



# DAMMED

Andrew Kodet  
Spring 2024

Master Planning Along the Lower Snake River  
in a Post Dam-Removal Condition



# Background



**Fargo, ND**



**Port Angeles, WA**



# Removal Process

## Fargo, ND



## Port Angeles, WA



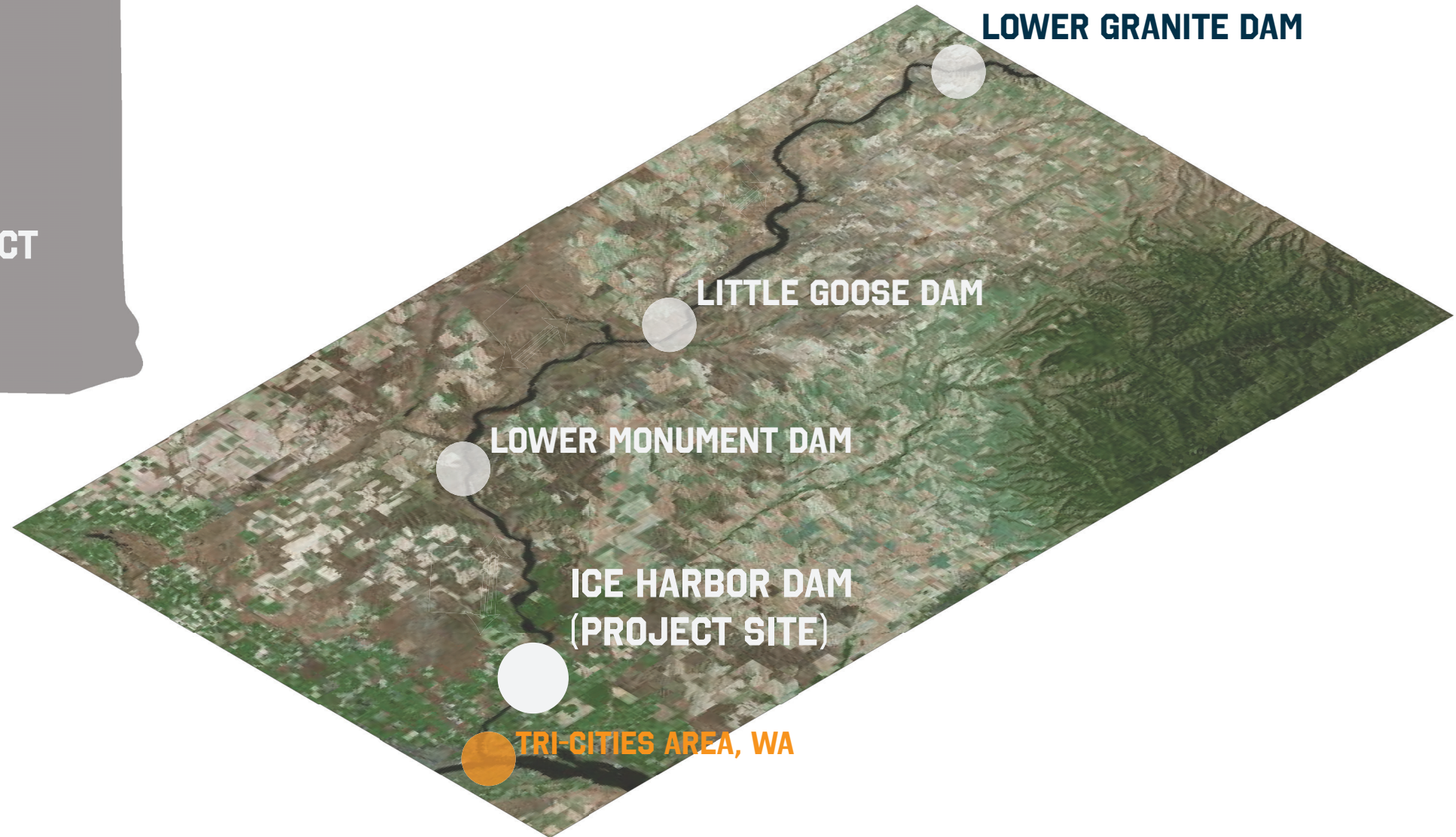


# Results



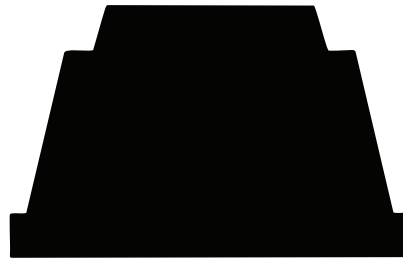
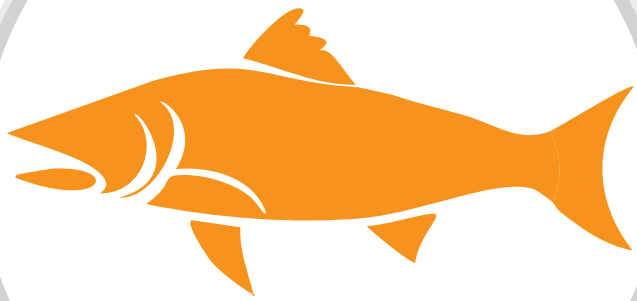


