

The Sonoran Institute 26 Years Strong, Shaping Our West



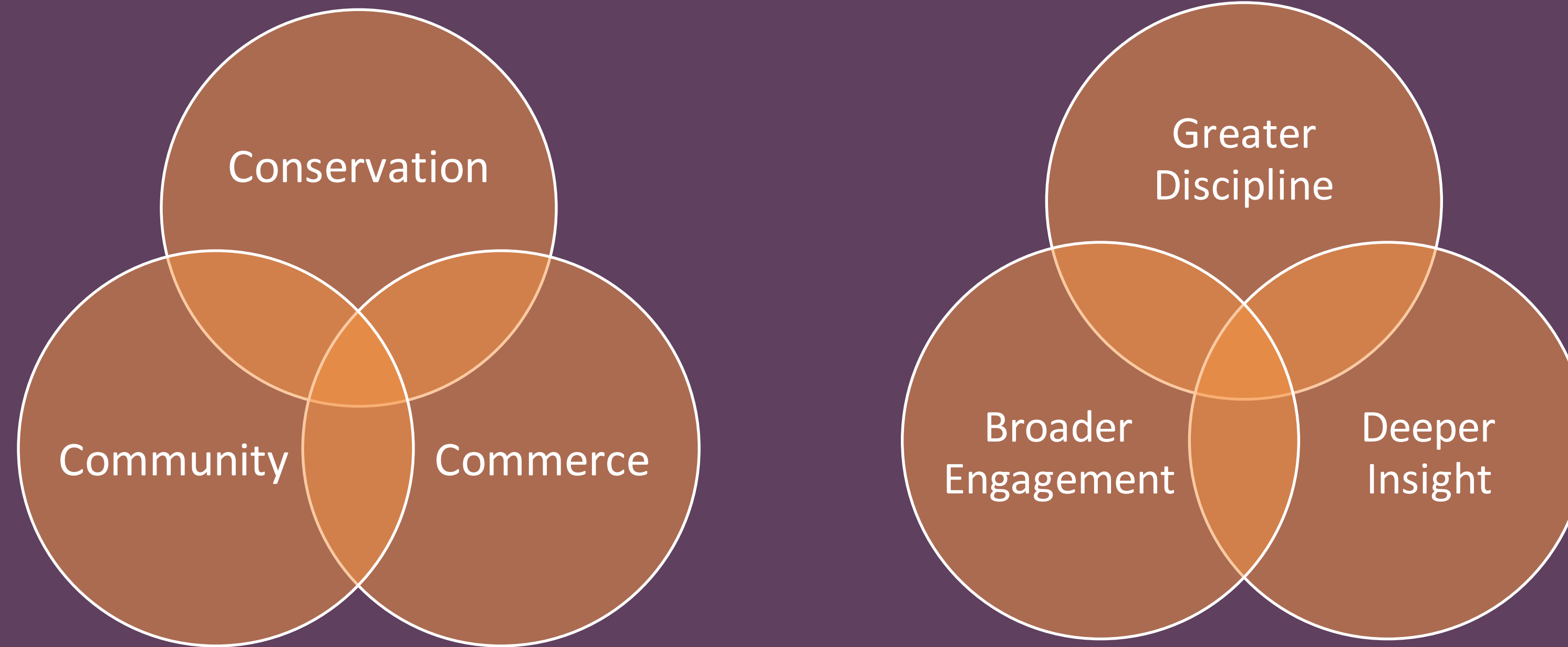
June 2016

Stephanie Sklar, Chief Executive Officer
The Sonoran Institute

Our Mission - *The Sonoran Institute connects people and communities with the natural resources that nourish and sustain them.*



The Sonoran Institute's Strategic Framework



- Three iconic landscapes
- Helping communities grow and prosper consistent with vision & values
- Partner with communities to innovate
- Build diverse constituencies for change



Shaping the Future of the West

Offices:

- Tucson, Arizona
- Phoenix, Arizona
- Mexicali, Baja California & A.C.



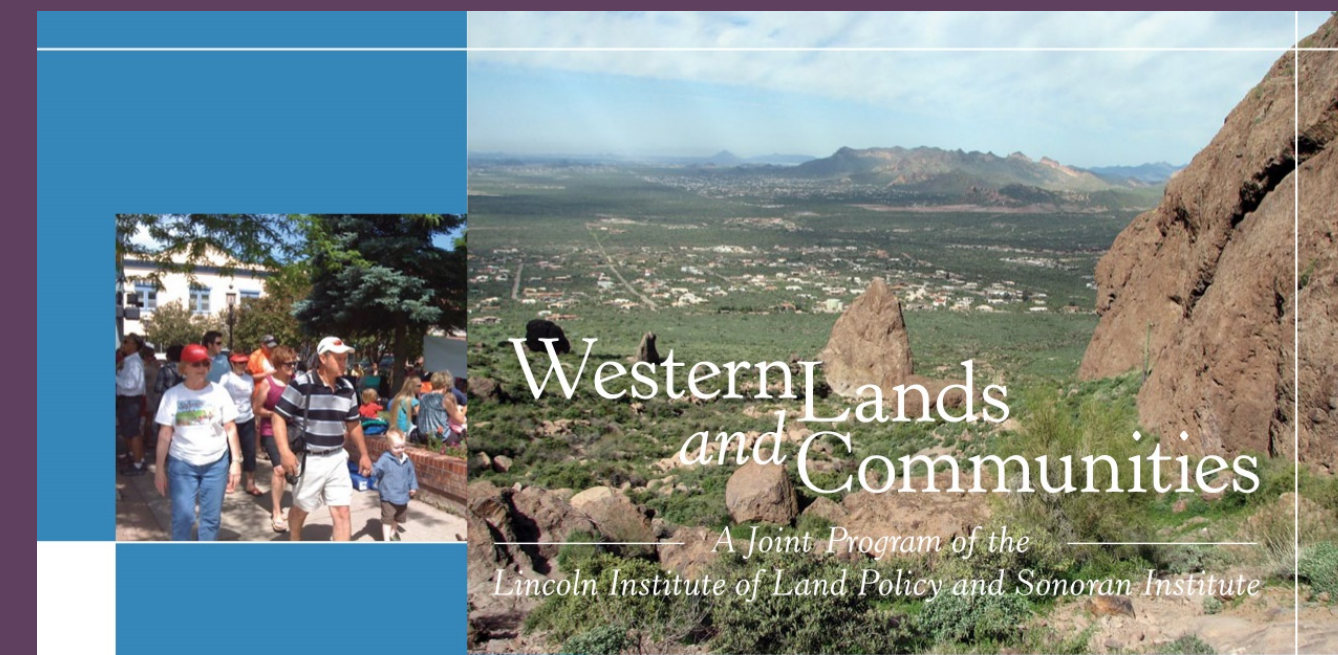


Western Lands and Communities

Summer Waters
Director

Projects and Activities

- Resilient Communities Toolkit
- Exploratory Scenario Planning
- SCOTie
- Water and Land Use

Western Lands and Communities
A Joint Program of the
Lincoln Institute of Land Policy and Sonoran Institute

Western Lands and Communities, a joint program of the Lincoln Institute of Land Policy and Sonoran Institute established in 2003, takes a long-term, strategic perspective in the Intermountain West on:

- Shaping Growth*
- Sustaining Cities*
- Protecting Resources*
- Empowering Communities*

PROGRAM VISION

The shared vision of the Western Lands and Communities partnership is to shape the future of the Intermountain West by informing land use and related natural resources policy.


We achieve this vision through regional land use planning that effectively improves the management of public and state lands, and integrates land use planning with conservation values, open space networks, transportation, water, and energy infrastructure.

Western Lands and Communities efforts are organized into four major thematic areas:

- Urban Form and Smart Growth Research
- Visioning and Planning Tools
- State Trust Land Management
- Western Land, Water, Energy and Climate Policy Linkages

Through a combination of research and education, tool development, technical assistance, demonstration projects, and training, Western Lands and Communities addresses key land use issues facing the West and finds approaches that fit the needs of our partners. We also share lessons learned across the region through publications, the internet, and other media to inform decisions at local, regional, and national levels.

www.sonoraninstitute.org Western Lands and Communities 1





Francisco Zamora
Director

Colorado River Delta

Projects and Activities

- Laguna Grande: riparian restoration
- Las Arenitas: treatment wetland
- Rio Hardy tributary and estuary
- Delta monitoring
- Minute 319/32X
- Conservation fund
- Mexicali Fluye/New River watershed



