FEBRUARY
2020

Planning for Linear Transportation with a Focus on Riparian Restoration

CHALLENGES AND OPPORTUNITIES

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

Presented by:

Haley Stratton & Tamara Keefe, Environmental Scientists
Felsburg Holt & Ullevig (FHU)

Overview

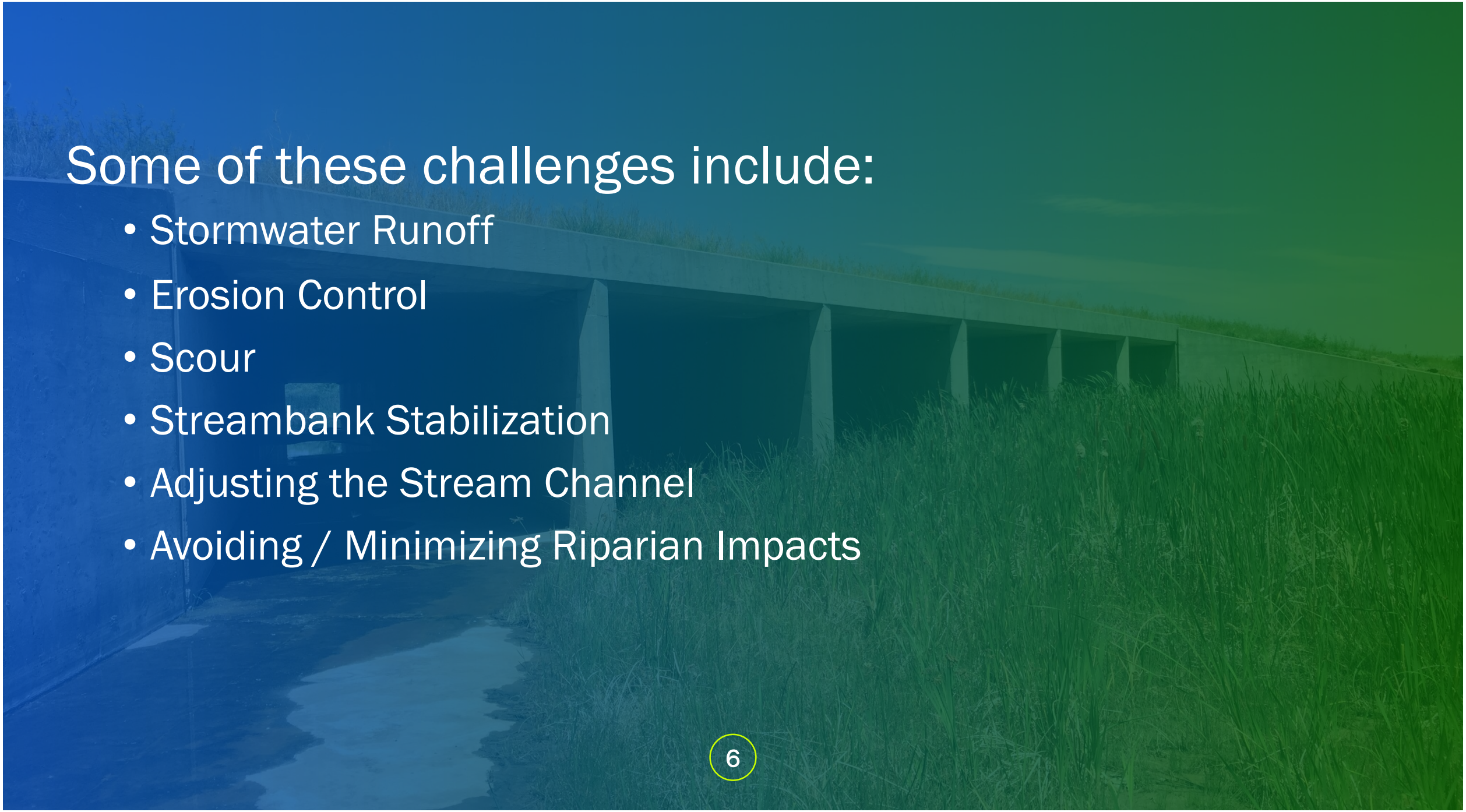
- Challenges of Linear Transportation Infrastructure in a Riparian Area
- Opportunities to Enhance and Restore Riparian Areas during Road and Bridge Planning, Design, Construction and Repair
- Questions and Answers

Linear Transportation

Roads and Bridges are a critical component to the world we live in today.

