



# Building the Case for Climate Resilience Investments

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EARTH  
ECONOMICS 

Image: Reddit Media.Com



Image: Google Earth





# Earth Economics' Work in a Nutshell

We use economics to tell stories  
about the relationship between  
nature and healthy communities



## **Traditional Flood Control: Los Angeles River**



# Green Infrastructure Flood Control Thornton Creek, Seattle



Image: Friends of Thornton Ck



# Our Approach

## *Awareness Building*

...Make sure nature has a seat  
at the table for decisions



## *Place-based Analysis*

... support better project, policy,  
and investment decisions



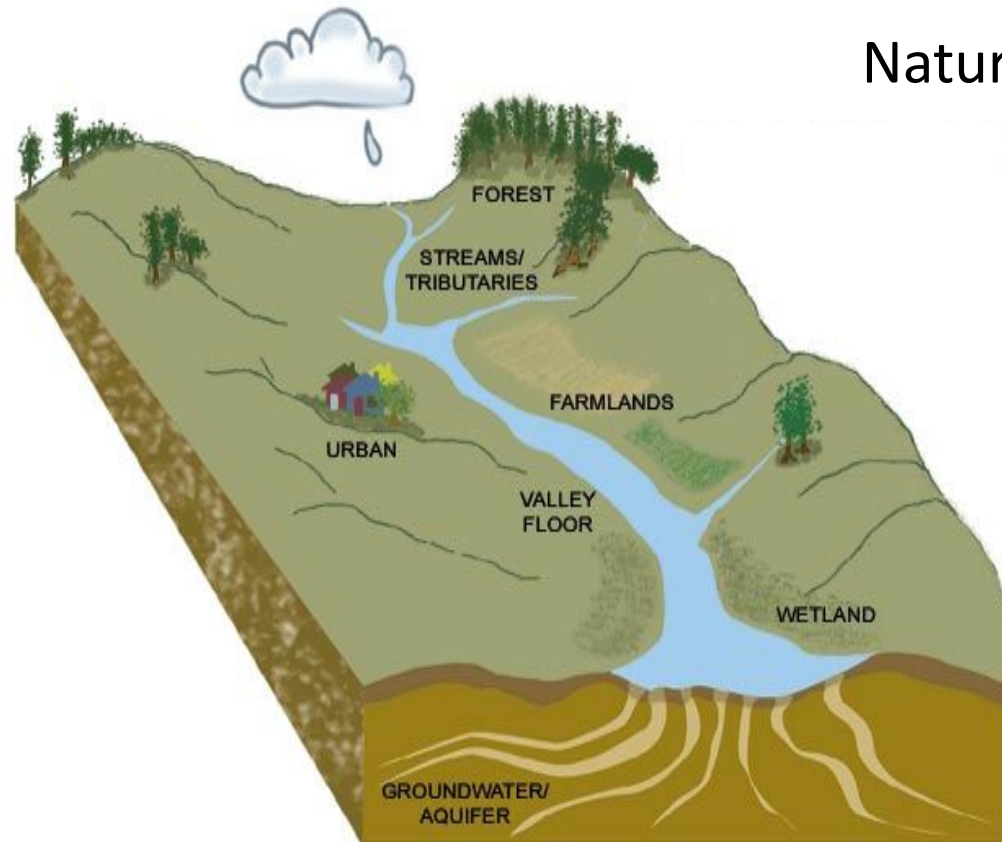
## *Strategy and Finance Recommendations*