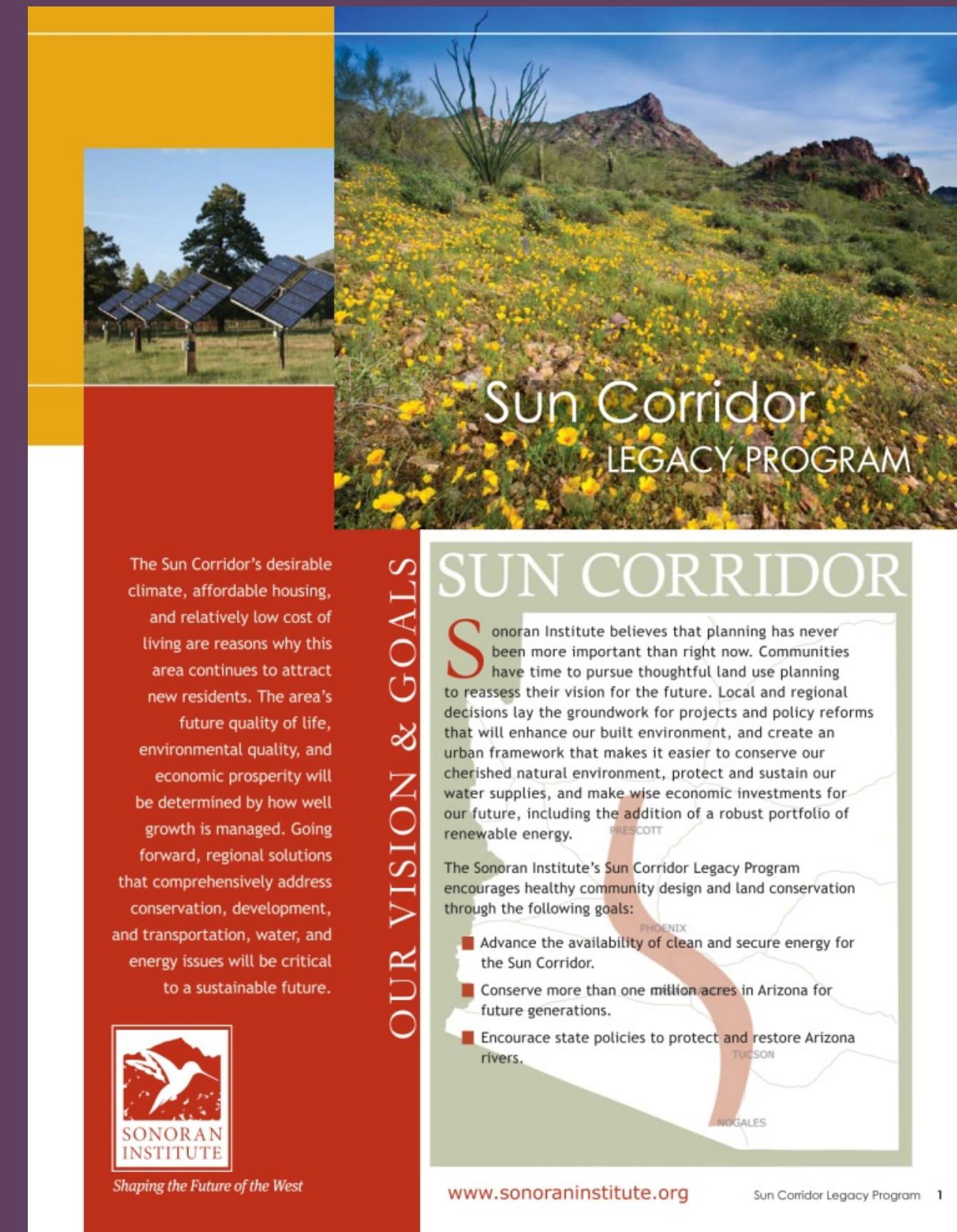


Ian Dowdy
Director

Sun Corridor

Projects & Activities

- Maricopa County Conservation
- Renewable Energy Siting
- Upper and Lower Santa Cruz River
- Interstate 11/Town of Wickenburg
- Airport Wash & Phoenix Light Rail
- Military & Conservation

The Sun Corridor's desirable climate, affordable housing, and relatively low cost of living are reasons why this area continues to attract new residents. The area's future quality of life, environmental quality, and economic prosperity will be determined by how well growth is managed. Going forward, regional solutions that comprehensively address conservation, development, and transportation, water, and energy issues will be critical to a sustainable future.

OUR VISION & GOALS

SUN CORRIDOR

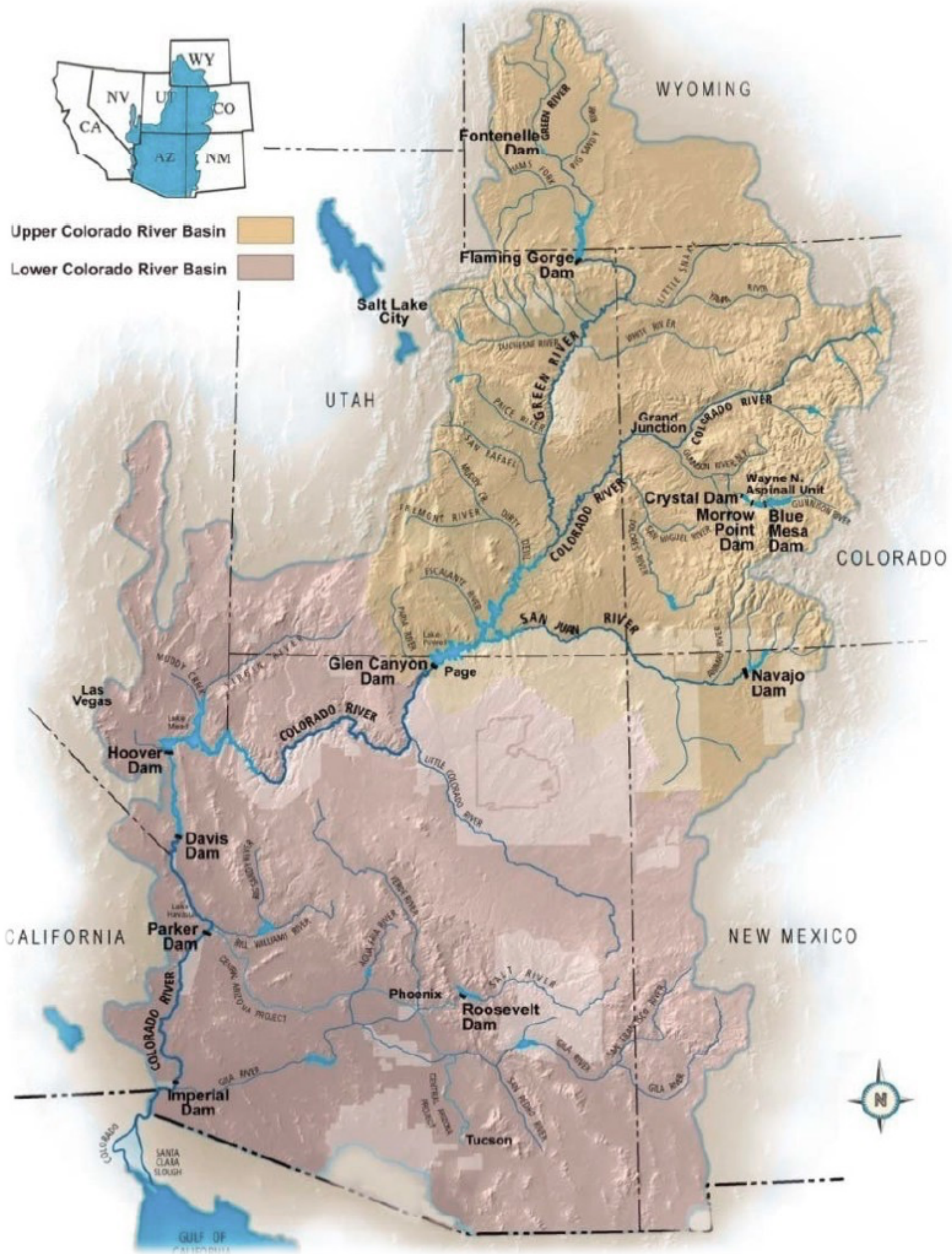
Sonoran Institute believes that planning has never been more important than right now. Communities have time to pursue thoughtful land use planning to reassess their vision for the future. Local and regional decisions lay the groundwork for projects and policy reforms that will enhance our built environment, and create an urban framework that makes it easier to conserve our cherished natural environment, protect and sustain our water supplies, and make wise economic investments for our future, including the addition of a robust portfolio of renewable energy.

The Sonoran Institute's Sun Corridor Legacy Program encourages healthy community design and land conservation through the following goals:

- Advance the availability of clean and secure energy for the Sun Corridor.
- Conserve more than one million acres in Arizona for future generations.
- Encourage state policies to protect and restore Arizona rivers.

