

# Lake Nokomis Shoreline Enhancement Project

## Community Meeting 2

February 13, 2018



# Agenda

- Current Problems
- Project Goals
- Project Status
- Existing Conditions
- Community Input
- Draft Schematic Design
- Long-term Care
- Discussion



A photograph of a riverbank with dense vegetation and a body of water. The foreground shows a sandy bank with some debris and a blue pipe or structure partially submerged in the water. The middle ground is filled with tall grasses and various trees, some with yellowing leaves. The background shows a dense line of trees across the water. The text "Current Problems" is overlaid in the center in a bold blue font.

## Current Problems

# Current Problems – Addressed by this Project

- Upland and shoreline **buffer habitat quantity and quality is limited** due to extensive turf and invasive species
- **Shoreline erosion** occurring in locations due to shading, wave action, trampling, and shallow-rooted vegetation
- **Aquatic habitat quantity and quality limited** due to little aquatic vegetation and poor water clarity
- **Sediment and algae** further suppress plant growth by preventing light penetration

# Current Problems – *Not* Addressed by this Project

## Lake Nokomis Groundwater and Surface Water Issues

- Comprised of Joint Interagency Technical Team
- The MPRB and City of Minneapolis are not the lead but are part of the multiple partner agencies involved
- Website:  
<http://www.minneapolismn.gov/publicworks/stormwater/nokomisgroundwater>
- Email Contact:  
[nokomisgroundwater@minneapolismn.gov](mailto:nokomisgroundwater@minneapolismn.gov)

A scenic view of a riverbank with tall grasses and trees, overlaid with a semi-transparent blue box containing the text 'Project Goals'. The background shows a calm river with ripples, a sandy bank on the left, and a dense line of green trees and bushes on the right. The text is centered in the blue box.

## Project Goals

# Project Goals...revolve around the “*Land-Water Interface*”

Critically important for...



# Project Goals

## Goals of the 2015 Master Plan:

- 1) Increase the amount of **naturalized landscape** in the park and around water bodies to:
  - Stabilize shorelines
  - Improve wildlife habitat for birds, pollinators, and fish
  
- 2) Naturalized areas will be managed and planted with select **native species** appropriate for the location and conditions of the specific site
  - Maintain appearance and height to retain views of the lake
  - Promote a safe and attractive park environment
  
- 3) **Transition** from 10% to 50% restored, naturalized landscape

# Project Goals – Master Plan (2015)

 Naturalized Shoreline/  
Wet Meadow



# Project Goals

## Goals of the Grant:

- 1) Enhance **4,800 linear feet** of shoreline by:
  - Re-grading banks to stabilize erosion
  - Removing invasive plants in the shoreline buffer
  - Installing appropriate native emergent and shoreline plants
  
- 2) Enhancements will **improve habitat** for fish, birds, reptiles, amphibians and aquatic invertebrates
  
- 3) Re-establish **aquatic and shoreline vegetation**, as this is critical to overall lake clarity

# Buffer Plantings



# Buffer, Shoreline & Emergent Plantings



# Loring Pond



# Durable Lake Access



A scenic view of a riverbank with tall grasses and trees, overlaid with a semi-transparent blue box containing the text 'Project Status'. The background shows a calm river with ripples, a sandy bank on the left with tall green grasses, and a dense line of trees in the distance. The text is centered in a bold, blue font.

## Project Status

# Project Status

	Task	2017				2018												2019	2020																		
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan-Dec	Jan-May	Jun																	
<b>1 Scoping</b>																																					
1.1	Project Kick-Off Meeting	X																																			
1.2	Prepare Work Plan		X																																		
1.3	Pre-Planning Agency Meeting & Project Advisory Committee Meeting #	X																																			
1.4	Community Meeting #1			X																																	
<b>2 Schematic Design</b>																																					
2.1	Prepare Draft Schematic Design (Concept) Plan				X	X																															
2.2	MPRB Project Advisory Committee Meeting #2					X																															
2.3	Permitting Pre-Application Consultation Meeting with Regulators	X																																			
2.4	Community Meeting #2						X																														
2.5	Development of Schematic Design					X	X																														
2.6	MPRB Project Advisory Committee Meeting #3							X																													
2.7	Community Meeting #3 ?							X																													
<b>3 Design Development/Construction Documents</b>																																					
3.1	Prepare 50% Design Development Plans								X																												
3.2	Prepare 100% Design Development Plans									X																											
3.3	Submit and Obtain Necessary Permits								X	X	X	X	X																								
3.4	Prepare 50% Construction Documents										X	X	X																								
3.5	Prepare 100% Bid-Ready Construction Documents											X	X																								
<b>CONSTRUCTION PERIOD &amp; FOLLOW-UP MANAGEMENT</b>														X	X		X	X																			
<b>4 Construction Services</b>																																					
4.1	Manage Public Bidding & Contracting Process												X																								
4.2	Construction Observation													X	X	X	X	X	X																		
4.3	Construction Close-Out																		X																		
<b>GRANT PERIOD ENDS</b>																																					X

Tonight

X

Construction begins

A photograph of a riverbank. On the left, there is a dense patch of tall, green grasses. Behind them are several trees, some with yellowing leaves, suggesting an autumn setting. The river occupies the right half of the image, with a calm surface reflecting the sky and trees. The text "Existing Conditions" is overlaid in the center of the image in a bold, blue, sans-serif font.

