



*Strategic prioritization of urban
stream restoration based on
salmon habitat preferences*

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Today's purpose

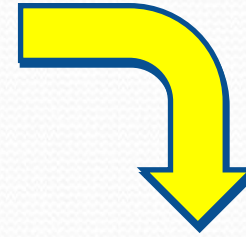
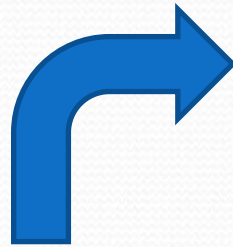
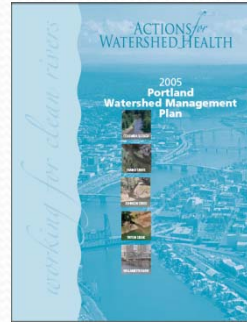


- Describe Portland's on-going process to manage and prioritize watershed management projects
- Describe procedure for rating the benefits of watershed projects

Blueprint: Managing for success in urban stream management



Plans



Actions

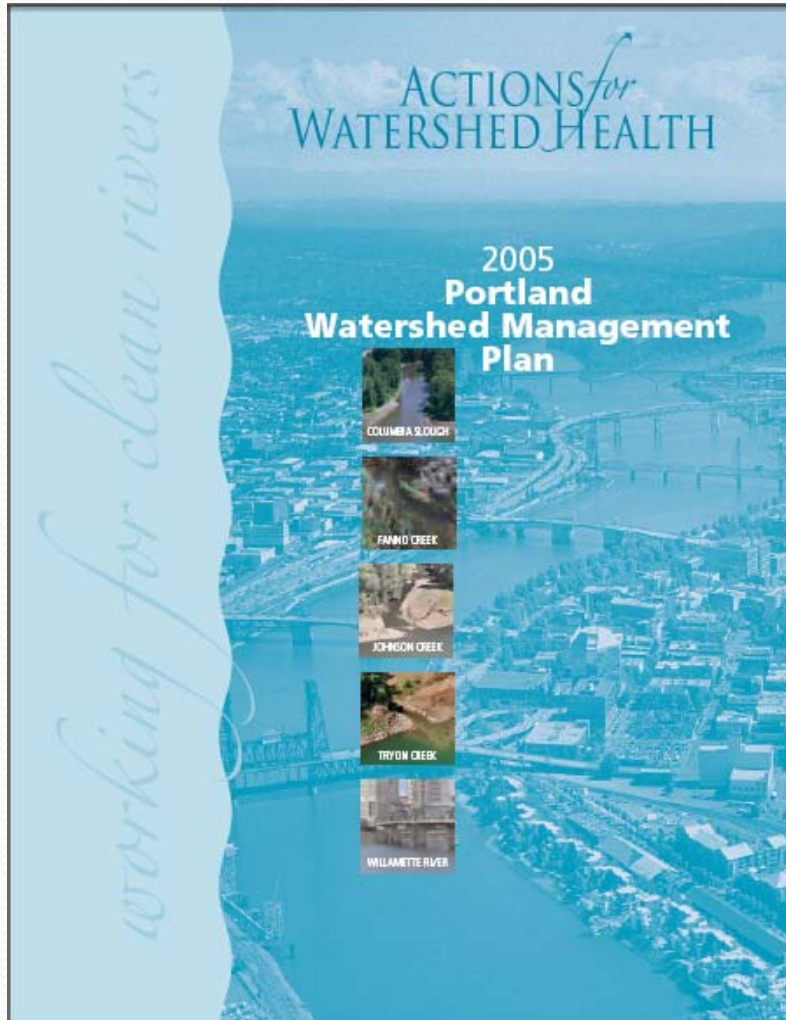


Outcomes



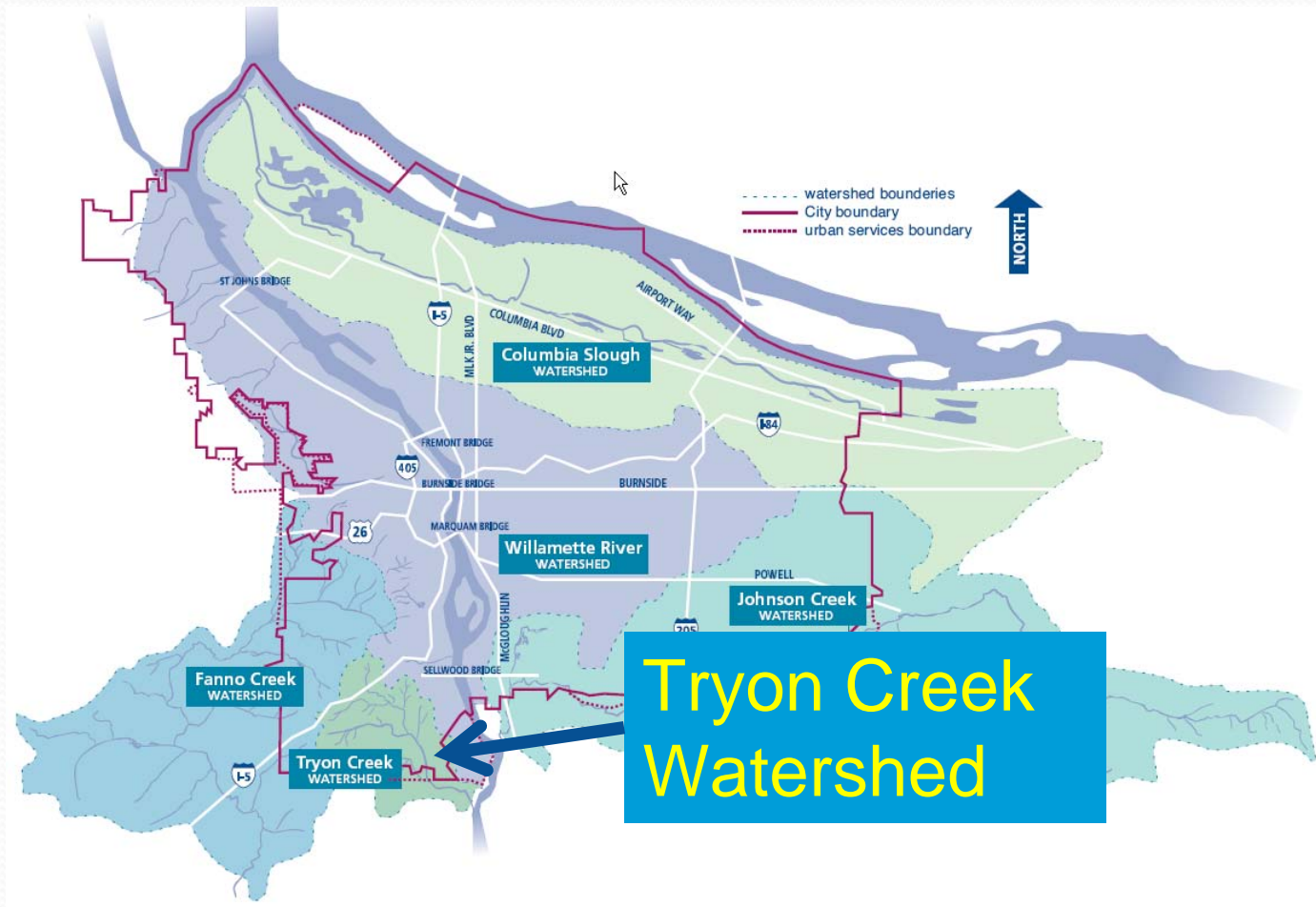
<http://www.portlandonline.com/bes/>

The Plan



- Comprehensive approach to improving health of PDX watersheds
- Guidelines for City Bureaus
- Incorporates Ecological Framework
- Addresses ESA, CWA, CERCLA et al. obligations