www.sonoraninstitute.org Sun Corridor Legacy Program 1

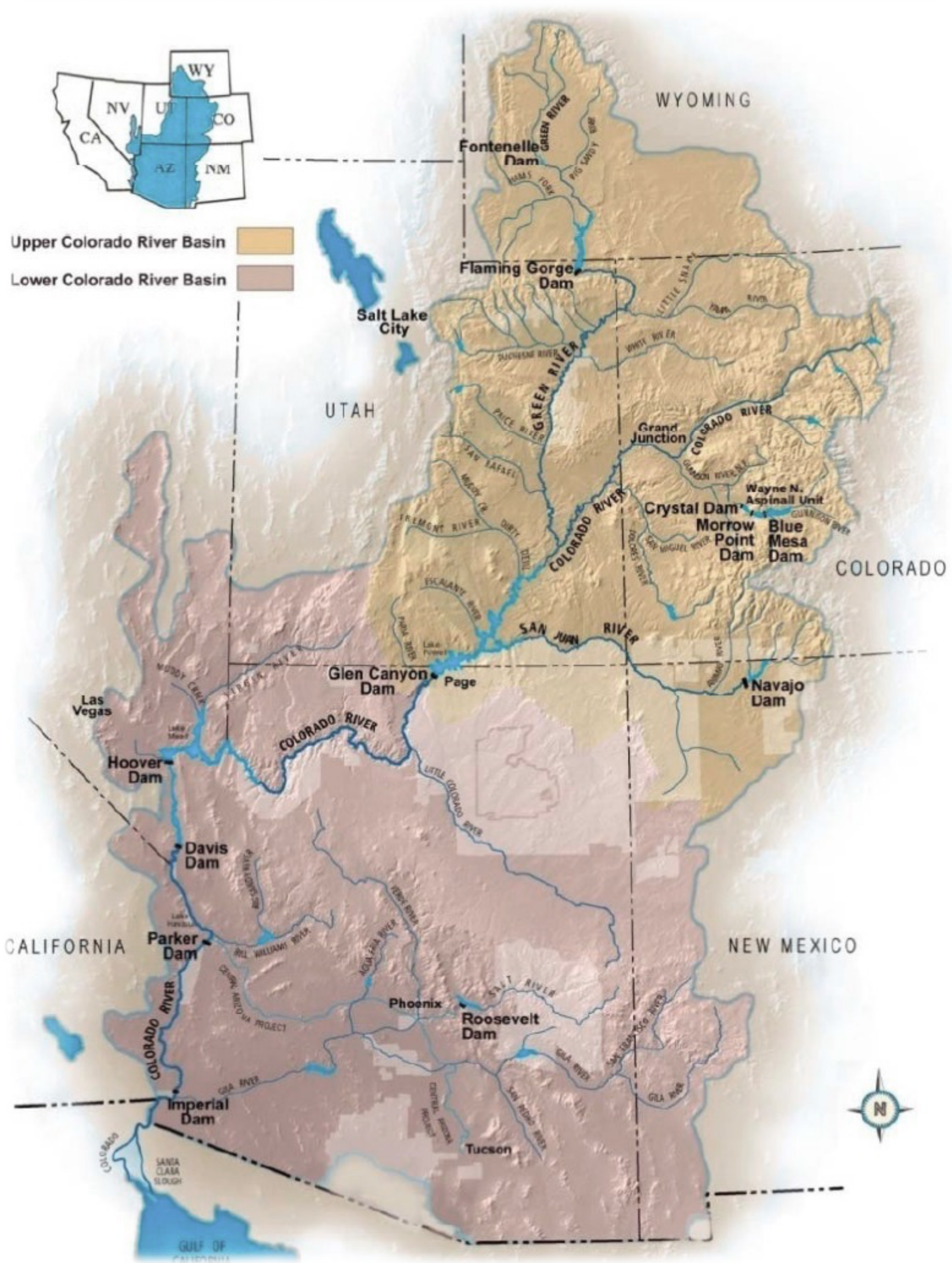
COLORADO RIVER BASIN



SONORAN INSTITUTE PROPOSED LAND USE & WATER INITIATIVE

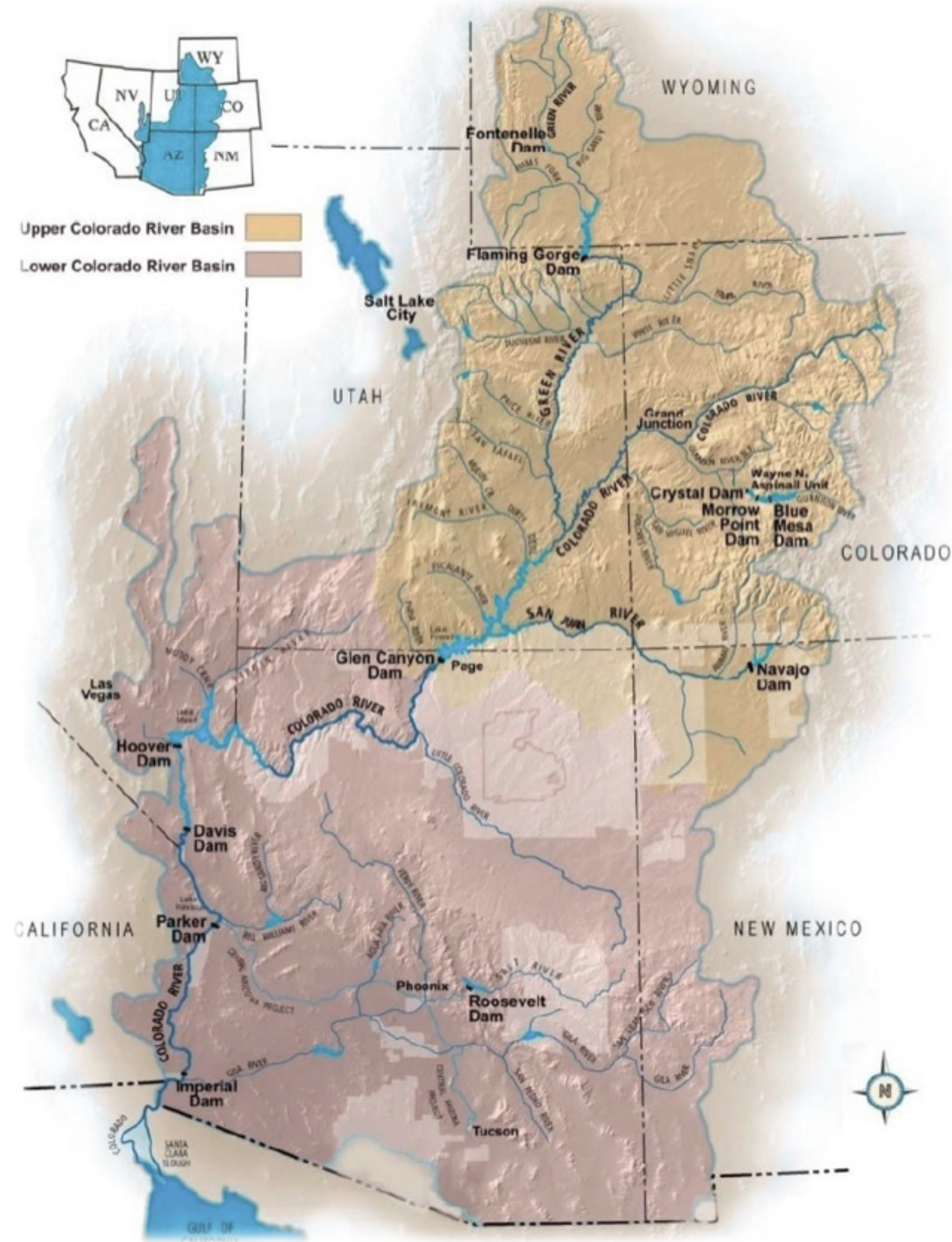
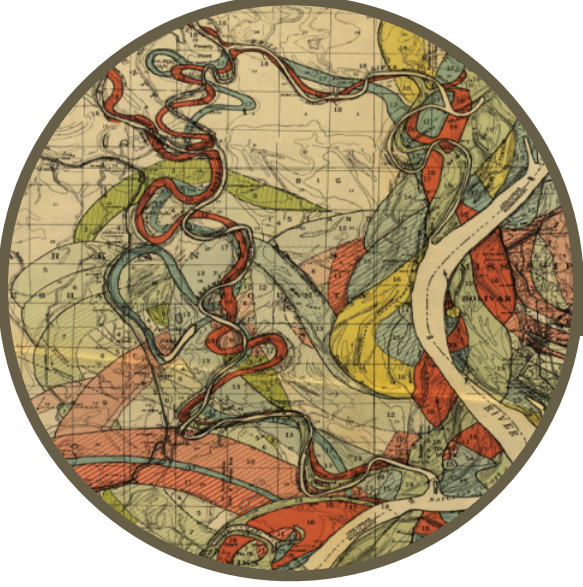


COLORADO RIVER BASIN



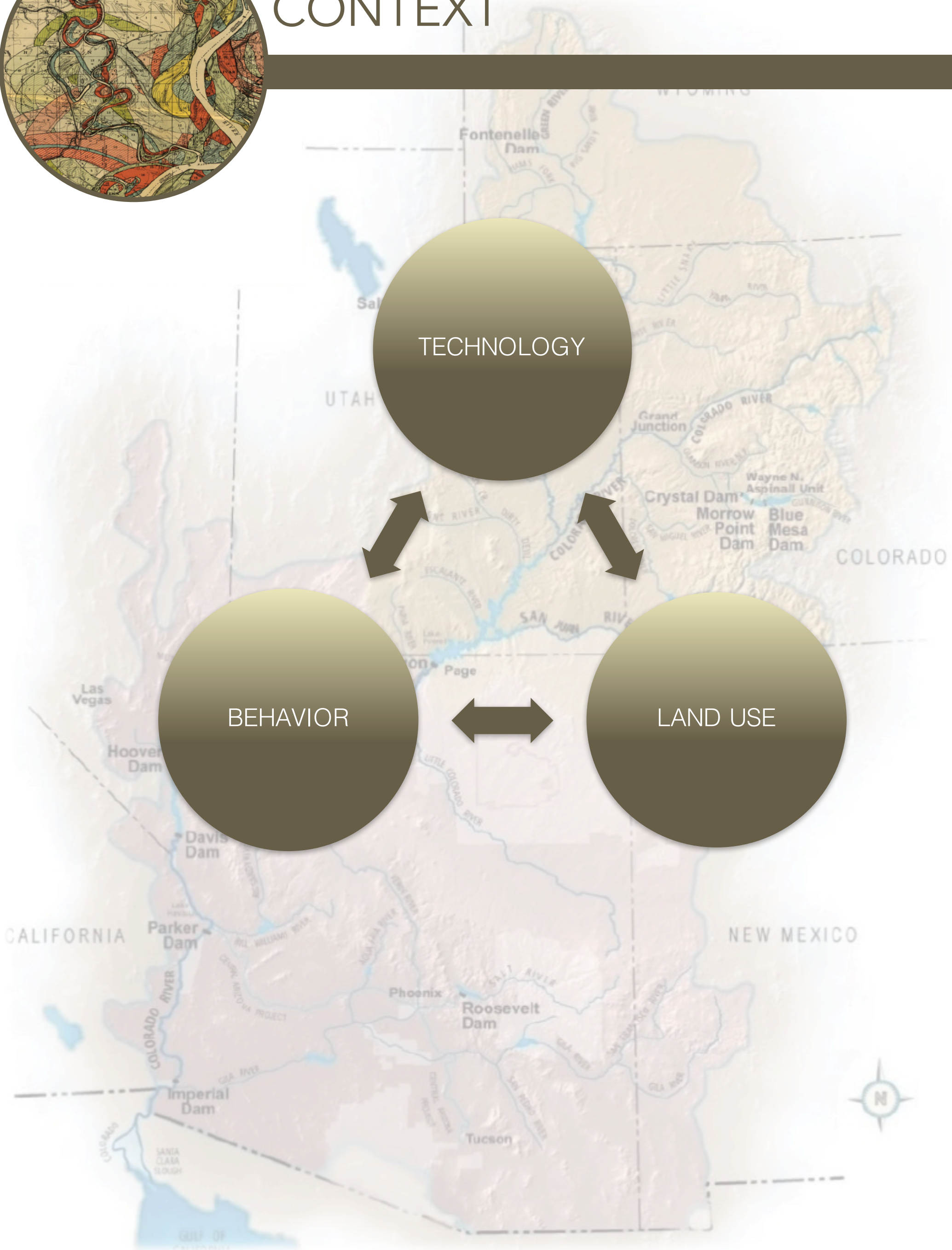
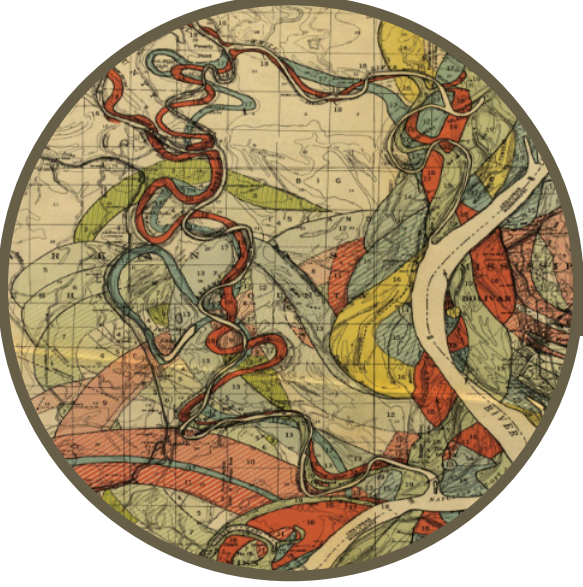
FRAMING QUESTIONS

1. To what extent are the ways in which we think about land, use land, and engage in land-based planning activities contributing to our water problems?
2. How can we use our experience—in land policy, community engagement, and natural resources—to address these problems?



