MANAGING URBAN WATERWAYS

Utah League of Cities and Towns

2023 Annual Convention – Salt Palace

September 6, 2023

Paul Burnett, Utah Division of Water Quality
B. Eric McCulley, Utah Reclamation Mitigation and Conservation Commission

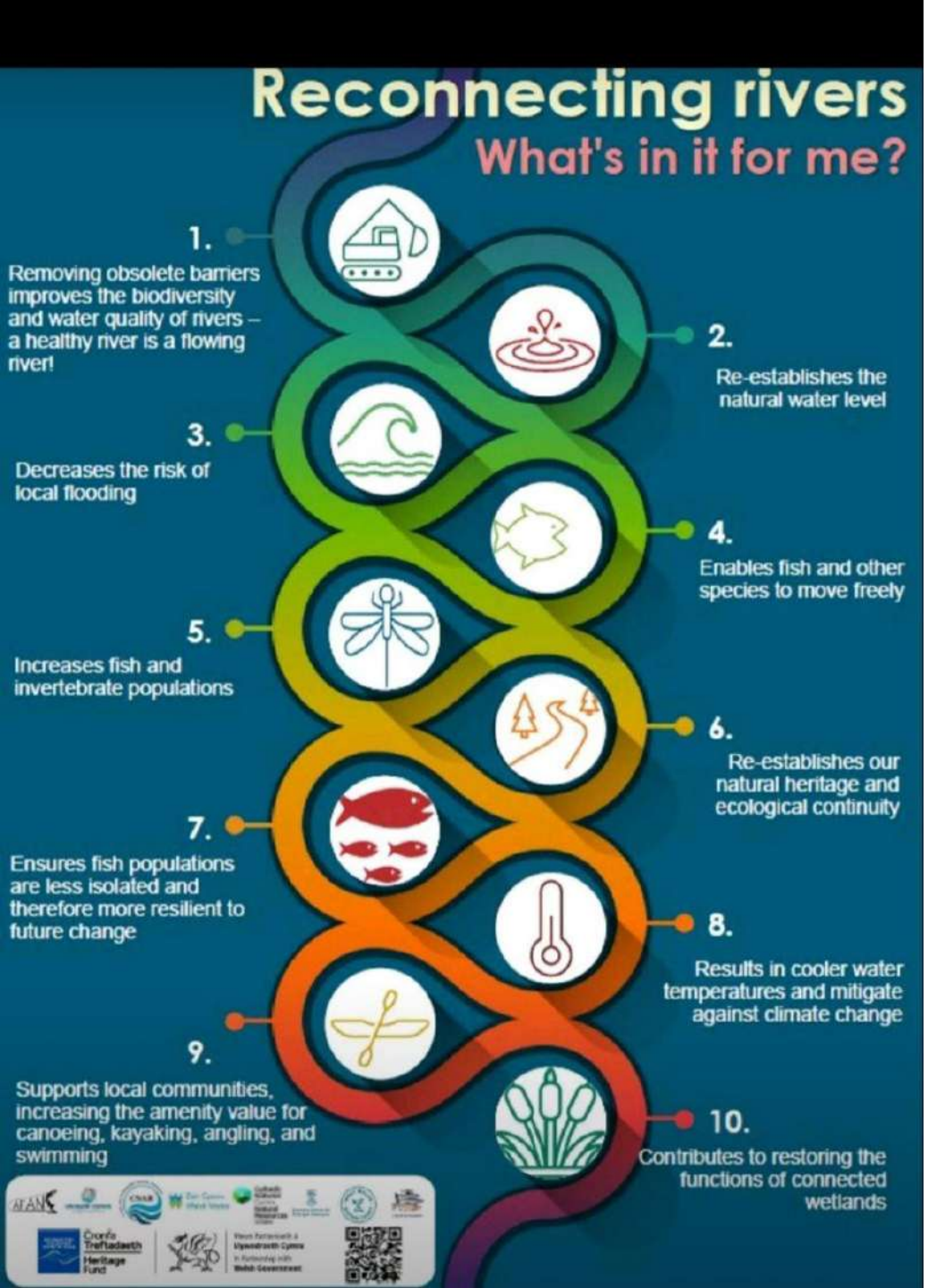
UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

