

# RESTORING ECOLOGICAL FUNCTIONS FROM LANDSCAPE-SCALE TO SITE-SCALE IN THE EMBUDO VALLEY, NEW MEXICO

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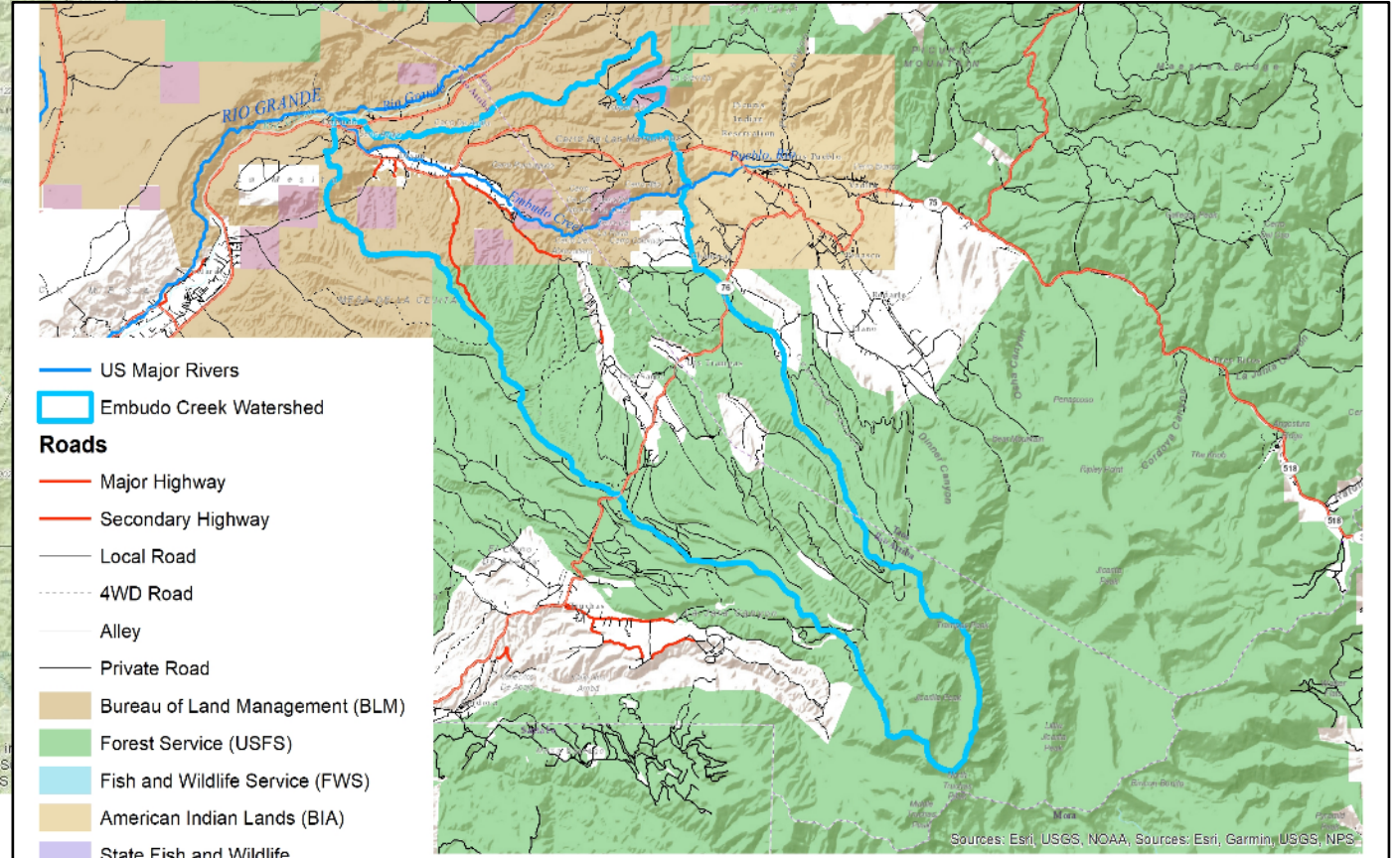
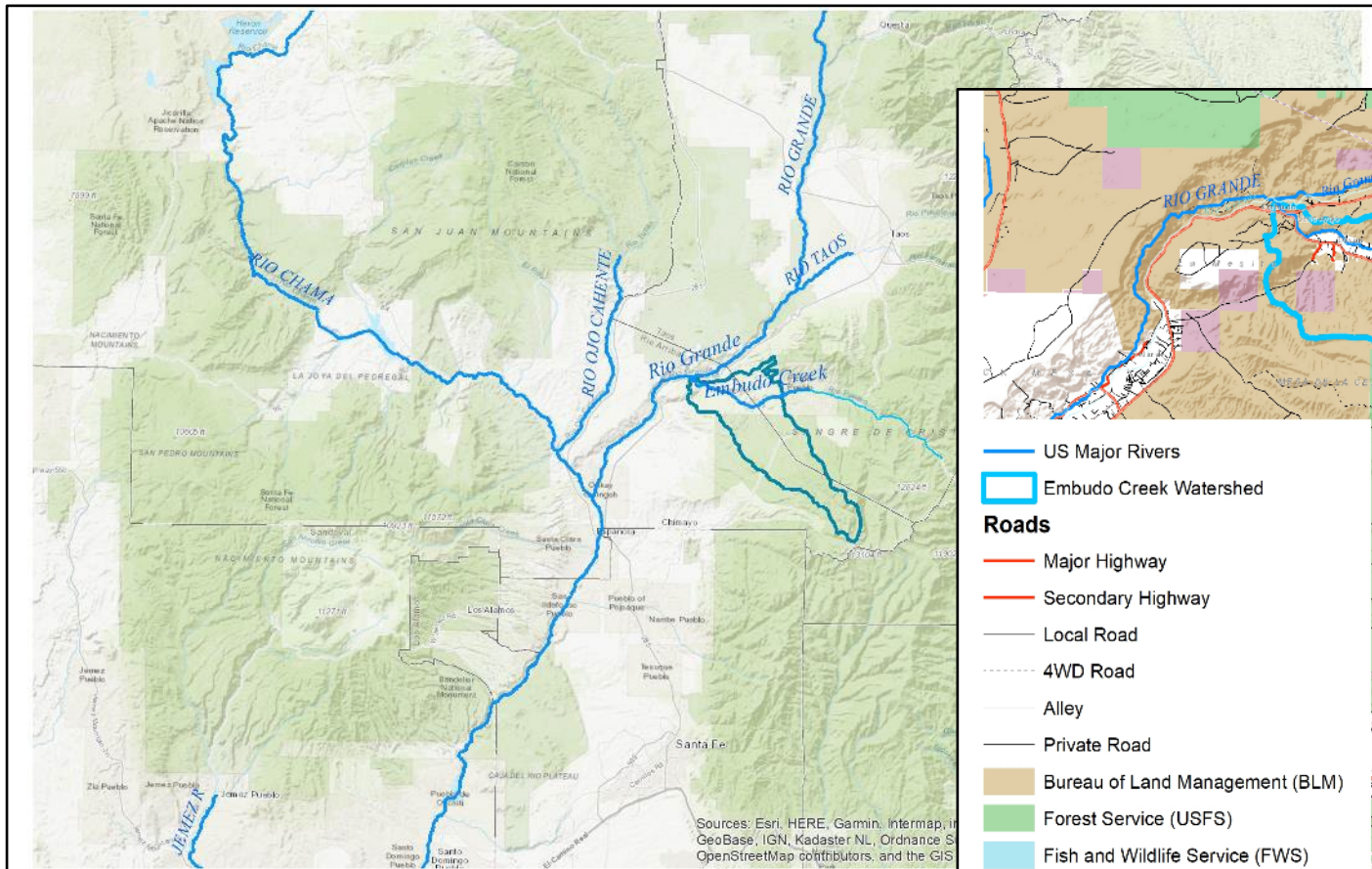
# SUMMARY