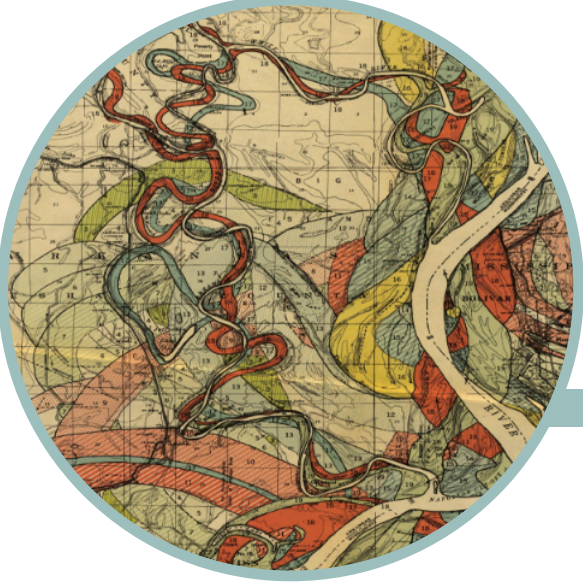
WHY THE COLORADO RIVER BASIN?

- CLIMATE IMPACTS
- WATER DEMAND
- DEWATERING AGRICULTURE
- DIMINISHING WATER FOR NATURE
- BASIN LEVEL STRESSES
- INCREASING UNCERTAINTY

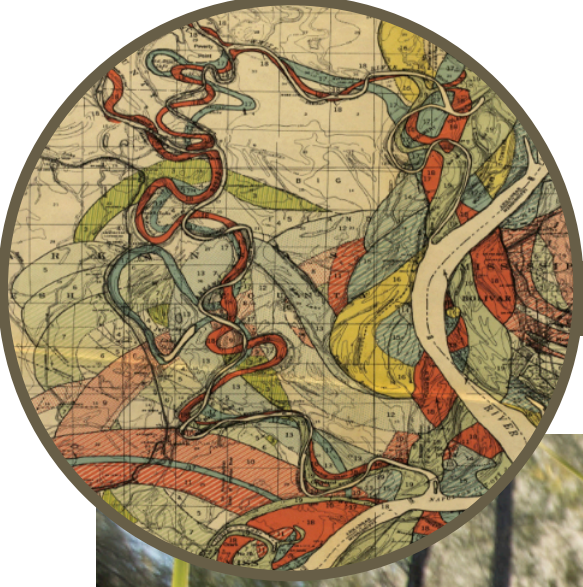


WHY LAND USE AND WATER?

1. FUTURE WATER DEMANDS DRIVEN BY URBAN GROWTH
2. LAND USE DECISIONS ABOUT HOW WE GROW AND DEVELOP WILL DEFINE FUTURE DEMAND
3. LACK OF INTEGRATION BETWEEN LAND USE PLANNING AND WATER MANAGEMENT
4. LOCAL JURISDICTIONS HAVE LIMITED CAPACITY AND TOOLS TO UNDERSTAND THEIR FUTURE WATER SUPPLIES AND HOW TO PLAN ACCORDINGLY

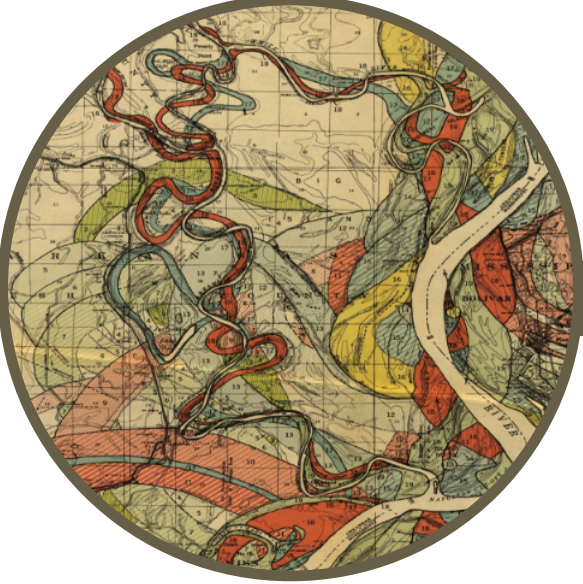


- *Land use planners have a great responsibility in how we use water forevermore. –Susan Daggett*
- *Demand management has to become a primary factor in land use planning...trainings are critical. — Kevin Reidy*
- *Right now, we are—and need to be—[offering trainings] on a retail basis. [The question is]: how do we take it to scale? — Drew Beckwith*
- *I wouldn't say that [land and water planning was] done in isolation, [it was] just done in parallel. Parallel is not integrated. — Dave White*
- *This is very fertile ground. Historically, water managers had to respond to population projections. Their job was to focus on acquisitions to meet new projections. That has changed in the last 4-5 years. — Jennifer Pitt*
- *When you uncouple land-use planning from water planning, you create a self-fulfilling prophecy: [in Colorado, for example] that the state will grow by 5 million people. This results in de facto planning. If, as a leader, you are saying: “We are going to grow by 5 million people,” [then ask], “how do we bring water to where we project growth will occur,” you have just engaged in de facto land-use planning. — Barbara Green*



