

Managing into the Future

Adaptive Management in Left Hand Watershed

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Left Hand Watershed Center

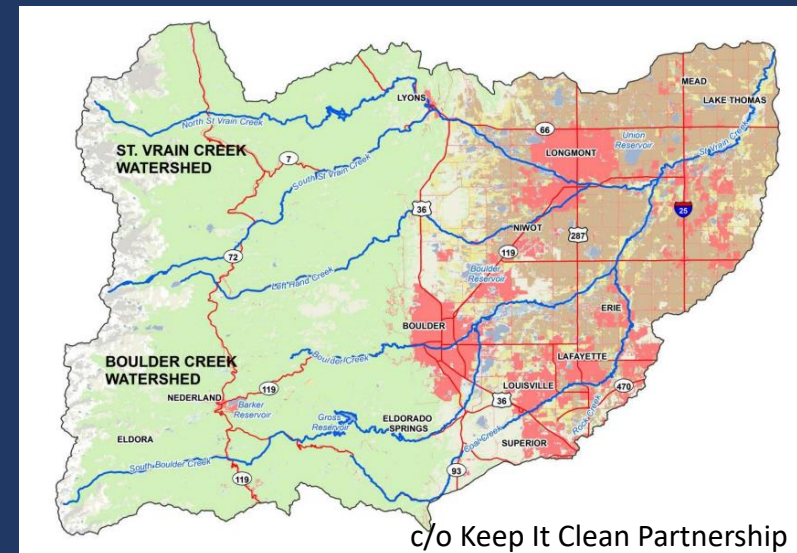


LEFT HAND
watershed center

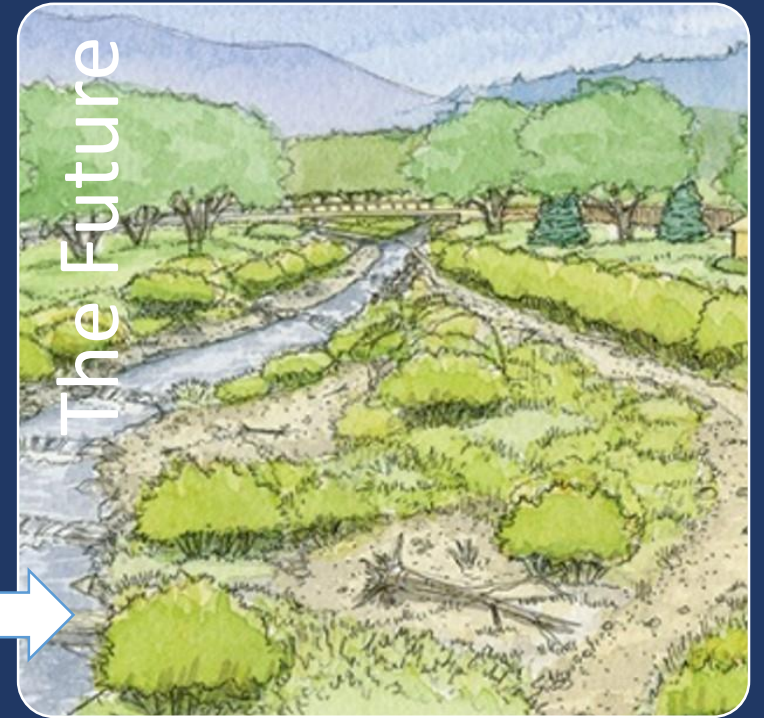
Left Hand Watershed Center



We protect and restore watersheds for people and the environment using a collaborative, science-based approach.



Our History



Current Focused Areas



Adaptive
Management



Watershed
Restoration



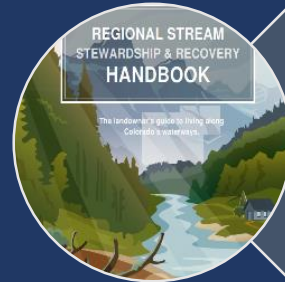
Stewardship



Community
Science

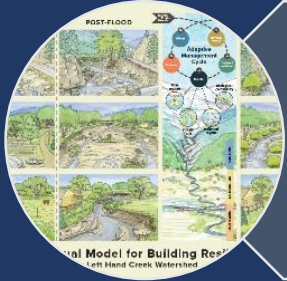


Forestry Health



Education
and Outreach

Current Focused Areas



Adaptive
Management



Watershed
Restoration



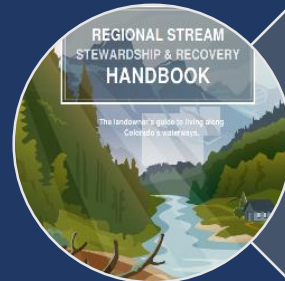
Stewardship



Community
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Forestry Health



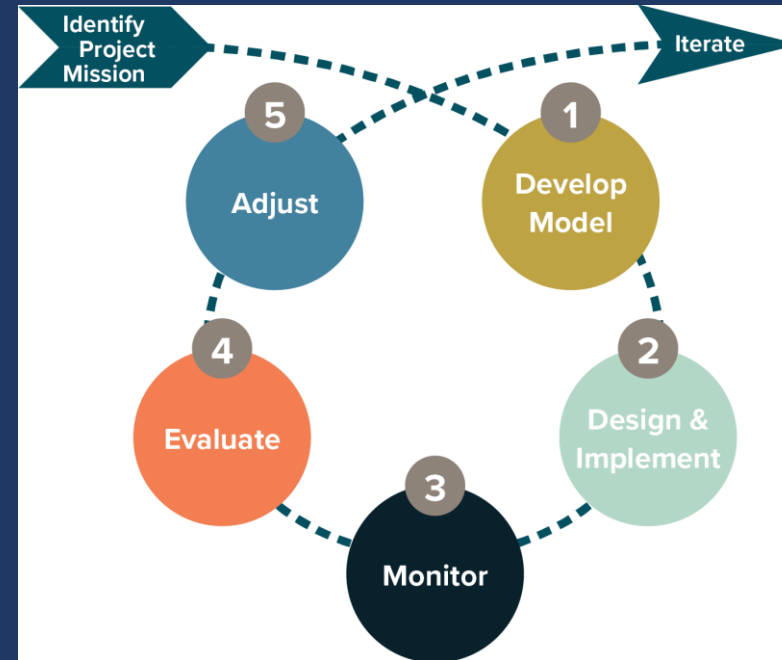
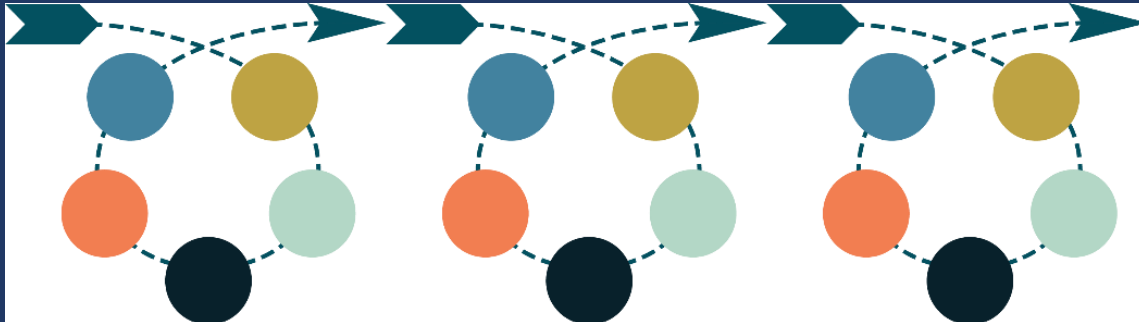
Education
and Outreach

How do we manage into the future?