## Existing Conditions

# Existing Conditions – Primary Issues

- Upland areas dominated by turf with woody vegetation along much of shoreline
- Majority of shoreline stable, but exceptions exist – often (but not always) associated with access
- No littoral emergent vegetation
- Water levels fluctuate, and have been high in recent years

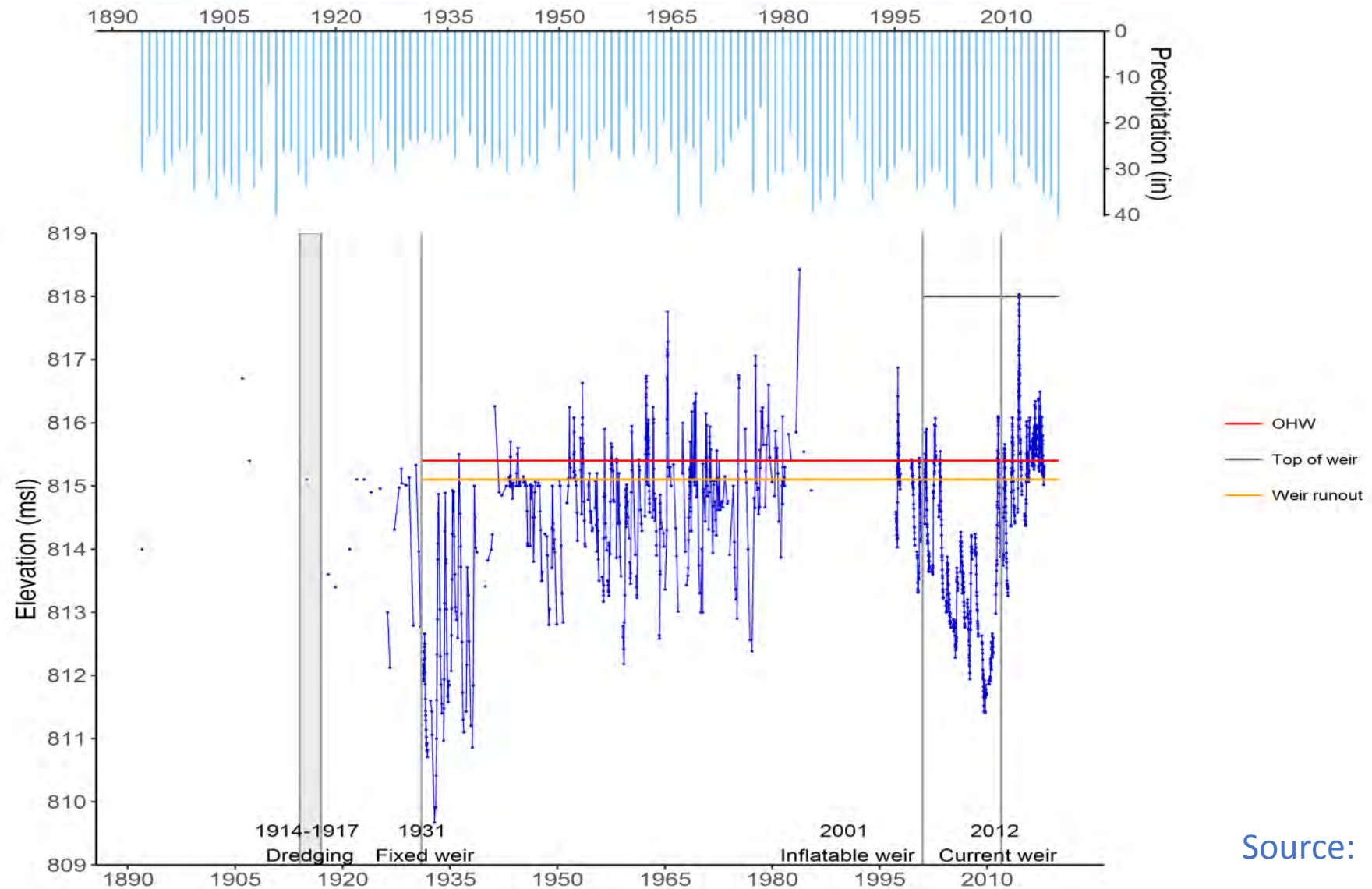


# Existing Conditions – Other Issues

- Concentrated runoff
- Invasive vegetation
- Erosion near stormwater infrastructure
- Wet depressions in turf
- Historical WPA walls