UTAH RECLAMATION MITIGATION AND CONSERVATION COMMISSION

PROVO RIVER DELTA

TOPICS

- Overview – why rivers and riparian areas are important to citizens of Utah
- Case Studies around Utah
  - Ogden City – Ogden and Weber Rivers
  - Helper City – Price River
- Discuss novel habitats created by human activity
- Talk about broader watershed characteristics to consider
- Challenges and characteristics of urban streams
- Establishing and developing urban goals
- Additional case studies
  - Jordan River
  - Provo River



- Biodiversity and water quality
- Natural water levels
- Decrease risk of flooding
- Fish can move freely
- Increase in fish and other life
- Natural heritage and ecological continuity
- Resilient fish and bird populations
- Cooler water temperatures [and surrounding landscapes]
- Providing recreational amenity
- Restore function of connected wetlands

How do rivers benefit humans?

Riparian Areas

- Riparian areas are the transitional zones between land and water, typically found along the banks of rivers, streams, lakes, and other water bodies.
- They are characterized by unique vegetation, including trees, shrubs, and plants adapted to the wet environment.
- Riparian areas can vary in width from a few feet to hundreds of feet, depending on the specific ecosystem and geographical context.

What do Riparian Areas do?

Because they are the transition…

OGDEN RIVER RESTORATION

Working Together to Rehabilitate Urban Stream Corridors and Fish Habitat

PURPOSE AND NEED

Improve Stream Health, Habitat and Recreational Opportunities

- Establish, Restore & Protect Riparian Corridor
- Improve River Access
- Enhance In-stream Habitats
- Improve Water Quality
- Buffer Nonpoint Source Pollution
- Install Stormwater Return Areas

PURPOSE AND NEED

Revitalize Community

- Sustainable Economic Development
- Improve Quality of Life
- Foster Community Ownership and Pride

Economic Development and Ecological Restoration are not Mutually Exclusive!!

REAL PURPOSE AND NEED

REMOVED

- 5,684 Tons of recyclable material
- 2,715 Tires (many of which were on rims)
- 9 Whole cars and plenty of other parts
- 8,359 Tons of debris/litter = 300 semi trucks full of garbage or non recyclable material.
- 22 Boxes of Cultural Resources Artifacts delivered to Natural History Museum of Utah

ACCOMPLISHMENTS

- 1.1 Miles of River Restored
- 30,000 Plants, including Trees and Shrubs
- 15 Angler access paths created
- 2 physically challenged access path to water
- 8 Buildings demolished from the riparian corridor

ACCOMPLISHMENTS

- 17 Acres of interior floodplain connected to the river
- 2,600 Linear feet of in-channel enhancements
- 13 Cross vanes and numerous in-channel habitat boulder clusters
- 9 Constructed storm water return areas
- 2 Drainage swales to buffer adjacent Development
- Adopt-a-River Program established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FLOOD MANAGEMENT

STEWARDSHIP

- Sustaining the habitat
- Weeds
- Garbage

Helper City – Price River

- Central focus of VITALITY in Helper City
- Helps connect people to nature
- Provides a place for solitude and contemplation
- Provides a cooler place to relax and swim in hot summer months
- Recreation feature close to downtown
- Angling opportunities close to workplace

HUMAN EFFECTS ON THE LANDSCAPE

- Human modifications on the landscape rival natural geological forcing but are different in scale (Tarolli and Sofia 2016).
  - Intensive land reclamation and agricultural use
  - Mining
  - Transportation networks
  - Water development
- Novel landforms