Challenges

There are unique challenges involved in having linear transportation infrastructure within a riparian corridor.

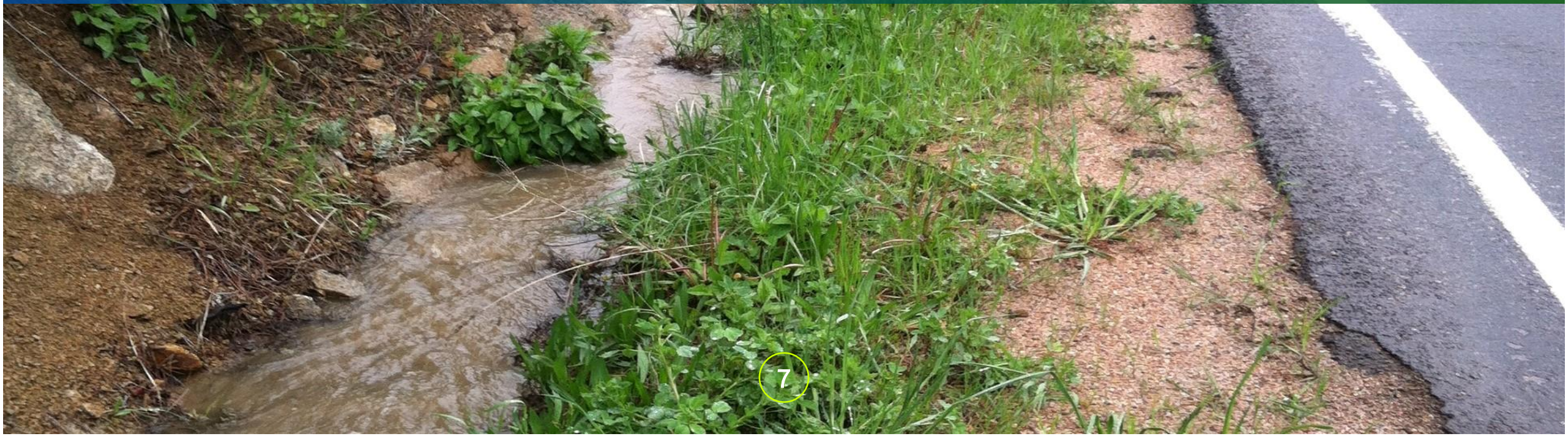


Some of these challenges include:

- Stormwater Runoff
- Erosion Control
- Scour
- Streambank Stabilization
- Adjusting the Stream Channel
- Avoiding / Minimizing Riparian Impacts

Stormwater Runoff

Stormwater runoff is created when rain or snowmelt accumulates on roads, driveways, bridges and other paved surfaces that do not allow water to soak into the ground.