# LOWER 4 SNAKE RIVER DAMS

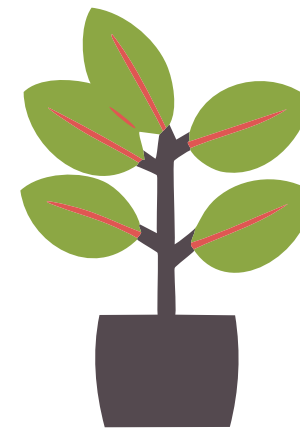




# Why Removal?



**Tribal  
Connections**





**“It’s time to craft a new future for the Pacific Northwest—culturally, economically, and ecologically.”**

**-WSC Government Affairs Director Jess Helsley**





**Currently**





# Snake River Valley





# River Corridor

Fragmented Riparian Area

Irrigated Farmland

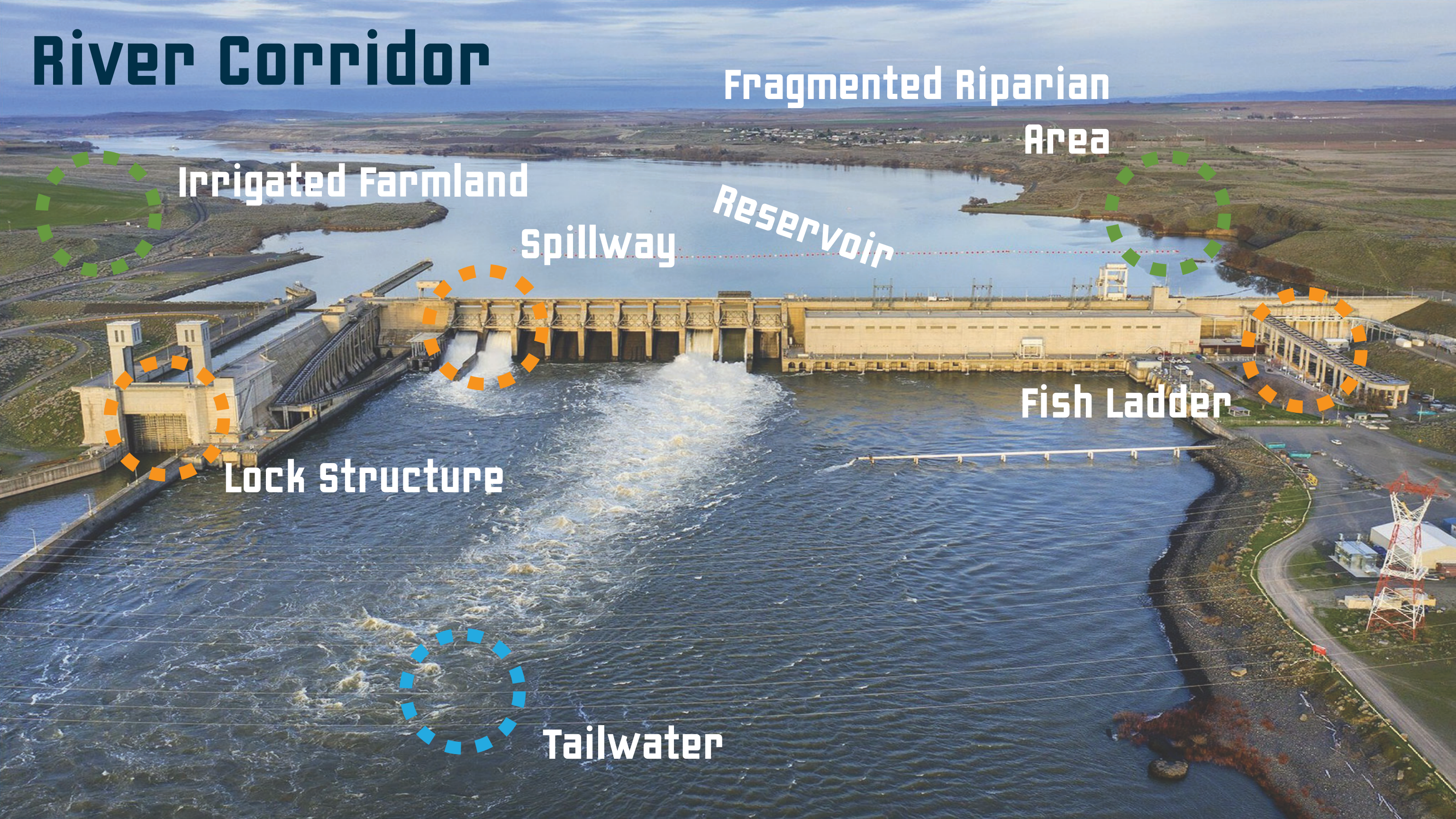
Reservoir

Spillway

Fish Ladder

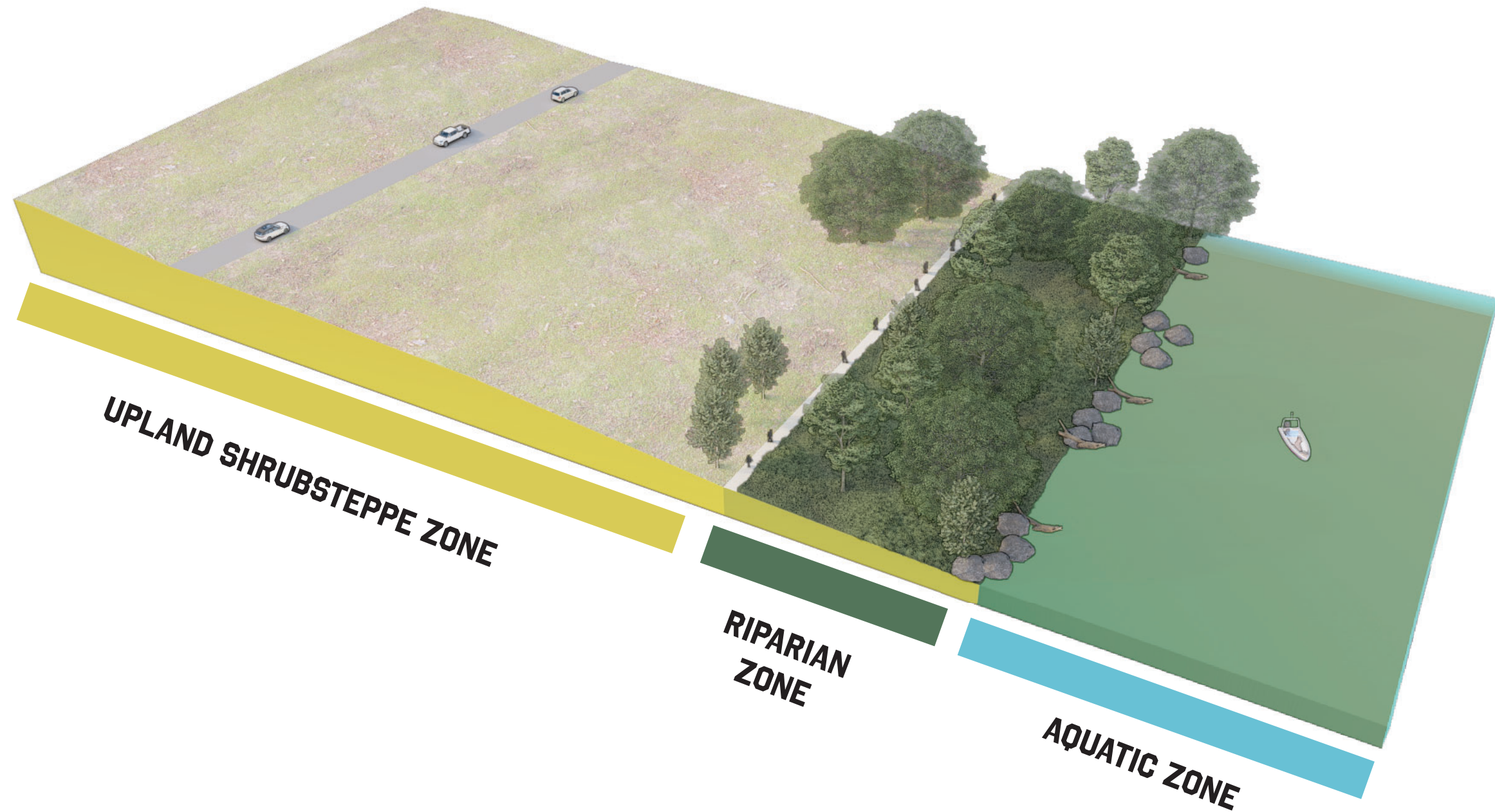
Lock Structure

Tailwater





# Ecological Zones





# Project Objectives

*-Restore native ecology including riparian plant communities, shrubsteppe areas, and aquatic habitat.*

*-Integrating a connecting parkway and recreational master plan to encompass human activity, interaction, and education.*

*-Restoring natural configuration to the river with proper shoreline stabilization.*



# Ice Harbor Dam Site Master Plan



## Site Key

- 1 Nature Center
- 2 Trail Parkway
- 3 River Walk
- 4 Levey Park
- SHRUBLAND RESTORATION
- RIPARIAN AREA RESTORATION
- WALKING TRAIL
- BOAT LAUNCH + WATER RECREATION AMENITIES
- VIEWING PIER + WALK-IN FISHING AREA
- SHORELINE STABILIZATION



# Master Planning Approach

Restoring river back to its native configuration

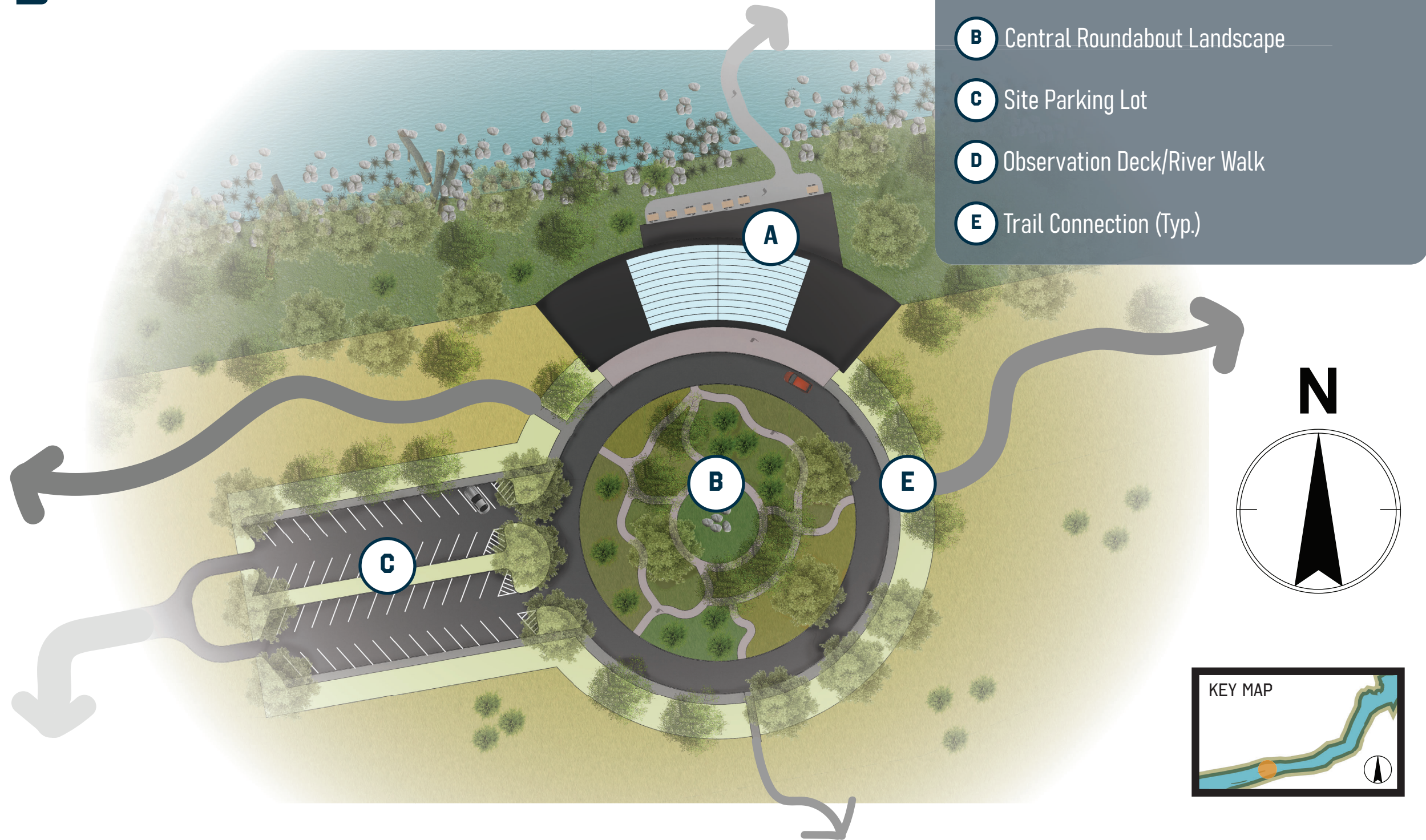
Balance between environmental and interactive elements