Lower Willamette River Watersheds



The Actions

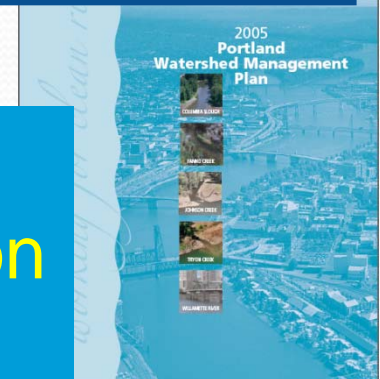


Strategic Categories

ACTIONS	
Stormwater Management	Modify the storm drainage system to increase infiltration
	Modify the storm drainage system to increase reuse or detain stormwater
	Modify the storm drainage system to treat stormwater pollutants
	Modify the storm drainage system to separate flow from combined storm/sanitary sewer
Revegetation	Increase the extent of canopy and other vegetative cover
	Improve the quality and composition of vegetative cover
Aquatic and Terrestrial Enhancement	Restore channel and floodplain function and stability
	Restore or create river, stream, wetland, and terrestrial habitat structure and function
	Restore habitat connectivity and access
	Manage for appropriate native species
Protection and Policy	Implement management of erosion, sediment, and debris
	Implement management of stormwater for erosion control
	Implement management of pollutant discharge
	Protect sites and features with high water quality
Operations and Maintenance	Operate and maintain the storm sewer system infrastructure to remove and prevent pollutants
	Reduce illicit and non-stormwater discharge
	Maintain and repair sewer systems to ensure proper function
Education Involvement and Stewardship	Promote watershed awareness with city staff, schools, the business community, organizations, and general public
	Provide pollution prevention education to city staff, the business community, organizations, and general public
	Provide technical assistance and incentives to city staff, schools, the business community, organizations, and general public

Action types

Projects: Application of Action types at specific locations and times





Project Purpose

Quantify potential OUTCOMES of projects

- Strategic prioritization
 - How can stream restoration actions be optimized within a watershed?
 - What is the potential gain from restoration projects?
 - What is the rationale for watershed investments?
 - How do alternative futures for the City compare?
- Regulatory obligations
 - How do Portland watershed actions contribute to ESA population recovery?
 - How can actions be prioritized to maximize ESA benefits?

Analytical Framework

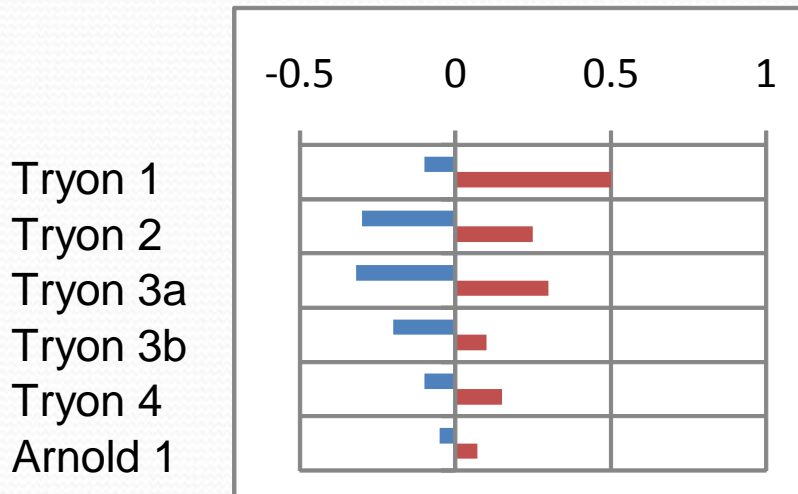


EDT = Ecosystem Diagnosis & Treatment

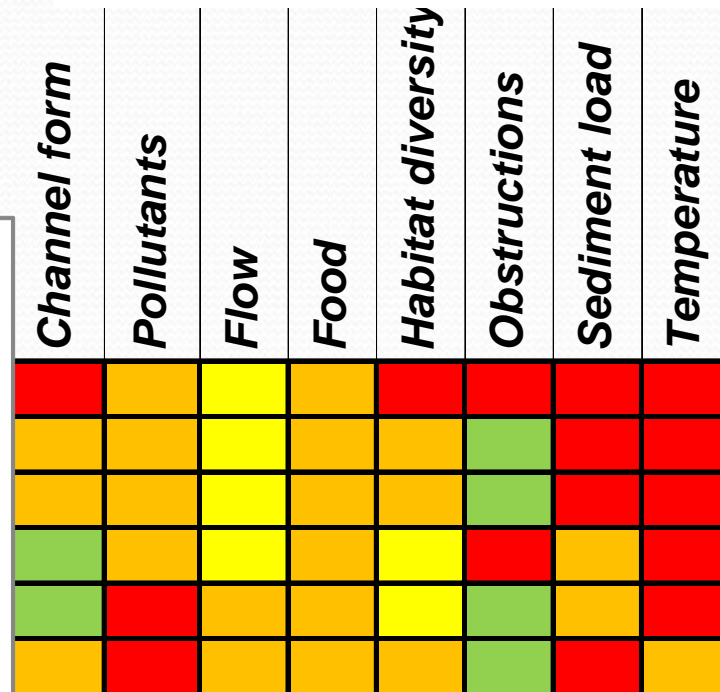
Step One—Diagnose stream problems with EDT