... build financing mechanisms and  
policy to accelerate progress at scale





# Ecosystem Services: The benefits people derive from nature



Natural Capital Asset: **Watershed**

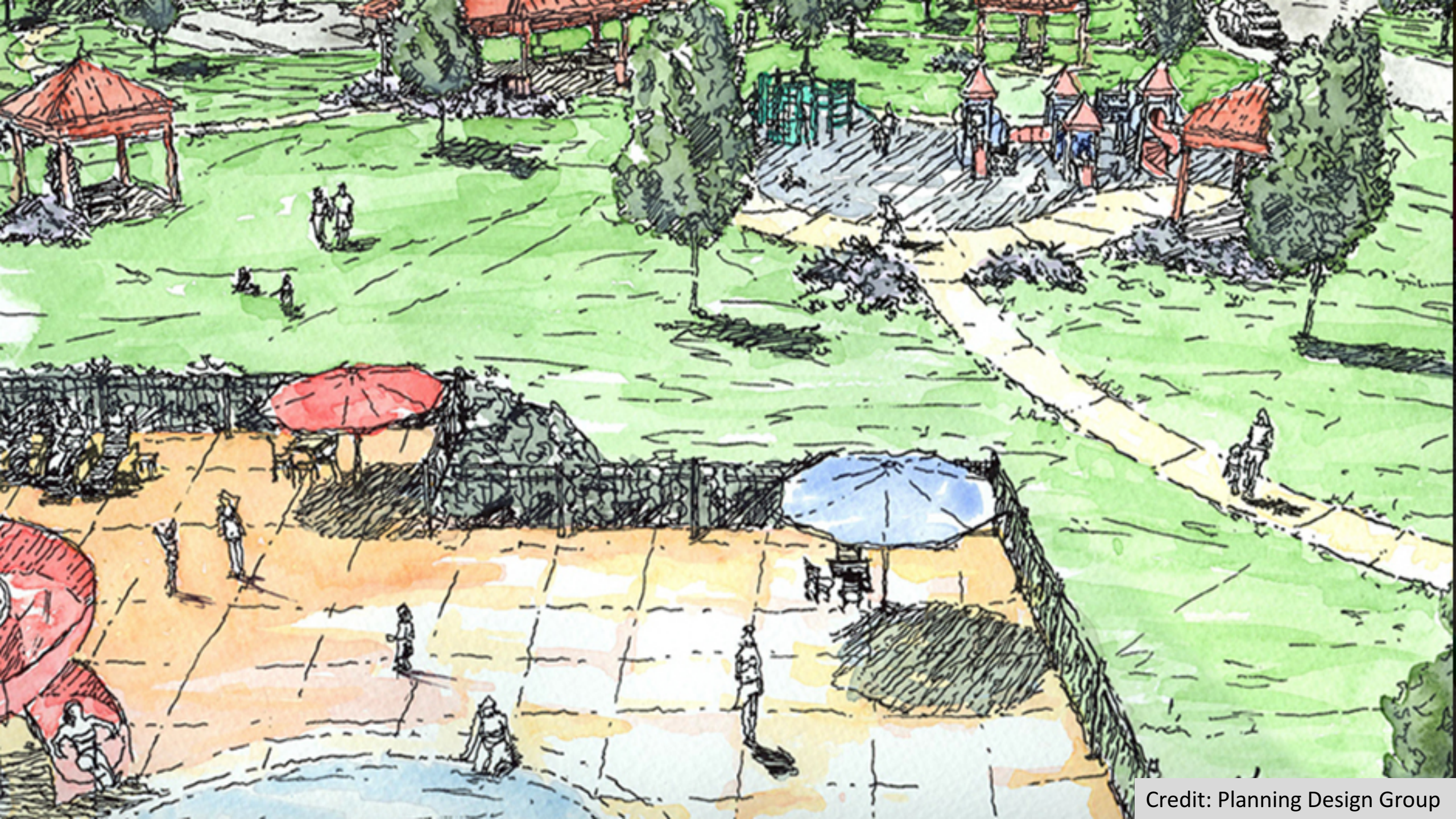


Function: **Collection & Filtration**



Service: **Water Supply**







# 21 Ecosystem Services

- Aesthetic Information
- Air Quality
- Biological Control
- Climate Stability
- Cultural and Artistic Information
- Energy and Raw Materials
- Food
- Genetic Resources
- Habitat and Nursery
- Medicinal Resources
- Moderation of Extreme Events
- Ornamental Resources
- Pollination
- Recreation and Tourism
- Soil Formation
- Soil Retention
- Science and Education
- Spiritual and Historical
- Waste Treatment
- Water Regulation
- Water Supply