- IDENTIFYING OPPORTUNITIES
- DEFINING OUR NICHE
- LOOKING AT PARTNERS
- SECURING SUPPORT

Photo courtesy Sonoran Institute



CONTEXT

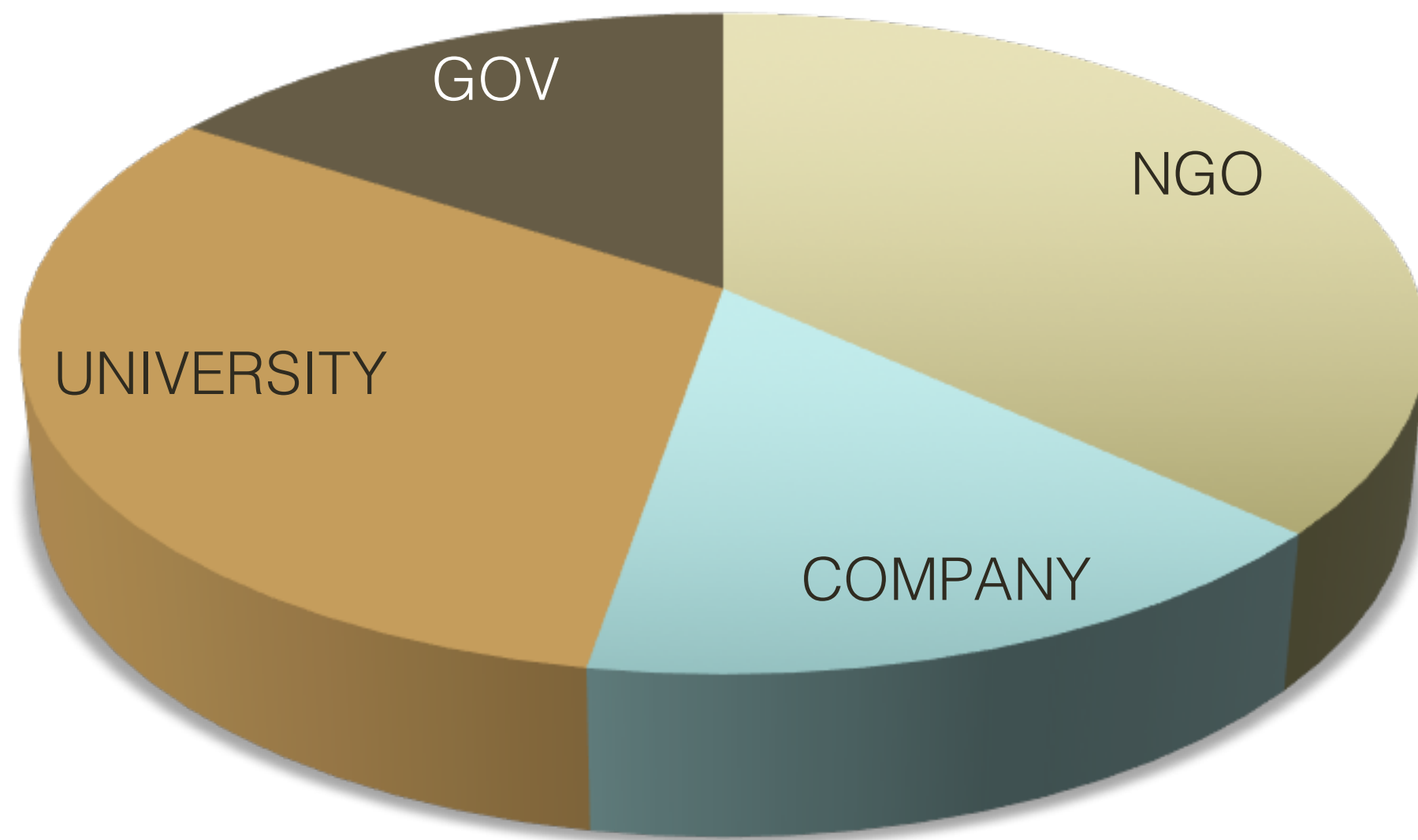


SCOPING

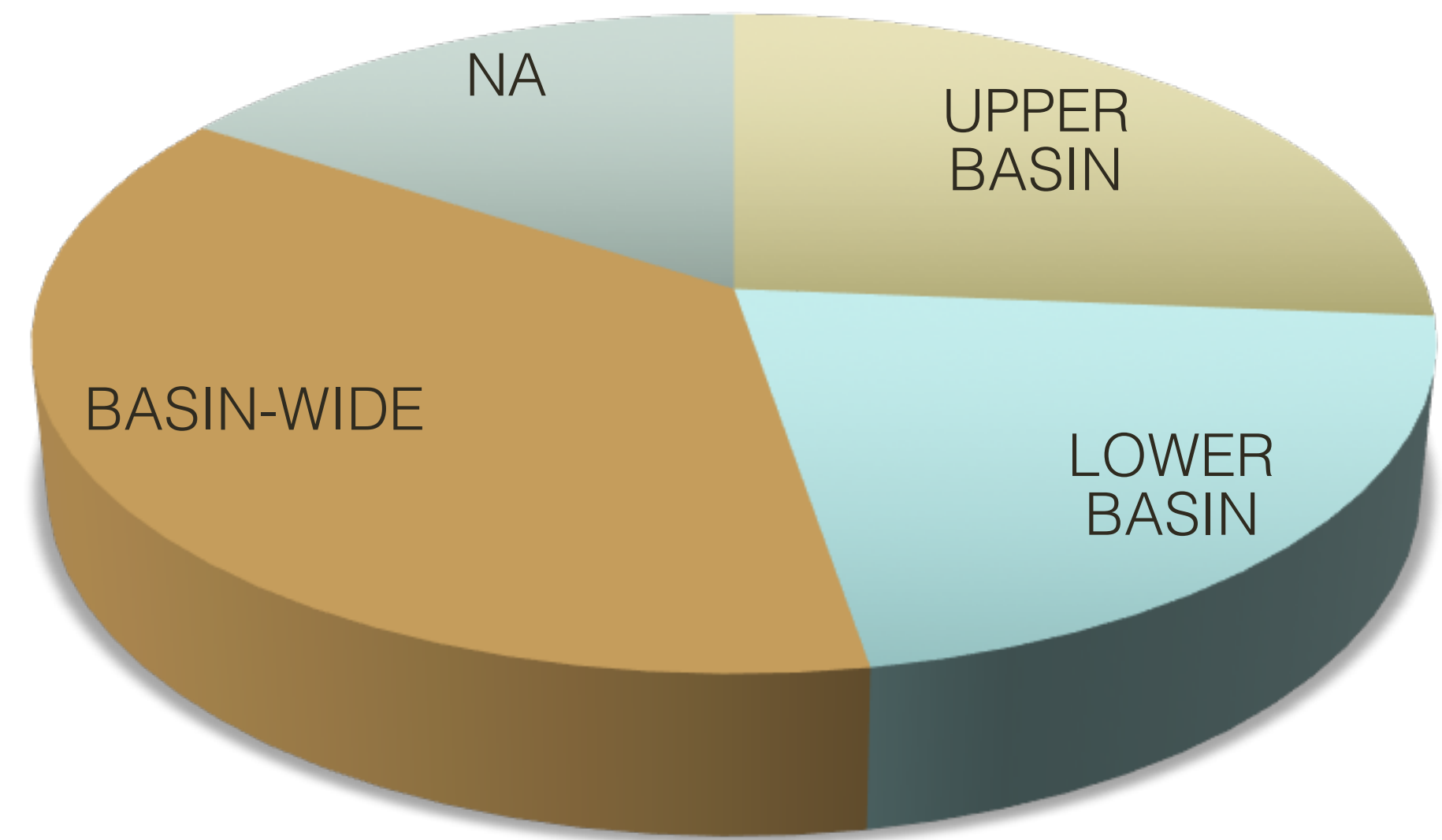
- American Planning Association Water Task Force
- Arizona State University Decision Center for a Desert City
- Arizona State University Kyl Center for Water Policy
- Carpe Diem West
- City of Phoenix Water Services Department
- Colorado Water Conservation Board
- National Audubon Society
- Northwest Colorado Council of Governments
- Parula, LLC
- Public Policy Institute of California
- Rocky Mountain Land Use Institute
- Squire Patton Boggs
- Sullivan Green Seavy
- The Nature Conservancy
- University of Arizona College of Architecture, Planning, and Landscape Architecture
- University of Colorado Getches-Wilkinson Center for Natural Resources, Energy, and the Environment
- University of Montana Center for Natural Resources and Environmental Policy
- Water and Environment Research Foundation
- Western Resource Advocates

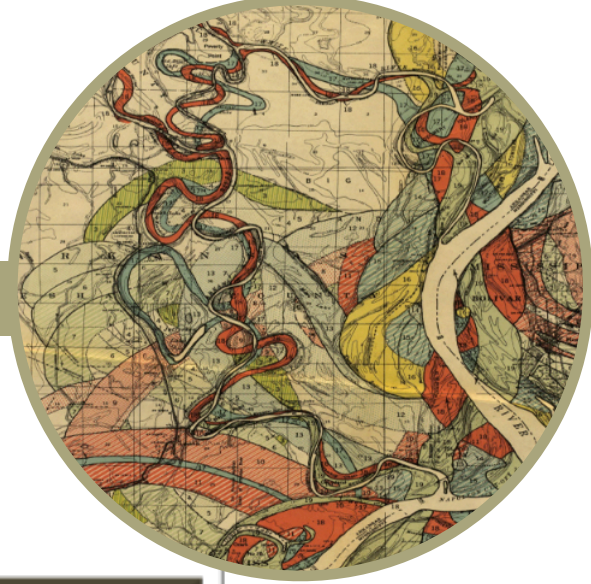
INTERVIEWS: ORGANIZATIONAL REPRESENTATION

- 20 INDIVIDUALS
- 19 ORGANIZATIONS

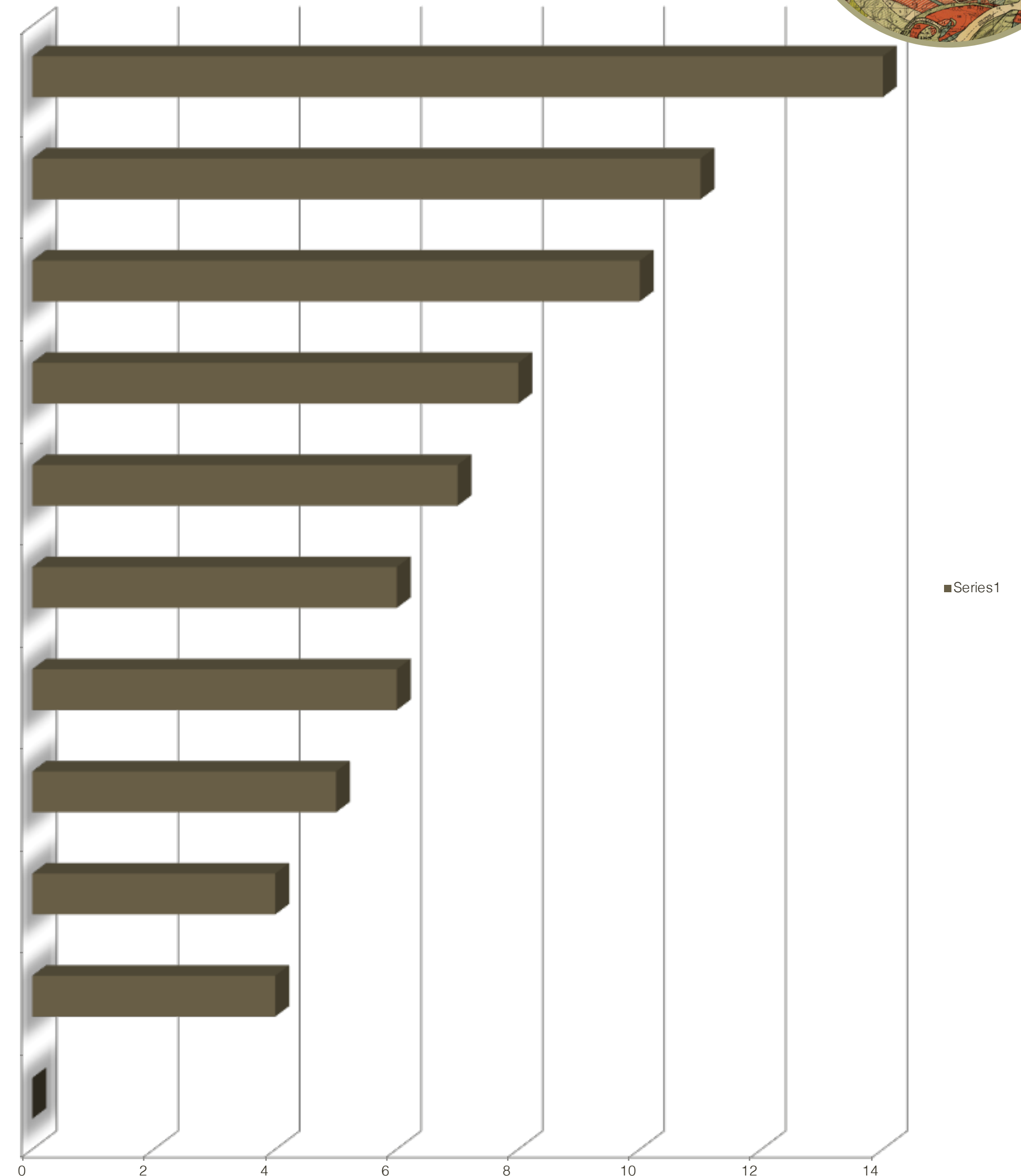


INFORMATION GATHERING





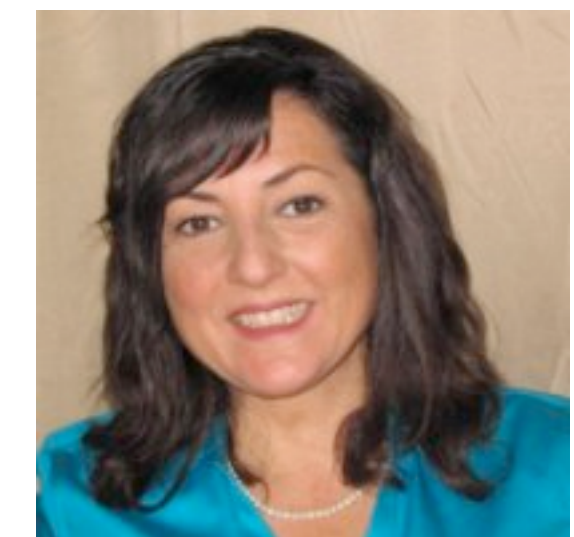
- Facilitating interdisciplinary approaches to water issues in the west, e.g., bringing together those responsible for land use planning with those responsible for water resources management.
- Building the capacity of local communities to more effectively make land use decisions given available water resources.
- Addressing uncertainties about future water supply in long range planning for growth and development, e.g., long range water resource planning using exploratory scenario planning.
- Fostering innovative approaches to the sharing of water resources amongst agriculture, urban development, and nature.
- Integrating green infrastructure and low impact development (LID) with smart growth development.
- Linking development and water users with water-related environmental services, e.g., linking efficient water use to preservation of instream flows.
- Integrating land use planning and the management of groundwater.
- Increasing the use of water pricing as a tool to encourage water conservation and improved land use practices.
- Increasing community resiliency to water related hazards, e.g., drought, wildfires, flood, landslides.
- Improving watershed health through partnerships between “upstream” water and land managers and “downstream” water users.
- Improving water quality by regulating the use of wells and septic systems and providing water infrastructure.