Room for educational opportunities



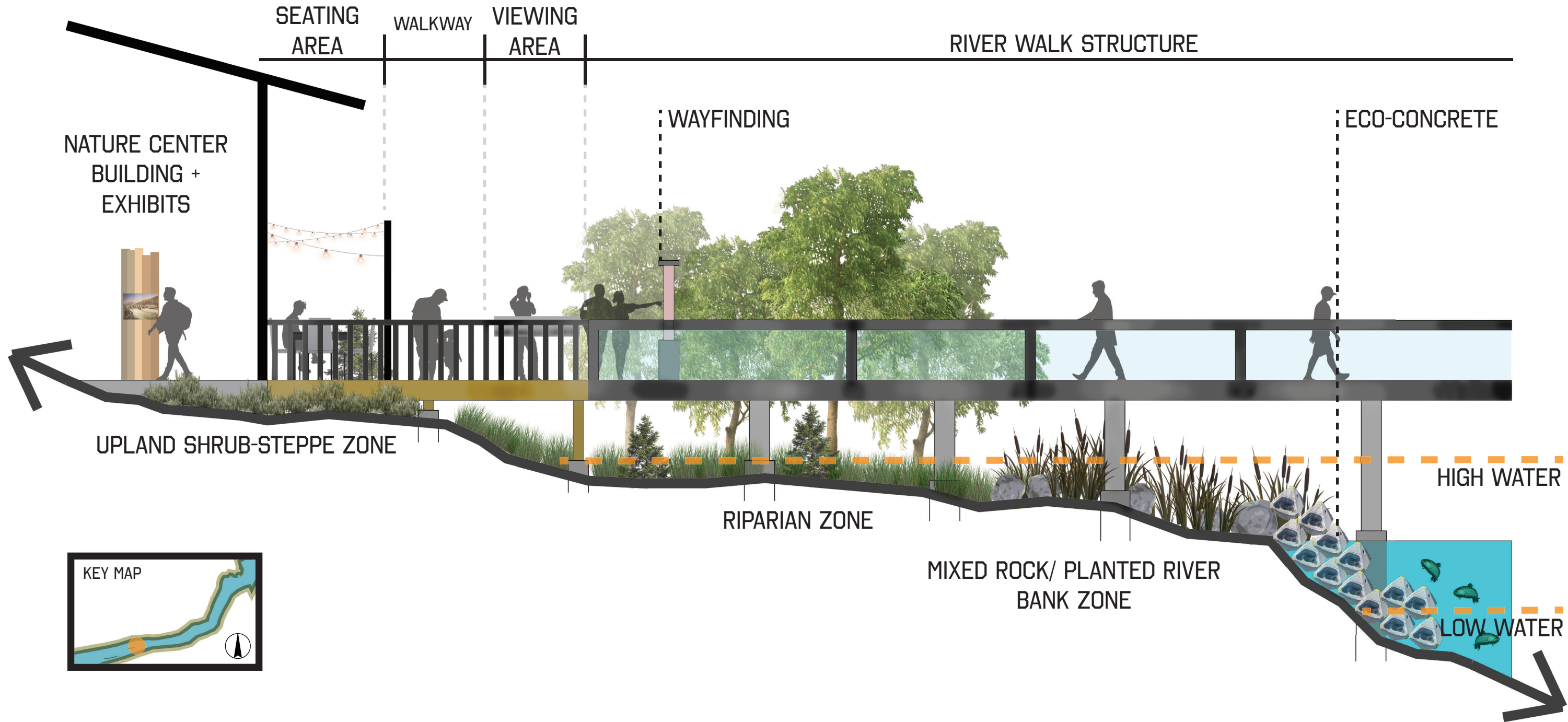


# Building + Site Plan





# River Walk Structure





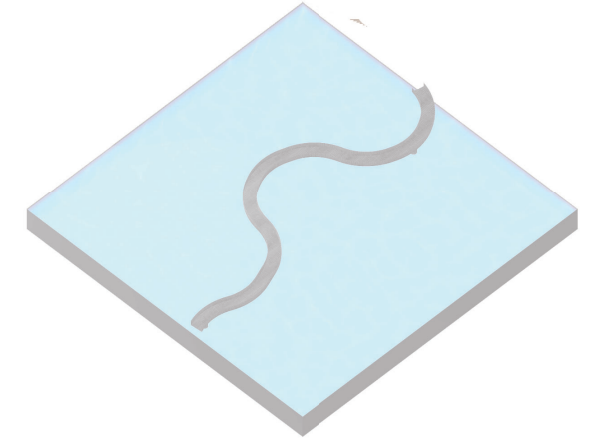
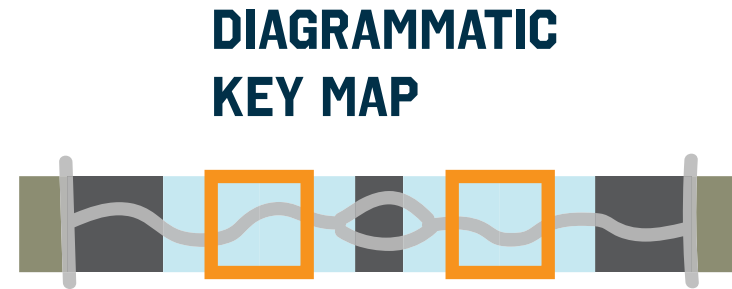
# Snake River Nature Center



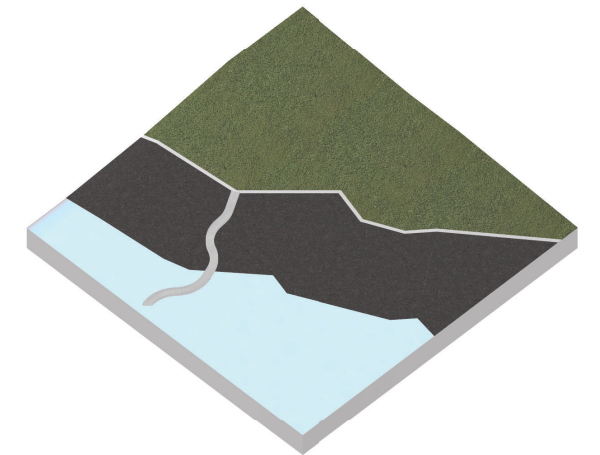
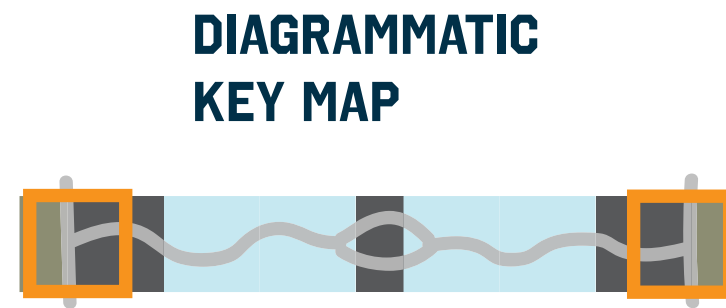