Adaptive Management!

Iterative Process for:

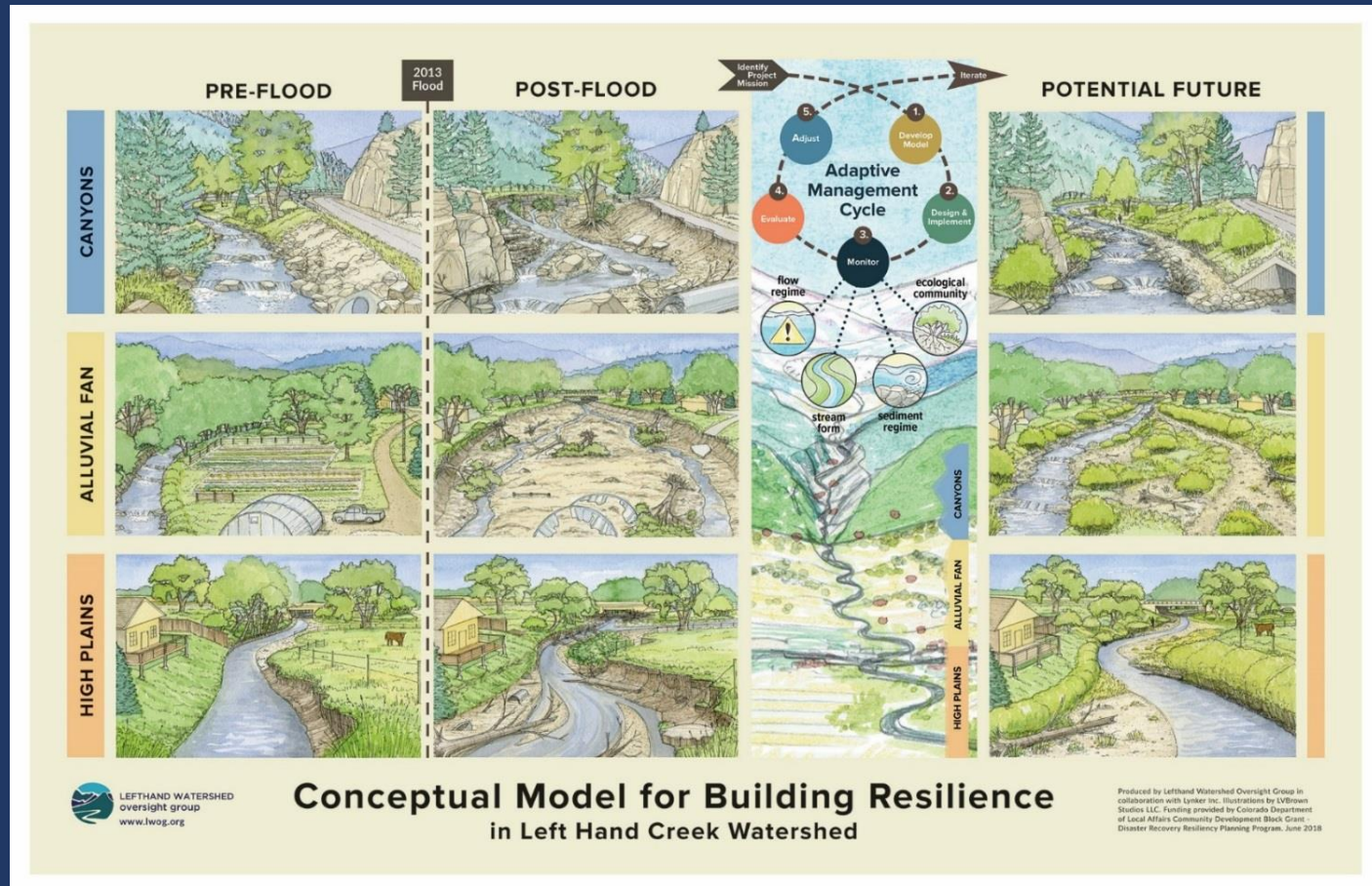
- Adjusting management or monitoring actions based on what is learned.



Allows us to plan for uncertainty associated with climate change and dynamic watershed processes.

1. Conceptual Model

- Inspires deep thinking about what is possible in the future.
- Developed by scientists & stakeholders.
- Illustrates conditions over space and time.



1

Develop Model

2

Design & Implement

3

Monitor & Assess

4

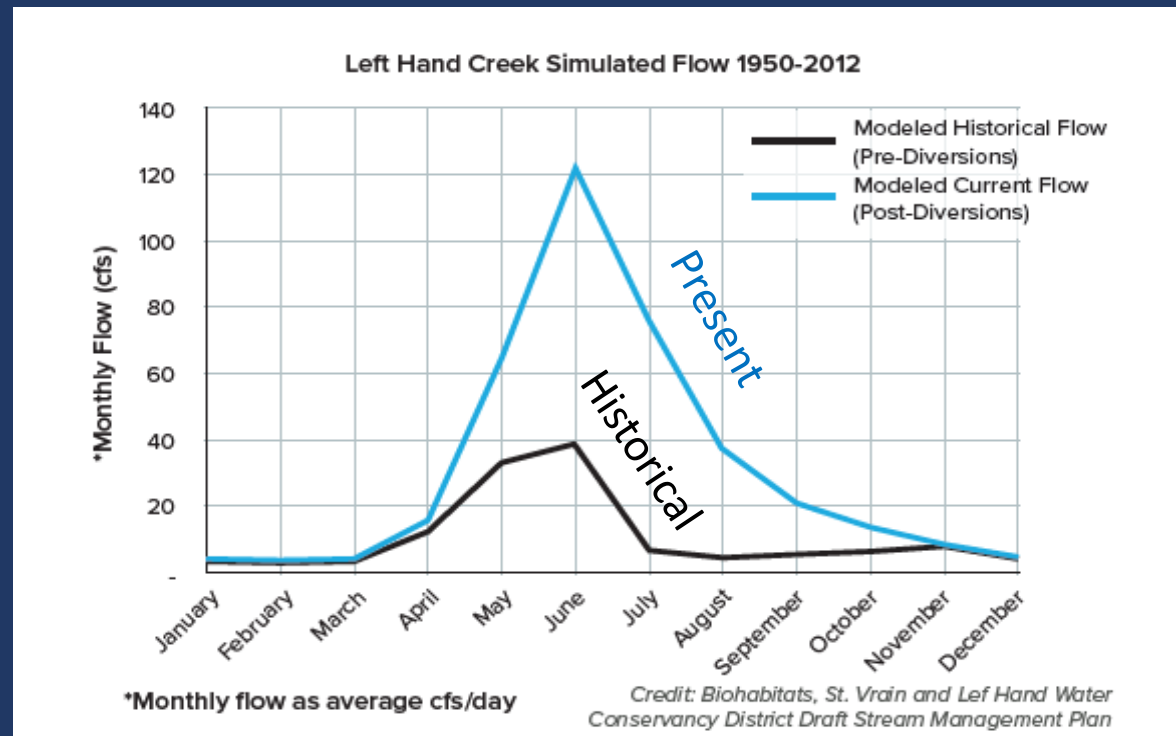
Evaluate

5

Adjust

1. Concept Model: Historical Context

- Pre-1879: a seasonal creek or wetland swale
- Diverted flows change hydrograph and create year-round flows
- Current context: a “Working River”