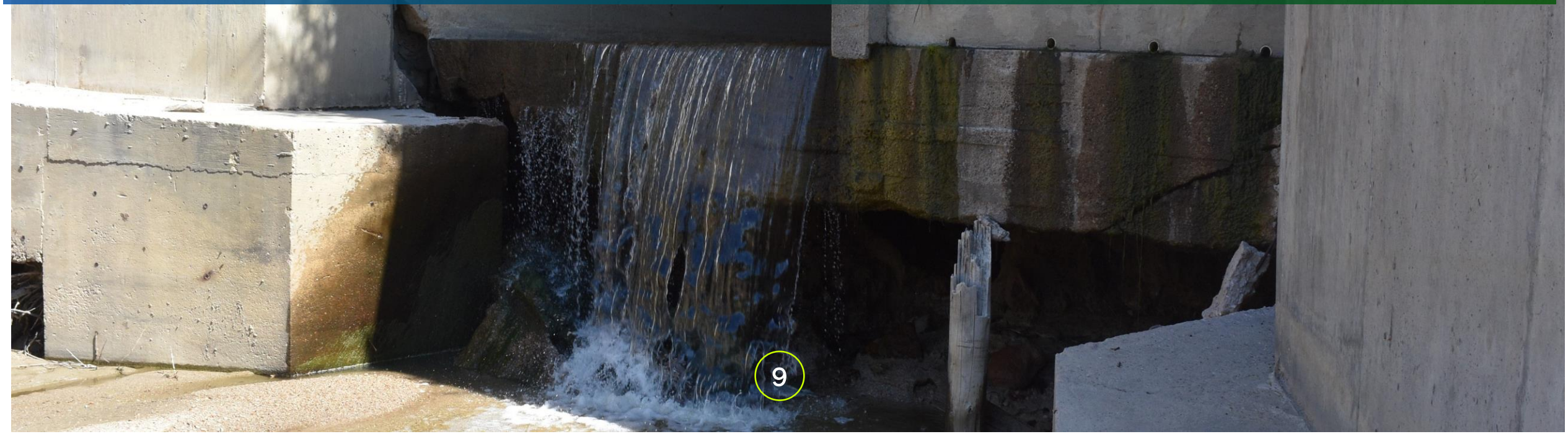
Stormwater Management

Stormwater runoff is a concern during and after construction.

- SWMP
- BMPs

Erosion Control

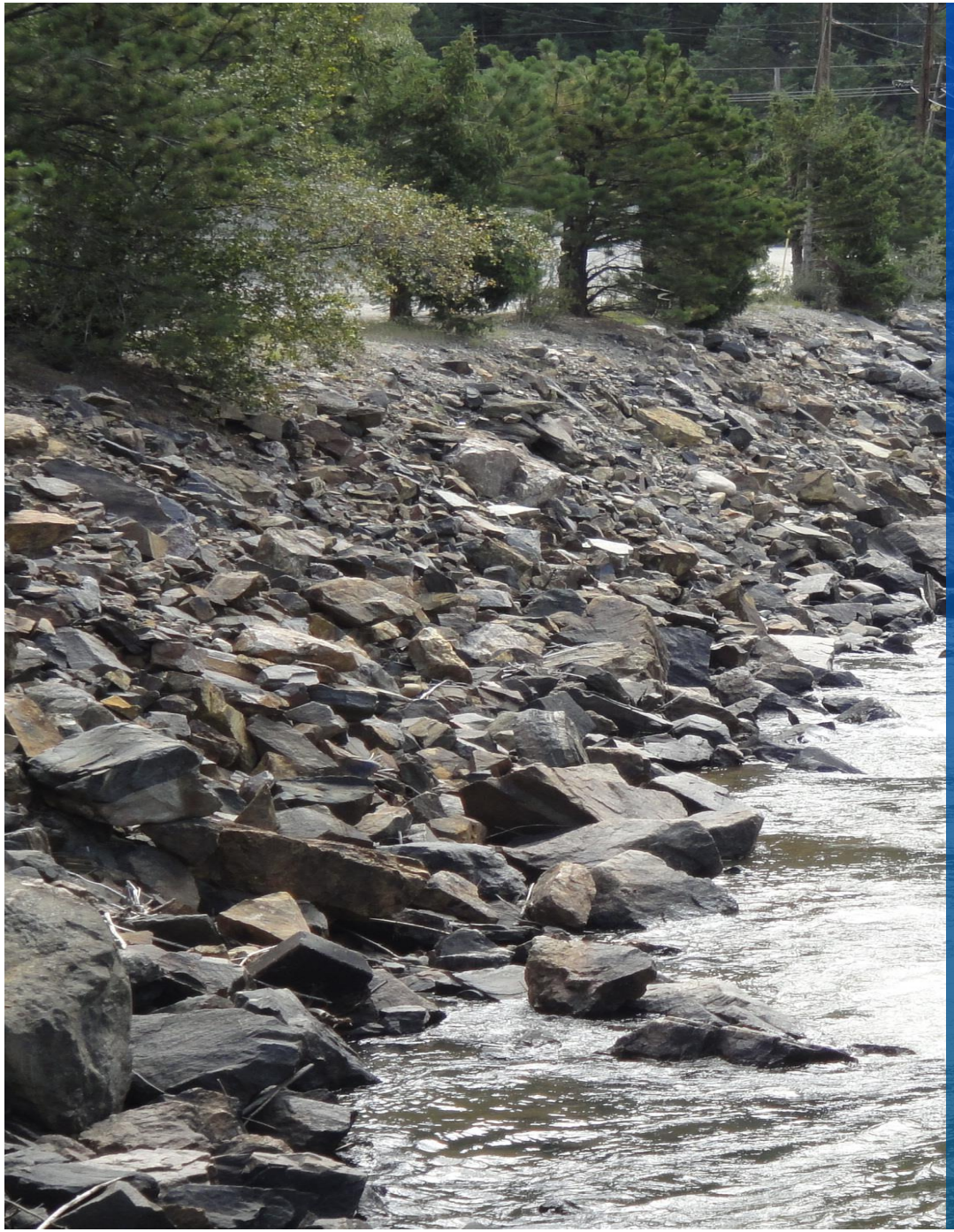
Erosion control is the practice of preventing or controlling wind or water erosion.