DECISIONS MADE TODAY CAN HAVE LONG TERM EFFECTS

- Landfills
- Transportation Infrastructure
- Bridges
- Developments


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Image Landsat / Copernicus
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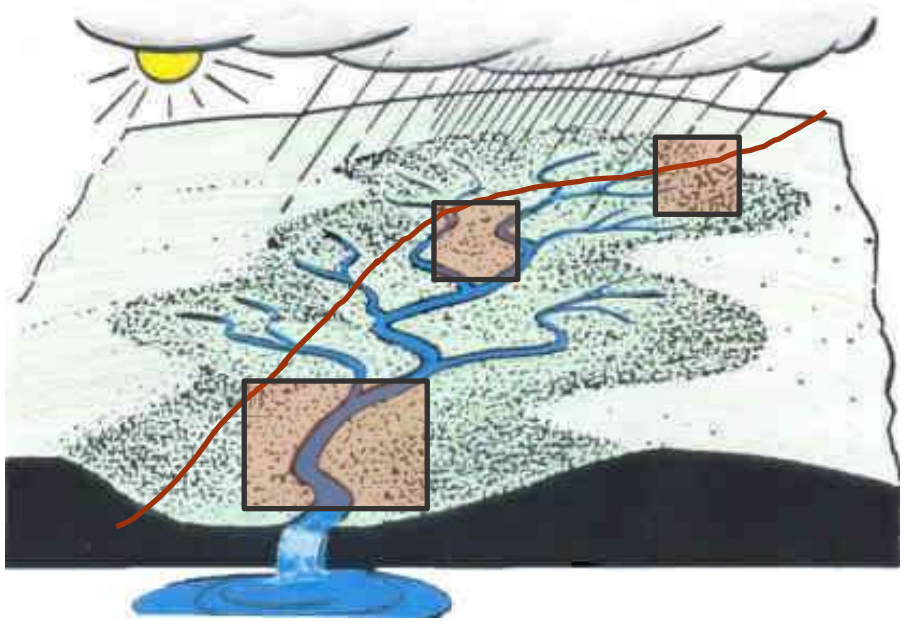
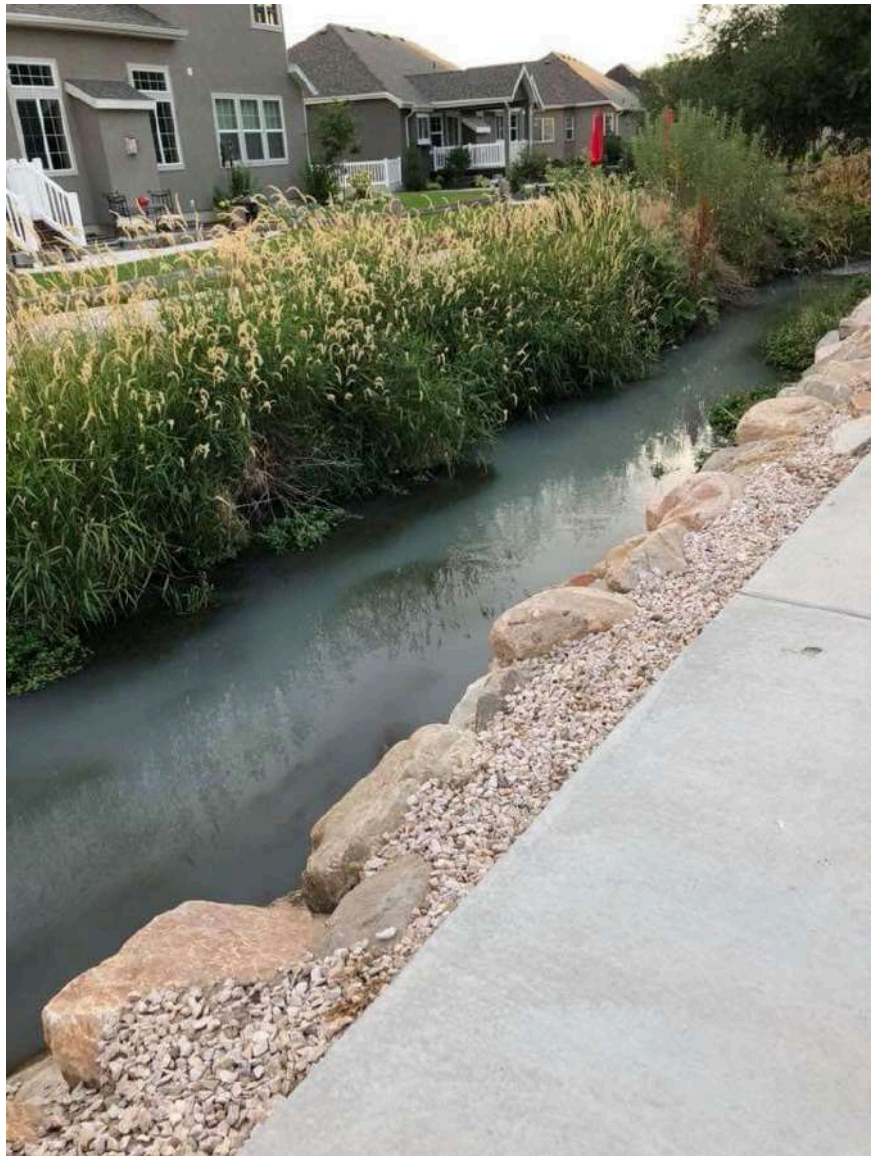
UNDERSTANDING BROADER WATERSHED ISSUES

- We all live in watersheds
  - Watersheds capture, store, and transport water through the landscape
  - Water flows downhill from multiple sources to a shared destination
  - Watersheds should be managed as a single unit
    - Connect uplands to waterways



What can Cities and Towns Do?