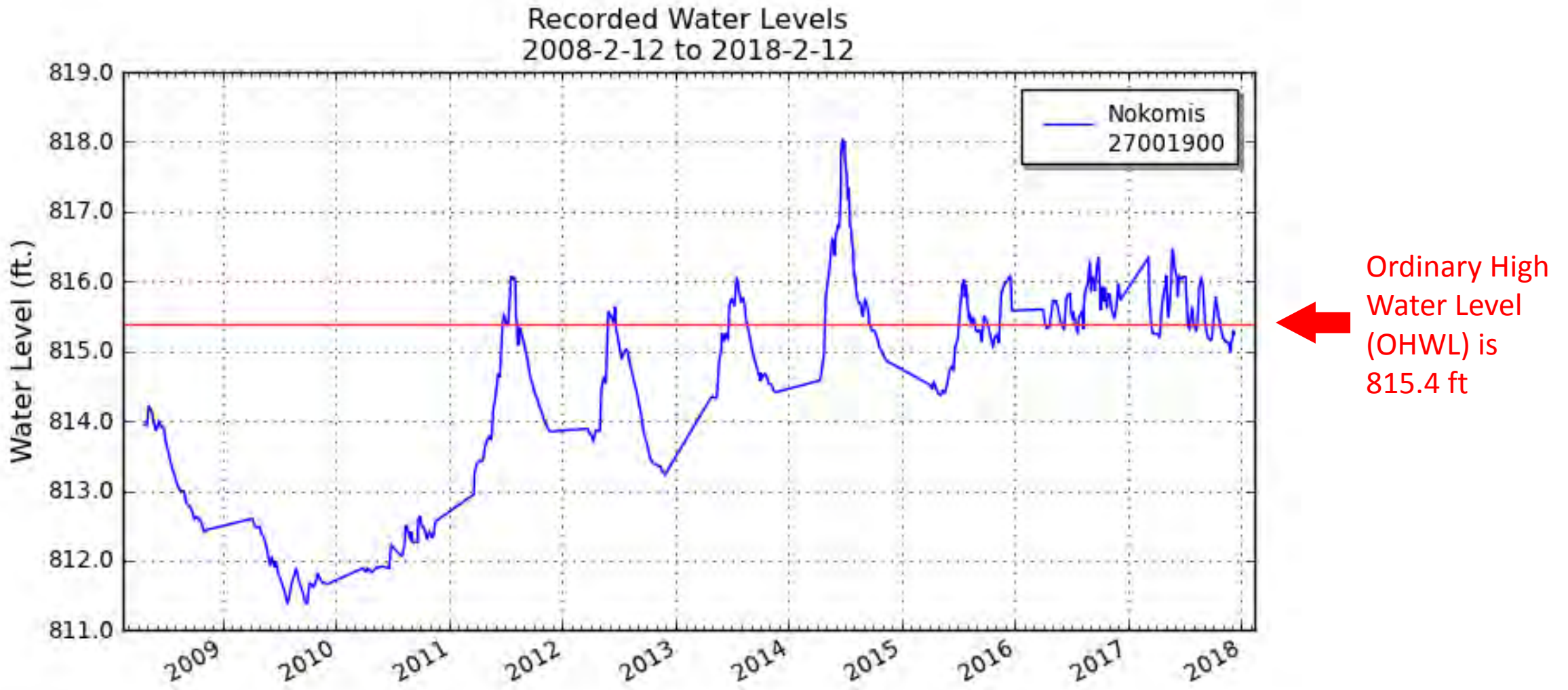


# Lake Level History & Trends

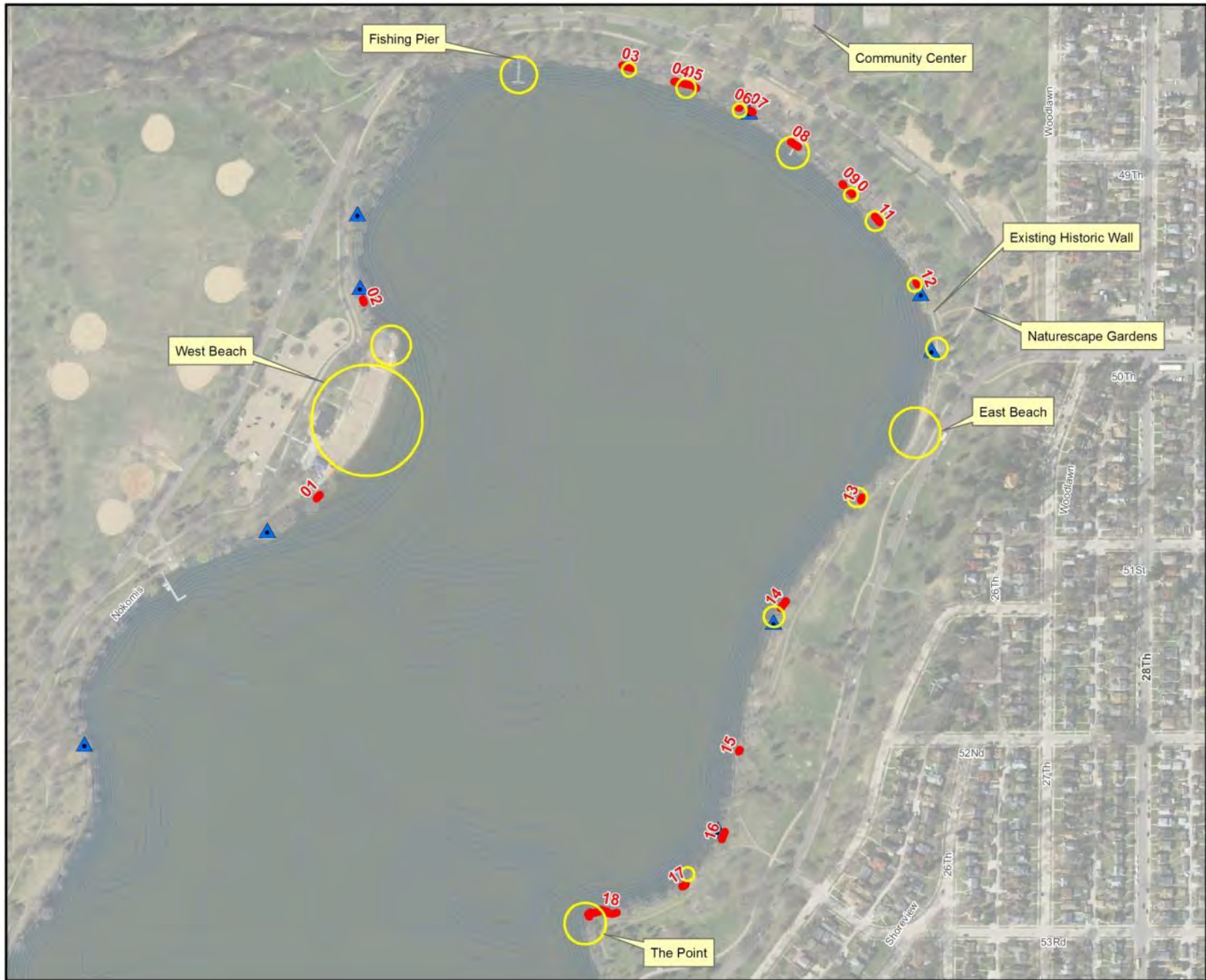


Source: MPRB

# Lake Level History & Trends



Source: MnDNR Lakefinder



# Lake Nokomis Shoreline Enhancement

## Existing Conditions

- Shoreline Activity Area
- Shoreline Erosion (449 lf)
- ▲ Stormwater Outfall
- Bathymetry (water depth, 2-ft interval)

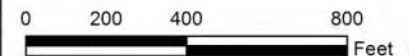
DRAFT

Data Sources:  
 - MCWD bathymetry data  
 - LMIC WMS server (2016 aerial photo)

AES Project Number: 17-0346  
 Date: 2/7/18  
 File Name: Lk Nokomis\_exist conditions\_draft 2018-02-07



21938 Mushtown Road  
 Prior Lake, MN 55372  
 952-447-1919  
 www.appliedeco.com





## Area 07

- About 8" vertical edge, from turf to sand
- Nearby infrastructure (coordinate w/ City)



# Area 08

- Some active erosion on left
- Gravel providing some stability



# Area 14



- Active erosion

# Area 16

- Unstable toe of bank, due to wave erosion