1. Area overview
2. Collaborative, landscape-scale planning
3. Collaborative, participatory planning
4. Science-based planning models and methods
5. Universal planning and assessment methods - locally adapted
6. Nested scales
7. Testing and adapting LTPBR techniques
8. Community engagement & replication
9. Examples of LTPBR techniques: a field guide

[LTPBR = Low-Tech, Process-Based Restoration]



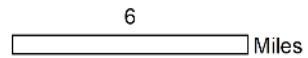
# AREA OVERVIEW: THE LOWER EMBUDO WATERSHED



- US Major Rivers
- Embudo Creek Watershed
- Roads**
- Major Highway
- Secondary Highway
- Local Road
- 4WD Road
- Alley
- Private Road
- Bureau of Land Management (BLM)
- Forest Service (USFS)
- Fish and Wildlife Service (FWS)
- American Indian Lands (BIA)
- State Fish and Wildlife
- State Parks and Recreation
- State Trust Land
- County Land \ Regional Agency Land

- US Major Rivers
- Embudo Creek Watershed

Base data layers sourced from USGS National Map, EPA, and the US Census Bureau. Additional data from Peter Arnold, Arid Lands Institute.

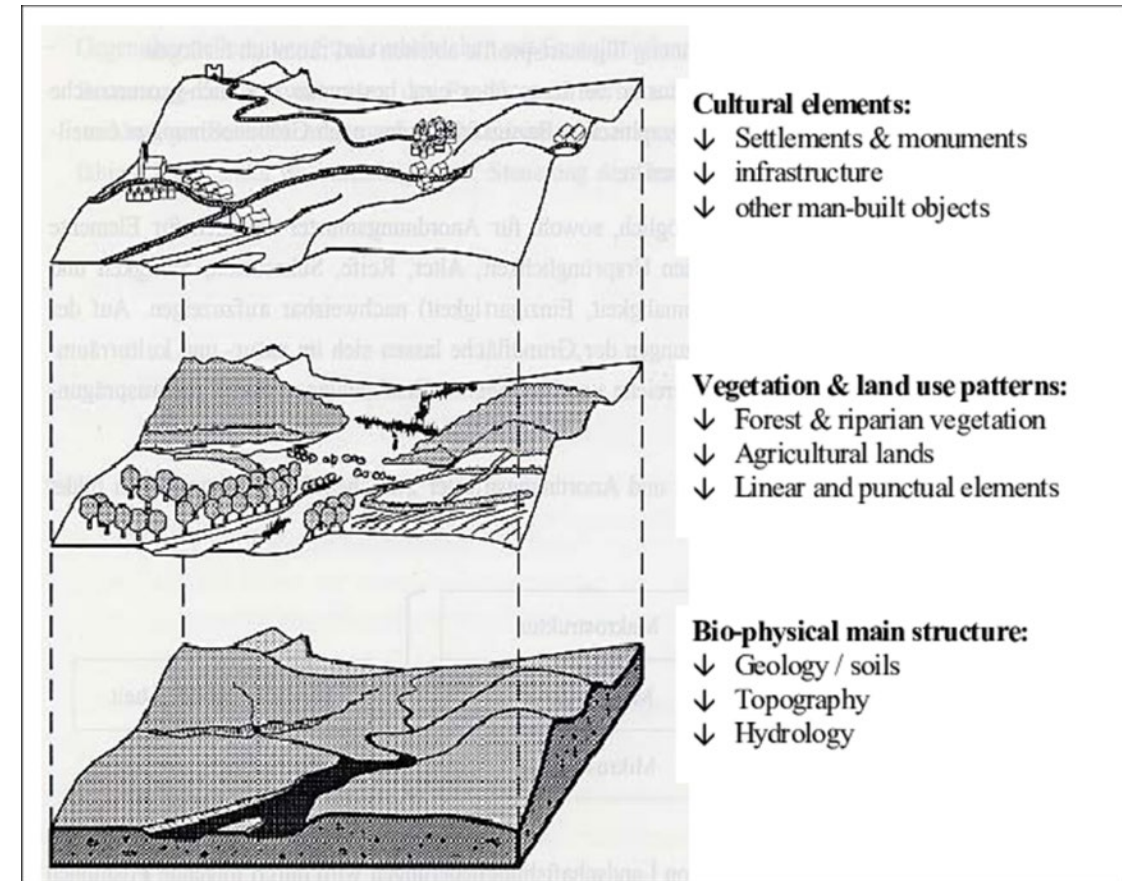


# COLLABORATIVE, LANDSCAPE-SCALE PLANNING

*Restoration activities grounded in planning & strategies*

## **Approach:**

- Using the **Landscape Planning Method + 4R Framework**
  - >> integrating goals of all key entities and communities
  - >> geo-physical and anthropogenic systems
  - >> applying participatory, collaborative principles
- Developing or enhancing **inspirational, ecological, social, and financial benefits**
  - >> for optimal community engagement and land stewardship
- **Process oriented** (planning that is continuous and planning that ties into ecological and community processes)
- **Systems oriented**
- **Function oriented** (not focused on previous conditions)