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1. Concept Model: Pre-flood conditions

1

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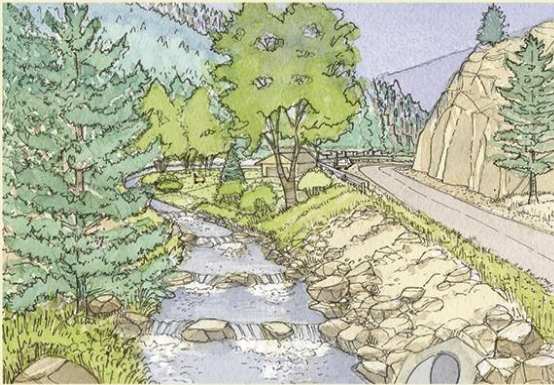
Evaluate

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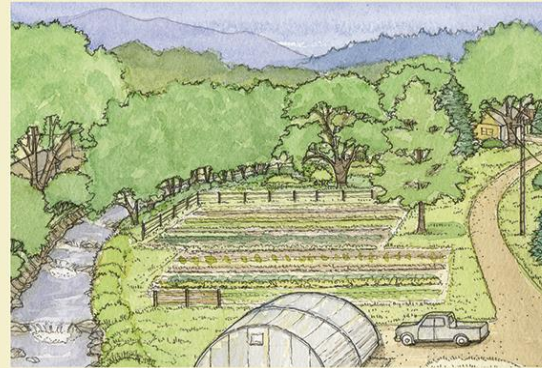
Adjust

PRE-FLOOD

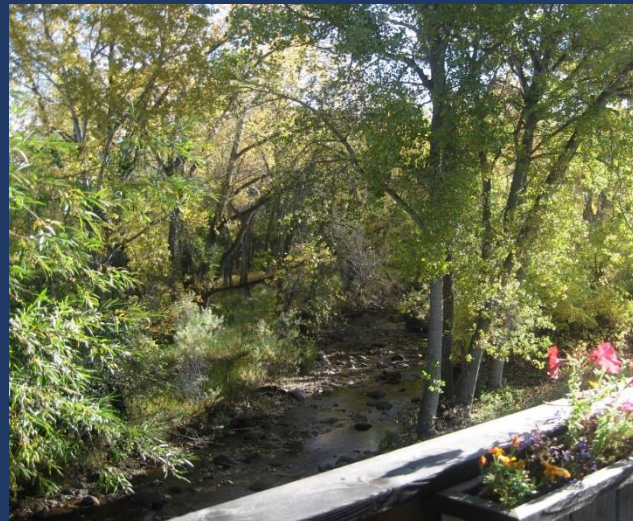
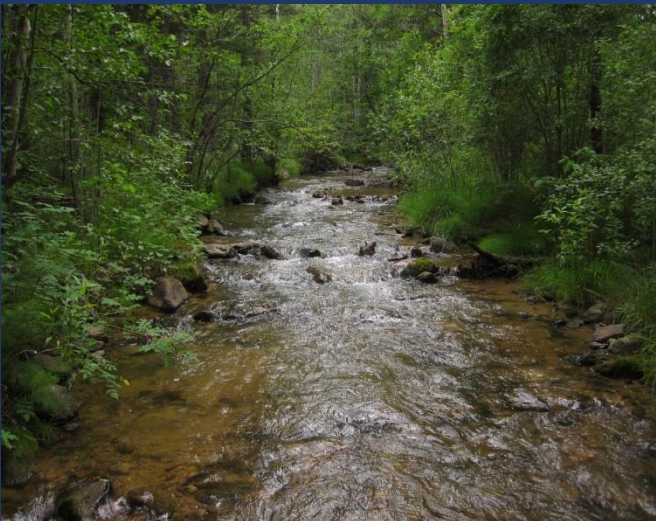
CANYONS



ALLUVIAL FAN



HIGH PLAINS



1. Concept Model: Post-flood conditions

1

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Model

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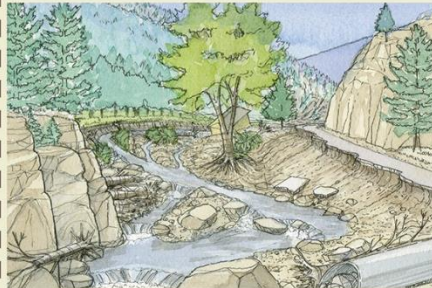
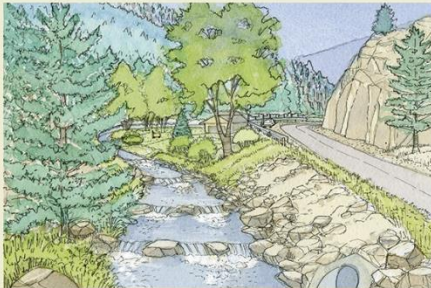
Adjust

PRE-FLOOD

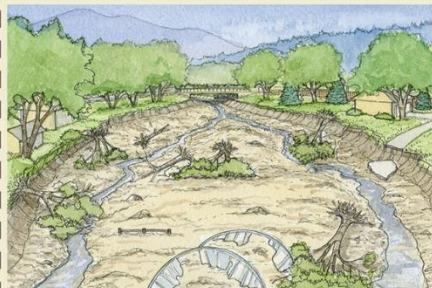
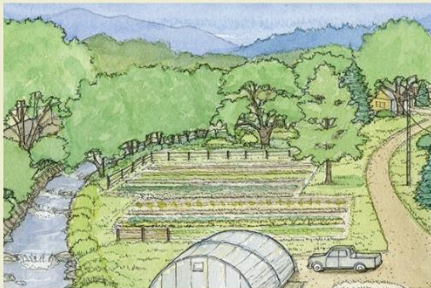
2013
Flood

POST-FLOOD

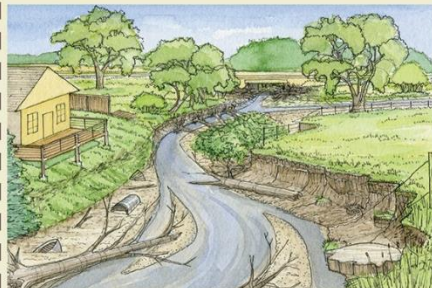
CANYONS



ALLUVIAL FAN



HIGH PLAINS



1. Concept Model: Potential Future

1

Develop
Model

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Design &
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Monitor &
Assess

