



Exploring existing & novel tools to protect riparian corridors in rapidly growing communities of the Intermountain West, USA

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Utah Geologic Survey Wetland Working Group, Dec. 4 2025*



OASES IN THE DESERT

Riparian zones make up **less than 2% of total land area in the US southwest** & **increase adjacent home premiums up to 26%**.

They are areas of **heightened biodiversity & productivity** relative to other desert ecosystems & **buffer surface waters from pollution**.

They support **detrital food webs** in soils & streams, create **habitat** for terrestrial species, serve as wildlife **migration corridors** & offer **recreational opportunities** to human communities.

Riparian zones **absorb floodwater**, reducing risk of property damage. Release of stored water can **recharge shallow aquifers** & **support stream baseflow**.

American Rivers 2016 *Economic Value of Riparian Buffer*,
González et al. *Biol. Cons.* 2017, Riis et al. 2020 *BioScience*





Riparian areas are **diminishing** in extent & undergoing **structural changes** due to land use conversion, river regulation, climate change, plant invasion & horticultural decisions.
(González et al. *Biol. Cons.* 2017, McFarlane et al. 2017 *J. of Env. Mgt*)



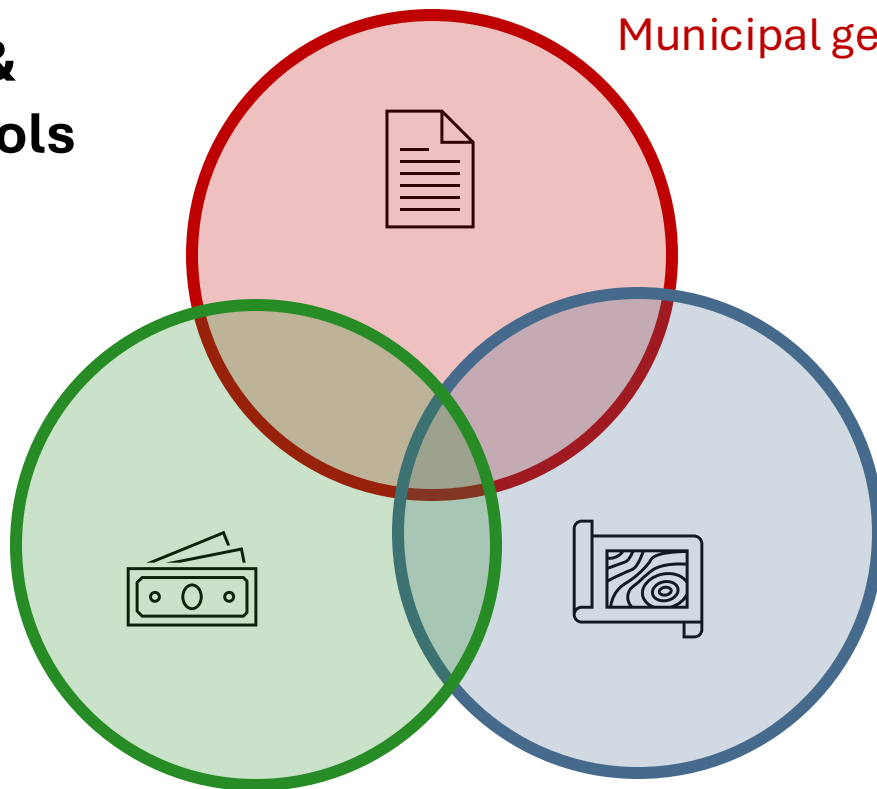
Planning & Financial Tools

POLICY

Municipal general plans & codes

INCENTIVES

MAPPING



Conservation easements
Purchase & transfer of development rights*
C markets & watershed credits*

Riparian areas + development growth*

*novel or underutilized



2024



Rep. Gay Lynn Bennion (D)
District 41



HB - 243 Riparian Amendments

Rep. Bennion | House Natural Resources, Agriculture, and Environment Committee | January 29, 2024

Background:

H.B. 243 – Riparian Amendments creates a new program called **Healthy Water Ways** that bestows awards to cities and counties for including a riparian area element in their general plans and adopting ordinances protecting riparian corridors.

Riparia are vegetated transition zones between aquatic and fully terrestrial habitats. They provide many benefits to humans including water storage, flood and erosion control, filtration of pollutants in runoff that supports good water quality, modulation of air and water temperature through evaporative cooling and shading, and access to open space. **Healthy Water Ways** will highlight proven approaches for promoting benefits of riparian corridors in a more coordinated manner, while preserving the ability to grow communities according to a local vision.

What's in the Bill

- Recommendation to include a riparian element into city and county general plans and adoption of riparian protection ordinances
- Local control over content of riparian element within general plans and related code
- 5-year funding for an employee of the Utah Division of Natural Resources to consult on riparian area delineation, general plan updates, and code development and to run Healthy Water Ways award program



The further away from the riparian corridor, the less strict regulation will be

What's NOT in the Bill

- A 'one-size fits all' approach.
- A requirement to update general plans, adopt new code, or conduct costly restoration work.
- Prohibition of economic activity and development within all riparian areas or control of invasive species, noxious weed and fire suppression activities.