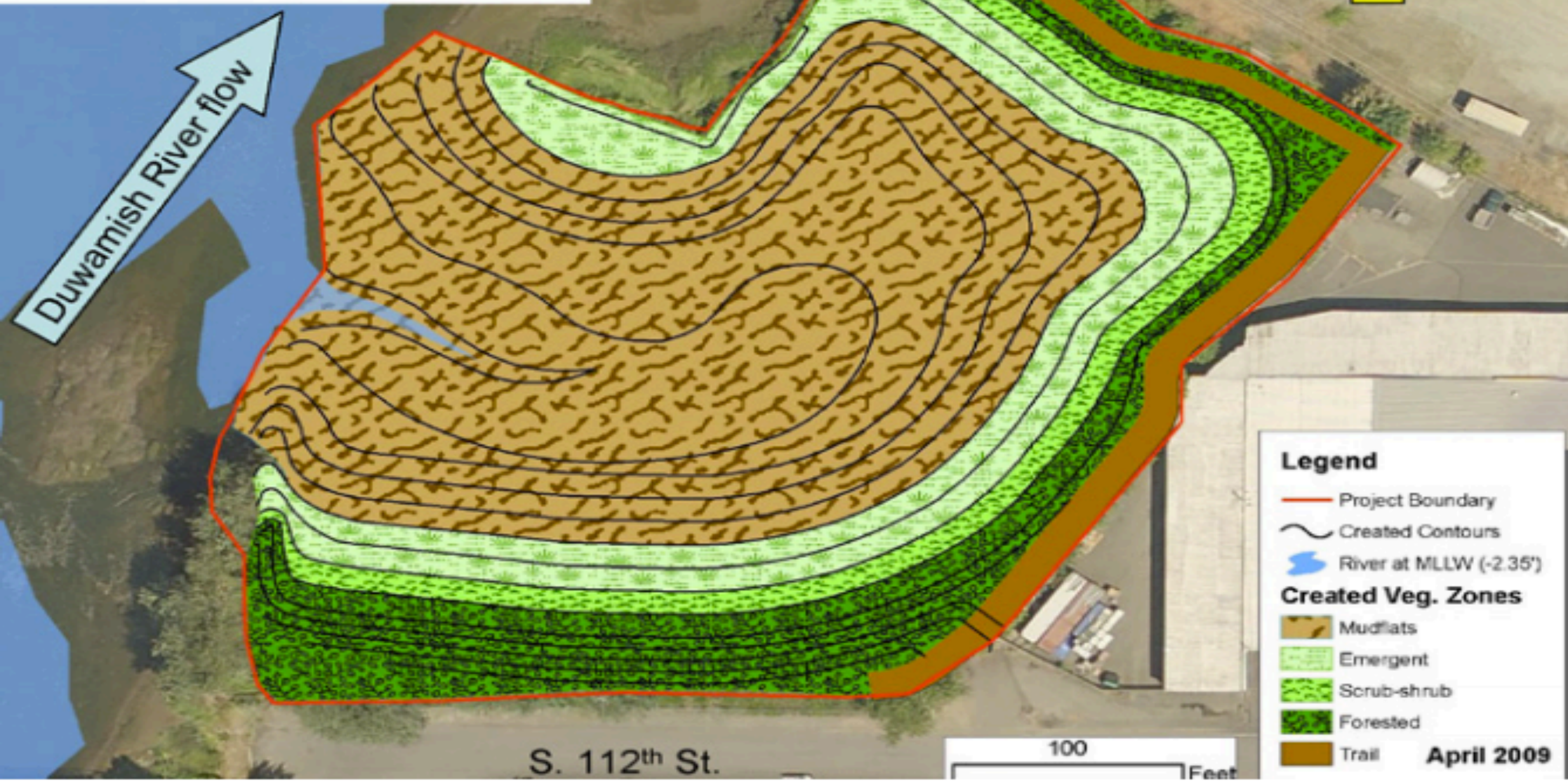




**Holistic Benefit Cost Analysis**



# Topography and Vegetation for North Wind's Weir Estuarine Restoration Project in Tukwila





# Sample Benefit Categories

## Project Costs

Property Acquisition  
Soil Remediation  
Plant Installation and Care  
Site Improvements (paths, etc.)