- **A collaborative learning process**





# The 4 Returns Framework for landscape restoration

## Process 5 Elements

Our landscape restoration process consists of 5 elements.

- Establishing a **landscape partnership**
- Reach a **shared understanding**
- Building a **landscape plan**
- Ensure **effective implementation**
- Develop **monitoring and learning**

## Impact 4 Returns

Our landscape restoration framework delivers 4 types of returns to the landscape and its stakeholders.



### Return of Inspiration

Opening people's eyes to the possibility of a better future



### Social Returns

Creating jobs, businesses, networks, and social prosperity



### Natural Returns

Restoring the health, resilience and prosperity of landscapes



### Financial Returns

Realising long-term, sustainable, and local income

## Landscapes 3 Zones

For successful landscape restoration we distinguish, restore and connect 3 types of zones.

### Natural Zone

Regenerating a landscape's ecological foundation by restoring and protection of biodiversity within natural ecosystems such as wetlands, grasslands and forests

### Combined Zone

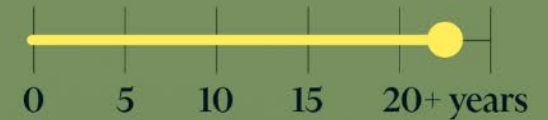
Combining food, fibre and biodiversity productivity through regenerative agriculture, agroforestry and soil restoration.

### Economic Zone

Delivering sustainable economic productivity with dedicated areas for activities that create value, typically concentrated in urban areas, infrastructure and processing.

## Time 20+ years

Successful systematic landscape restoration takes one generation, or 20 years.



A minimum of 20 years, or one generation, is needed to successfully implement large-scale integrated landscape management.