Proof of Concept

- Critical Lands Overlay Zone – City of Logan
- Foothills & Canyons Overlay Zone – Salt Lake County
- Jordan River Protection Overlay Zone – Lehi City
- Riparian Corridor Overlay District – Salt Lake City
- Sensitive Areas – Cache County
- Sensitive Lands Evaluation & Development Standards – City of Cottonwood Heights
- Sensitive Lands Overlay Zone – Park City
- Sensitive Lands Regulations – Oakley City
- Waterfront Trails & Buffer Overlay Zone – City of Saratoga Springs

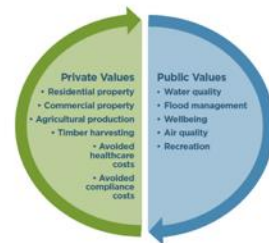
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Flexible Planning

Land use planning tools exist to compensate property owners for potential financial loss associated with riparian protection, such as:

- Purchase or transfer of development rights
- Higher density development in other areas
- Financial compensation via land purchase for conservation easements
- Exemptions from code restrictions based on undue burden criteria



Private and Public Benefits of Riparian Buffers

Resources

Gabanski, L. 2012. The Economic Benefits of Protecting Healthy Watersheds. EPA 841-N-12-004. U.S. Environmental Protection Agency, Washington, D.C. 4 pp. <https://www.epa.gov/hwp/benefits-healthy-watersheds#economic>

Hall, A., et. al. 2023. Land Use & Green Infrastructure Scorecard: Low Impact Development Strategies to Protect Water Resources. U.S. Environmental Protection Agency, Washington D.C., 38 pp. <https://www.epa.gov/green-infrastructure/land-use-and-green-infrastructure-scorecard>

Young, N. 2016. The Economic Value of Riparian Buffers. American Rivers, Washington, D.C., 19 pp. <https://www.americanrivers.org/resource/economic-value-riparian-buffers/>

For more information, Contact: Rep. Gay Lynne Bennion, 385-244-9197, gibennion@le.utah.gov

Key Principles:



Hazards mitigation – Riparian areas protect real property by limiting erosion and reducing the size and speed of floods, especially where there is space for floods to move through floodplains.



Water supply – Riparian areas absorb water from precipitation and release it over time to maintain baseflow during dry times. Water loss from riparian evapotranspiration can be offset by gains through absorption of precipitation and shading of streams and soils.



Economics – Riparian protection maintains high property values and promotes community development by supporting desired aesthetics and recreation opportunities that can coincide with commercial growth.



Stewardship – Riparian vegetation filters pollutants and modulates water temperature, providing a low-cost means to ensure high water quality for human consumption and aquatic life. Riparia also sequester carbon from the atmosphere.



Connectivity – Effects of riparian management can influence downstream communities in positive or negative ways, depending on land use patterns. Riparia also serve as important wildlife habitat and migration corridors.



NSF Engines: Southwest Sustainability Innovation Engine

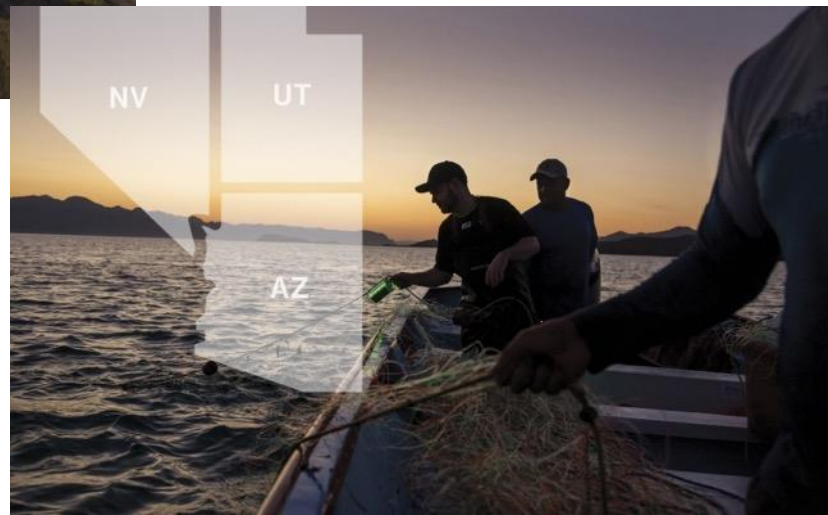
A university, industry and community collaboration funded by the U.S.
National Science Foundation

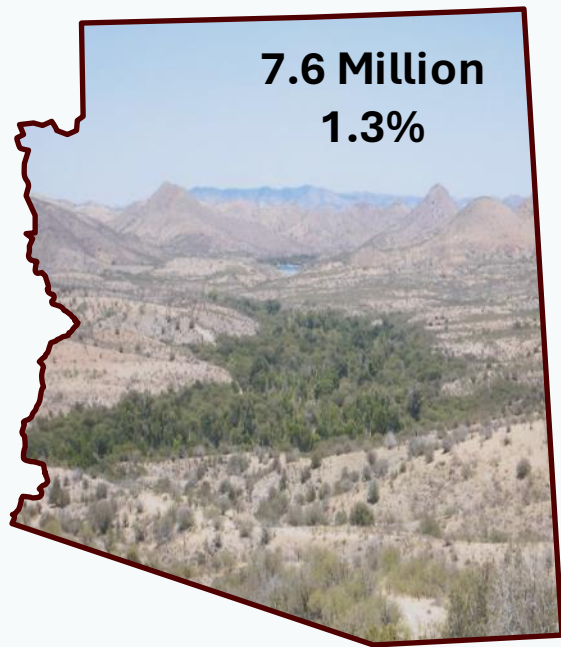


NSF Award #: 2315479

Mission

SWSIE builds an ecosystem in the American Southwest that **advances the development & deployment of transformative technologies**—creating economic opportunities, strengthening U.S. competitiveness, & addressing regional challenges in energy, water, & air systems.