## Avoided Damages

Commercial Property  
Residential Property  
Infrastructure – Bridges and Roads  
Casualties

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### Economic

Neighboring Property Values  
Construction Investment Jobs  
‘Trickle Down’ to Local Businesses  
Long-Term Worker Retention

### Social

Volunteer Engagement  
Physical Health  
Mental Health  
Social Equity  
Recreation (Fishing, Birding)  
Cultural Value

### Environmental

Salmon Habitat  
Reduced Soil Erosion  
Carbon Sequestration  
Bird Habitat  
Air Quality  
Tree Cover  
Invasives Control

# Project Life: 100+ Years

Photo: MTA New York City Transit / Leonard Wiggins



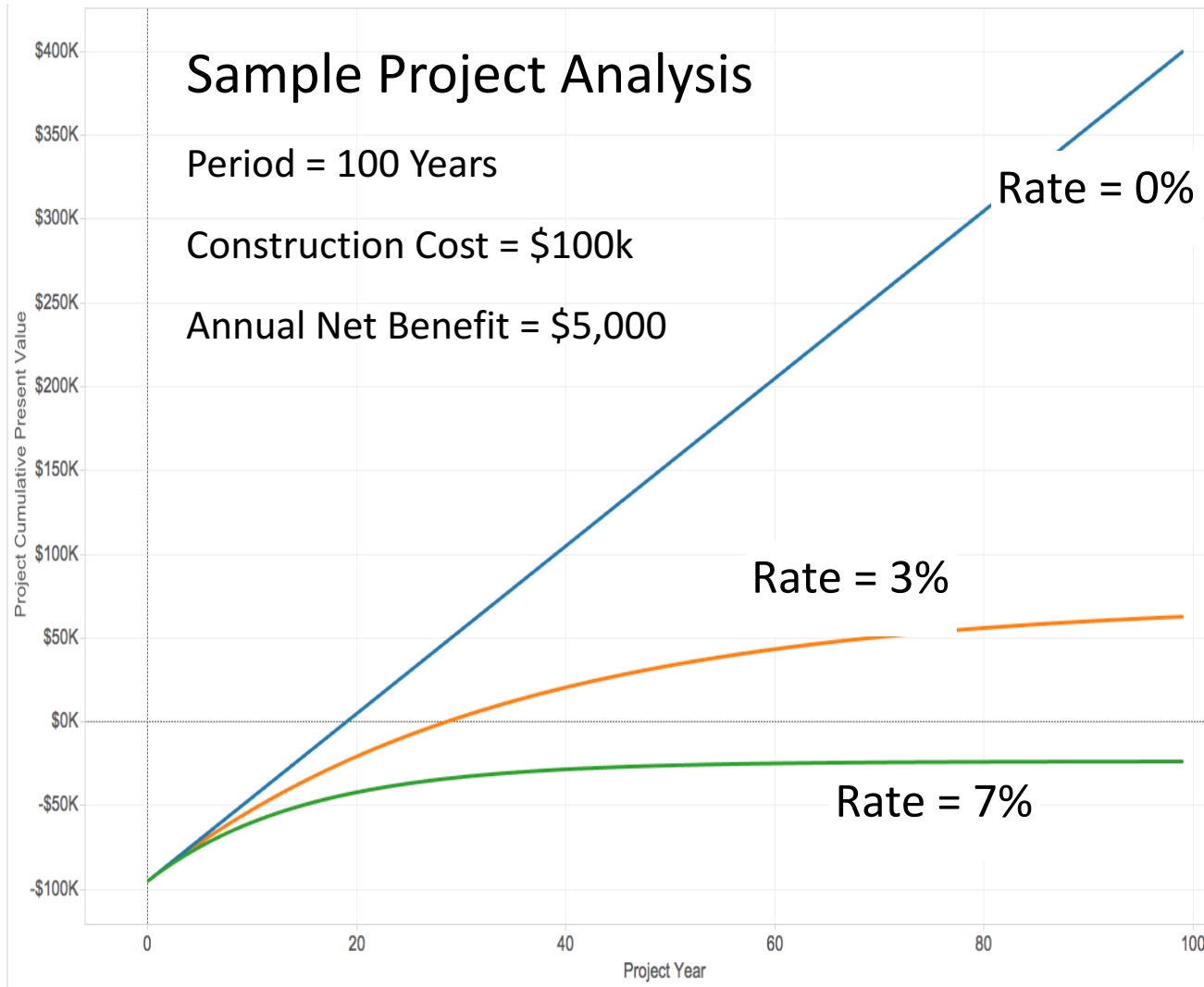
Gray Infrastructure tends to need  
increasing maintenance, repair and,  
ultimately, replacement



Green Infrastructure may provide  
benefits for many decades, with  
limited maintenance needed



# Discount Rates Are Important



This chart shows how the sample project will produce a favorable or unfavorable benefit-cost ratio depending on the rate used for analysis.