Erosion in Riparian Areas

Scour

Scour is the engineering term for the erosion of soil surrounding a bridge foundation, including piers and abutments.



Streambank Stabilization

Traditional riprap coverage has historically been a standard and popular approach to bank stabilization.

- Reducing bank area and habitat
- Preventing revitalization and generation of riparian areas.

Adjusting the Stream Channel

As roads are built and used, new and unforeseen effects often appear.

Avoiding / Minimizing Riparian Impacts

Understanding mitigation as a sequence is an important part of addressing impacts comprehensively.

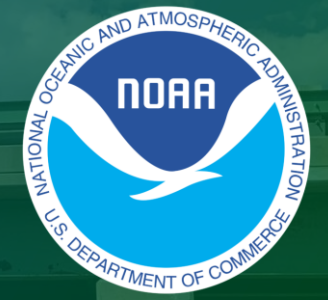
1. Avoidance
2. Minimization
3. Mitigation

Opportunities

Balancing decisions concerning the riparian area and transportation infrastructure is critical to the long-term health of the riparian ecosystem and infrastructure.

Protecting and Restoring Riparian Areas

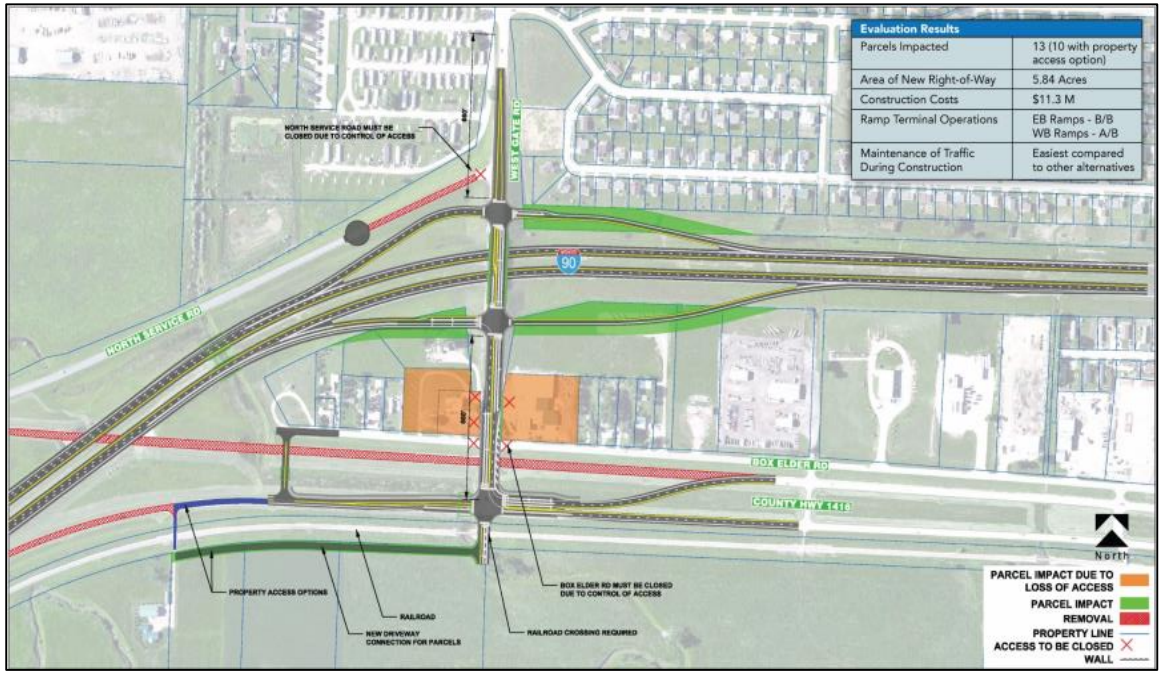
Protecting and restoring riparian areas and habitat connectivity along transportation corridors has become a priority for many agencies.