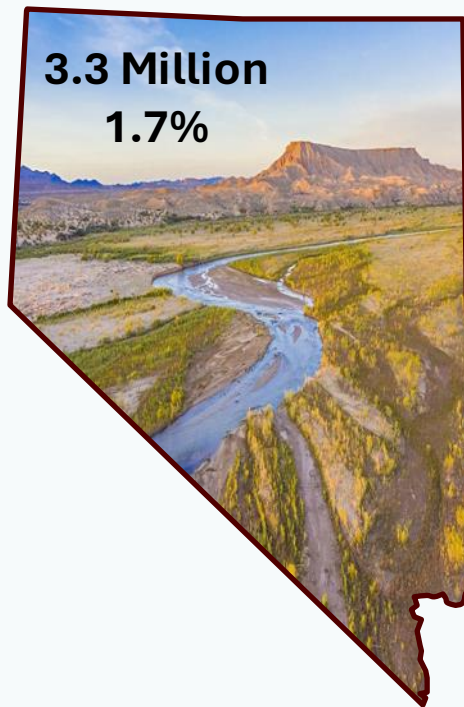




7.6 Million
1.3%

Arizona

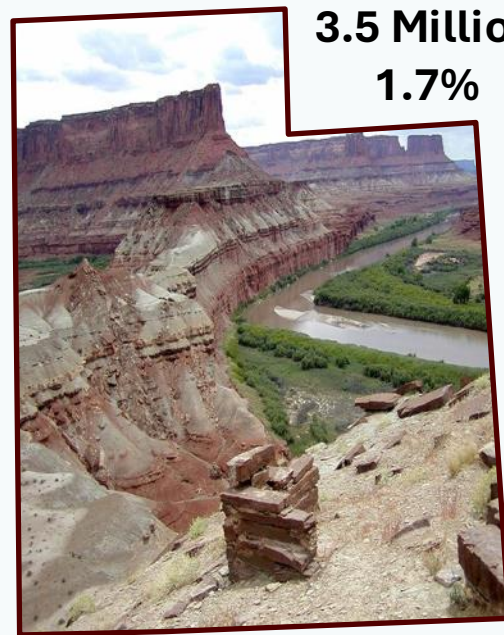
Sonoita Creek



3.3 Million
1.7%

Nevada

Lower Virgin River



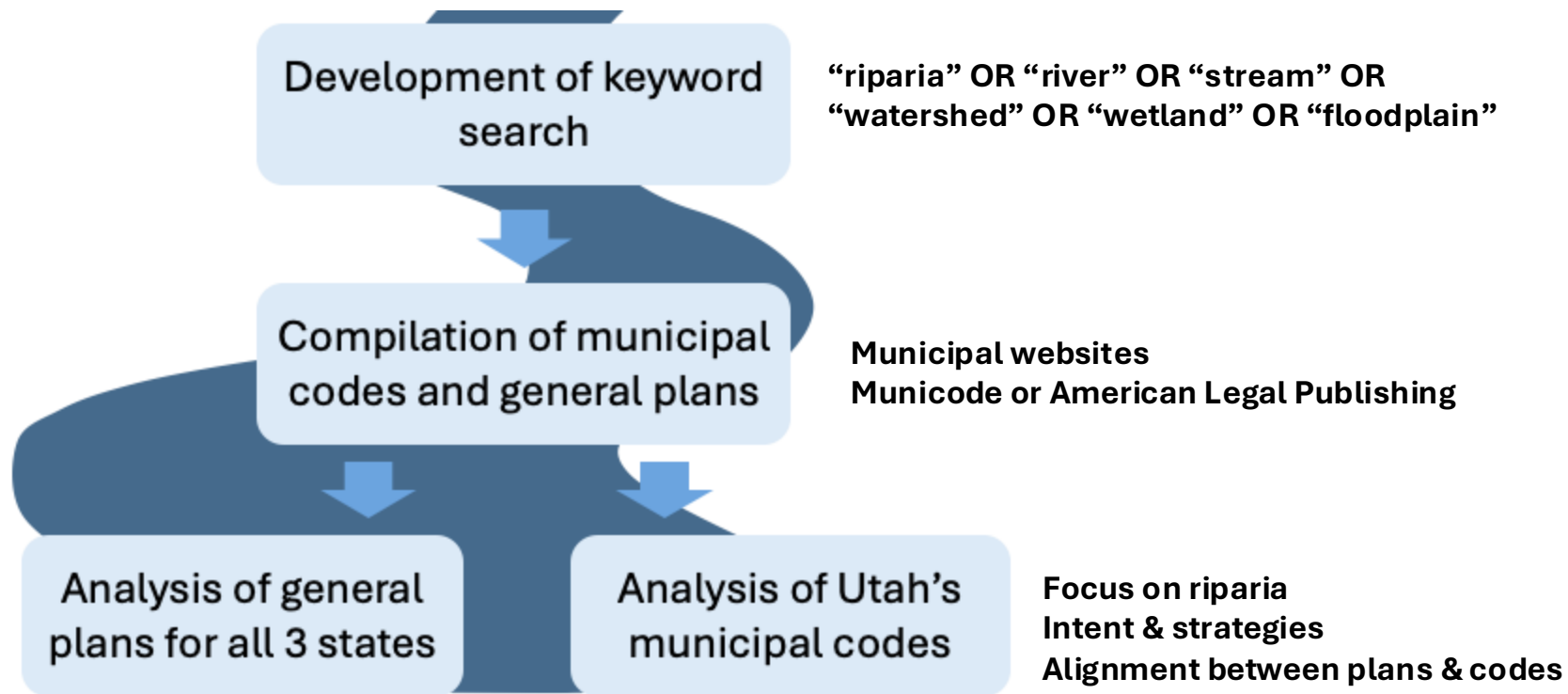
3.5 Million
1.7%

Utah

Green River

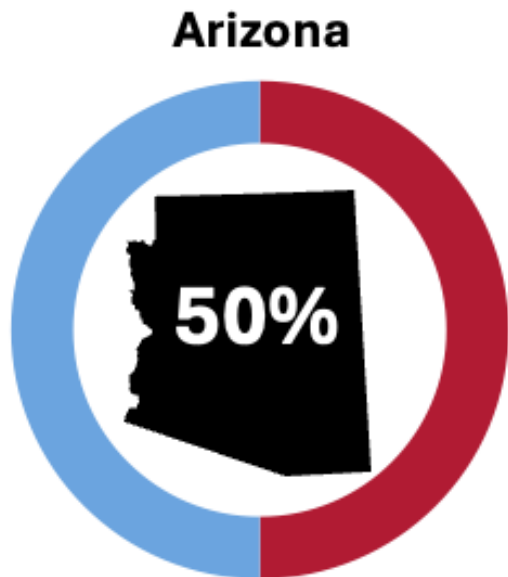


To what extent do **municipal general plans & ordinances** protect riparia in AZ, NV, UT?



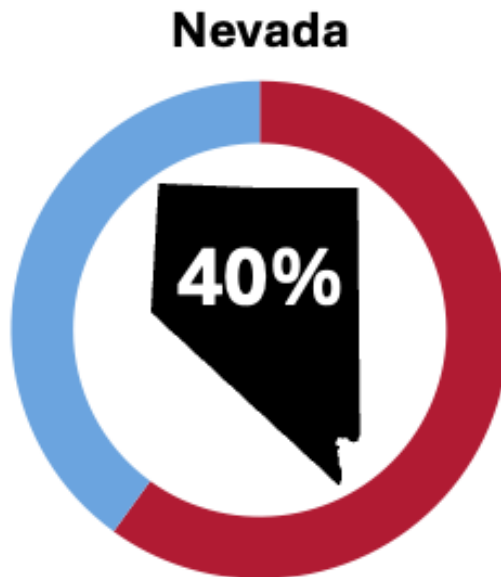
119 cities with a population above 10,000

GENERAL PLANS: 43% of surveyed cities ($n = 119$) include concern for riparian protection