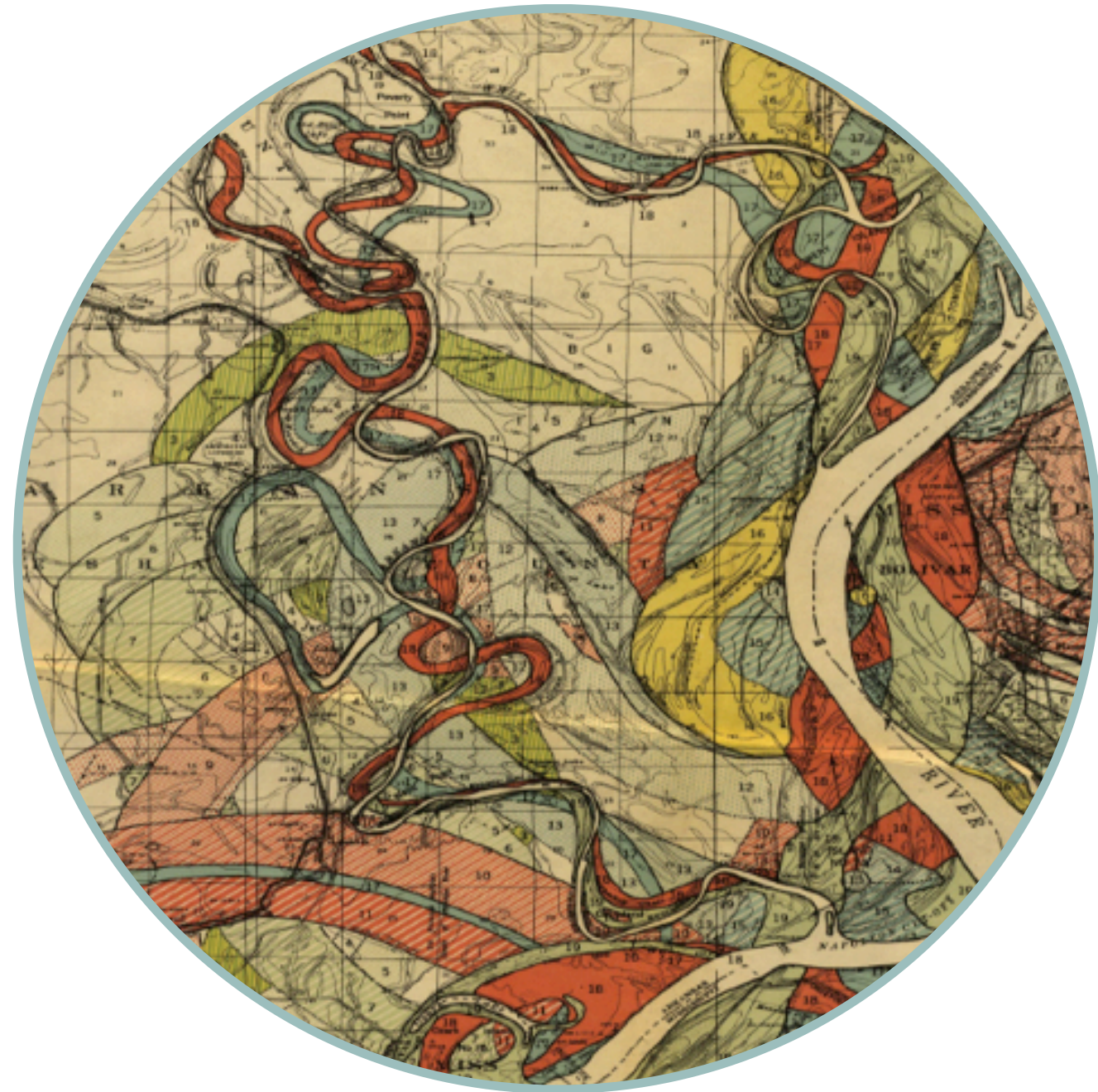




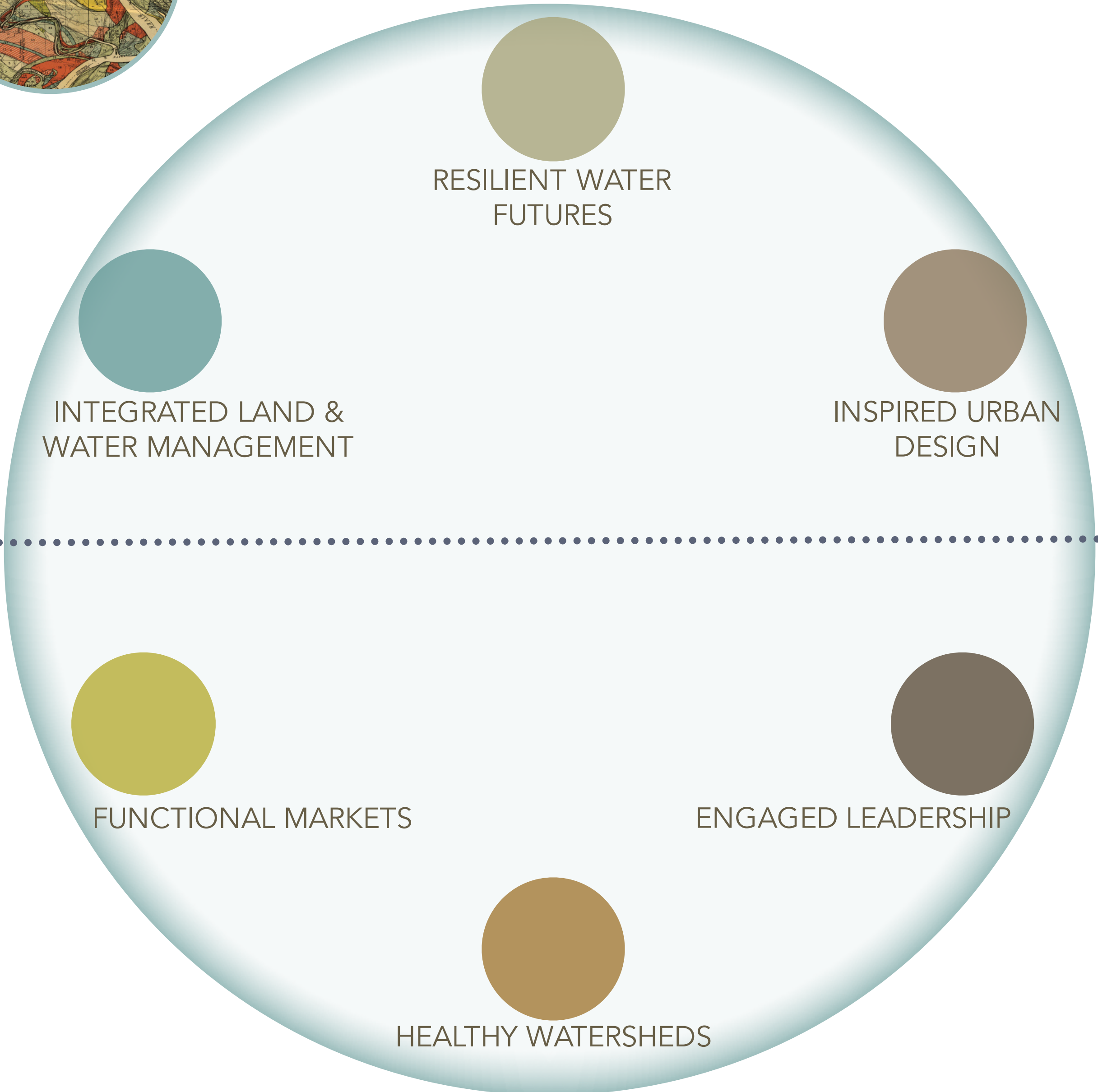
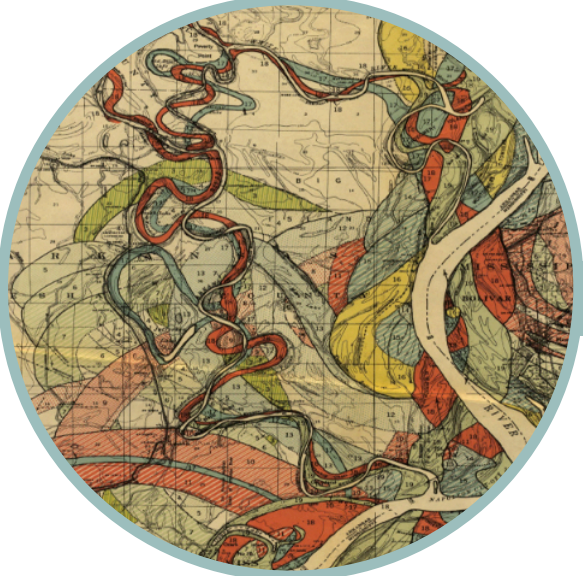
INTERVIEWS WITH LINCOLN AND SONORAN LEADERSHIP TO SHAPE THE PROGRAM

- IMPORTANCE: How important is the issue to the future of the region?
- NEED: Where is the greatest need for human/financial resources?
- **FIT: Where can Lincoln Institute of Land Policy and Sonoran Institute make the most logical and impactful contributions?**