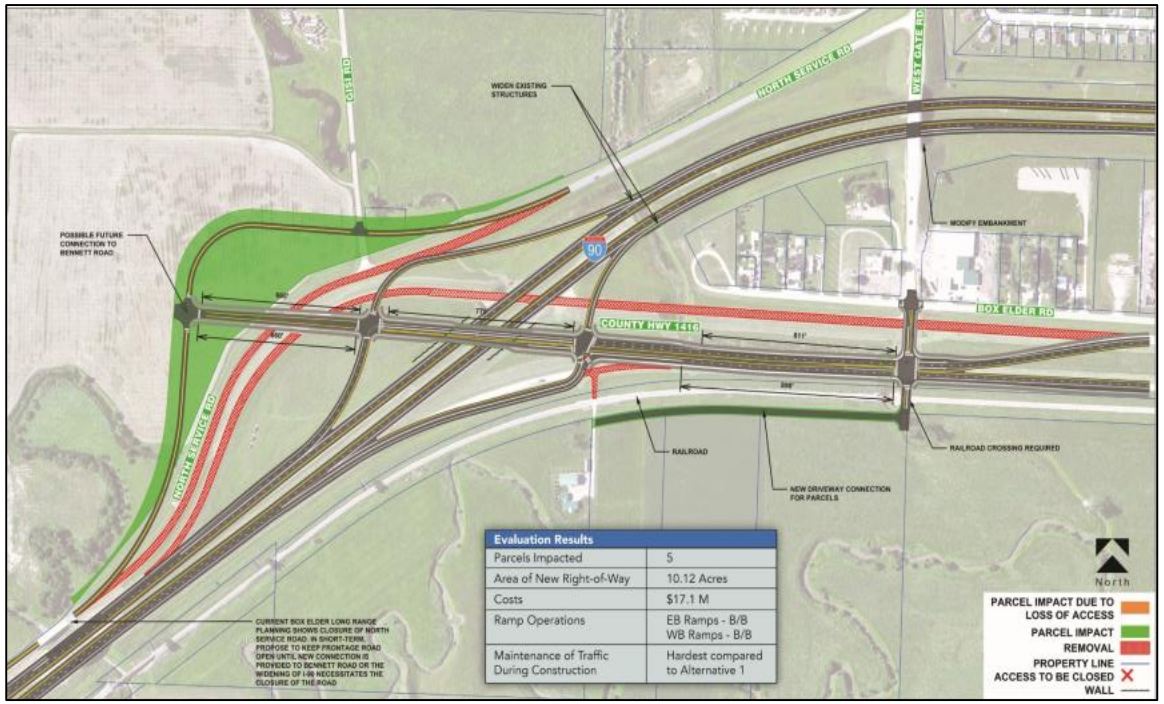


Potential Opportunities

The planning, design, construction, and operation and maintenance can be conducted in a way to reduce or eliminate impacts to riparian areas.

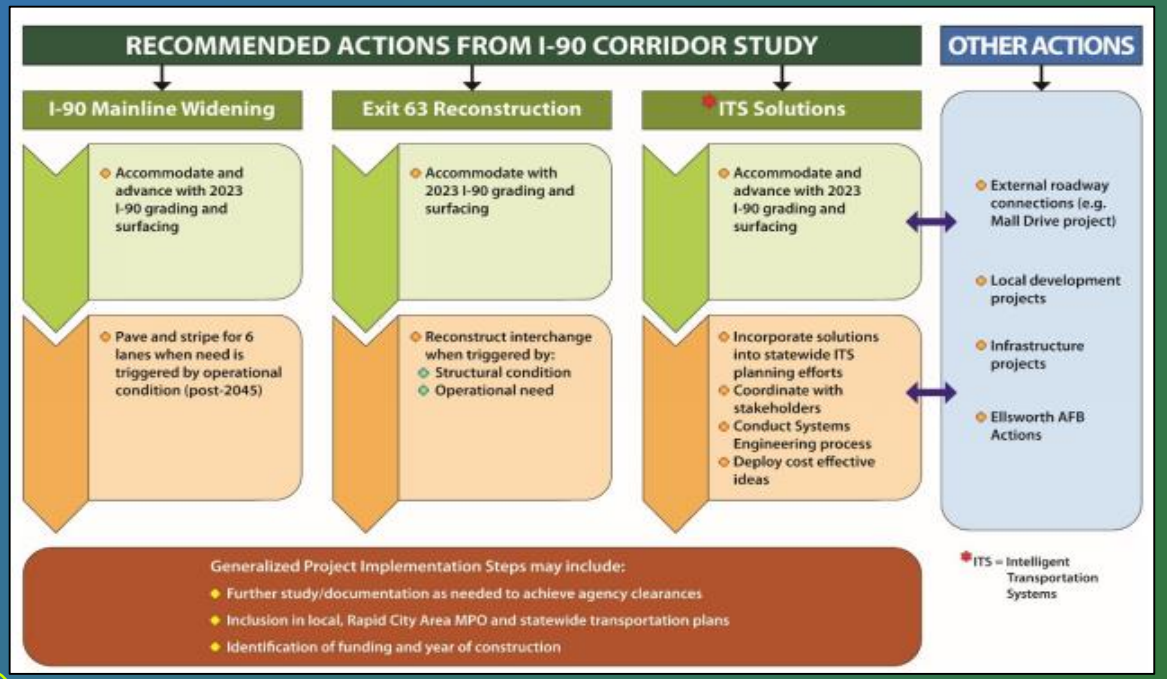
1. Planning Phase
2. Design Phase
3. Construction Phase
4. Operation and Maintenance Phase