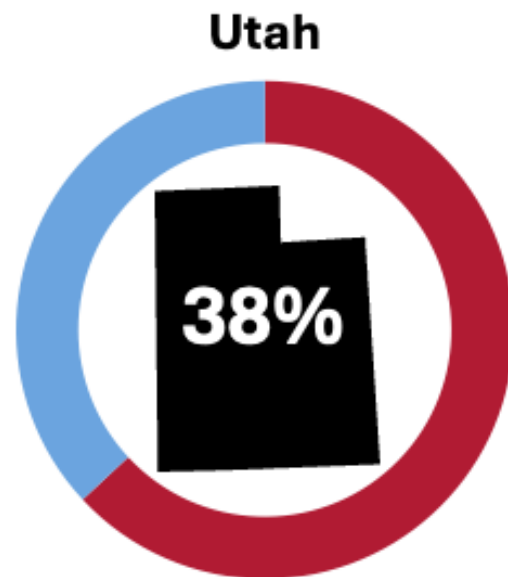
■ No ■ Yes

$n = 44$



■ No ■ Yes

$n = 10$

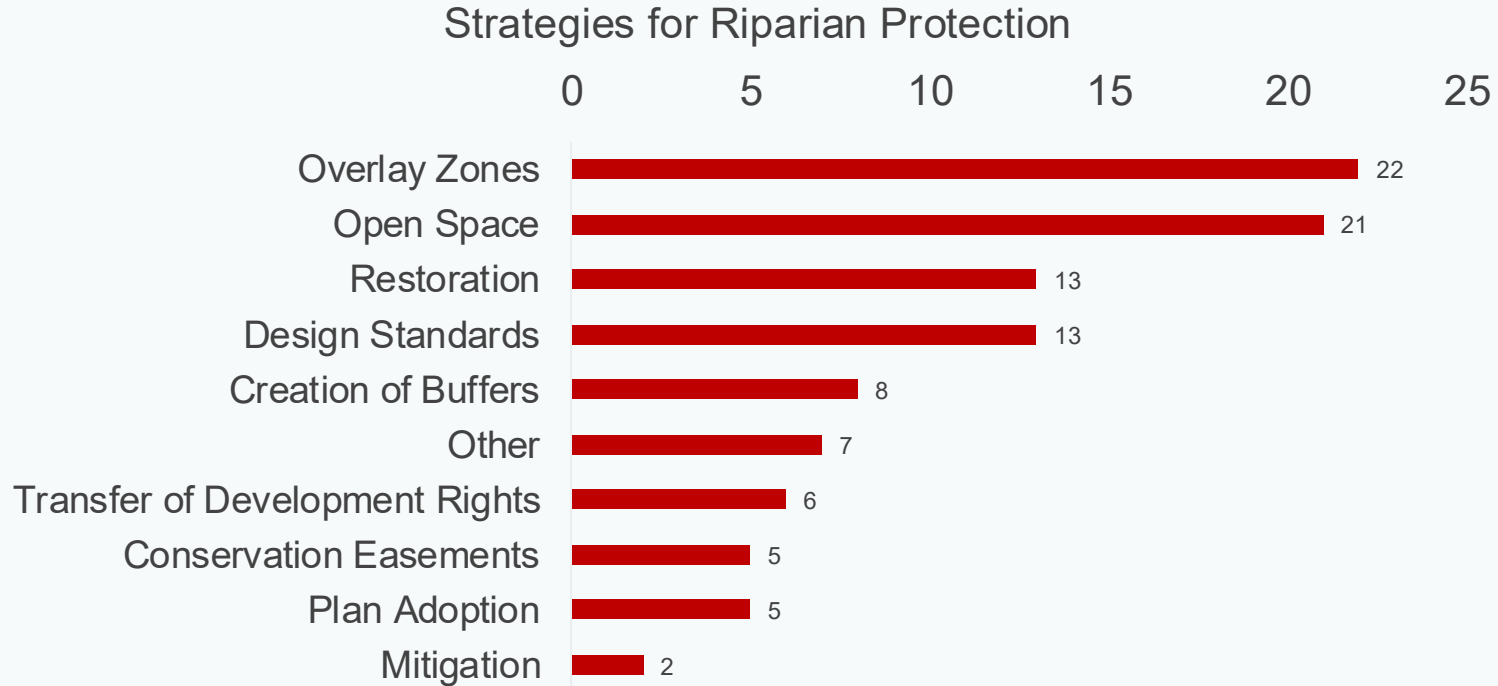


■ No ■ Yes

$n = 65$

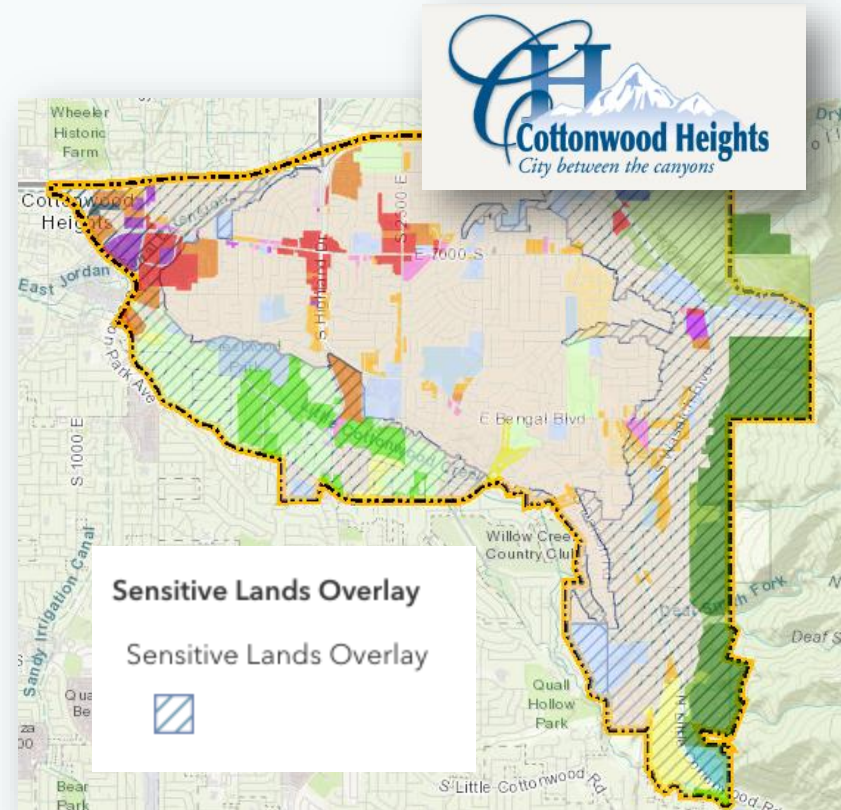


GENERAL PLANS: Protection **strategies** are **diverse** & sometimes **multifaceted**



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Sensitive lands overlay zones:
ordinances that place additional constraints on development to protect the environment, public safety, or aesthetics



GENERAL PLANS: Protection **strategies** are **diverse** & sometimes **multifaceted**

Design plans: guidelines or regulations dictating the extent or types of development within or near riparian areas





GENERAL PLANS: Protection **strategies** are **diverse** & sometimes **multifaceted**

Transfer of development rights: legal agreements that allow developers to develop (sometimes at higher density) in upland areas to conserve riparian open space.