- Development pressures in urban areas place natural areas at great risk.
- Local governments play an important role in gathering information
  - Identify waterways and ¼ mile buffer
    - Most sensitive areas
  - Identify stormwater contribution areas
- Local governments can develop ordinances to protect these natural areas
  - Waterway building setbacks
    - 20-50’ from highwater mark or midchannel
  - Septic system setbacks
- Community stakeholders and leaders
  - Develop management strategies and restoration plans
  - Raise funding



URBAN STREAMS - CHANNEL CONFINEMENT

- Effects (when comparing reaches of same marginal width and similar slope)
  - Faster Water Velocity
  - More scour and efficient sediment transport
    - Deposition downstream
  - Reduced habitat



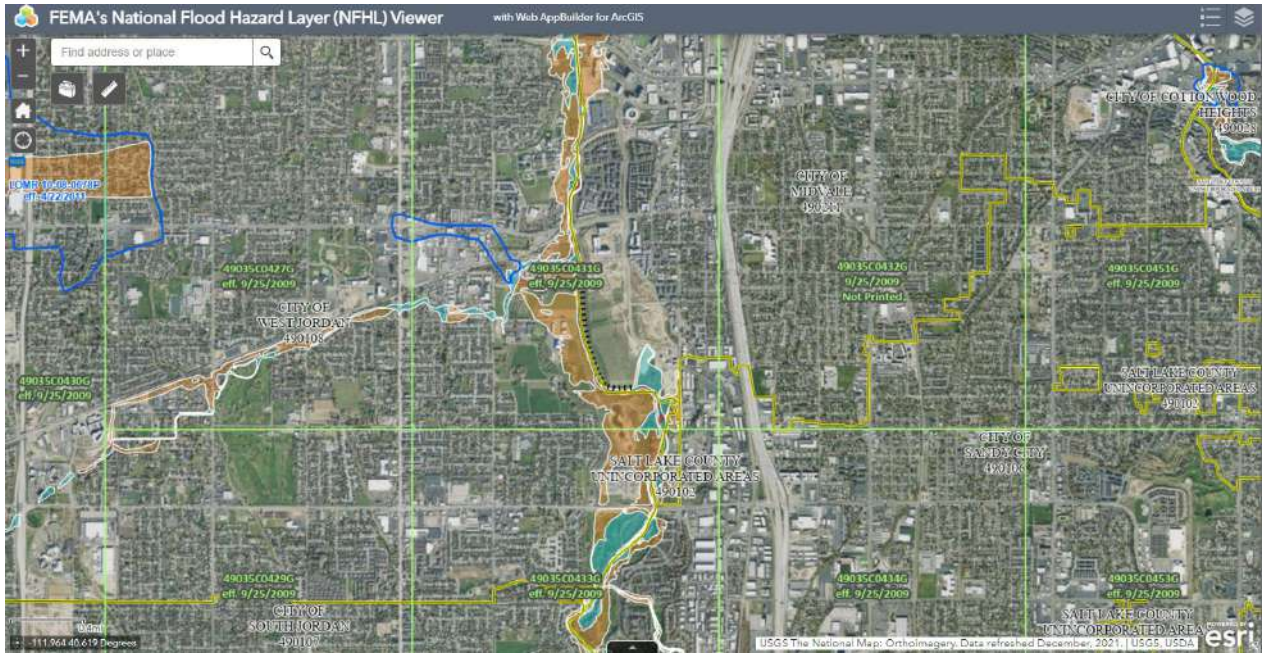
URBAN STREAMS - FLOODING AND INFRASTRUCTURE