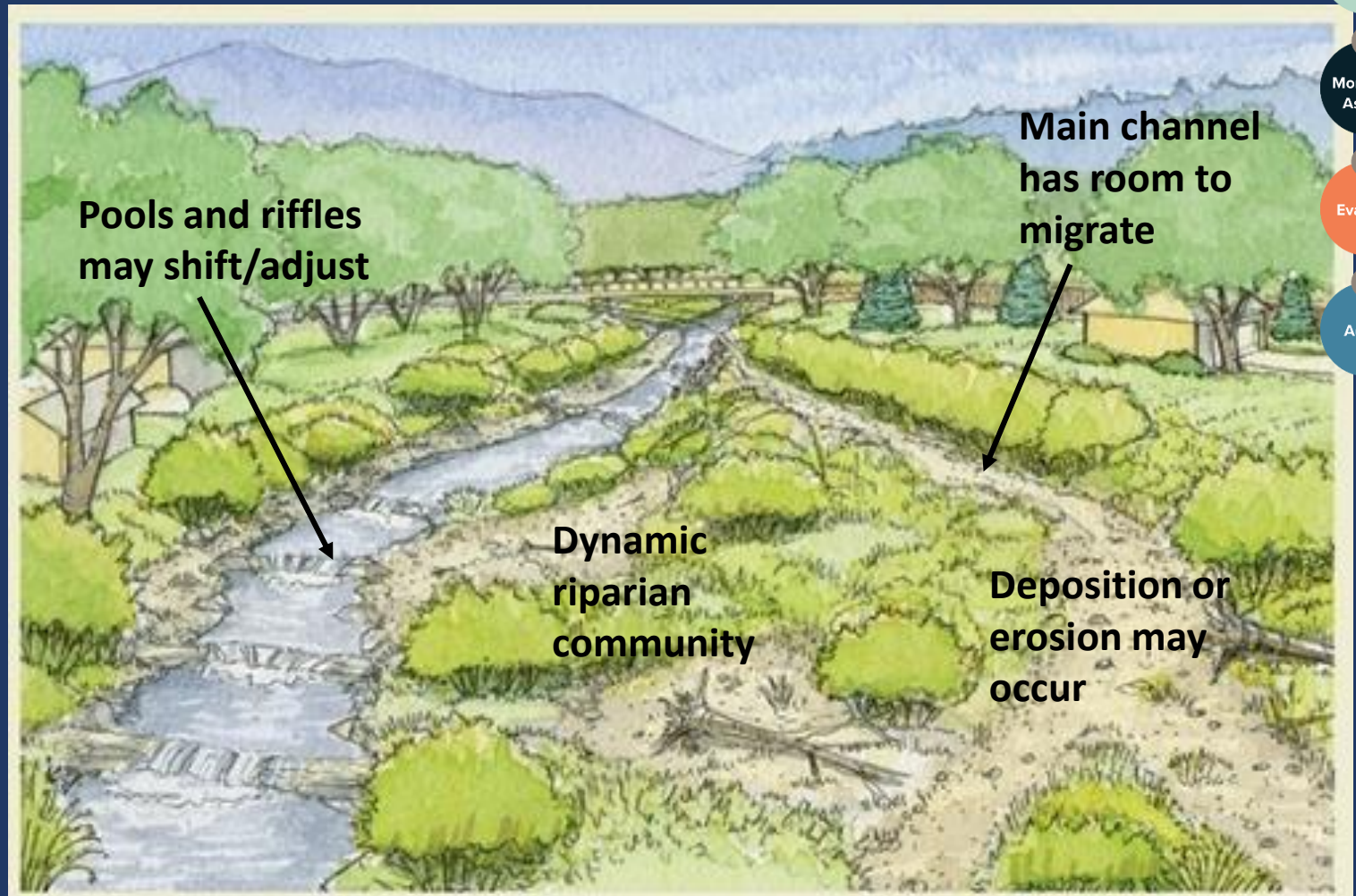
4

Evaluate

5

Adjust

POTENTIAL FUTURE



Pools and riffles
may shift/adjust

Main channel
has room to
migrate

Dynamic
riparian
community

Deposition or
erosion may
occur

2. Design and Implement Projects



Goal: maintain or improve ecological condition at restored sites over time.



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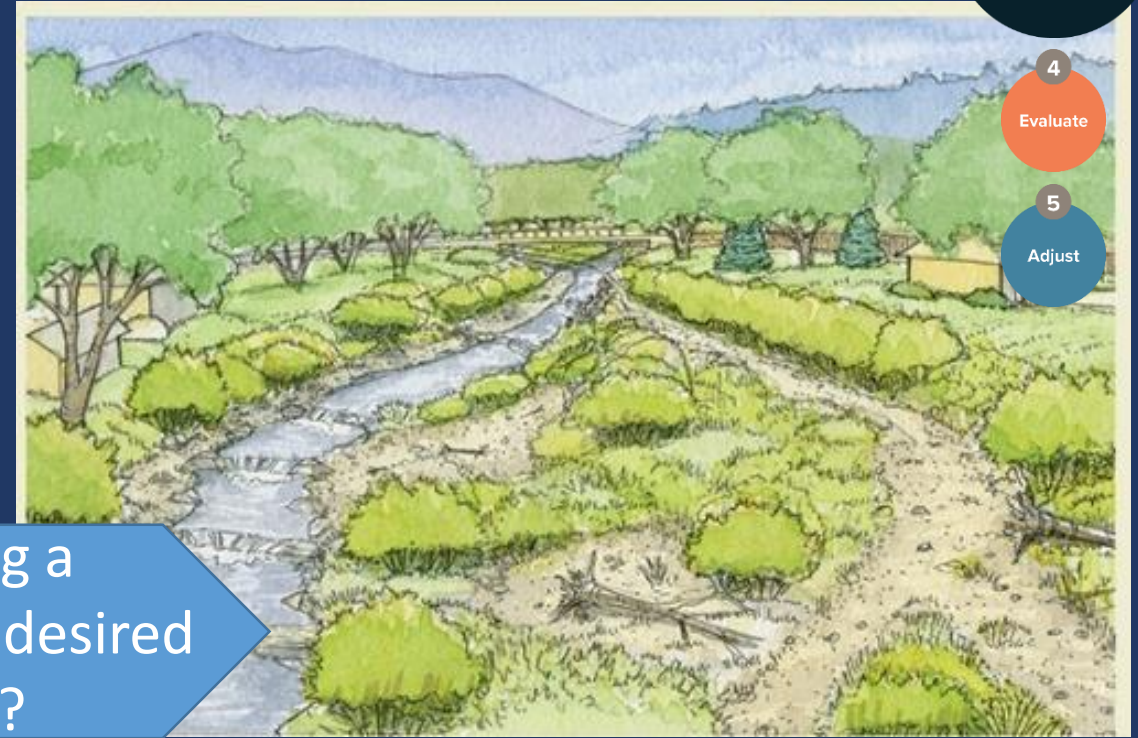
3. Monitor and Assess

- Restoration



Are we maintaining a trajectory towards our desired future condition?