SPANISH FORK PRIDE & PROGRESS

SELLER PROCESS



Calculate TDRs = (A-F) x B

- A - Total Area of Property
- F - Floodway & 30% Slope Area
- B - Base Density Designation*



Submit Application**

- Receive:
- TDR Certificate
 - Deed of Severance



Sell TDRs

- Connect with a Buyer
- Receive Payment
- Record a Deed of Transfer

BUYER PROCESS



Find & Secure Property

Proof of Program Intent

- Find Property in Sending Area
- Write LOI or Buy Property



Submit Application**

- Receive:
- Amount of TDRs Required
 - Deed of Transfer

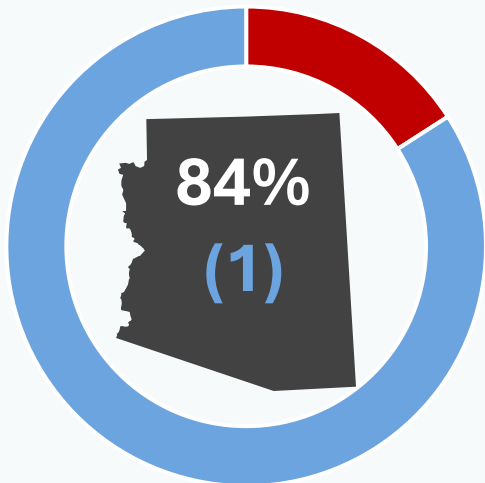


Develop Property

- Guaranteed TDR Use
- Complete Approval Process
- Start Building

CODES: 88% of surveyed cities ($n = 119$) include **concern for riparian protection** (riparian specific code)