# Structural Zones

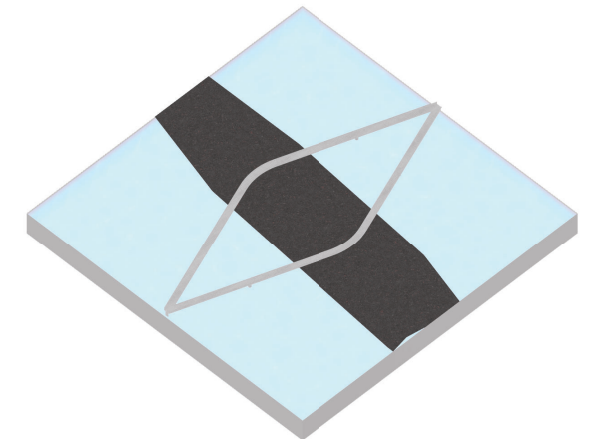
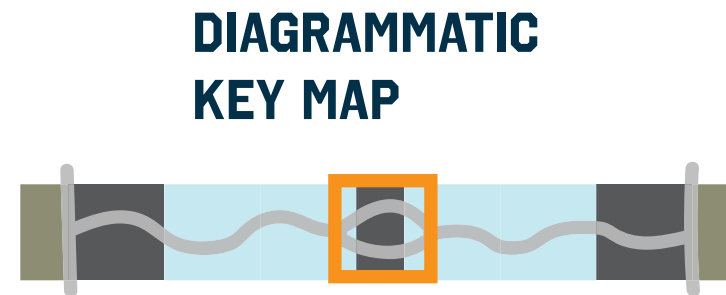
## MEANDERING WALKWAY



## TRAIL SYSTEM CONNECTION

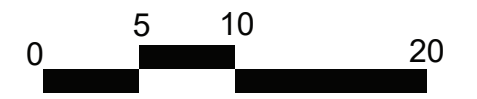
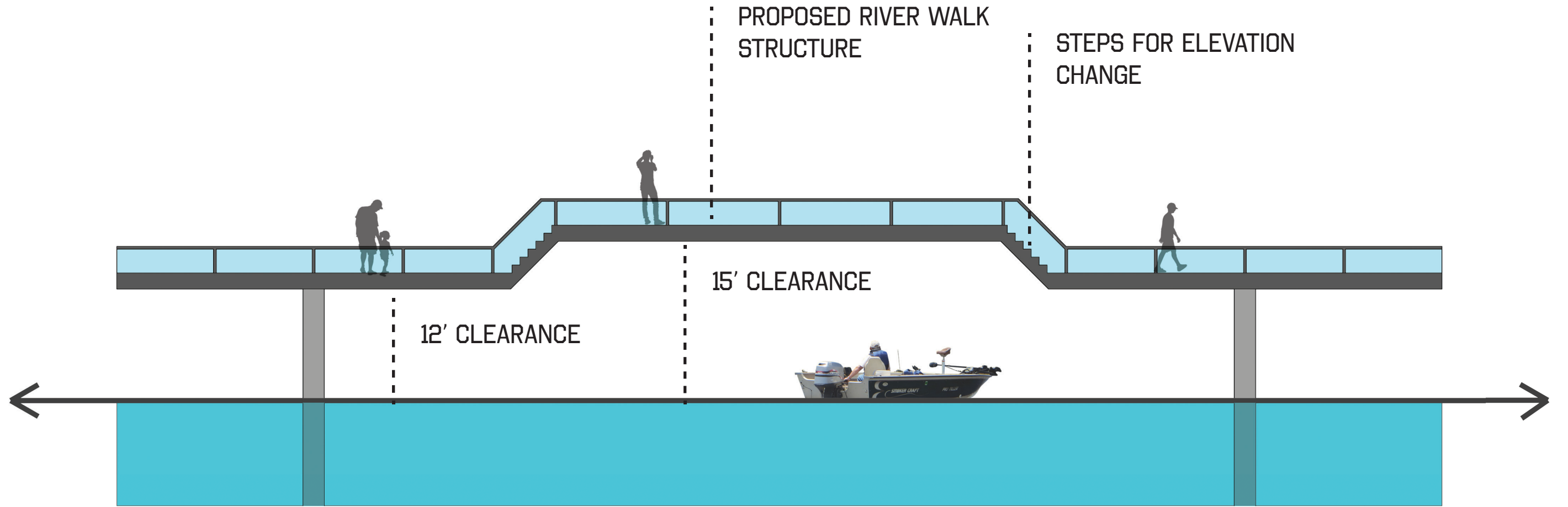