- Desired Future Conditions



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3. Monitoring and Assessment Framework

1
Develop
Model

2
Design &
Implement

3
Monitor &
Assess

4
Evaluate

5
Adjust

What Sets This Framework Apart?

Holistic



It addresses ecological conditions but accounts for all watershed functions as drivers.

Actionable



On-the-ground management actions are incorporated directly into the monitoring plan.

Flexible

New datasets can be incorporated seamlessly by modifying hypotheses.

Performance standards or management triggers can also be modified to accommodate unique project goals.

Data collection methods can also be adjusted for different systems or watershed needs.

**& it's
Approachable!**

3. Monitoring and Assessment Framework

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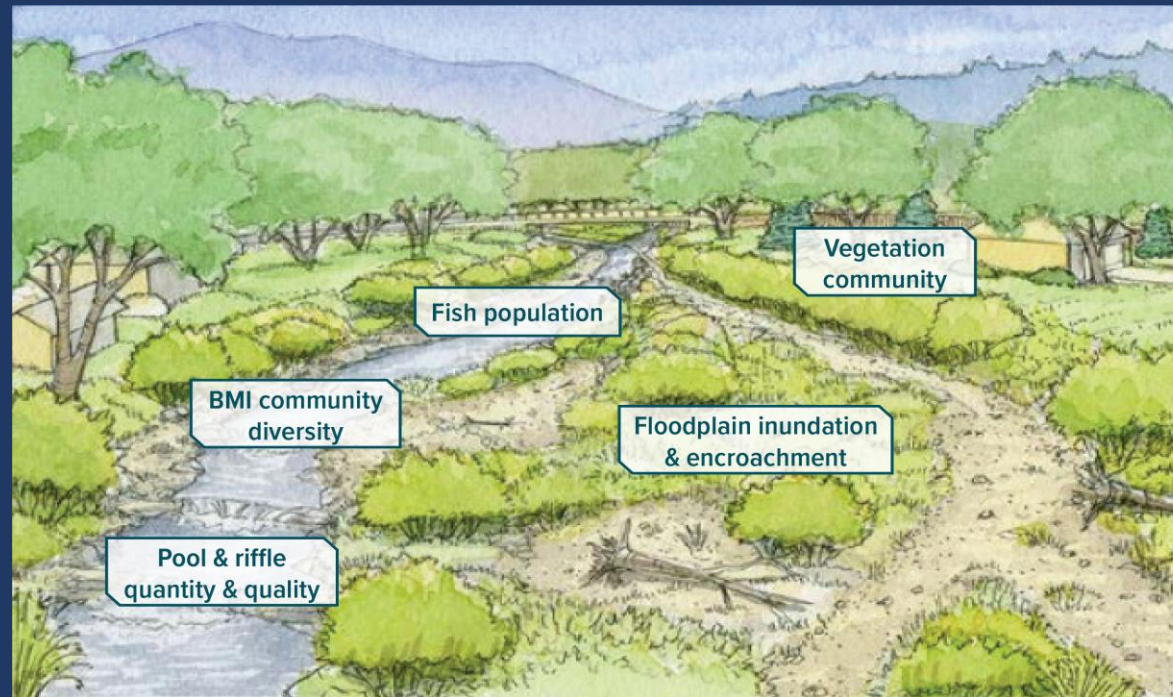
Floodplain Connectivity

Habitat

Vegetation

BMI Community

Fish Community



3. Monitoring and Assessment Framework

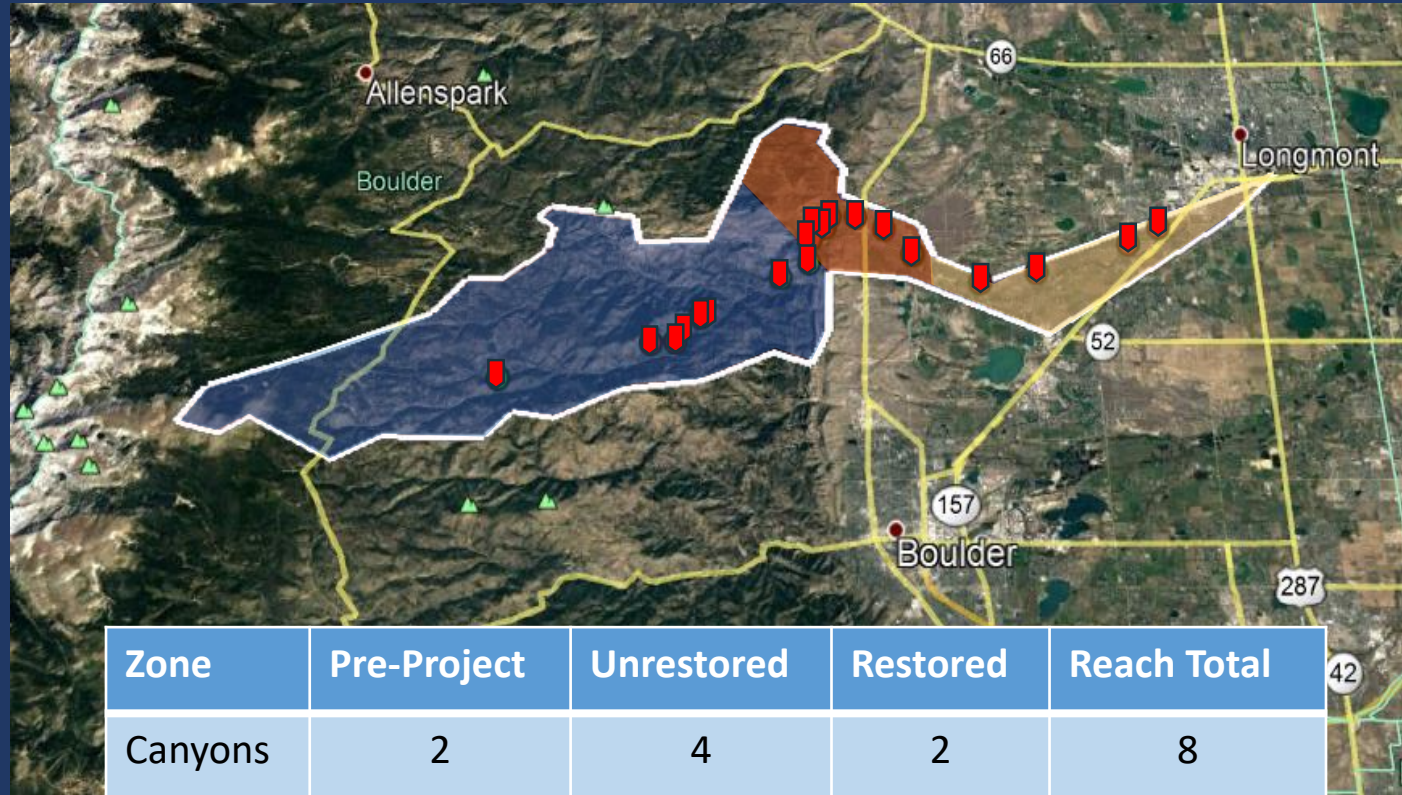
Floodplain
Connectivity

Habitat

Vegetation

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Fish
Community



Zone	Pre-Project	Unrestored	Restored	Reach Total
Canyons	2	4	2	8
Foothills	3	2	2	7
Plains	-	1	3	4