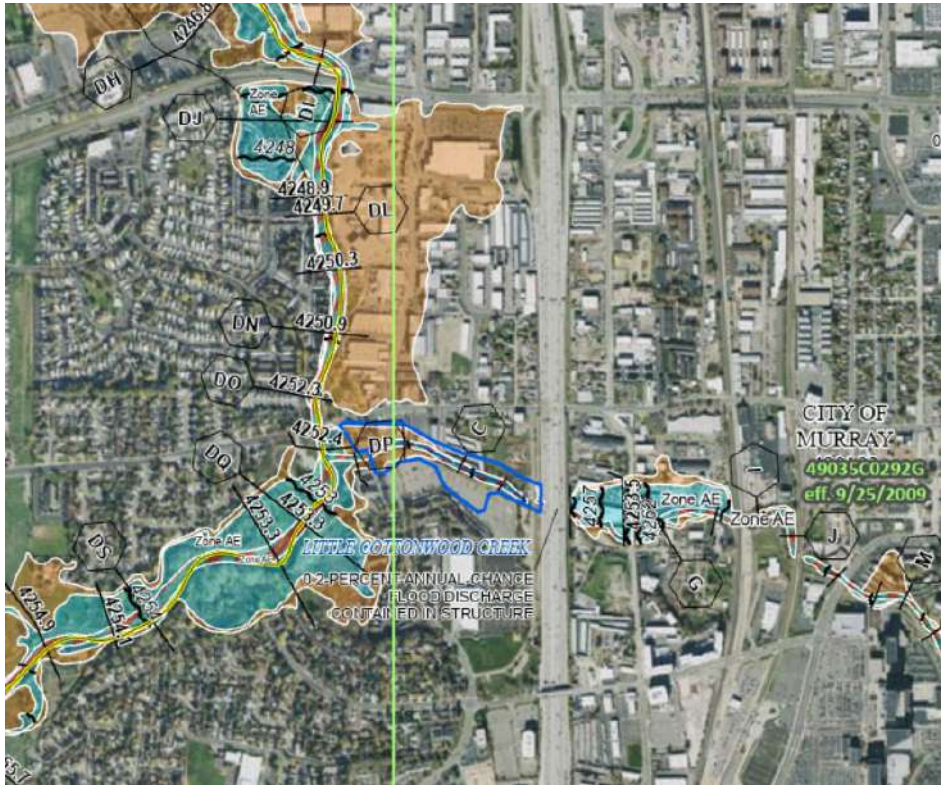
URBAN STREAMS - STORMWATER

- Extensive hard surfaces and drainage systems
  - Efficient transport of stormwater to the stream channel
    - Flashy Hydrology
  - Impervious surfaces
    - Organic Pollutants
    - Sediment
    - Garbage

HUMAN COMPONENT

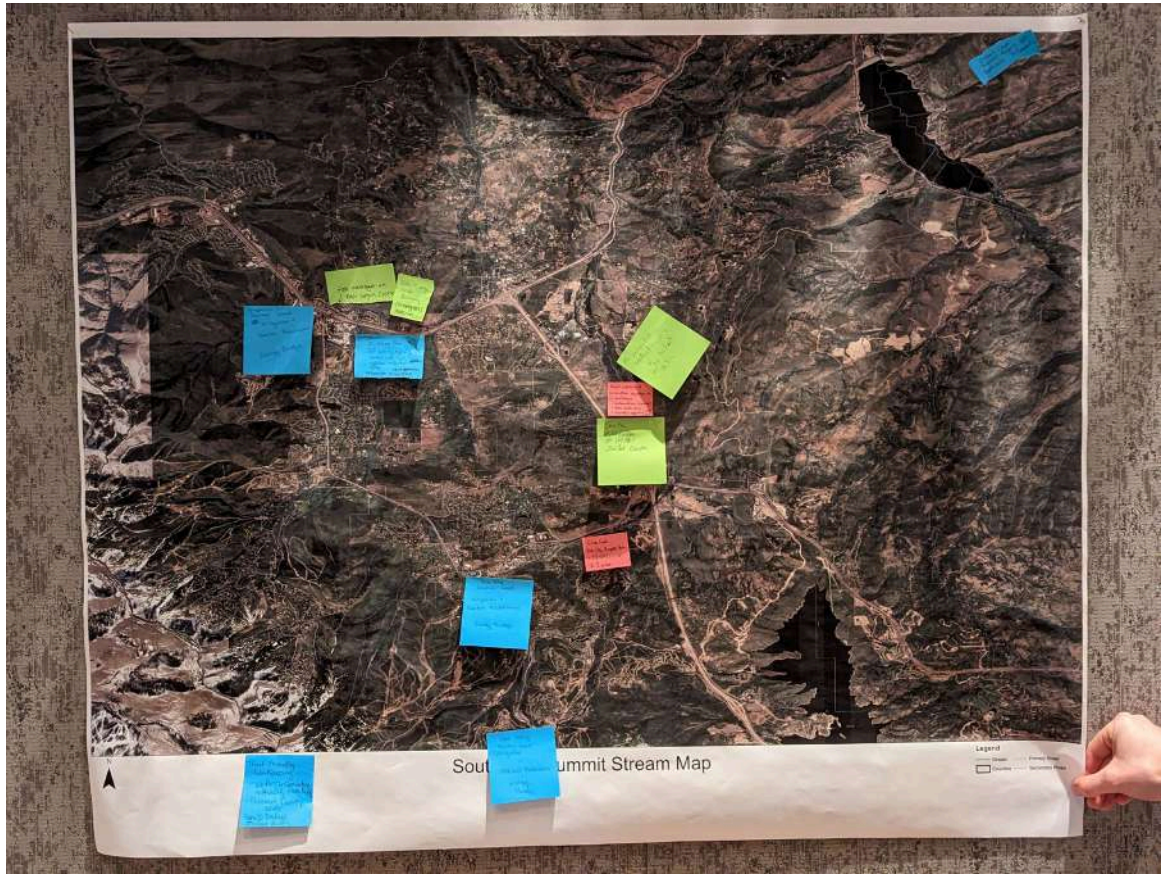
Floodplains – good riparian setback areas – examples