## ISLAND OBSERVATION LOOP



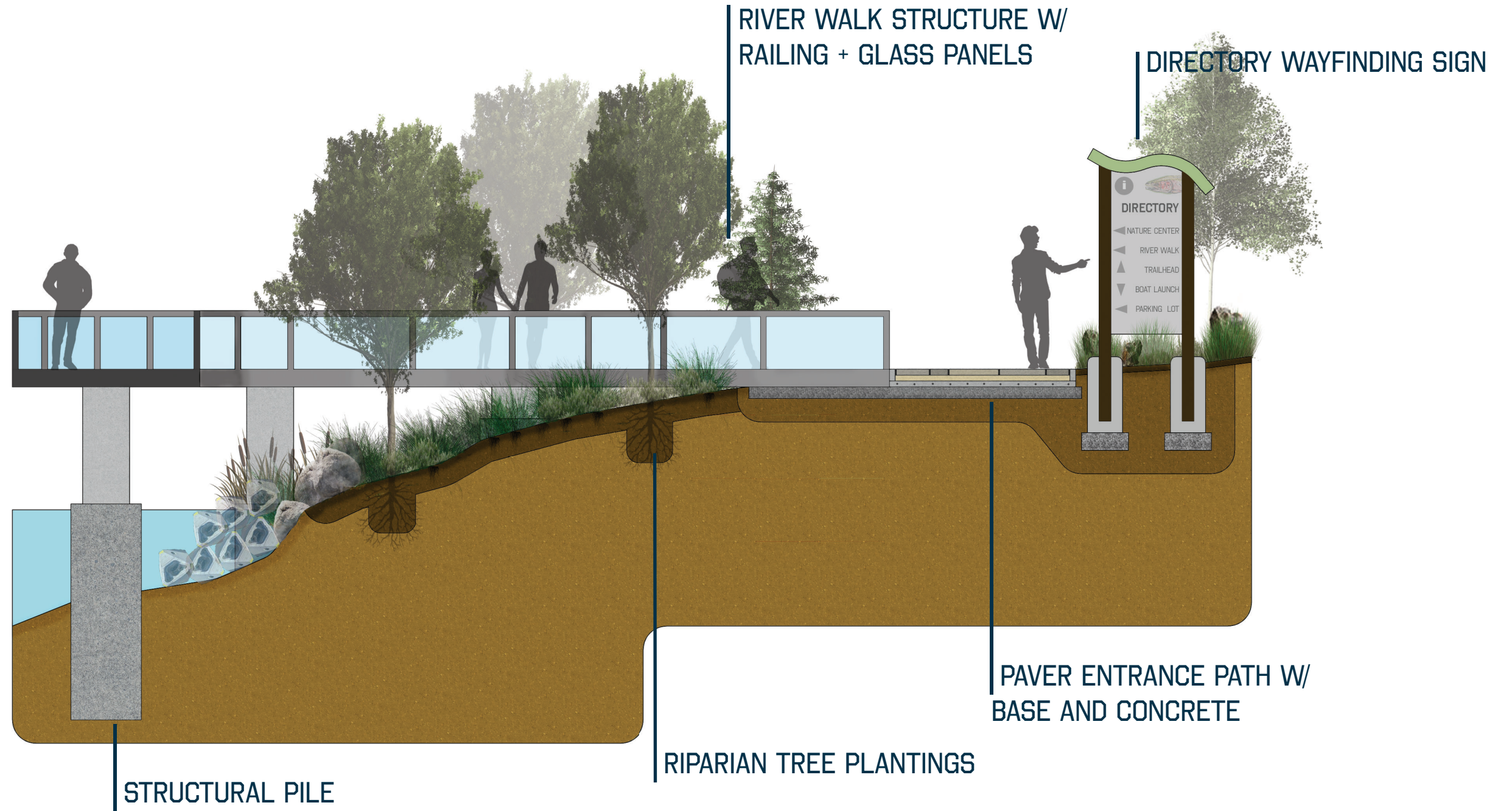


# Watercraft Usage





# Structure Connection to Trail





# Why River Walk Structure?

Enhanced circulation around river corridor

Close interaction and views over the river

Symbolic element of the removed dam structure



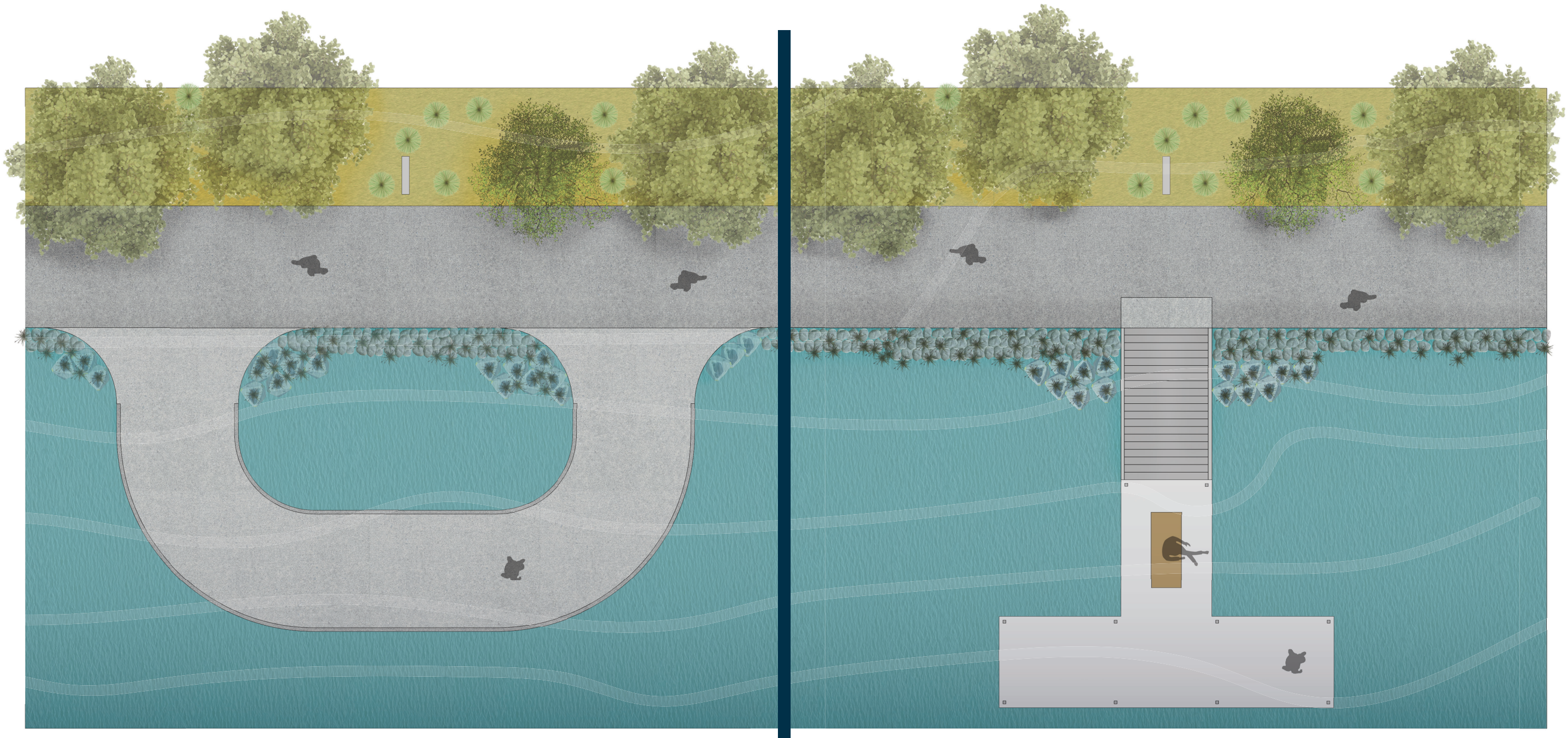