**COMMONLAND**

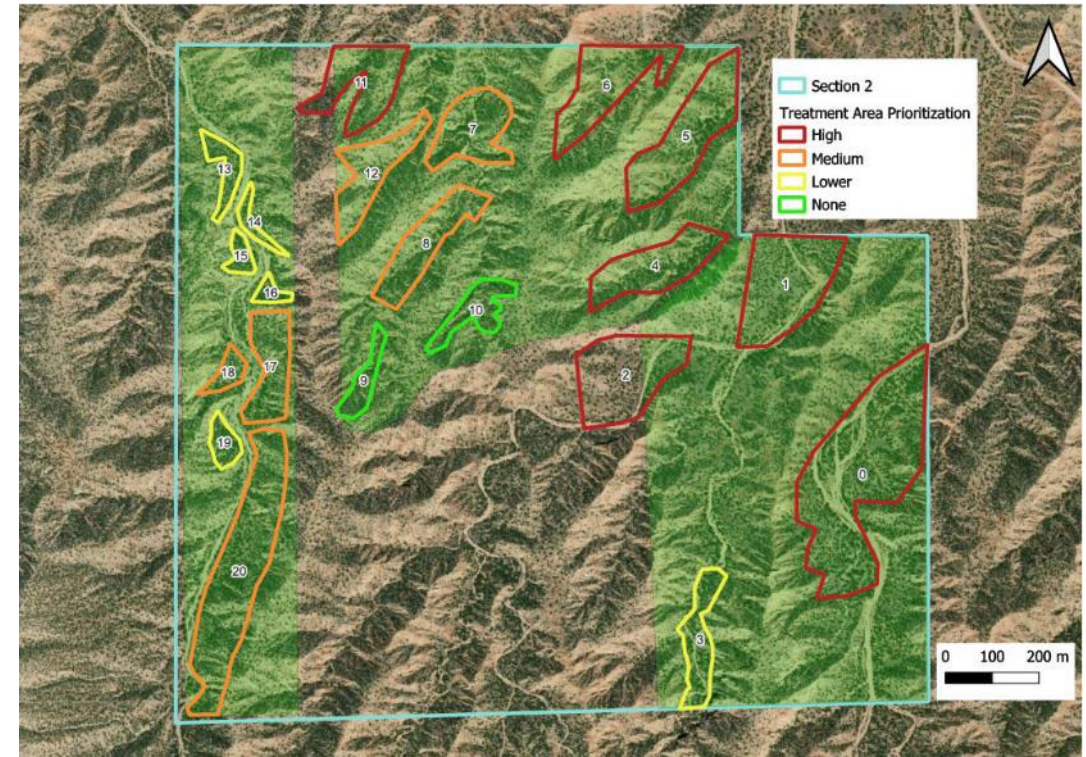


# COLLABORATIVE, PARTICIPATORY PLANNING

*Our approaches and methods are communicated in a strategic manner to a range of restoration practitioners*

## **Approach:**

- Selecting priority treatment areas in collaboration with land management agencies, landowners, and user groups
- joint-fact finding in baseline assessments
- multi-party monitoring gatherings