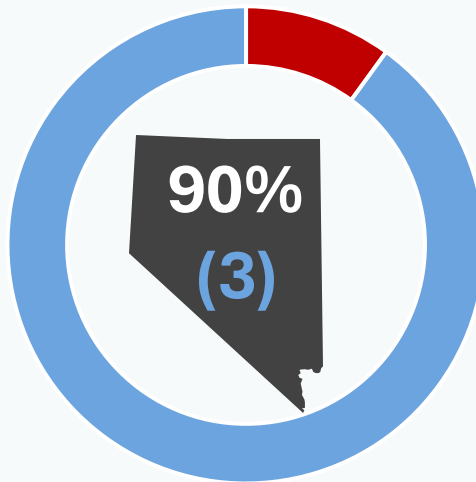
Arizona



■ No ■ Yes

$n = 44$

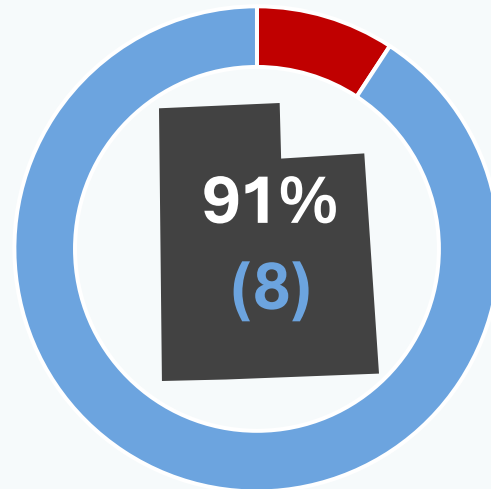
Nevada



■ No ■ Yes

$n = 10$

Utah



■ No ■ Yes

$n = 65$



CODES: Similarity in **reasons for protection**

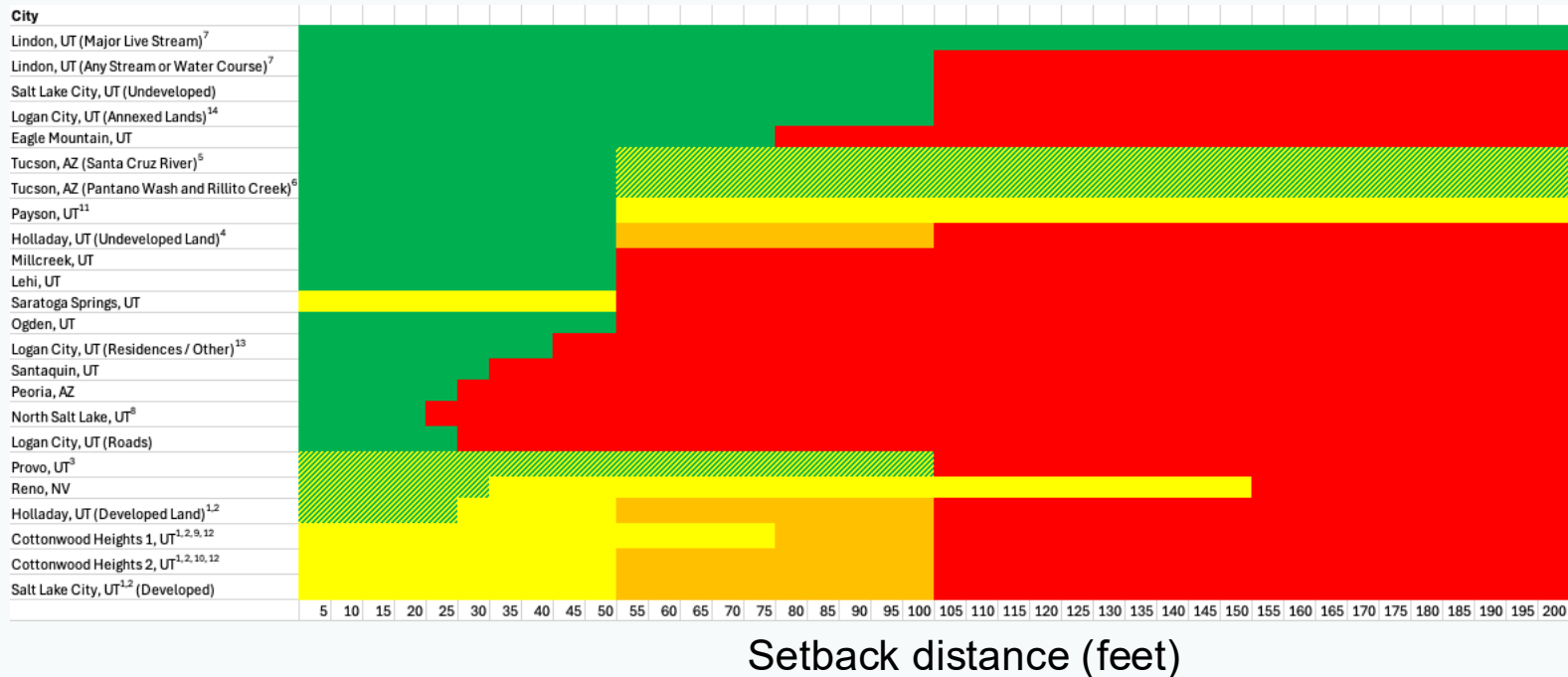