# River Shoreline + Parkway



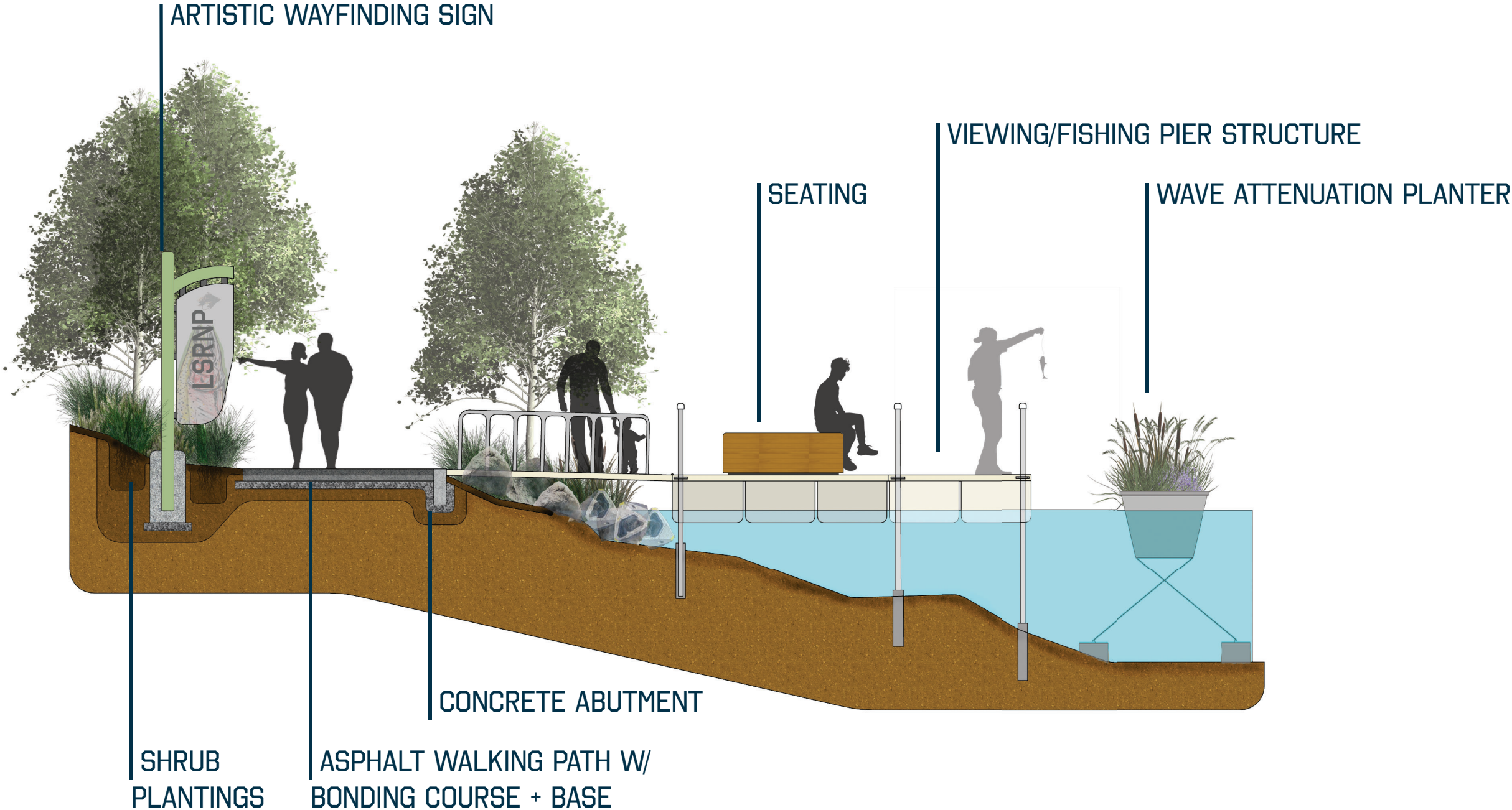


# Parkway + River Interaction



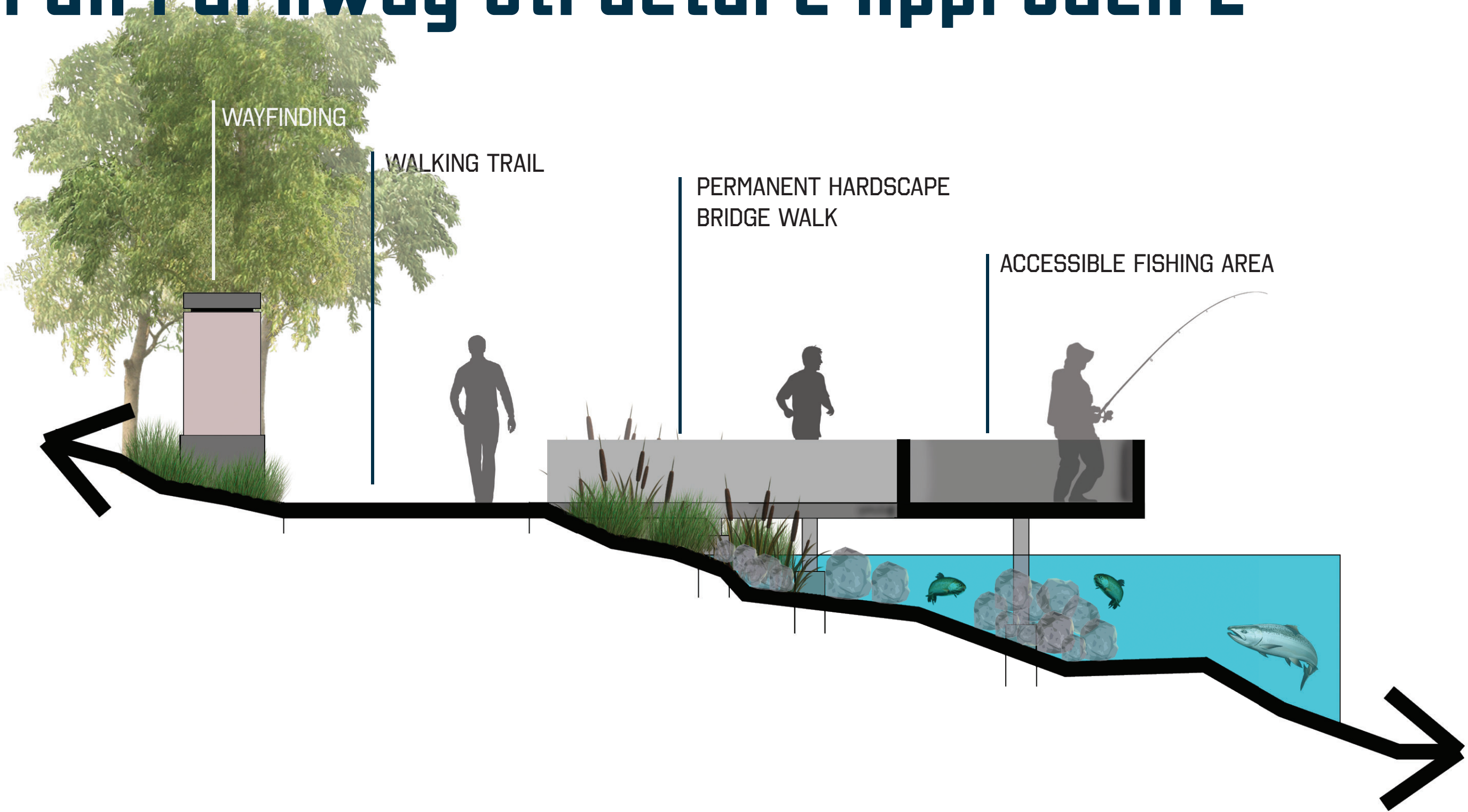


# Trail Parkway Structure Approach 1





# Trail Parkway Structure Approach 2

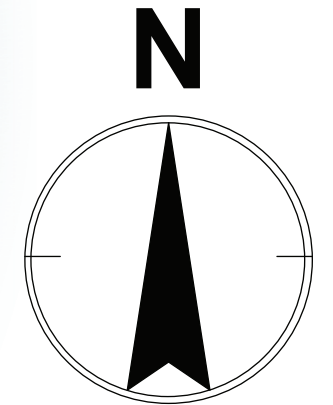
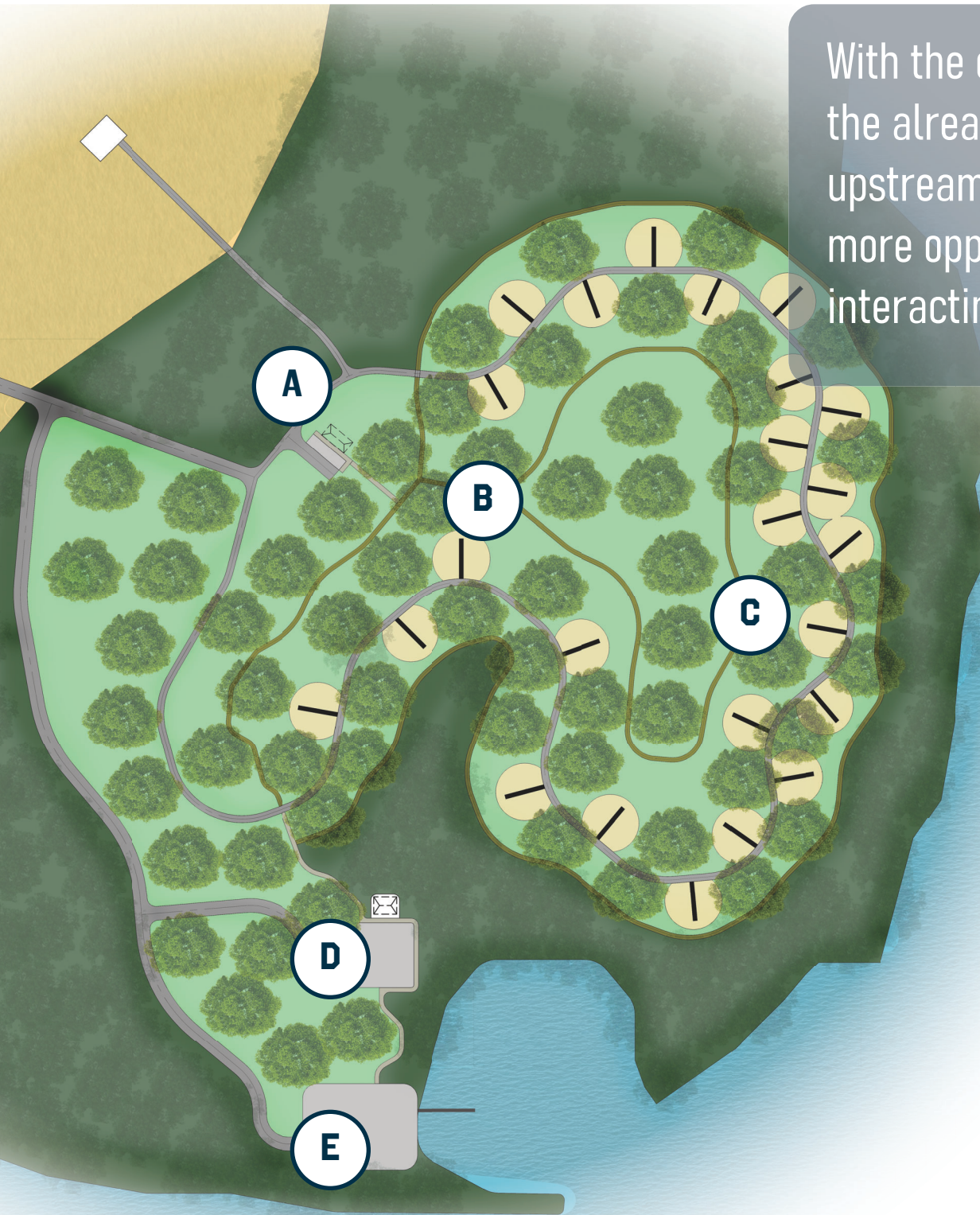