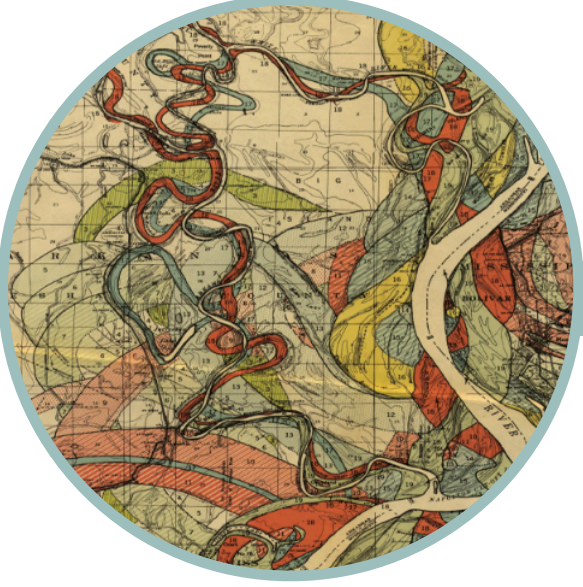


FOCUS AREAS



LOCAL INTERVENTIONS

BASIN-WIDE CONTRIBUTIONS



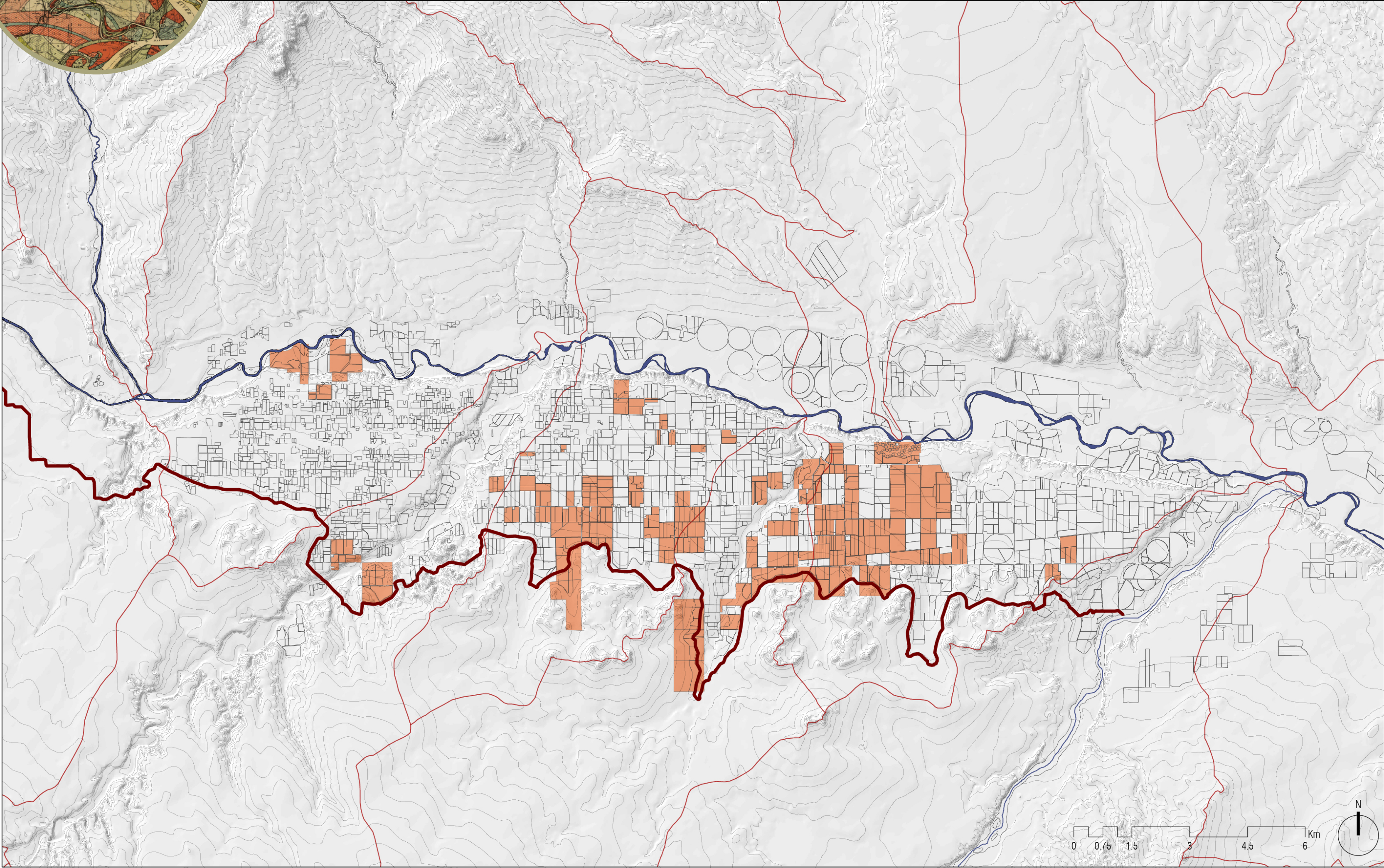
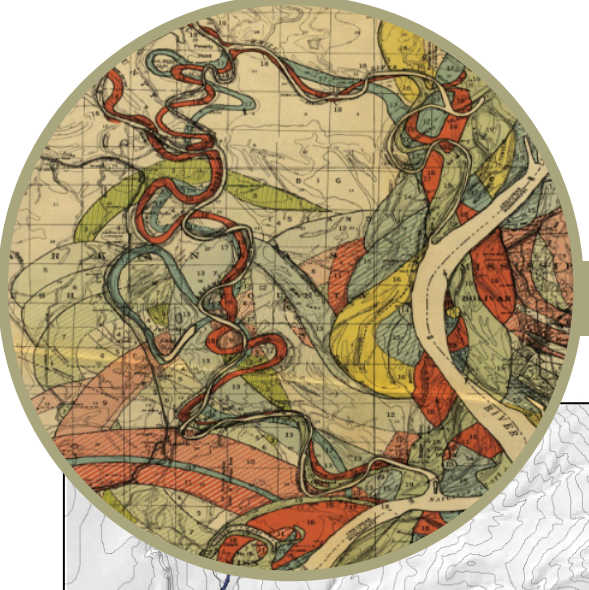
- IS ANYTHING UNCLEAR FOR WHICH YOU NEED FURTHER CLARIFICATION?
- HAVE WE CAPTURED THE RIGHT FOCUS? WHAT MIGHT YOU TAKE AWAY, CHANGE OR ADD?

Communities need help integrating land use and water management; demand management must become a primary factor in land use planning.

PROPOSED ACTION AREAS:

1. **TOOLS.** Develop a toolbox to help local jurisdictions integrate land use and water management; include guidelines, model plans and policies, and available training programs.
2. **TRAININGS.** Building upon existing efforts, expand delivery of community training and assistance programs that bring together land use planners and water resource managers.
3. **CASE STUDIES.** Research, evaluate, and popularize case studies, best practices, and model policies related to integrated land and water management.

FOCUS AREA: RESILIENT WATER FUTURES

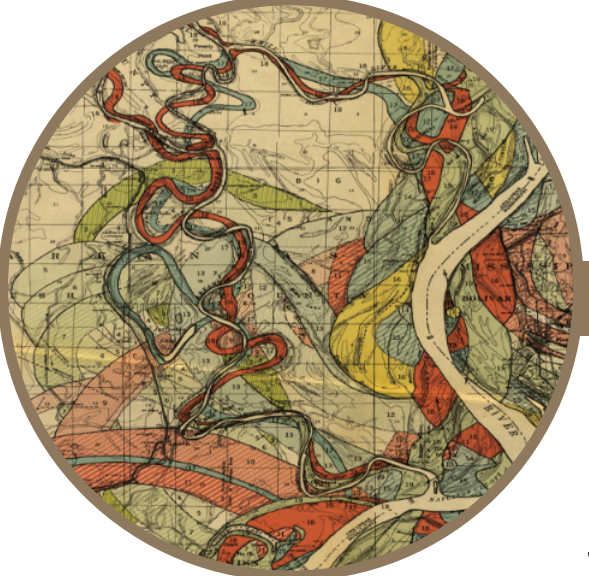


Pending agricultural to municipal water transfer, Pueblo County, CO

In the face of climate change, fully appropriated water resources, and rapid population growth, communities need flexible, adaptable water systems; planning for a wide range of future scenarios, including water-related disasters, has to become the new norm.

PROPOSED ACTION AREAS:

1. **WATER SHARING.** Catalogue the range of water sharing tools, techniques, and programs to educate communities and connect them with organizations and resources that advance water-sharing innovations .
2. **DISASTER MITIGATION.** Conduct climate-related disaster prevention and mitigation planning interventions (e.g., fire, flood, drought, erosion).
3. **SCENARIO PLANNING.** Deliver exploratory scenario planning services as a community engagement and issue-framing tool that draws together disparate groups of interest.



SITE PLAN – PARAMETRIC PLANTING, SOURAV BISWAS & FLAVIO SCIARAFFIA



Water-conscious design is missing in most built environments; innovative concepts and best practices exist, the need is to build acceptance for them and make them actionable.

PROPOSED ACTION AREAS:

1. DESIGN. Engage the urban design and engineering professions in water-conscious planning and design; develop design guidelines and planning manuals.
2. COST EFFICIENCY. Through detailed economic analysis, establish water usage statistics for different urban design concepts; considering water as a currency, quantify water savings in terms of efficiencies and ROI.
3. WATER PORTFOLIOS. Advance a “one water” framework by helping communities link “water portfolios” to urban form; enable them to consider efficient use and reuse in relation to different types of water (e.g., treated, surface, rain, storm, sewage, etc.).



At Lincoln House

The blog of the Lincoln Institute of Land Policy

Cities Increasing Reliance on Fees as Other Revenues Fall, May 7, 2015

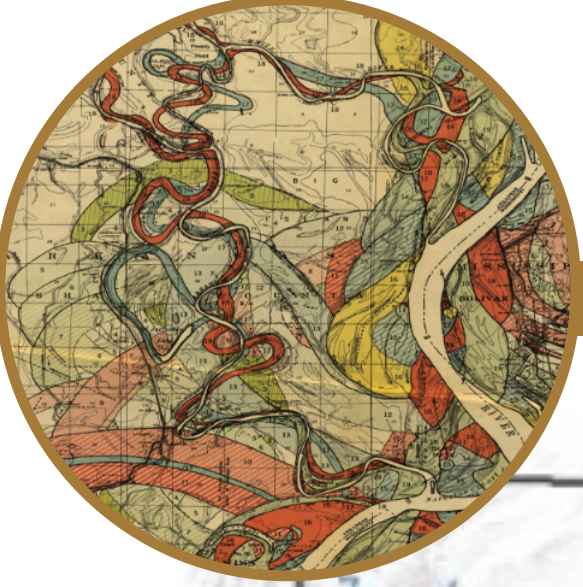
FiSCs with the Highest Per Capita Sewer Charges in 2012

Fiscally Standardized City	Sewer Charges Per Capita	Percentage Change in Real Per Capita Sewer Charges 2007 to 2012
Detroit (MI)	\$728	40%
Seattle (WA)	\$662	22%
Atlanta (GA)	\$503	27%
Tacoma (WA)	\$501	56%
Portland (OR)	\$445	-8%
Washington (DC)	\$424	17%
Chattanooga (TN)	\$421	29%
Spokane (WA)	\$418	42%
Knoxville (TN)	\$402	22%
San Francisco (CA)	\$391	18%
Average for 112 Fiscally Standardized Cities	\$221	16%

The cost of water does not reflect its value or scarcity. Market reforms are complex but not impossible; standardized data can serve a variety of water market policy and research interests, building a framework to advance reform.