- Nearby infrastructure (coordinate w/ City)



# Area 17



- About 8" vertical edge, from turf to sand

## Area 18

- Unstable toe of bank, due to wave erosion
- Potential WPA walls may limit interventions here

## South of Area 18

- More stable toe of bank, protected from wave energy



# Existing Lakeshore Access



# Existing Lakeshore Access



A scenic view of a riverbank. The foreground shows a sandy and muddy shore with some debris. To the left, there is a dense patch of tall, green grasses. In the background, a line of trees with green and yellowing leaves borders the water. The water is calm and reflects the sky and trees. The text "Community Input" is overlaid in the center in a bold, blue font.

## Community Input

# Input from Community Meeting #1 (Nov 30, 2017)

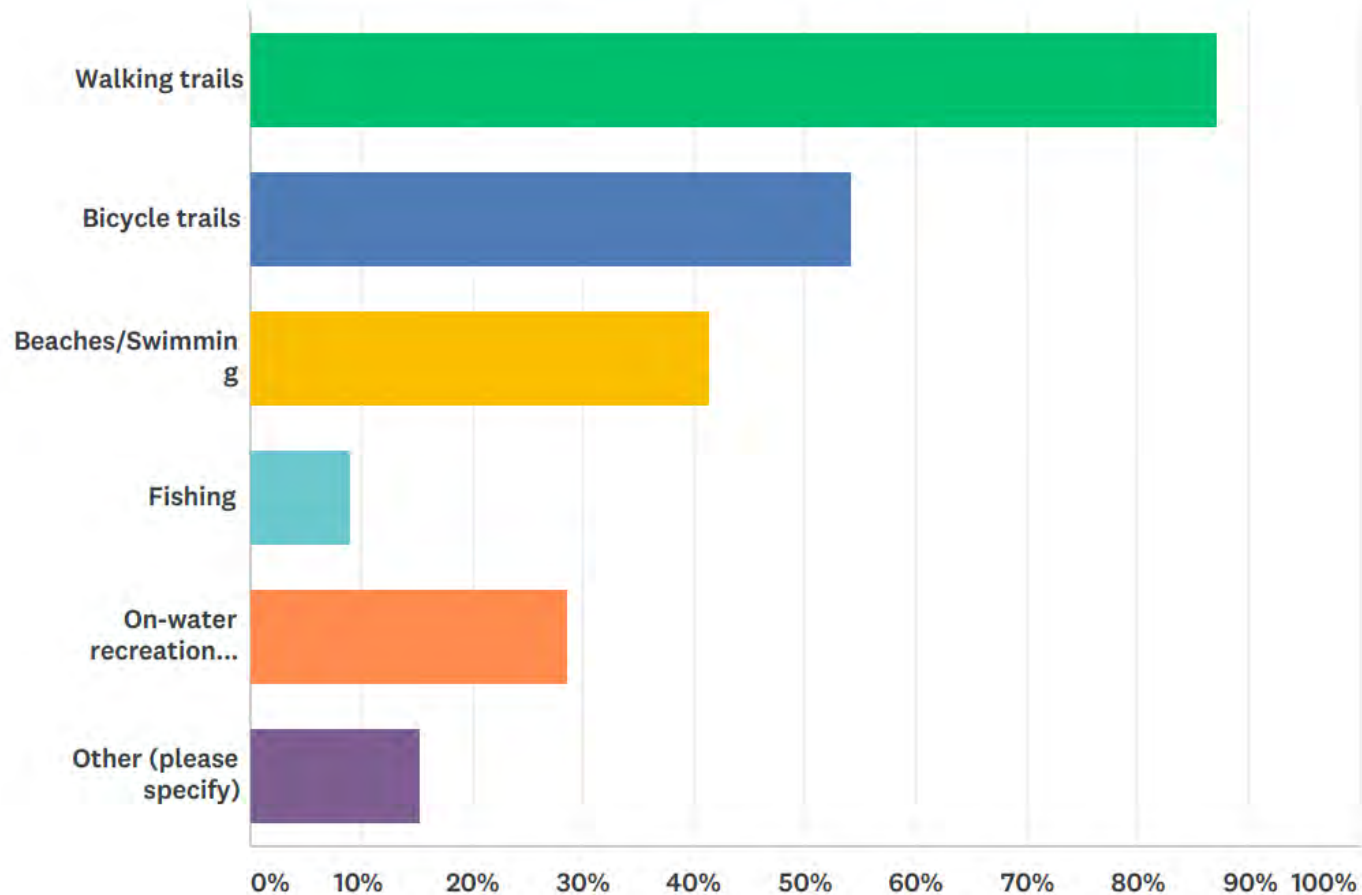
- Discussed issues and heard preferences – not all unanimous
- Clarified this project cannot address all issues at Lake Nokomis
- Followed up with on-line survey (early 2018)