# SCIENCE-BASED PLANNING MODELS AND METHODS


*Science supports our decision making in our restoration projects*

**PROYECTO EMBUDO DE AGUA SAGRADA**  
An Updated Watershed-Based Plan  
for the Lower Rio Embudo Watershed,  
New Mexico

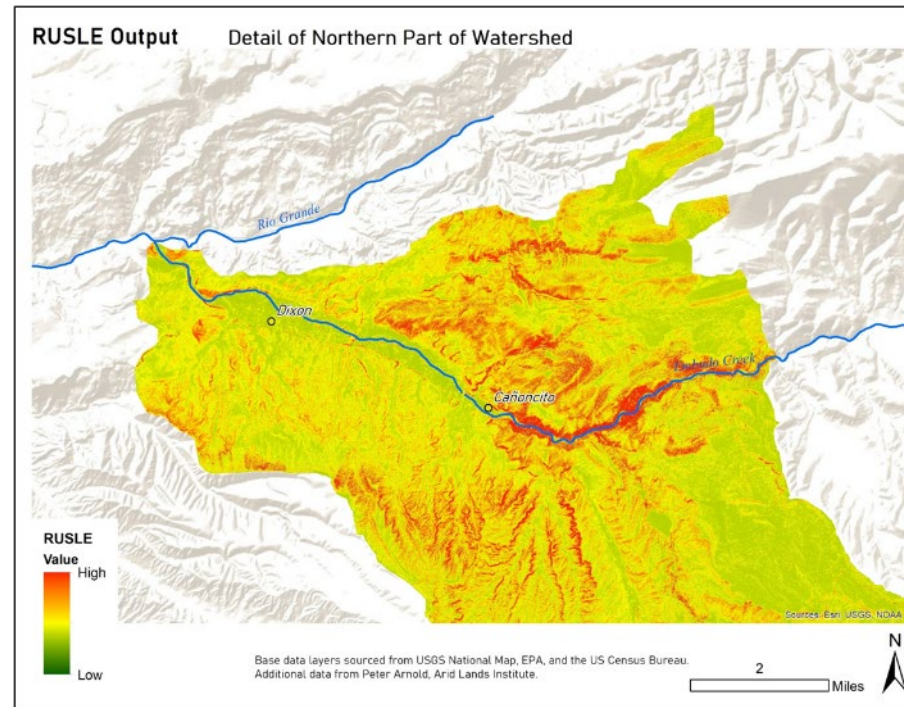


By Jan-Willem Jansens, Ecotone Landscape Planning, LLC  
November 1, 2019

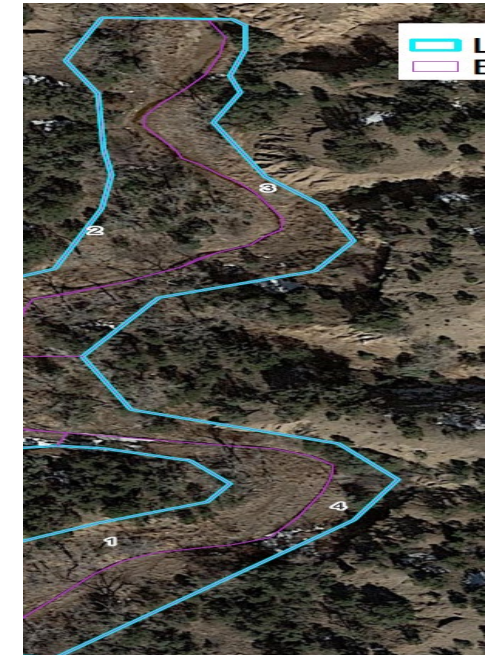
Prepared for:  
Embudo Valley Regional Acequia Association  
and  
New Mexico Environment Department - Surface Water Quality Bureau



**Scientific Planning Method**



**Science-based Assessment & Analysis Method**



**Monitoring Information**



**On-the-ground work**

Observation >> Hypothesis >> Planning >> Testing (Implementation) >> Monitoring



# UNIVERSAL PLANNING AND ASSESSMENT METHODS

*Our approaches and methods are replicable or transferable for use in other regions or ecosystems*

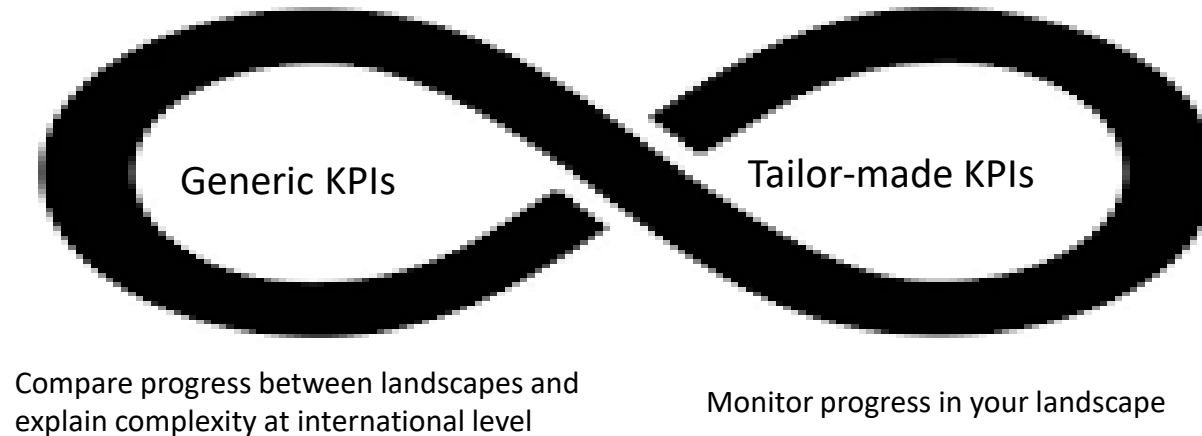
## ***Approach:***

- Universal planning & assessment methods >> tested for general use
- Adaptation for specific, local circumstances >> adaptable for replication across different ecosystems
- Iterative, collaborative planning >> innovating, testing, adapting, and replicating





# The 4 Returns of Impact can be divided into general and specific KPIs



The Key Performance Indicators (KPIs) of the 4 Returns Framework can be used as Generic KPIs (to compare progress between landscapes and explain complexity at international level), while it allows for customised KPIs (to monitor progress within a landscape).