PROPOSED ACTION AREAS:

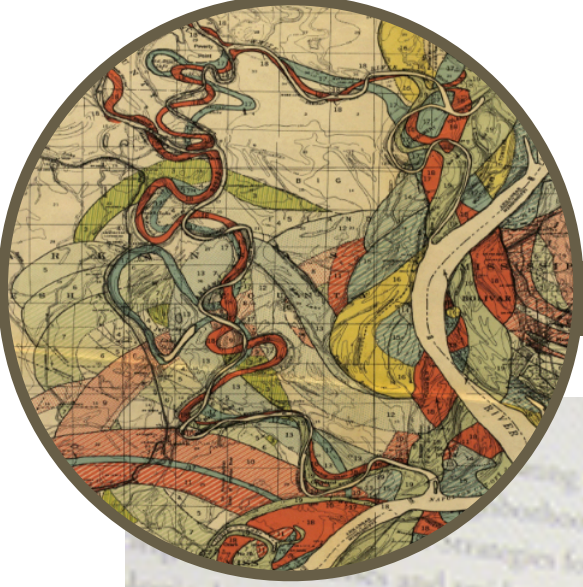
1. **PRICING.** Collect, assess, and disseminate information on the efficacy of different types of municipal water pricing structures and incentives tied to land use.
2. **STANDARDIZED DATA.** Standardize municipal usage/consumption data to enable communities to make statistical comparisons at the intersection of land use, urban form, water consumption, and price structure.
3. **MARKET REFORM.** Suggest land-based legal, policy, and regulatory framework reforms that can support efficient, equitable, market-driven solutions to water shortages.



Whole-systems approaches are needed to protect watershed health. Obstacles to trans-boundary partnerships—legal, political, economic—must be breached and guarantees for ecological gains (such as instream flow allocations) and functional ecologies made.

PROPOSED ACTION AREAS:

1. **WATERSHED PARTNERSHIPS.** Address barriers to cross-jurisdictional partnerships within watersheds, particularly in terms of conflicting land uses.
2. **UPSTREAM/DOWNSTREAM ALLIANCES.** Research and quantify the “value proposition” of downstream water users investing in upstream land uses that promote healthy watersheds and source water protection; frame policies and incentives to support such investments.
3. **INSTREAM FLOWS.** Assess how water efficiencies associated with differing land uses can be allocated to instream flows; propose policies and incentives that ensure water saved is used for environmental purposes.



FOCUS AREA: ENGAGED LEADERSHIP

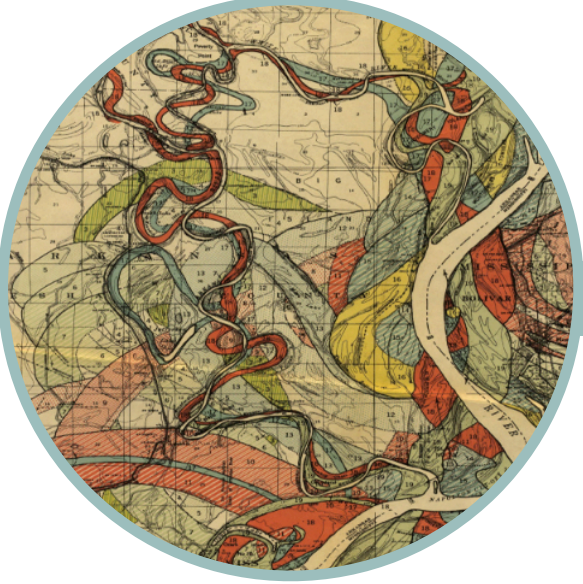


Chicago Infrastructure Trust panel moderated by Armando Carbonell. Photo by John Greenfield

Elected officials and leaders need resources for effective decision-making and opportunities to learn and network among their peers—across disciplines and interests. Ultimately, they should be given opportunities to become advocates for necessary policy reforms and actions that create sustainable water futures at a variety of scales.

PROPOSED ACTION AREAS:

1. **LEADERSHIP LIBRARIES.** Contribute to the development of databases and libraries focused on case studies, best practices, and model policies in integrated land-based water management planning practices.
2. **ELECTED OFFICIAL TRAINING.** Establish land-based water policy training courses for elected officials and community leaders; deliver through affiliations with partner agencies; link trainings, whenever possible, to local intervention activities.
3. **CONFLICT RESOLUTION.** Work with community leaders to resolve land-based water conflicts at various scales using convening power and conflict resolution skills.
4. **NETWORKS AND FORUMS.** Establish networks and host forums that facilitate peer-to-peer and cross-boundary learning; funnel advocates for critical reforms into related organizational networks and campaigns



FOCUS AREAS

INTEGRATED LAND AND WATER MANAGEMENT

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2. **TRAININGS.** Building upon existing efforts, expand delivery of community training and assistance programs that bring together land use planners and water resource managers.
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RESILIENT WATER FUTURES

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INSPIRED URBAN DESIGN

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2. **COST EFFICIENCY.** Through detailed economic analysis, establish water usage statistics for different urban design concepts; considering water as a currency, quantify water savings in terms of efficiencies and ROI.
3. **WATER PORTFOLIOS.** Advance a “one water” framework by helping communities link “water portfolios” to urban form; enable them to consider efficient use and reuse in relation to different types of water (e.g., treated, surface, rain, storm, sewage, etc.)

FUNCTIONAL MARKETS

1. **PRICING.** Collect, assess, and disseminate information on the efficacy of different types of municipal water pricing structures and incentives tied to land use.
2. **STANDARDIZED DATA.** Standardize municipal usage/consumption data to enable communities to make statistical comparisons at the intersection of land use, urban form, water consumption, and price structure.
3. **MARKET REFORM.** Suggest land-based legal, policy, and regulatory framework reforms that can support efficient, equitable, market-driven solutions to water shortages (e.g., guiding agricultural to municipal water transfers).

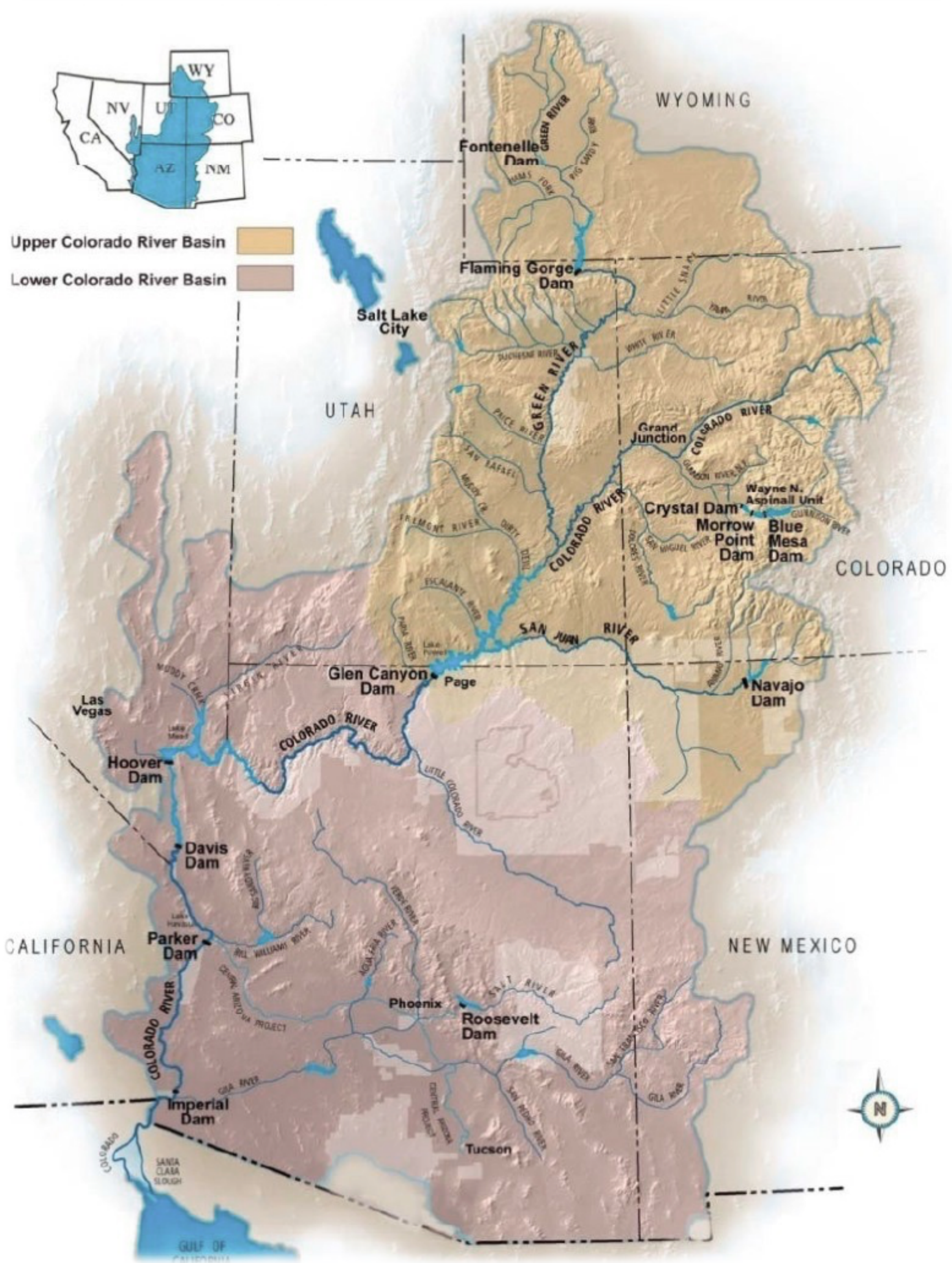
HEALTHY WATERSHEDS

1. **WATERSHED PARTNERSHIPS.** Address barriers to cross-jurisdictional partnerships within watersheds, particularly in terms of conflicting land uses.
2. **UPSTREAM/DOWNSTREAM ALLIANCES.** Research and quantify the “value proposition” of downstream water users investing in upstream land uses that promote healthy watersheds and source water protection; frame policies and incentives to support such investments.
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ENGAGED LEADERSHIP

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COLORADO RIVER BASIN



NEXT STEPS

1. Finalize case statement and fundraising plan
2. Meet with prospective donors
3. Continue to develop program
 - Colorado Community Assistance Project
 - Arizona Stakeholder Process on the Role of Effluent
 - Investment Framework for Water-resilient development and infrastructure
 - State of the Colorado River Basin Report