# Public Survey Results

Q10 When visiting Lake Nokomis where do you typically spend your time? (Select all that apply)

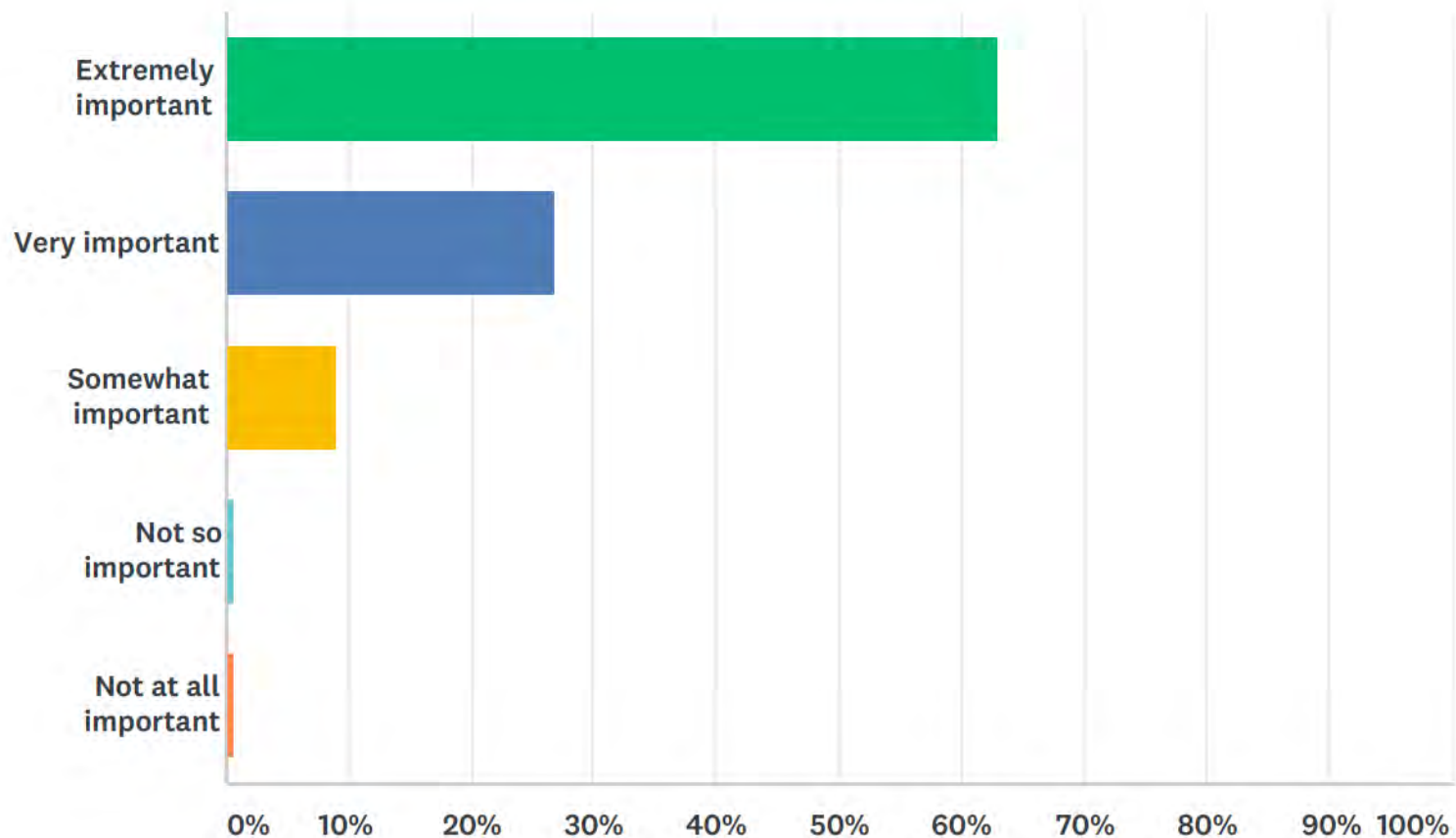
Answered: 157 Skipped: 14



# Public Survey Results

Q11 How important do you think shoreline erosion, invasive plants and water quality are to Lake Nokomis?