HABITAT



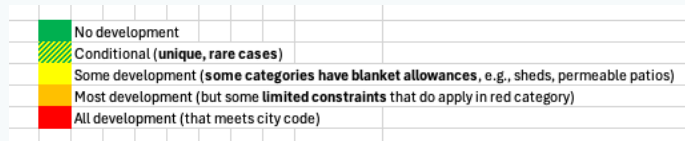
RECREATION

FLOOD
MITIGATIONWATER
QUALITY

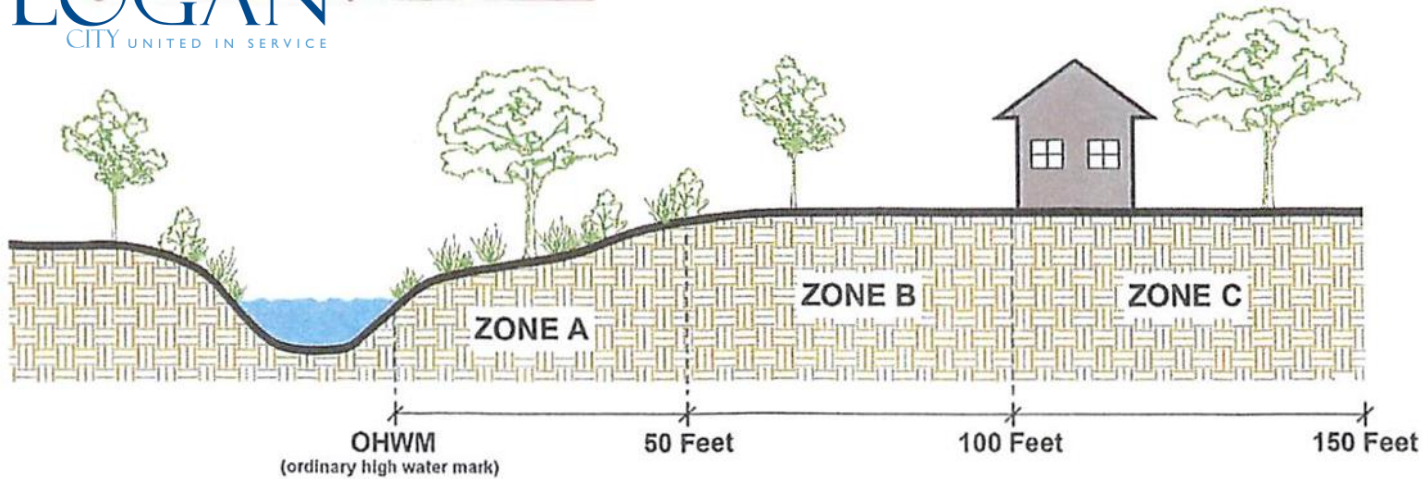
The **most common setback** for riparian protection is **50 feet** from the ordinary high-water mark (OHWM)