1

Develop
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**Monitor &
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3. Monitoring and Assessment Framework

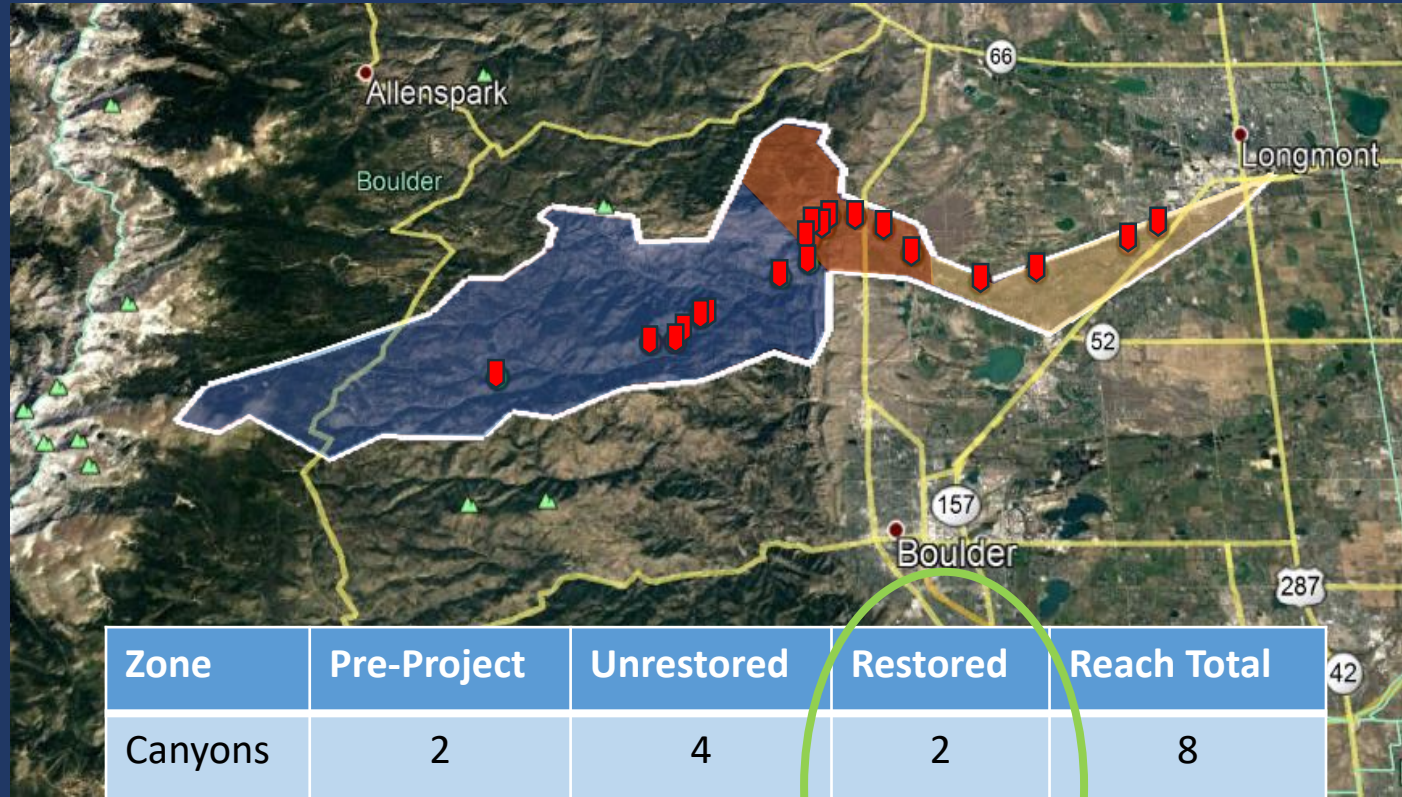
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4. Monitor: Vegetation

Hypothesis

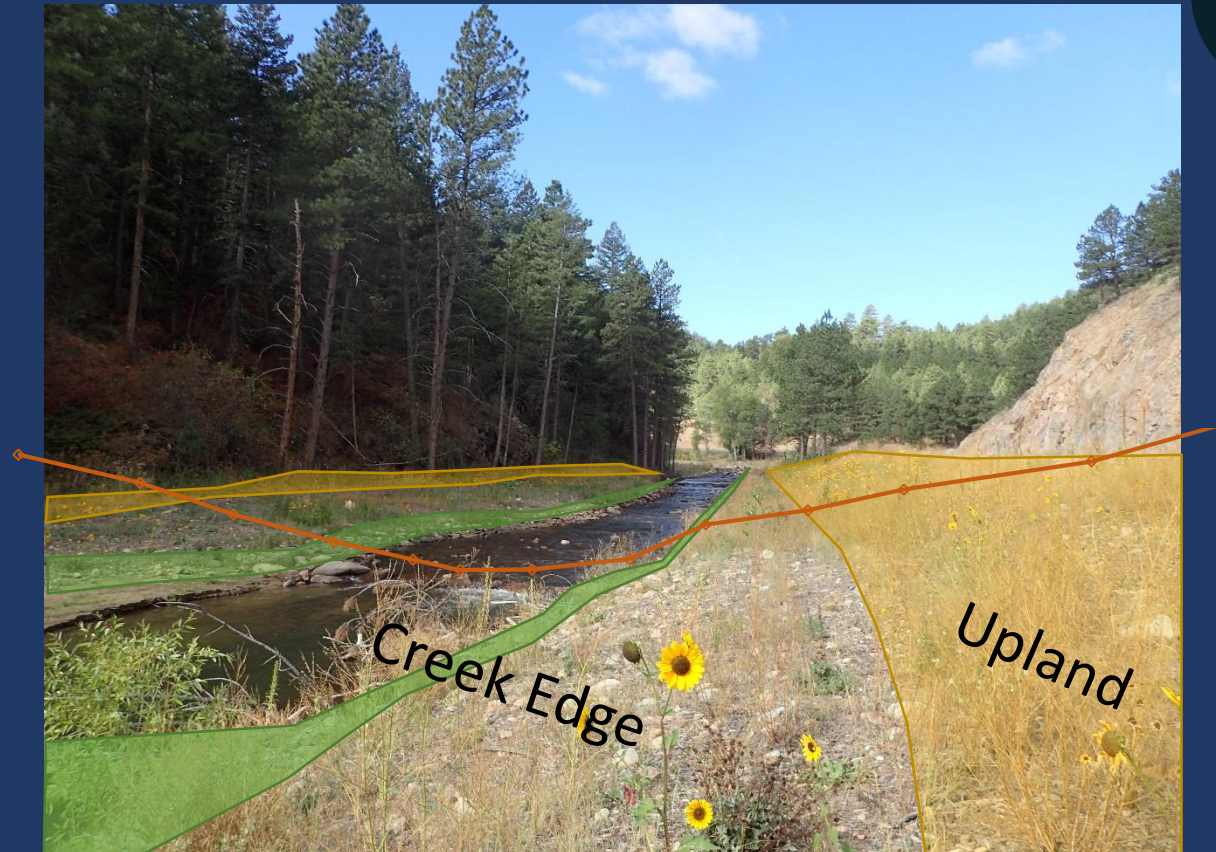
- Native cover and richness will increase or remain the same over time.