DEVELOPING GOALS

- Develop a watershed plan to document issues within watershed
  - Sensitive areas
  - Recreational uses/barriers
  - Active transportation opportunities
  - Stormwater inputs
  - Water rights holder concerns
- Engage diverse partners
  - Local champions
  - Agency staff
  - City staff
  - NGOs



ECONOMICS OF URBAN RIVER RESTORATION

- Is it worth it?
- Urban Restoration is expensive
  - Up to 10x the cost of implementing proactive watershed protections
  - Functional urban streams bring unique values to the community

ECONOMICS OF URBAN RIVER RESTORATION

JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION
Vol. 48, No. 3 AMERICAN WATER RESOURCES ASSOCIATION June 2012

IS URBAN STREAM RESTORATION WORTH IT?[1]

Melissa A. Kenney, Peter R. Wilcock, Benjamin F. Hobbs, Nicholas E. Flores, and Daniela C. Martínez[2]

ABSTRACT: Public investment in urban stream restoration is growing, yet little has been done to quantify whether its benefits outweigh its cost. The most common drivers of urban stream projects are water quality improvement and infrastructure protection, although recreational and aesthetic benefits are often important community goals. We use standard economic methods to show that these contributions of restoration can be quantified and compared to costs. The approach is demonstrated with a case study in Baltimore, Maryland, a city with a legal mandate to reduce its pollutant load. Typical urban stream restoration costs of US$500-1,200 per foot are larger than the cost of the least expensive alternatives for management of nitrogen loads from storm-