Planning Phase

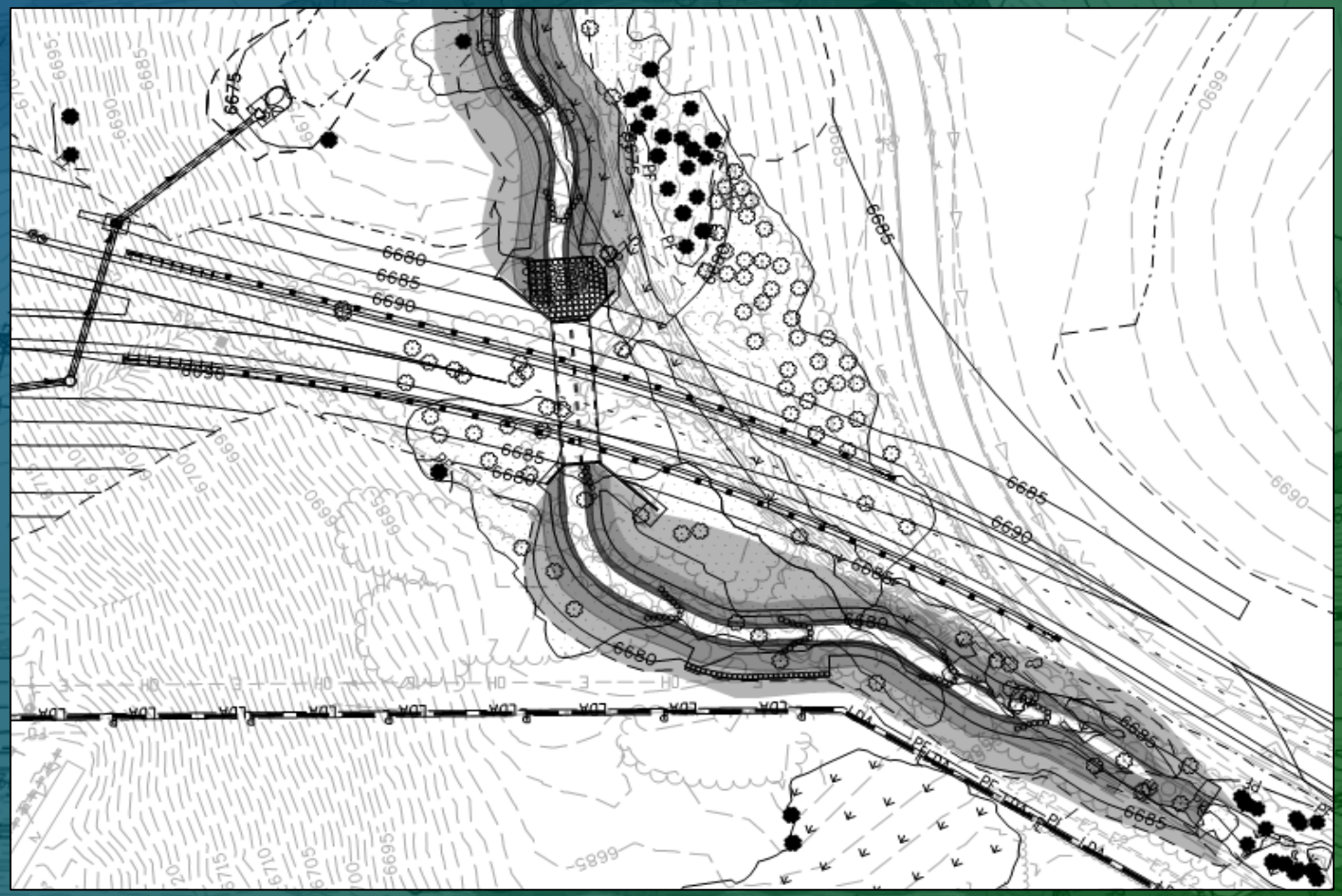
Planning includes consideration of all various transportation options, potential locations, and possible basic designs.