# Levey Park

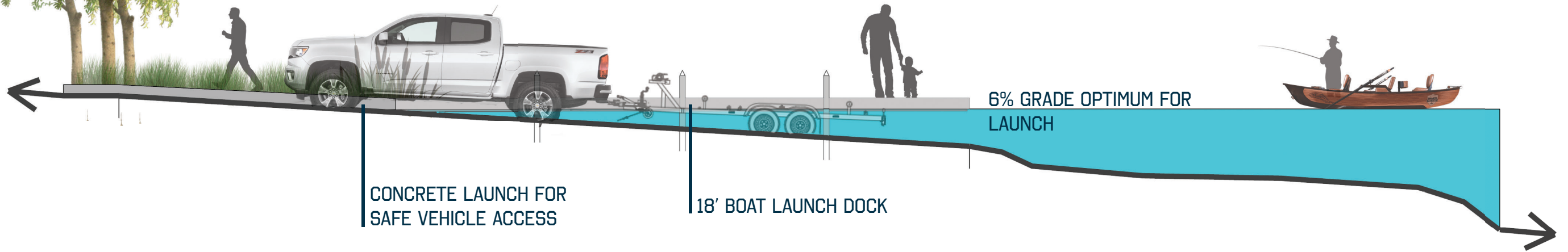
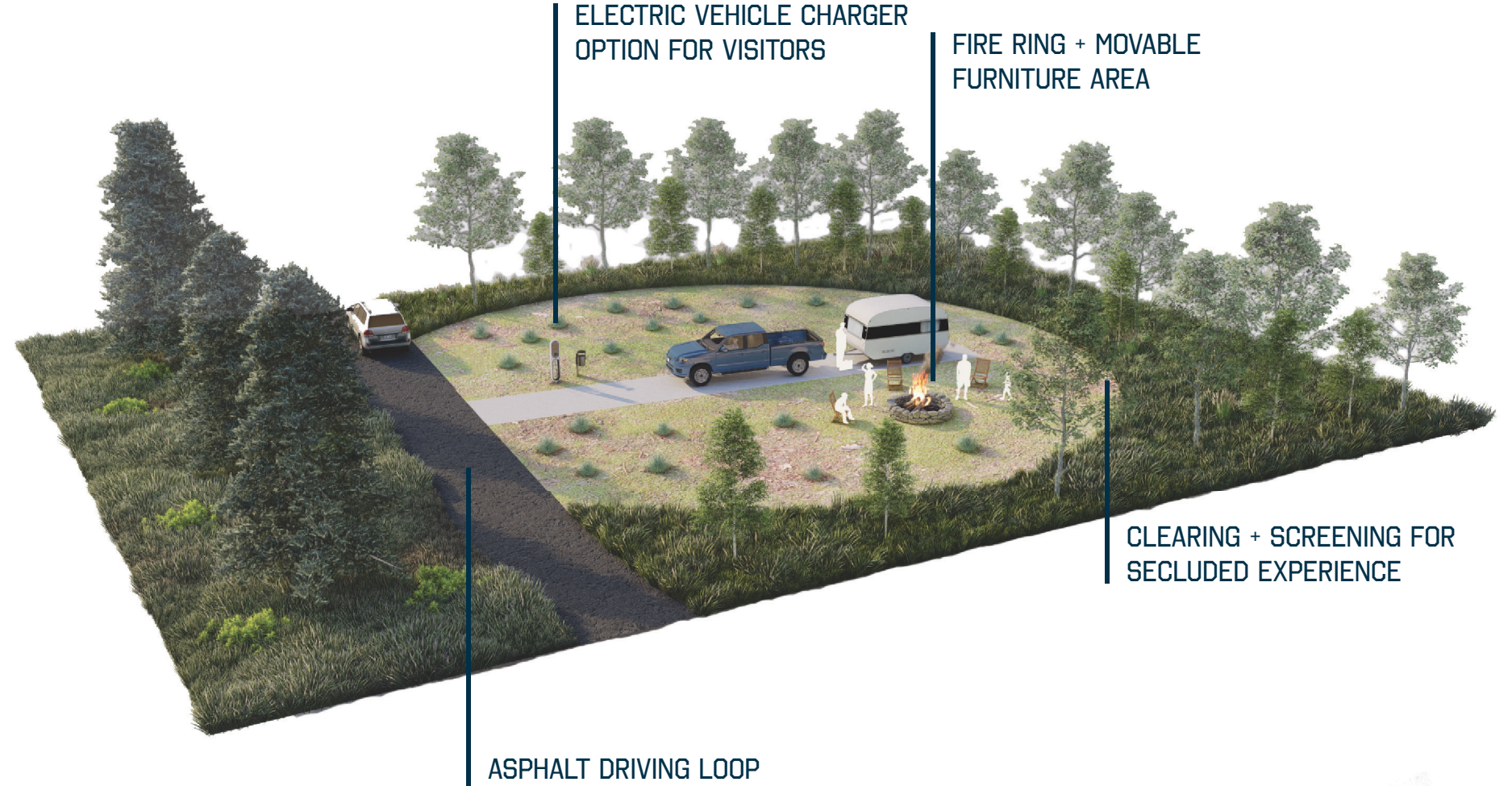
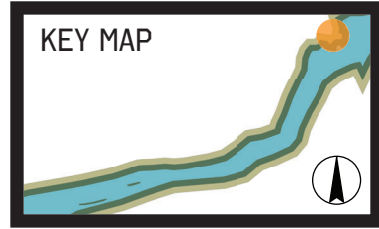
With the opportunity to expand upon the already existing Levey Park upstream of the dam removal site, more opportunities for camping and interacting with the river persist.

- A** Ranger Station
- B** Campsite Clearing
- C** Trail Walking Loop
- D** Picnic Area
- E** Watercraft Launch + Parking Lot





# Campground Features





# Aquatic Habitat Details

- A Eco-Concrete Rip Rap (Typ.)
- B Vegetated Crevice (Typ.)
- C Riparian Shoreline