Tryon Creek

Priorities for Coho Habitat Recovery



Limiting Factors



Step Two-Create Project Hypotheses

Increase
Stormwater
Infiltration

Action

Sci
Effect

Effectiveness of
action to change
environmental
attributes

Create explicit working hypotheses regarding potential impact of actions/projects on the environment

basis for project evaluation across the city

- **Separates scientific and policy issues**

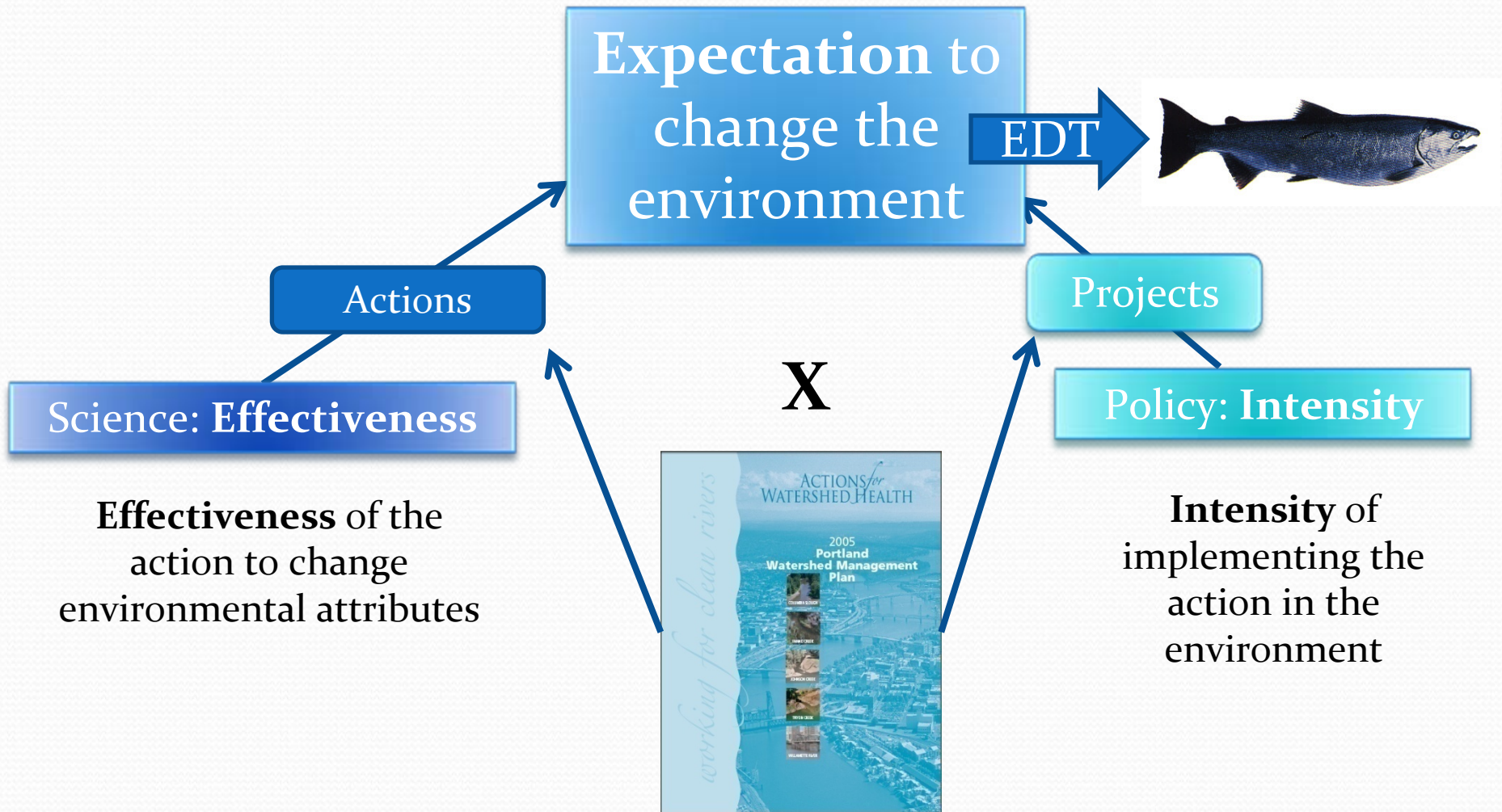
Upper
Tryon
Stormwater
Detention

Scientific

Effectiveness

of
ng
the action in the
environment

Step Three: Characterize population change in EDT



Action Editor Computes Environmental Expectations



Action Editor

A Scenario has been loaded for Tryon_052206

Import Baseline
Data

Classify Reaches

Edit Projects

Review Action
Effectiveness

Create Scenario

Import EDT
Input File

Edit Effectiveness
& Intensity

Export New
EDT Input File

Project List:

Project Intensity: A Policy Decision

- Ac • Cost
- X • Feasibility
- E) • Support
- er • Opportunity
- ch • Spatial Distribution

Spatial intensity of application

Home Create Action

stormwater 5% of

pollutant input to Tryon

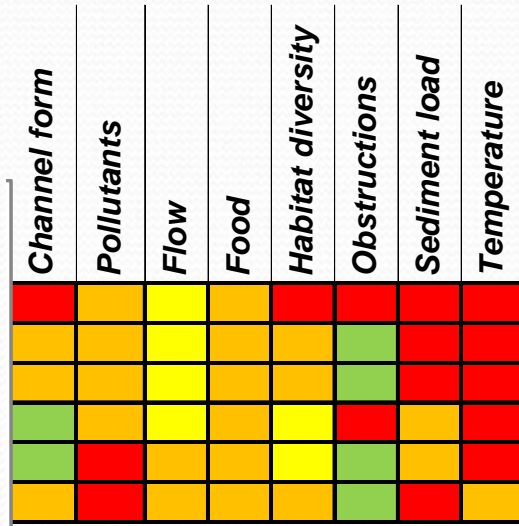
Geographic Area	Reach	Intensity	Stormwater Intensity