Method: Plot surveys along transects

- Creek Edge & Upland zones
- Plains, Foothills, and Canyons

Metrics

- Avg. % Native Cover
- Avg. native richness



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4. Evaluate Data: Vegetation

Performance standard: native richness and % cover increasing or remaining the same from year to year.

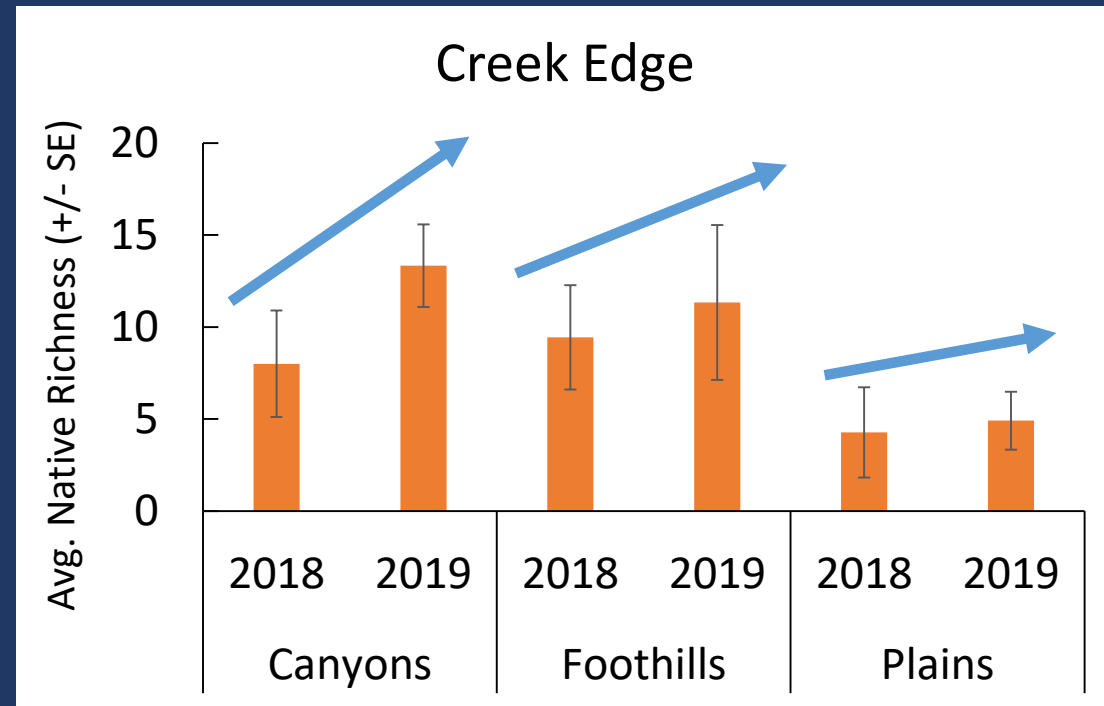
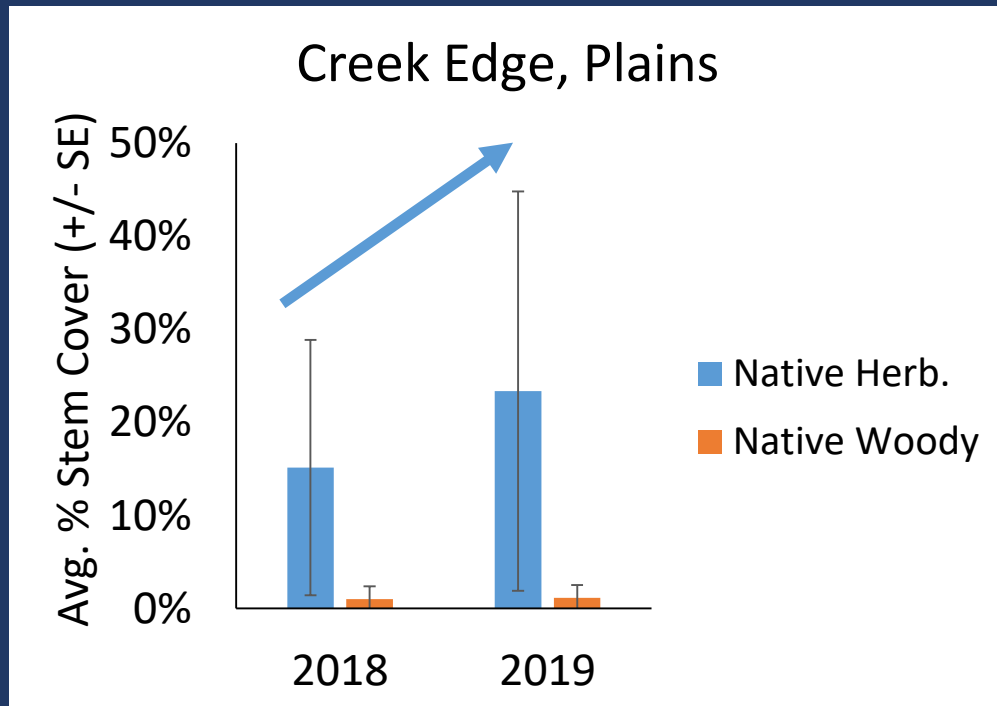
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4. Evaluate Data: Vegetation

Data quantitatively support our observations and inherent best management practices from year to year.



