-ball innings and soccer matches, past picnic shelters and parking area infiltration trenches, sinking at last into the wetlands that encircle this new 240-acre community park.

Between mud slicks and puddles, it's a bummer when kids have to take a raincheck on outdoor fun. But thanks to a city-maintained perimeter of natural area, our drop gets benched by a giant cottonwood — a working tree whose cost-efficient stormwater management allowed this popular park to grow.

Vancouver-Clark Parks and Recreation deemed municipal stormwater systems and detention ponds impracticable for this popular sport park, nestled within the Lacamas Creek watershed. So instead, the parks agency invested in its wetlands.

It was a natural choice; restoring the disturbed ecosystem mitigated the expansion project's increased runoff costs from new parking and athletic fields.

So thanks to our cottonwood, local Little League can really go to bat — on eight new, well-drained, sand-based turf athletic fields.



The expansion of **Hockinson Meadows Community Park** *created* **80 JOBS.**



A FOREST GROWS ON I-205

Freeways aren't usually this pretty. For 16 miles alongside Interstate 205, from the Columbia River in North Portland south to the city of Gladstone, a multi-use path winds between homes, light rail, and 5,000 young trees.

This forest — planted over four years by the Oregon Department of Transportation, East Multnomah Soil & Water Conservation District, Metro, and 1,800 Friends of Trees volunteers — reflects the innovative new tree thinking taking root in The Intertwine.

"This is the first time ODOT has done a project like this, where trees have been considered a capital asset similar to pavement and lightposts," said Friends of Trees Executive Director Scott Fogarty.

Intended to improve neighborhood livability, encourage path use, manage stormwater, and increase environmental equity among communities, the award-winning I-205 project is already making life better for residents: scrubbing their air, filtering their stormwater, raising their property values.

And don't forget community. Said Antonio Askew, 19, pointing to freshly planted trees along the path: "like if I have kids, I can tell them, 'Hey, I helped with that.'"

Benefits:



TRANSPORTATION



HEALTH



ENVIRONMENT

"One percent of all transportation dollars should go to greening roadways across the state. That way, in the future, when carbon is commodified, Oregon will have a plethora of trees sequestering carbon."

*- Scott Fogarty,
Executive Director, Friends of Trees*



Planting an Asset

Street trees add an average of \$7,000 to the value of their associated homes.

Properly placed trees can save 20-50% in energy used for heating.

Trees are proven traffic calmers and crime deterrents.

Our street and park trees offer a \$3.80 return on every dollar invested.

Portland's urban canopy saves the city about \$36 million in stormwater processing costs.

A little something about the trees...

*Each year, just
18,000 trees*

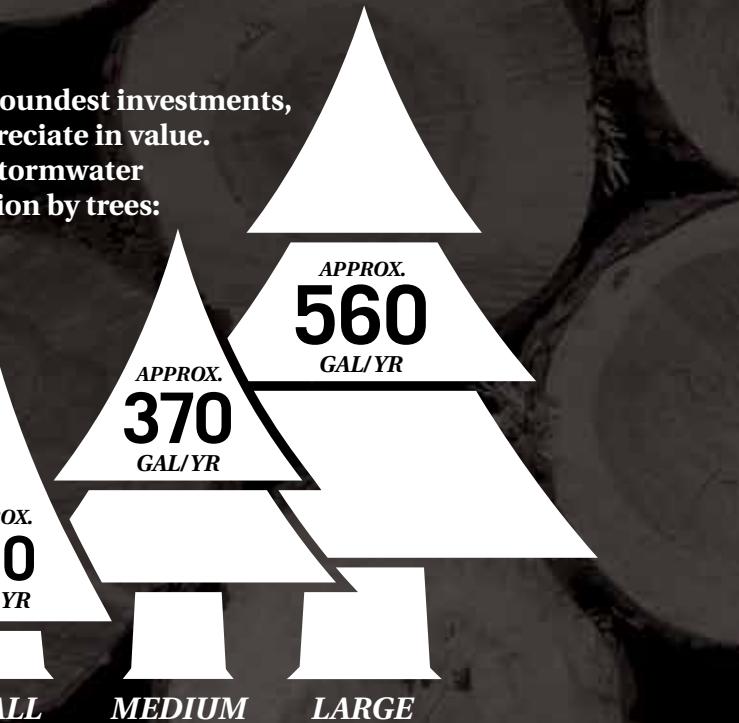
*— planted by —
Friends of Trees*

*Remove 3.24 million
pounds of air pollutants.*

*Intercept nearly
43 million gallons
of rainwater.*

**Like the soundest investments,
trees appreciate in value.**

**Average stormwater
interception by trees:**



**Study in a natural setting,
especially in the very young,
is proven to aid cognition,
reduce symptoms of attention
deficit disorder, and increase
self-discipline and emotional
well being.**



CLASS UNDER COTTONWOODS

The Columbia River is the heart of The Intertwine: where we say goodbye to the drop we met in Englewood Park; where stormwater exits, free of grime, after channeled through the Big Pipe; where the aerated flows off Willamette Falls mix calmly at the confluence.

Upriver at Steigerwald Lake National Wildlife Refuge — The Intertwine's eastern gateway — Gibbons Creek cuts a wide swath into the Columbia over 1,049 acres of wildlife-rich floodplain habitat. Attracting upwards of 100,000 visitors annually, the refuge is home to rich bird life: from martins and geese to herons and raptors.

When high water temperatures and lost vegetation began to threaten the health of Gibbons Creek, the Lower Columbia Estuary Partnership took action at the Refuge. Drawing on students and volunteers to plant over 13,500 native trees and shrubs to cool the creek, the Estuary Partnership also capitalized on community involvement to cultivate a new generation of stewards.

Launched in 2000, the Estuary Partnership's innovative education program schools students before heading outdoors to plant; each receiving up to four classroom lessons on topics such as bird identification, river food webs, and Native American plant use.

With new canopy above and curious students beside, our last drop takes time to enjoy life in The Intertwine, eddying slowly through Steigerwald to meet the Columbia.





AN INTERTWINE CHALLENGE

This year The Intertwine Alliance offers the following challenges to residents and leaders of our region.

Water. We're on the nation's leading edge of innovative stormwater management, yet we will continue to face choices about whether to invest in pipes or in natural systems. **We challenge** our municipalities and utilities to increase the percentage of stormwater managed through green infrastructure.

Natural Areas. With much of The Intertwine's most stunning and precious natural areas now held in public trust, this is the time to restore these lands and ensure their long-term care. **We challenge** our residents and elected

leaders to establish a permanent funding source to protect our natural area investments.

Trees. Thanks to the dedicated work of our partners, we understand the tremendous economic, social, and environmental value of our trees. Now we can capitalize on this knowledge by planting more of these incredible assets — as well as caring for the trees in our own backyards. **We challenge** every government within The Intertwine to develop a plan to increase canopy cover.

Over the next weeks and months, we'll be asking our region's elected and civic leaders to help lead this agenda. Choose your challenge and we're ready to help — because watershed wide, from Coast Range to Cascades, we're all in this together.



THE INTERTWINE IS OUR COMMON GROUND.



OUR COMMON GROUND