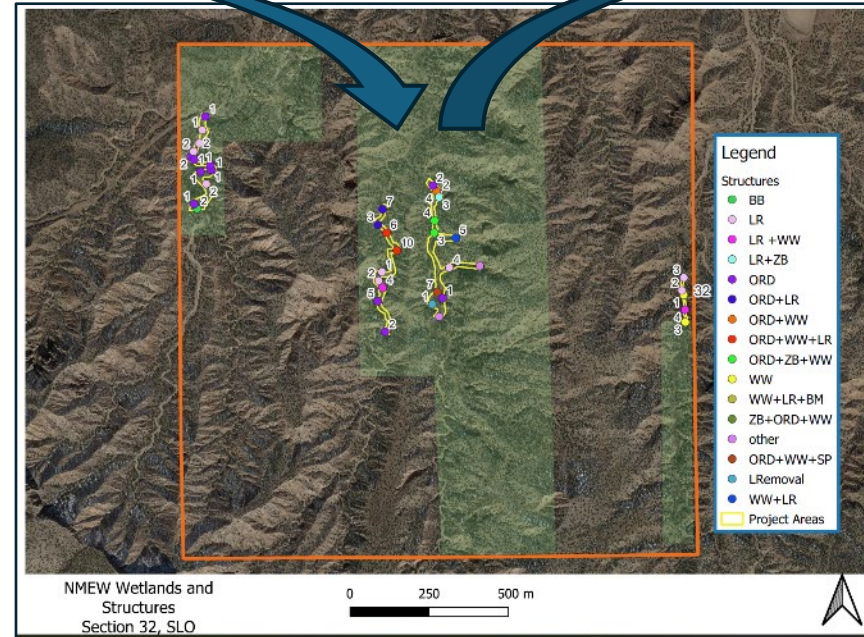
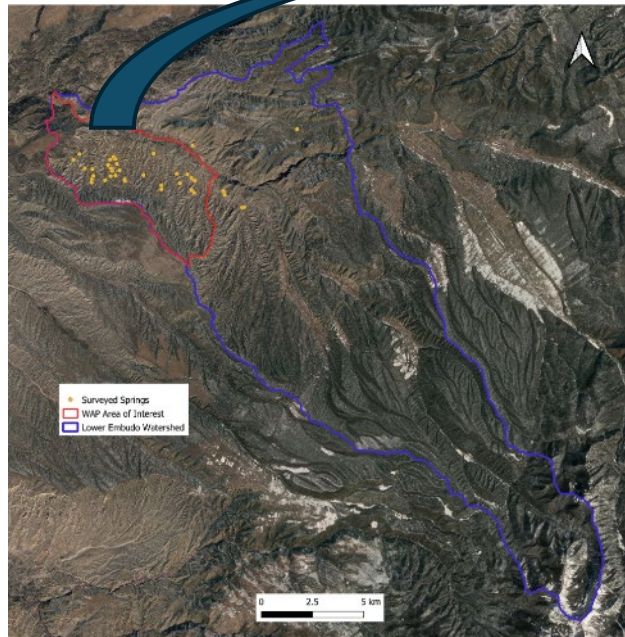


# NESTED SCALES: SCALABLE PLANNING METHODS

*Our restoration approaches and methods are scalable to smaller or larger projects*

## **Approach:**

- Nested scales of application: Landscape scale → Field Scale → Site Scale
- Modular techniques and “treatment trains” (= series of techniques)





# NESTED SCALES: Landscape Scale

## ***Characteristics:***

- 1,000-1M ha (2,500-2.5M acres)
- Watersheds, forests, rangelands
- Long-term engagement (decades)
- Multiple owners, stakeholders

## ***Approach:***

- Strategic planning
- Multiple funding sources – ongoing
- Systemic impacts
- Influencing processes
- High complexity
- Limited individual participation opportunities





# NESTED SCALES: Field Scale

## ***Characteristics:***

- 1-1,000 ha (2.5-2,500 acres)
- Drainages, wetland complexes, forest stands, savannah macro-patches
- Mid-Long-term engagement (multiple years)
- A few to several owners, stakeholders