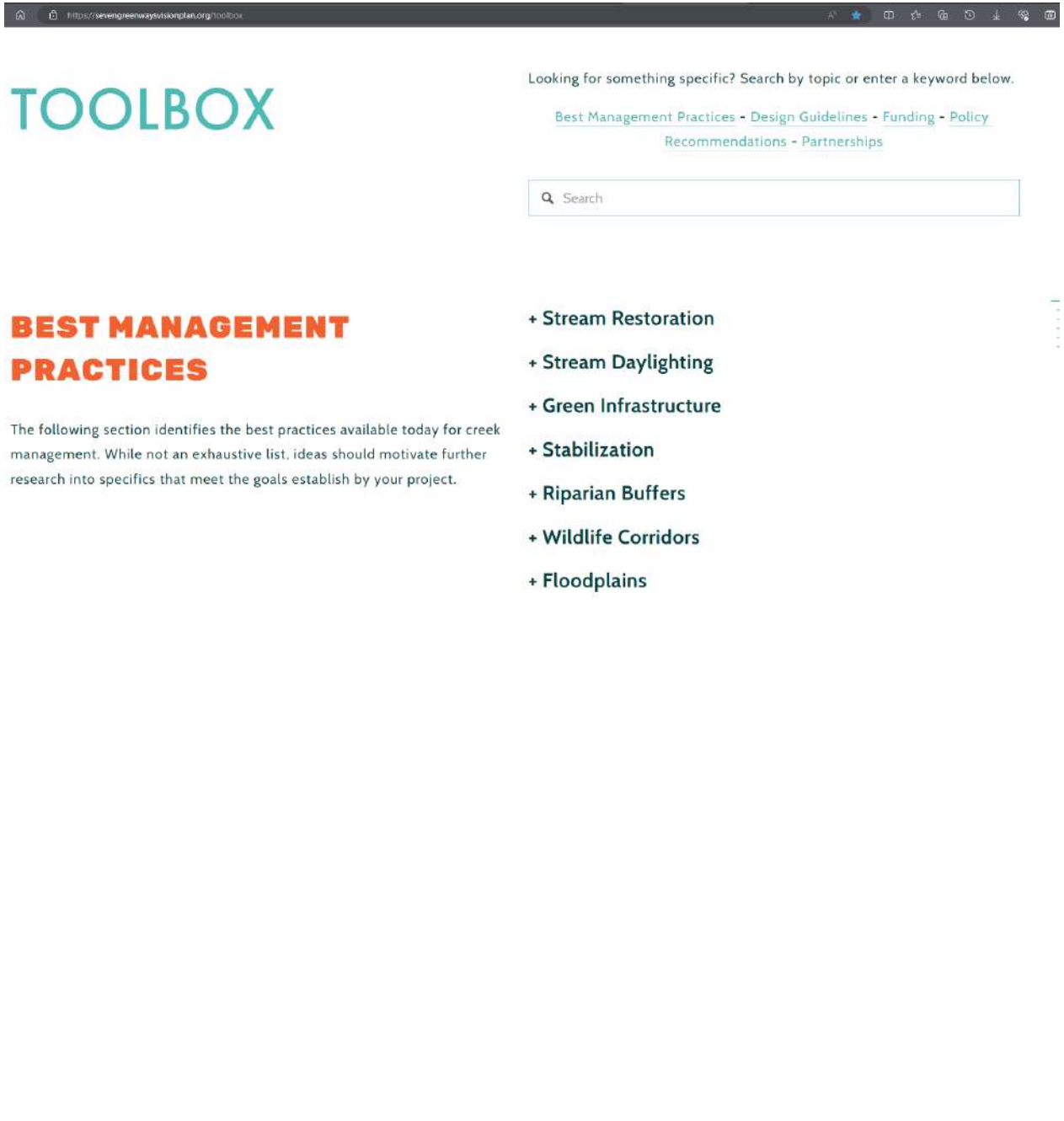
ECONOMICS OF URBAN RIVER RESTORATION

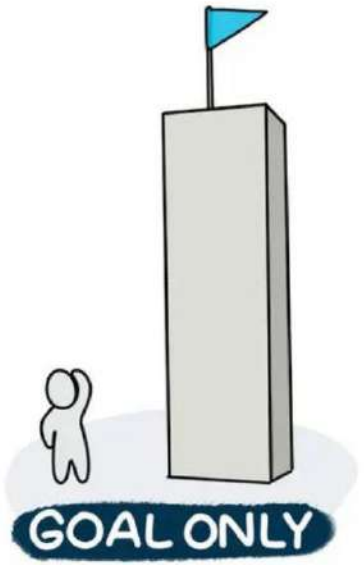
- Is it worth it?
- Urban Restoration is expensive
  - Up to 10x the cost of implementing implementing proactive watershed protections
  - Functional urban streams bring unique values to the community
- Functional rivers deliver a wide range of community values
  - Aesthetics
  - Flood protection
  - Recreational use
  - Transportation

DEVELOPING RESTORATION GOALS

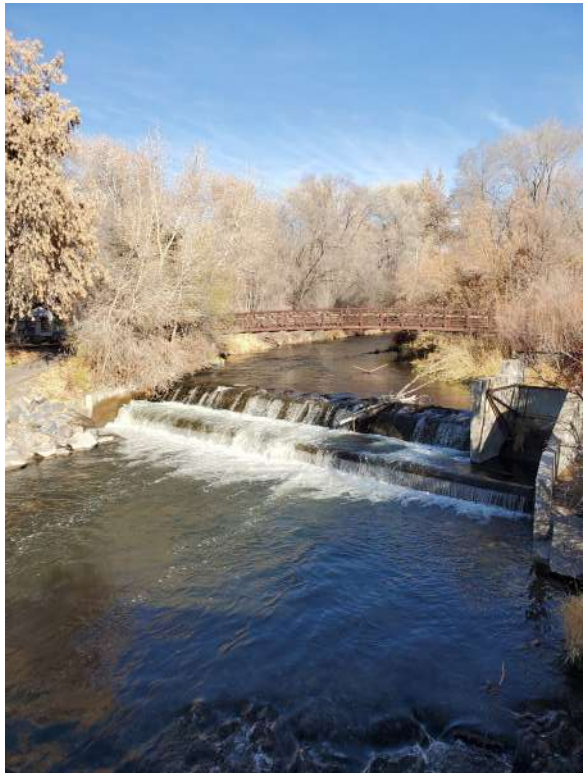
- Invest in design
  - Most funding sources have short cycles
  - Improves our understanding of unknowns
  - Reduces risk of failure
  - Develops strategies for phasing