Upper Tryon	Tryon18culvertlength	20	20
Upper Tryon	Tryon4CMarshallLength	20	25
Upper Tryon	Tryon4D	20	25
Upper Tryon	Tryon4E	20	25
Upper Tryon	TryonLancasterLength	20	25

Proportion of Attribute Restoration Potential

	Tryon18culvertlength	Tryon4CMarshallLen gth	Tryon4D	Tryon4E	TryonLancasterLeng th
Flow High	.04	.045	.045		.045
Flow Low	.19	.213	.213		.213
Flow Diel	.116	.131	.131		.131
Metals Water Column	.226	.252	.252		.252
Metal sediment	.078	.088	.088		.088
Misc Toxic Waste	.04	.045	.045		.045
Nutrient Enrichment					
Temp Max	.04	.045	.045		.045
Temp Min					

Environmental Change = Change in Habitat potential for target species

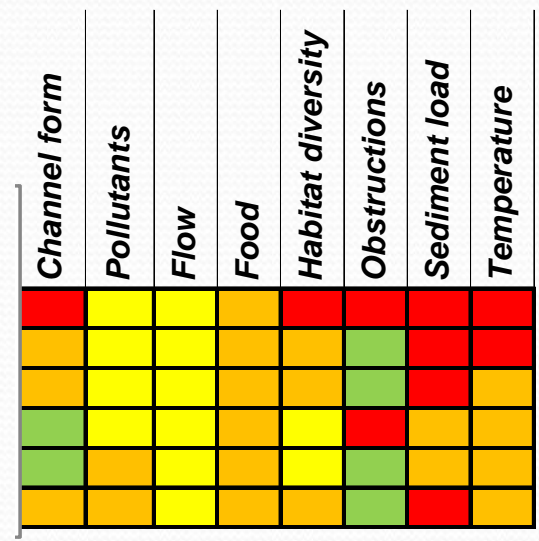
Current Condition



■ Extreme
■ Moderate
■ Low



With Watershed Strategy



■ Extreme
■ Moderate
■ Low



How Portland Will Use This Process

- Watershed actions will be characterized
 - Environmental Expectations
 - Change in habitat potential for coho and steelhead
- City planners can examine alternative futures
 - Develop most effective programs and strategies
- Provides scientific/policy accountability for investments in watershed health
- Document City's contribution to ESA recovery
 - Develop Portland ESA recovery strategy