Design Phase

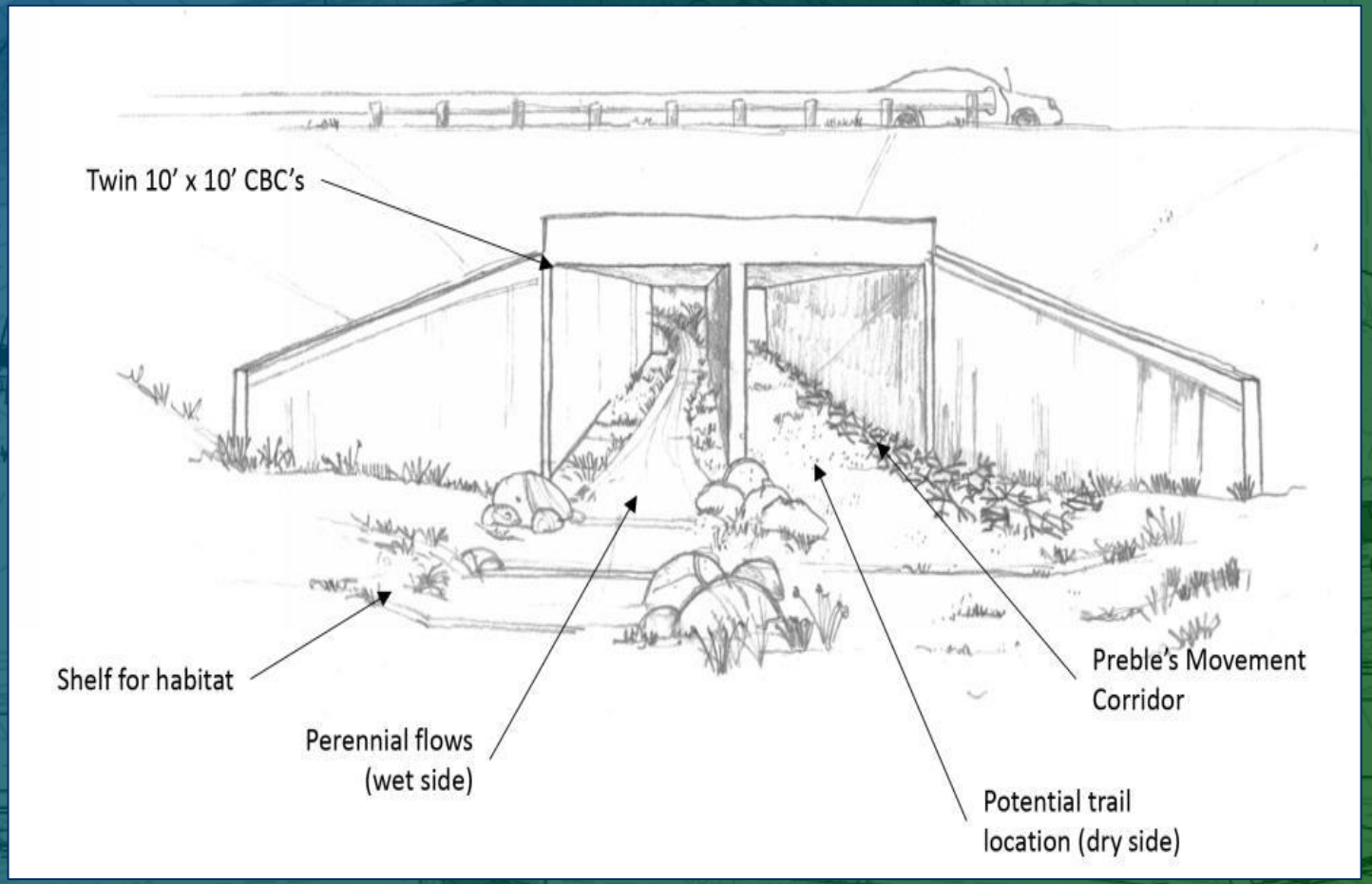
This phase determines the specific potential impacts on adjacent and nearby riparian areas.