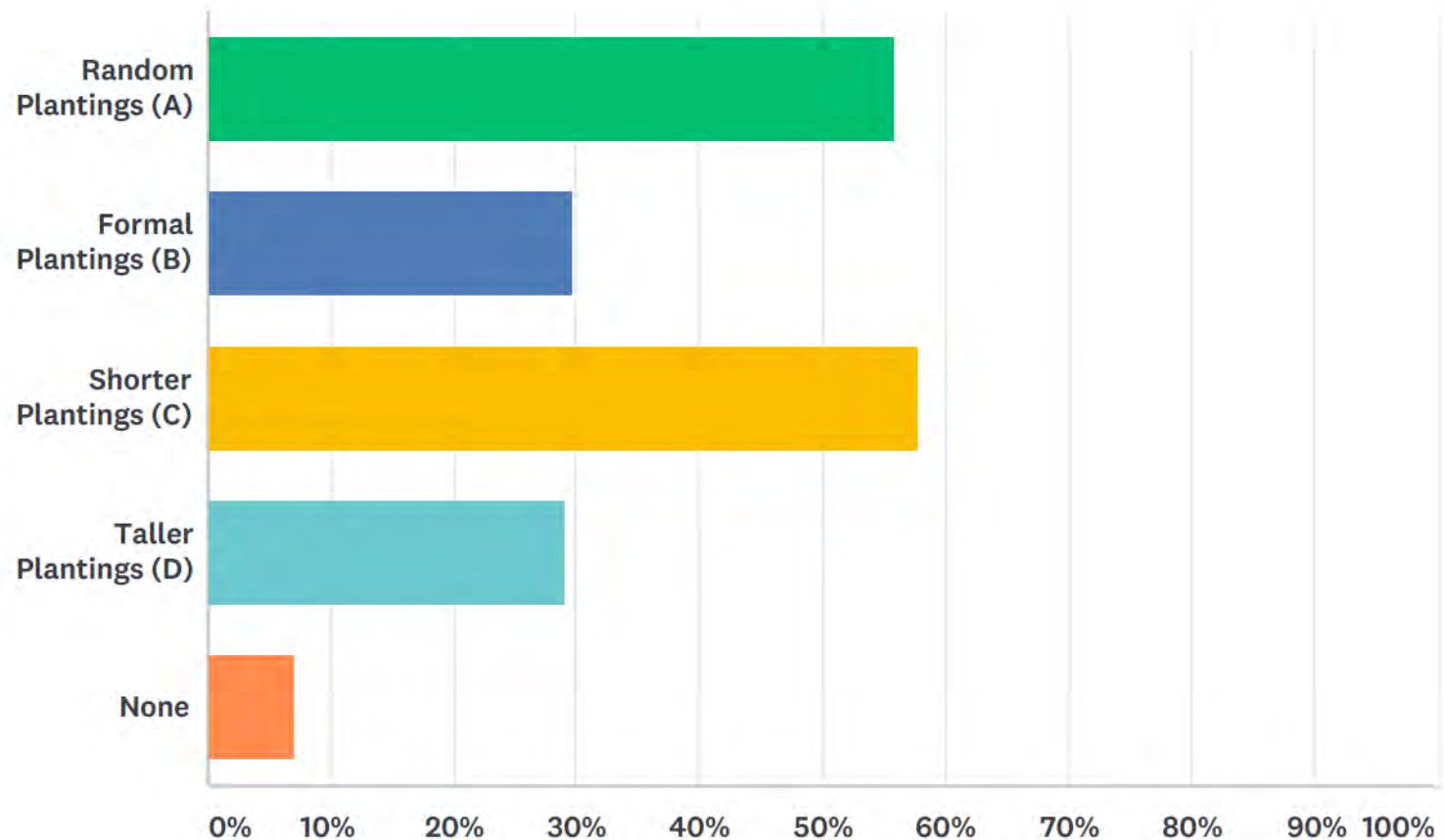
Answered: 157 Skipped: 14



# Public Survey Results

Q2 Above are different design aesthetics related to how naturalized buffers may look. Please select the options you prefer.

Answered: 168 Skipped: 3



A photograph of a riverbank with tall grasses and trees, overlaid with a semi-transparent blue box containing the text 'Draft Schematic Design'. The scene shows a sandy bank on the left with dense green grasses. The water is calm and reflects the surrounding greenery. The text is centered in the middle of the image.

**Draft Schematic Design**

# Draft Schematic Design - Components

- Buffer and emergent plantings (following MPRB herbicide policy)
- Shoreline stabilization
- Lake access

# Draft Schematic Design – Restoration Zones

## ***Upland Buffer***

- from within 2ft of trail to wetland delineation line
- mostly short mesic prairie and areas of wet prairie (depressions in turf)

## ***Shoreline Buffer***

- from wetland delineation line to water's edge (at ~OHWL)
- mostly wet prairie/wet meadow vegetation
- shoreline stabilization (where warranted) & thinning of woody veg.