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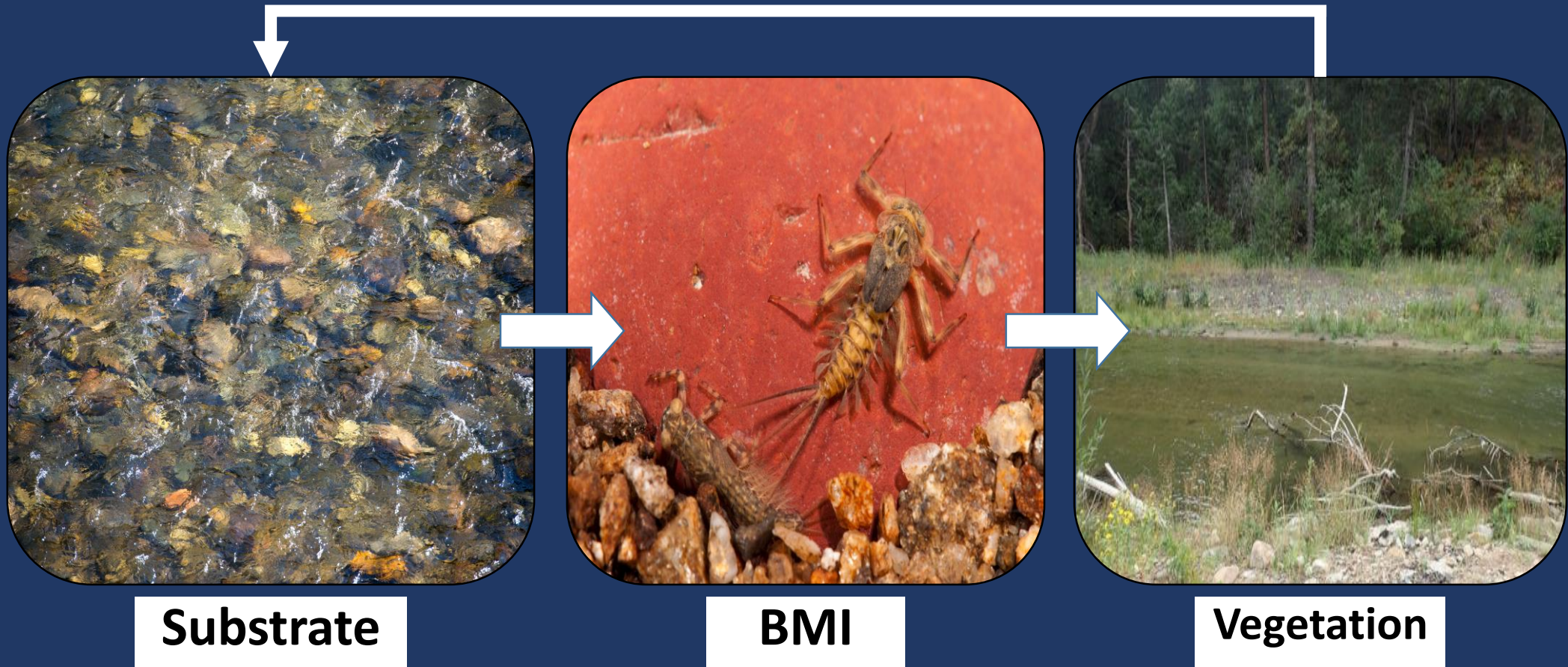
Evaluate

5

Adjust

4. Evaluate Data: Vegetation

Data are not stand alone.



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5. Adjust

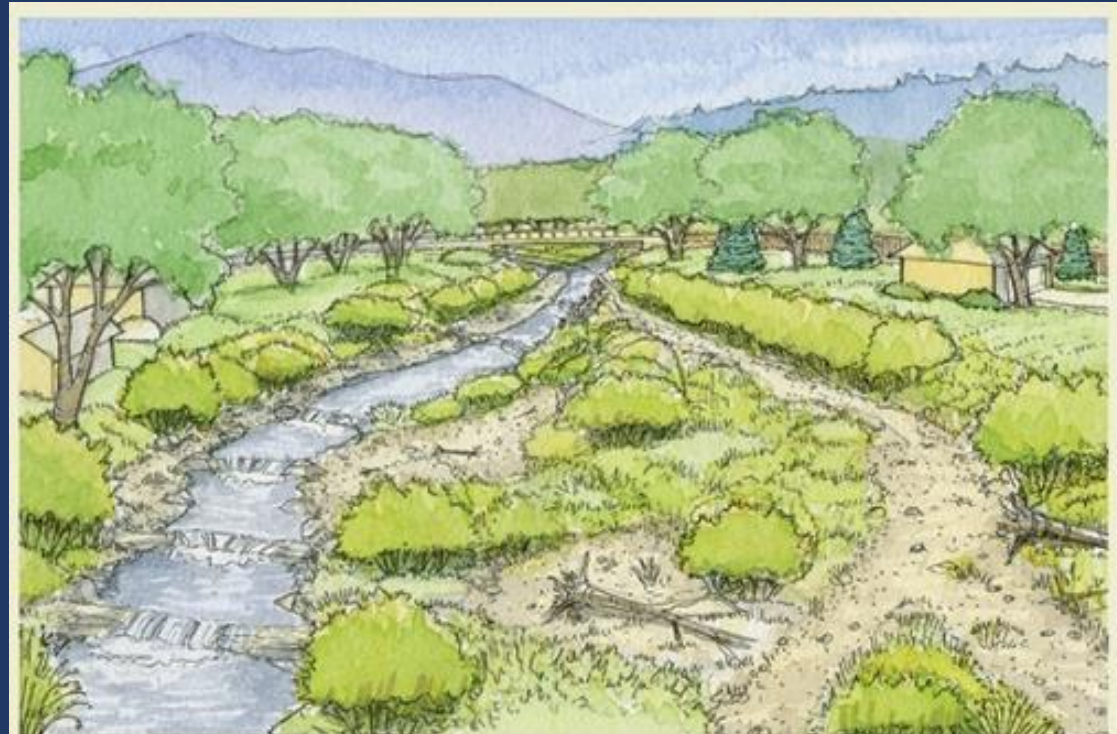
Plan

- Improve conceptual model as we understand more about our system.

Monitoring

- Refine metrics and performance standards.
- Add fish surveys, water quality studies, barrier assessments.

What adjustments can we make to the plan or monitoring framework?



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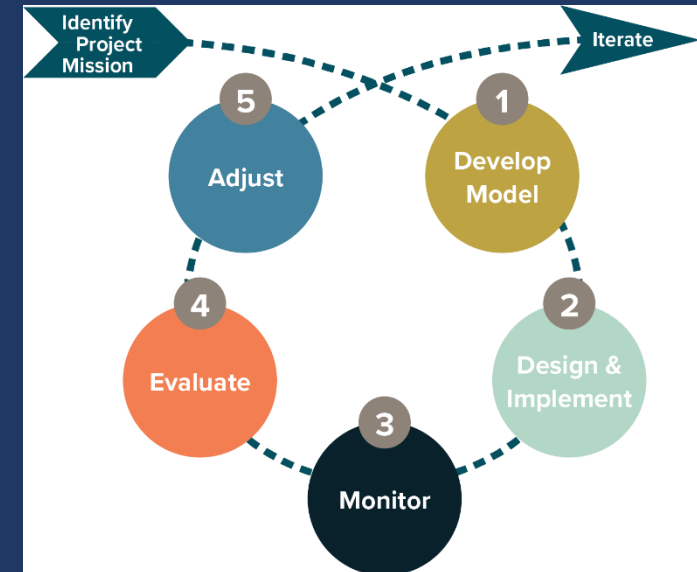
Evaluate

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Adjust

Key Takeaways

- The Watershed Center's adaptive management tool is approachable for other watershed groups.
- The adaptive management tool accounts for uncertainty through a holistic, actionable, and **iterative** approach.
- Our monitoring framework is multi-faceted. It evaluates performance standards, it uses quantitative assessments, and it is comprehensive.





LEFT HAND
watershed center

THANK YOU

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Click [Here](#) to access our full Adaptive Management Plan and Monitoring and Assessment Framework