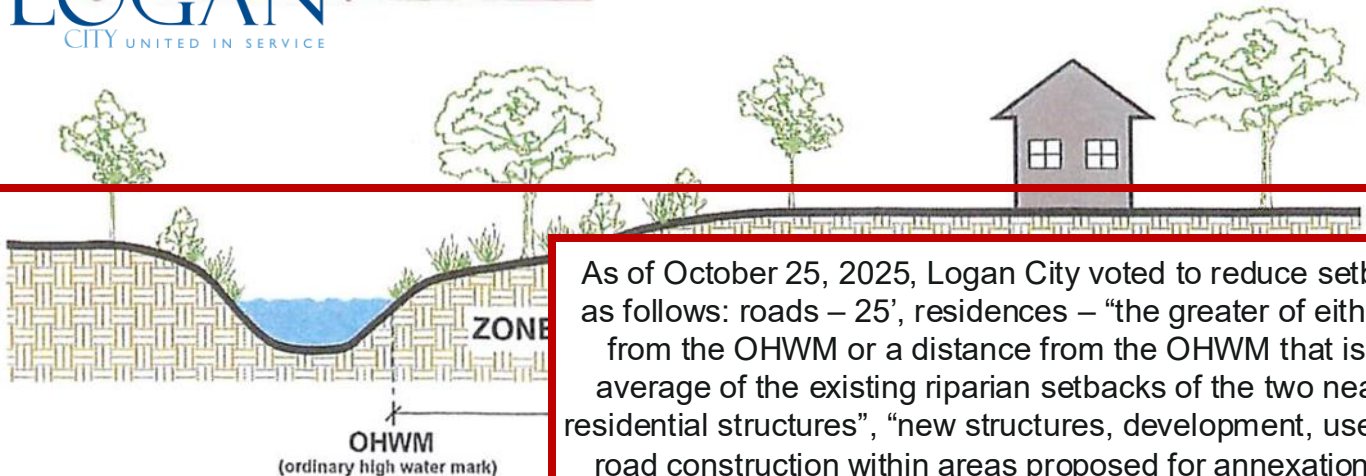
> 12 listings – some setback language in code not specific to a riparian ordinance



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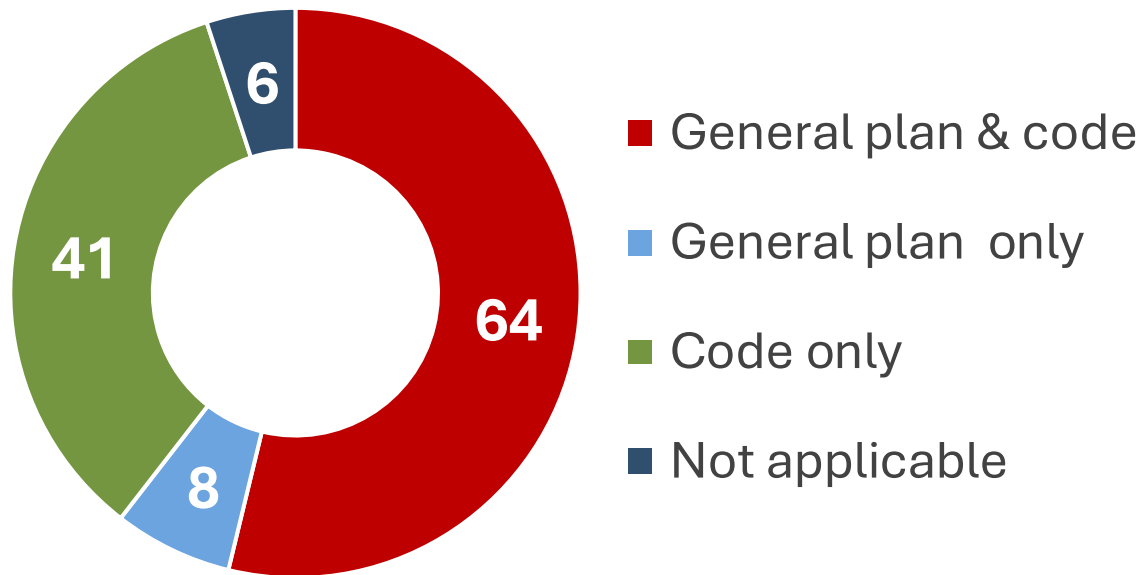


The **most common setback** for riparian protection is **50 feet** from the ordinary high-water mark (OHWM)



As of October 25, 2025, Logan City voted to reduce setbacks as follows: roads – 25', residences – “the greater of either 40' from the OHWM or a distance from the OHWM that is the average of the existing riparian setbacks of the two nearest residential structures”, “new structures, development, uses, and road construction within areas proposed for annexation into Logan City ” – 100', “all other structures, uses, and development” – 40' (Ch 17.24)

54% of **municipal general plans & codes** are aligned, **35%** of municipalities mention riparian protections in **code but not general plans** & **< 1%** mention riparia **only in general plans**



“riparia” OR “river” OR “stream” OR
“watershed” OR “wetland” OR “floodplain”





Municipalities generally express a **desire to protect riparia** & recognize there are **diverse options** to do so, but there is **room for improved accountability**.

Although a majority of surveyed municipalities mentioned riparian protection, **few have adopted strong, actionable plans or ordinances**.

Intent & action may be **misaligned** due to lack of shared terminology, muddled code interpretation, differences in buffer widths leading to a **balkanized system of protection**.



Partnership to educate planners & property owners



luau.utah.gov



Environmental and Natural Resources



Toolkits & Data by Topic

Explore toolkits that combine
the needed resources to help
you address specific topics in
a comprehensive manner

Toolkits →



**Riparian
Ordinance Toolkit**
(Jordan River Commission)

The Jordan River Commission's
Riparian Ordinance Toolkit provides a
comprehensive guide for city planners
across Utah in protecting and
enhancing riparian corridors in their
respective communities. The guide
includes contacts, ordinance, and
regulation examples, and templates.

[Access the Toolkit](#) ↗

Capstone project created by undergraduates in the Environmental & Sustainability Studies Program





Support provided by the NSF Southwest Sustainability Innovation Engine



School of Environment,
Society & Sustainability



**NATURAL HISTORY
MUSEUM OF UTAH**

Rio Tinto Center | University of Utah



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