## ***Emergent Wetland***

- from water's edge to depth of approximately 2ft
- diversity of shallow emergent species near shoreline
- transitioning to only hardstem bulrush out to 2ft depth



**LEGEND**

RESTORATION ZONES

- UPLAND BUFFER (2.57 acres)
- SHORELINE BUFFER (1.05 acres)
- EMERGENT WETLAND (2.55 acres)
- SHORELINE EROSION REPAIR (449 LF)



# Upland Buffer

- ~2-foot mowed turf edge along paved trail
- Temporary wire mesh fence to protect plantings, ~2 feet from paved trail



# Upland Buffer & Shoreline Buffer

- Diverse native shorelines (including many pollinator species)
- Mostly shorter species, with areas of taller plants



# Shoreline Stabilization

- Riprap toe protection in only 2-3 locations



# Shoreline Stabilization

- Most areas minor grading, seed & ECB



# Emergent & Shoreline Plantings

- Some upland/shoreline plantings remain from 2005...  
...but all emergents lost



# Emergent Plantings

- Emergent wetland restoration strategies
  - Adequate wave protection (temporary silt fence backed with mesh on T-posts)
  - Protect from herbivory (bury silt fence bottom and wrap to shoreline)
  - Adequate planting density (2-ft centers)
  - Phased approach
  - Appropriate emergent and shoreline species
  - Reserve fund for adaptive management



# Emergent Plantings

- Hardstem bulrush
- River bulrush
- Lake sedge
- Giant bur-reed
- Common three-square



# Shoreline Access

- Priority of park users
- Not all shoreline access locations are alike
- Access locations often associated with localized shoreline erosion
- This project will retain most existing lake access points, and re-design for improved durability
- Of the 18 erosion areas within project area, we propose:
  - 11 will be stabilized and revegetated
  - 7 will be stabilized and still provide lake access










**LEGEND**

**RESTORATION ZONES**

- UPLAND BUFFER (2.57 acres)
- SHORELINE BUFFER (1.05 acres)
- EMERGENT WETLAND (2.55 acres)
- SHORELINE EROSION REPAIR (449 LF)
- # STABILIZE SHORELINE AND RE-VEGETATE (11 LOCATIONS)
- # STABILIZE AND RETAIN SHORELINE ACCESS (7 LOCATIONS)





LEGEND	
<b>RESTORATION ZONES</b>	
	UPLAND BUFFER (2.57 acres)
	SHORELINE BUFFER (1.05 acres)
	EMERGENT WETLAND (2.55 acres)
	SHORELINE EROSION REPAIR
	ENHANCED PLANTING OPPORTUNITY AREA
	MAINTAINED TURF GRASS
	STABILIZE SHORELINE AND RE-VEGETATE (11 LOCATIONS)
	STABILIZE AND RETAIN SHORELINE ACCESS (7 LOCATIONS)



LOCATION PLAN



RESTORATION ZONES		LEGEND	
	UPLAND BUFFER (2.57 acres)		ENHANCED PLANTING OPPORTUNITY AREA
	SHORELINE BUFFER (1.05 acres)		MAINTAINED TURF GRASS
	EMERGENT WETLAND (2.55 acres)		STABILIZE SHORELINE AND RE-VEGETATE (11 LOCATIONS)
	SHORELINE EROSION REPAIR		STABILIZE AND RETAIN SHORELINE ACCESS (7 LOCATIONS)











LOCATION PLAN



LOCATION PLAN





LEGEND	
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LOCATION PLAN





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LOCATION PLAN



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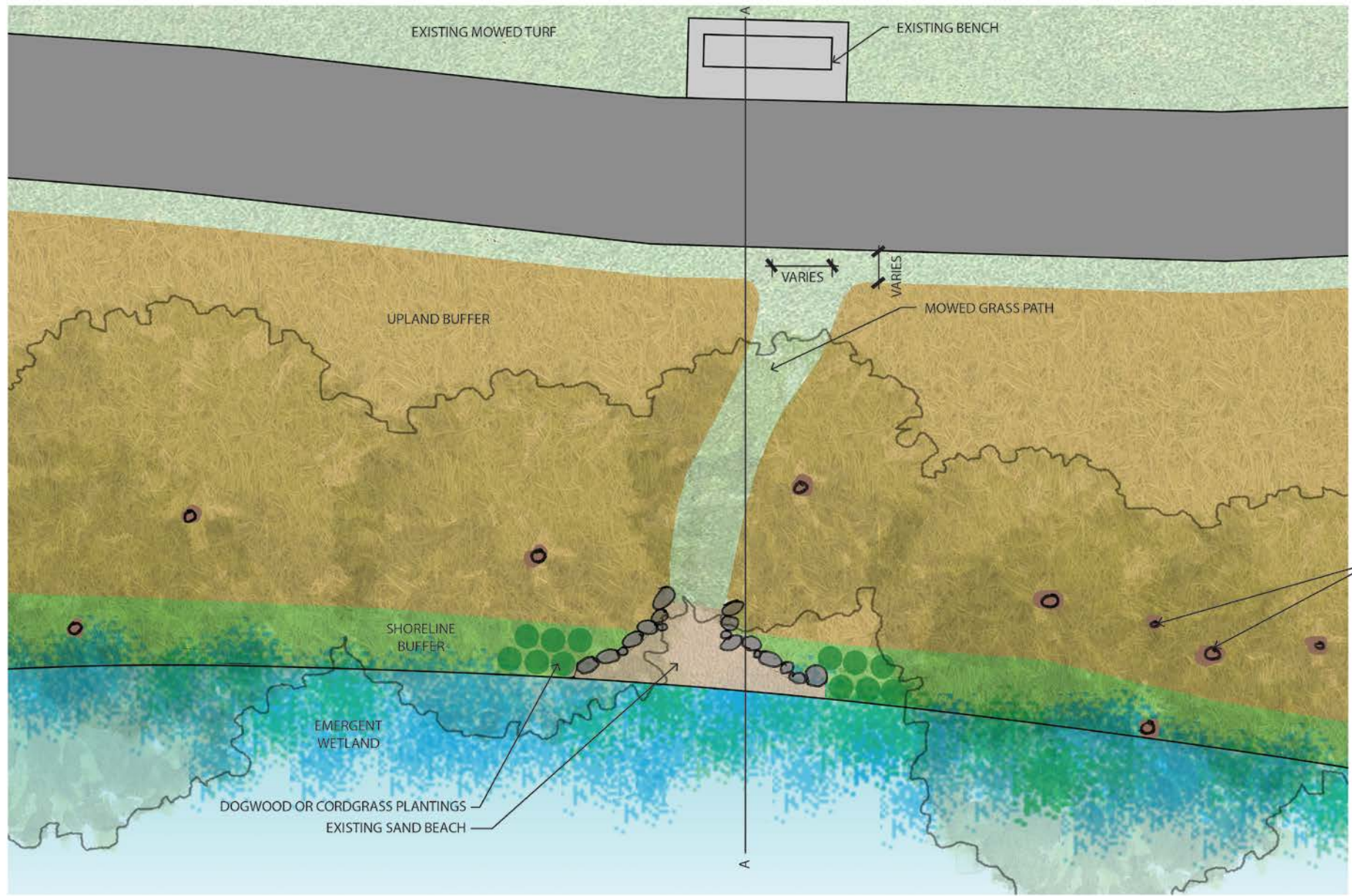