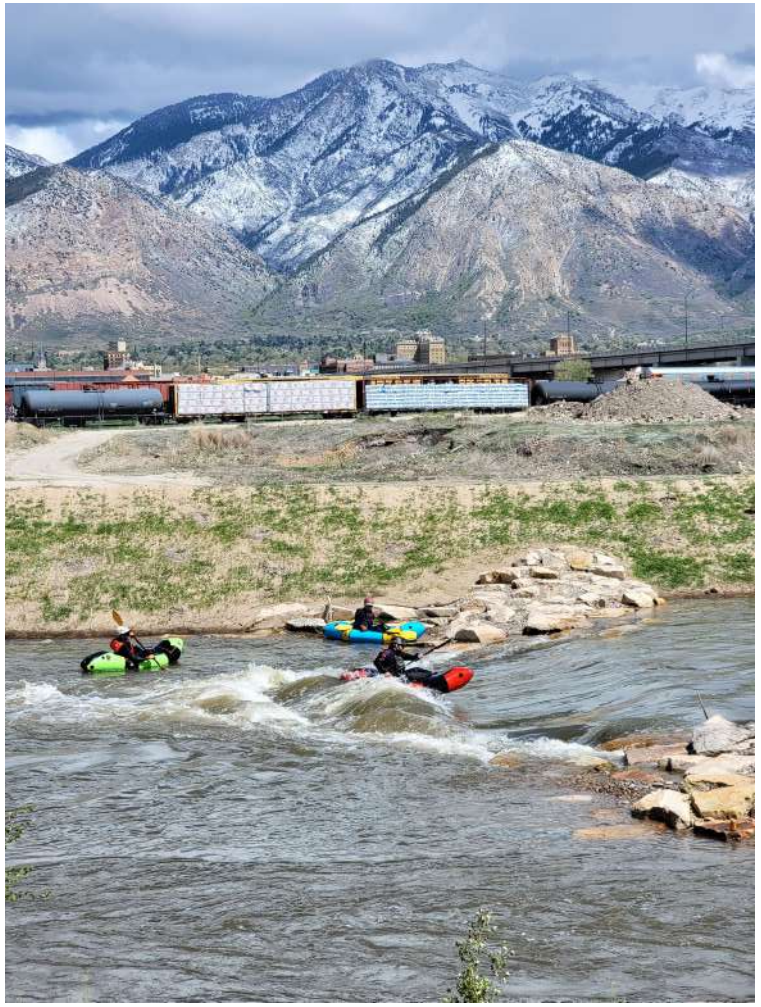
- Set realistic expectations
  - Use design to develop demonstration projects or areas
  - Approach complex projects in phases
  - Continue progress through small tractable projects if a complex phase is being planned


https://sevengreenwaysvisionplan.org/toolbox
TOOLBOX
Looking for something specific? Search by topic or enter a keyword below.
Best Management Practices - Design Guidelines - Funding - Policy Recommendations - Partnerships
Search
BEST MANAGEMENT PRACTICES
The following section identifies the best practices available today for creek management. While not an exhaustive list, ideas should motivate further research into specifics that meet the goals establish by your project.
+ Stream Restoration
+ Stream Daylighting
+ Green Infrastructure
+ Stabilization
+ Riparian Buffers
+ Wildlife Corridors
+ Floodplains
POLICY RECOMMENDATIONS
Policy will be crucial in achieving goals for the greenways. As creeks flow through numerous jurisdictions, recommendations represent an overall guiding document for policy considerations.
+ Plan Alignment
+ Riparian Corridor Ordinance
+ Developments
+ Creek-Friendly Certification
+ Transfer of Development Rights
+ Property Acquisition
+ Water Banking
+ Gentrification
+ Special Districts



@melodie_tld






Jordan River
Restoration


Provo River Delta
Restoration Project

Scan to participate in future restoration workshops