## ***Approach:***

- Selective, targeted planning
- A few funding sources – limited duration
- Localized, long-term or short-term impacts
- Influencing localized ecological dynamics
- Medium-high complexity
- Individual and small group participation opportunities



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# NESTED SCALES: Site Scale

## ***Characteristics:***

- 10 sq m - 1 ha (100 sq ft - 2.5 acres)
- Ecotope / location / micro-patch
- Mid- to short-term engagement
- One or a few owners, stakeholders

## ***Approach:***

- Detailed, tactical planning
- One or a few funding sources
- Site-specific impacts
- Influencing site-specific ecological dynamics
- Variable or low complexity
- Individual and small group participation opportunities (human scale)





# TESTING AND ADAPTING LTPBR TECHNIQUES

*Our approaches and methods eliminate uncertainties in restoration implementation*

## **Approach:**

- Low-Tech Process-Based Restoration techniques (“design with nature”; “biomimicry”)
- Testing, monitoring, and evaluation
- Technical Field Guides
- Skillful construction





# COMMUNITY ENGAGEMENT & REPLICATION

Technical guides

Workshops and tours

Expansion on other jurisdictions and ecosystems

Applications in forest ecosystems

Private land project replications

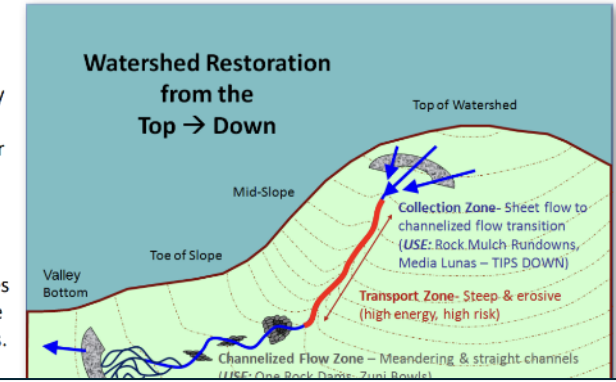


## EROSION CONTROL FIELD GUIDE

By Craig Sponholtz & Avery C. Anderson

### WORKING WITH NATURE TO HEAL EROSION

Soil loss caused by flowing water diminishes the fertility, productivity and healing capacity of the land. This guide was created to empower landowners and managers to take action and reverse soil erosion at every opportunity. These methods promote harvesting and storing runoff and sediment with structures based on natural forms that initiate long-lasting regenerative processes.



For more information visit [www.erosioncontrol.org](http://www.erosioncontrol.org) and [www.erosioncontrol.org](http://www.erosioncontrol.org)

### Una Guía de campo para el uso de Materiales de Aclareo Forestal en Estructuras de Control de Erosión



Septiembre 2022

**Introducción:**  
Slash, o escombros de la tala de bosques, se puede usar de manera efectiva para cubrir áreas desnudas y erosionadas en el suelo del bosque. Slash se desmoronará en la basura vegetal, lo que ayuda a que la tierra absorba más agua. Slash también crea una cubierta protectora que ayuda a restablecer el césped, las hierbas y las plántulas de arbustos. Slash crea un microclima para la germinación de las plantas, ofrece un microhábitat para animales pequeños y protege a las plantas jóvenes de los ungulados que se alimentan. Slash también protege el suelo del impacto de las gotas de lluvia, el viento y la escorrentía de aguas pluviales. Como resultado, el suelo está más protegido de la erosión por salpicadura, la precipitación tiene la oportunidad de asentarse e infiltrarse, la erosión eólica y el polvo en el aire se mantienen bajos, la materia orgánica se absorbe gradualmente en el suelo y se induce el crecimiento de las plantas.



### Forest Thinning Control Structures



September 2022



### A Field Guide on Using Piñon-Juniper (PJ) Materials in Erosion Control Structures



October 2022





# DISCUSSION



505-470-2531

[www.ecotonelandscapeplanning.com](http://www.ecotonelandscapeplanning.com)