- Discount rates are used when calculating a 'present value' of project benefits and costs accrued over time.
- Higher rates (e.g. 7% used by FEMA) tend to disadvantage green projects by minimizing future benefits while also minimizing future costs of gray projects.
- Many economists believe that rates of 3% or less should be used for green projects.





CREDIT: ZAC CHRISTIN

Image: Zac Christin

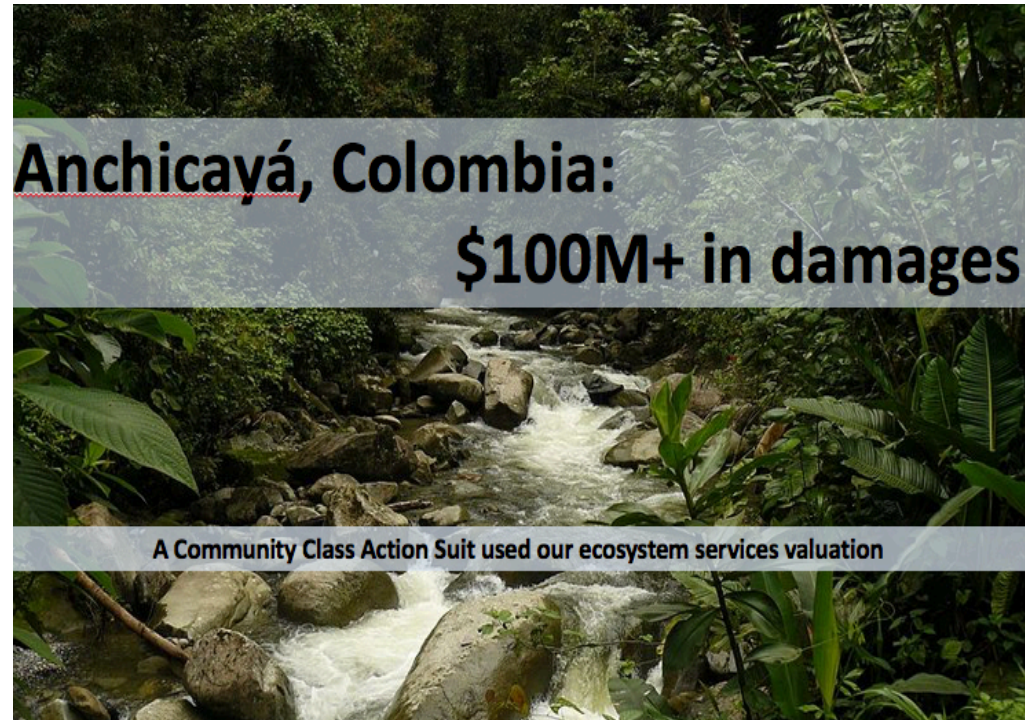


# Change on the ground





# Change on the ground





# Communication Challenges

Mainstream application of ecosystem services is relatively new

Values are not precise – often presented as ranges

Still gaps in the original research

Federal and local guidance and standards may not allow or does not address use of ecosystem services in BCA and project analysis

Stakeholders may not feel that the values are ‘real’

Natural capital projects don’t seem to be making a difference

# Key Speaking Points

Even though ecosystem values may not be perfect they should always be considered. More information leads to better decisions.

*“Better to be approximately right than precisely wrong”*

- Warren Buffett



# Key Speaking Points

Natural capital solutions often offer lower costs, longer-lived benefits, and recover more quickly from shocks than built capital.

# Neighborhood Projects and Challenges

Angela Tovar - Director of Community Development, The Point

Linda Warren- VP of Placemaking, Cleveland Neighborhood Progress





Image: Matt Chadsey

**D-Town Farm, Detroit**