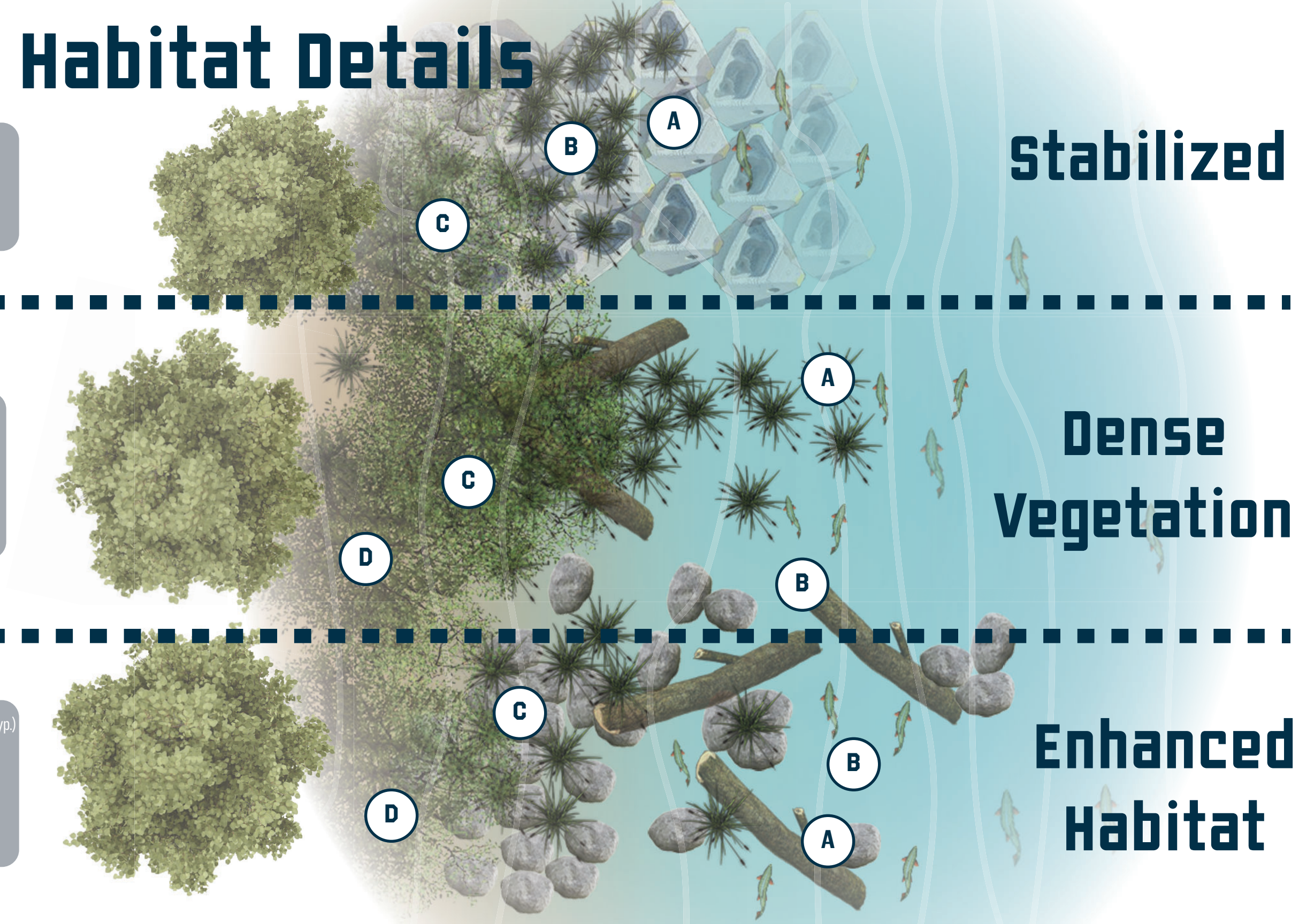
**Stabilized**

- A Reed Planting (Typ.)
- B Log Placement (Typ.)
- C Dense Vegetated Edge
- D Riparian Shoreline

**Dense  
Vegetation**

- A Log/Root Wad Placement (Typ.)
- B Pocket for Aquatic Habitat
- C Boulder Shoreline
- D Riparian Shoreline

**Enhanced  
Habitat**





# Overall River Corridor

## NATIVE HABITAT IMAGERY



UPLAND SHRUBSTEPPE  
ZONE

RESTORED RIPARIAN ZONE

AQUATIC ZONE



# Project Synthesis

Nurturing habitat and landscape to promote regrowth of native life, including anadromous fish species

Regional destination promoting recreational + educational opportunities, reminding us of the existence of the dams and growth since

Serving as a set of design guidelines, aiming to be a replicable answer for future dam removal





# DAMMED

*Thank You*

*Questions?*



# Works Cited

BLUMM, M. C., & ERICKSON, A. B. (2012). DAM REMOVAL IN THE PACIFIC NORTHWEST: LESSONS FOR THE NATION. ENVIRONMENTAL LAW, 42(4), 1043–1100. [HTTP://WWW.JSTOR.ORG/STABLE/43267821](http://www.jstor.org/stable/43267821)

POFF, N. L., & HART, D. D. (2002). HOW DAMS VARY AND WHY IT MATTERS FOR THE EMERGING SCIENCE OF DAM REMOVAL: AN ECOLOGICAL CLASSIFICATION OF DAMS IS NEEDED TO CHARACTERIZE HOW THE TREMENDOUS VARIATION IN THE SIZE, OPERATIONAL MODE, AGE, AND NUMBER OF DAMS IN A RIVER BASIN INFLUENCES THE POTENTIAL FOR RESTORING REGULATED RIVERS VIA DAM REMOVAL. BIOSCIENCE, 52(8), 659–668. [HTTPS://DOI.ORG/10.1641/0006-3568\(2002\)052\[0659:HDVAWI\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2002)052[0659:HDVAWI]2.0.CO;2)

BAXTER, R. M. (1977). ENVIRONMENTAL EFFECTS OF DAMS AND IMPOUNDMENTS. ANNUAL REVIEW OF ECOLOGY AND SYSTEMATICS, 8, 255–283. [HTTP://WWW.JSTOR.ORG/STABLE/2096729](http://www.jstor.org/stable/2096729)

STANLEY, E. H., & DOYLE, M. W. (2003). TRADING OFF: THE ECOLOGICAL EFFECTS OF DAM REMOVAL. FRONTIERS IN ECOLOGY AND THE ENVIRONMENT, 1(1), 15–22. [HTTPS://DOI.ORG/10.2307/3867960](https://doi.org/10.2307/3867960)

POFF, N. L., ALLAN, J. D., PALMER, M. A., HART, D. D., RICHTER, B. D., ARTHINGTON, A. H., ROGERS, K. H., MEYER, J. L., & STANFORD, J. A. (2003). RIVER FLOWS AND WATER WARS: EMERGING SCIENCE FOR ENVIRONMENTAL DECISION MAKING. FRONTIERS IN ECOLOGY AND THE ENVIRONMENT, 1(6), 298–306. [HTTPS://DOI.ORG/10.2307/3868090](https://doi.org/10.2307/3868090)

## CASE STUDIES

FINAL BLAST REMOVES THE COPCO NO. 2 DAM FROM THE KLAMATH RIVER - ACTIVE NORCAL

ON THE KLAMATH, DAM REMOVAL MAY COME TOO LATE TO SAVE THE SALMON - YALE E360

DAM AND RESERVOIR REMOVAL PROJECTS: A MIX OF SOCIAL-ECOLOGICAL TRENDS AND COST-CUTTING ATTITUDES | SCIENTIFIC REPORTS (NATURE.COM)

ELWHA RIVER ECOLOGY BURSTS WITH NEW LIFE FOLLOWING DAM REMOVALS IN WASHINGTON (REVITALIZATION.ORG)

ELWHA RIVER DAM REMOVAL HISTORIC, BUT NOT EXPLOSIVE | KNKX PUBLIC RADIO

BOARDMAN RIVER PROJECT ENTERS FINAL PHASE - DREDGING TODAY

A RIVER REBORN - CONSERVATION RESOURCE ALLIANCE (RIVERCARE.ORG)

SHOWCASING THE MICHIGAN DNR: BOARDMAN RIVER DAM-REMOVAL PROJECT MOVING FORWARD - GR8LAKESCAMPER

CLARK FORK RIVER – AMERICA'S MOST ENDANGERED RIVERS® OF 2023

MILLTOWN DAM REMOVAL & CLEAN UP PROJECT - CLARK FORK COALITION

## IMAGE CREDIT

[WWW.INFORUM.COM/NEWSMD/LOW-HEAD-DAMS-POSE-PUBLIC-SAFETY-THREAT](http://www.inforum.com/newsmd/low-head-dams-pose-public-safety-threat)

[WWW.PATAGONIA.COM/ACTIONWORKS/CAMPAIGNS/REMOVE-THE-SNAKE-RIVER-DAMS/](http://www.patagonia.com/actionworks/campaigns/remove-the-snake-river-dams/)

[WWW.COLUMBIAN.COM/NEWS/2020/JAN/17/SNAKE-DAM-ISSUES-GET-PERSONAL-AT-PASCO-RALLY/](http://www.columbian.com/news/2020/jan/17/snake-dam-issues-get-personal-at-pasco-rally/)

[REVITALIZATION.ORG/ARTICLE/ELWHA-RIVER-ECOLOGY-BURSTS-WITH-NEW-LIFE-FOLLOWING-DAM-REMOVALS-IN-WASHINGTON/](http://revitalization.org/article/elwha-river-ecology-bursts-with-new-life-following-dam-removals-in-washington/)

[WWW.NPS.GOV/OLYM/LEARN/NATURE/DAM-REMOVAL.HTM](http://www.nps.gov/olym/learn/nature/dam-removal.htm)

[HTTPS://WATERLOGUS.BLOGSPOT.COM/2015/05/DAMS-AND-FISH-LADDERS-COLUMBIA-AND.HTML](https://waterlogus.blogspot.com/2015/05/dams-and-fish-ladders-columbia-and.html)

[HTTPS://TDN.COM/LIFESTYLES/MERWIN-HOME-TO-PIKEMINNOW/ARTICLE\\_B1D11888-8CA7-53CC-8962-F78F93EA617B.HTML](https://tdn.com/lifestyles/merwin-home-to-pikeminnow/article_b1d11888-8ca7-53cc-8962-f78f93ea617b.html)

[HTTPS://WILDSALMONCENTER.ORG/2022/10/17/NEXT-STEPS-FOR-SNAKE-RIVER-DAM-REMOVAL/](https://wildsalmoncenter.org/2022/10/17/next-steps-for-snake-river-dam-removal/)