- Minimizes Ecological Impacts
- Mitigates Hydrological Patterns



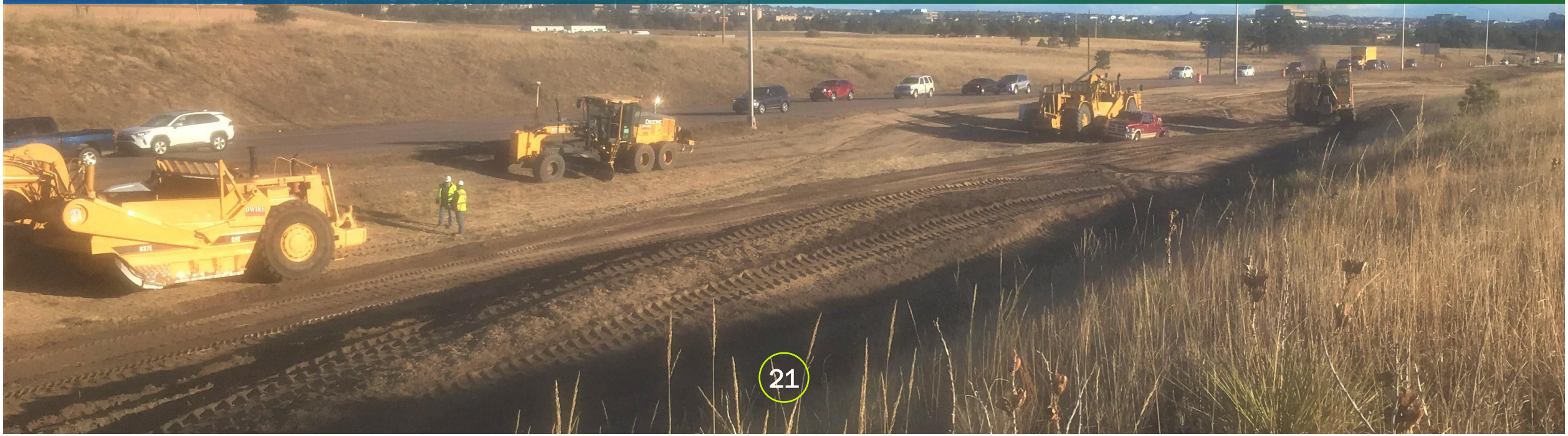
Design Phase

This phase also provides the opportunity for incorporating substantial restoration or habitat creation activities.



Construction Phase

Involves the vegetation removal, earth moving, and road building activities that impact the surrounding habitats.



Erosion & Sediment Control

Reduce soil erosion, runoff, and other construction related impacts

- Strict Application of Specifications
- Permanent Control Measures
- Limit Construction Dates

Operation and Maintenance

Includes all post-construction activities associated with the built project.

Mitigation opportunities include long-term applications of BMPs.

Best Management Practices (BMPs)

BMPs can describe a wide range of management procedures, scheduling of activities, operating procedures, treatment requirements and practices.

Some of the most effective road BMPs to protect riparian areas include:

- Examining Practical Alternatives
- Complying with all Permits
- Minimizing and Avoiding Impacts

Monitoring

As time goes on, new or unforeseen effects can appear, such as effects from erosion, that require correction.

- Operation of Design Mitigations are still Functioning
- Corrective Actions that Improve the Riparian Area
- Retro-fit Existing Roadway Infrastructure

A Successful Project

Utilizing agency partnerships, taking advantage of potential opportunities, and employing effective BMPs, can most often lead to a successful transportation and riparian project.


Questions?

THANK YOU!

Haley Stratton and Tamara Keefe

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

Phone

(303) 721-1440

Email

Haley.Stratton@fhueng.com

Tamara.Keefe@fhueng.com