LOCATION PLAN

# Schematic Design – Typical Plans and Sections

- **Phase 1** (current project)
  - Concept 1 – simple, basic, inexpensive
  
- **Potential Future Phases**
  - Concept 2 – increased formality
  - Concept 3 – illustrates riprap and sitting area
  - Concept 4 – illustrates limestone blocks in lake and sitting area

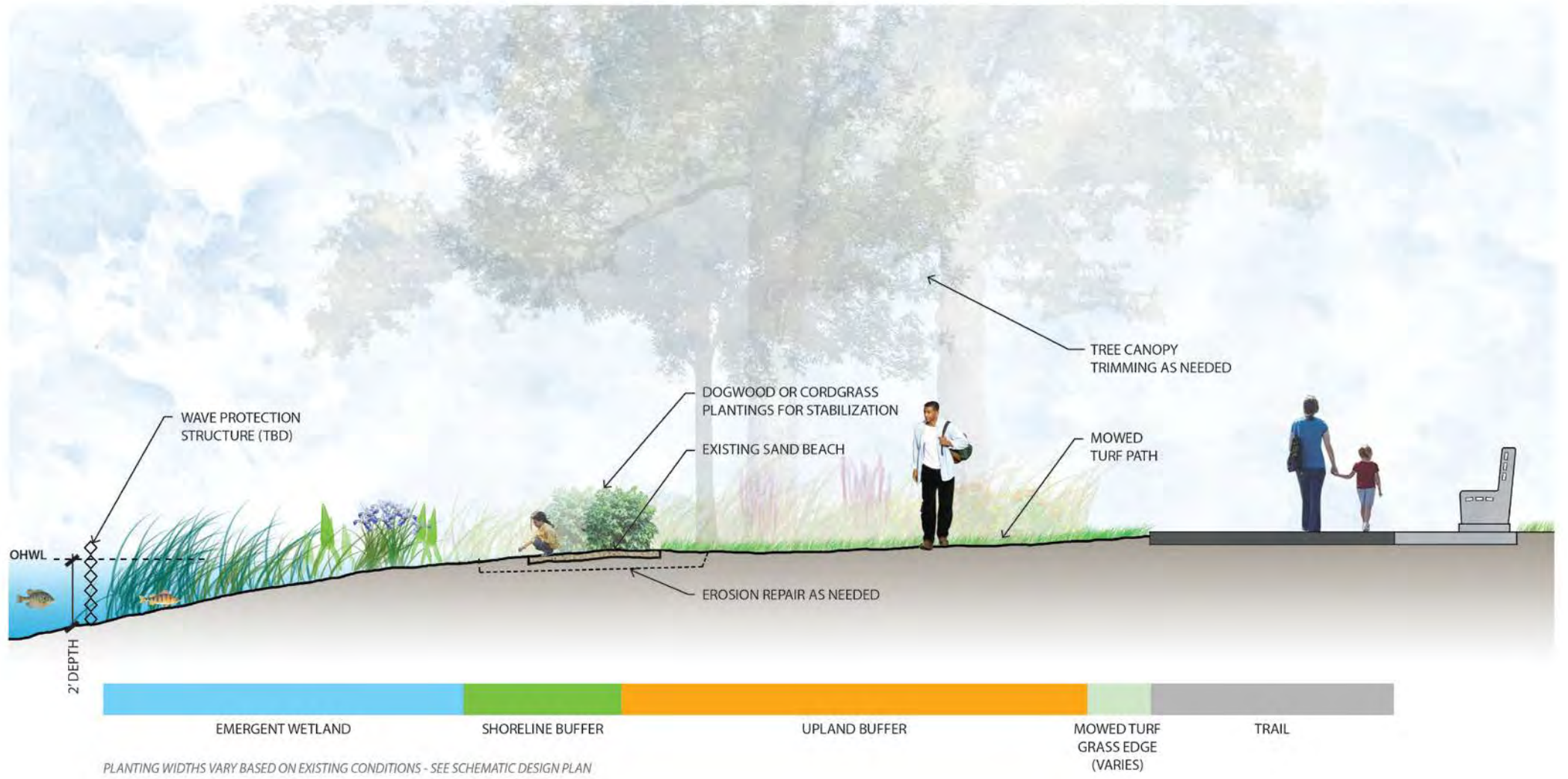
# Phase 1



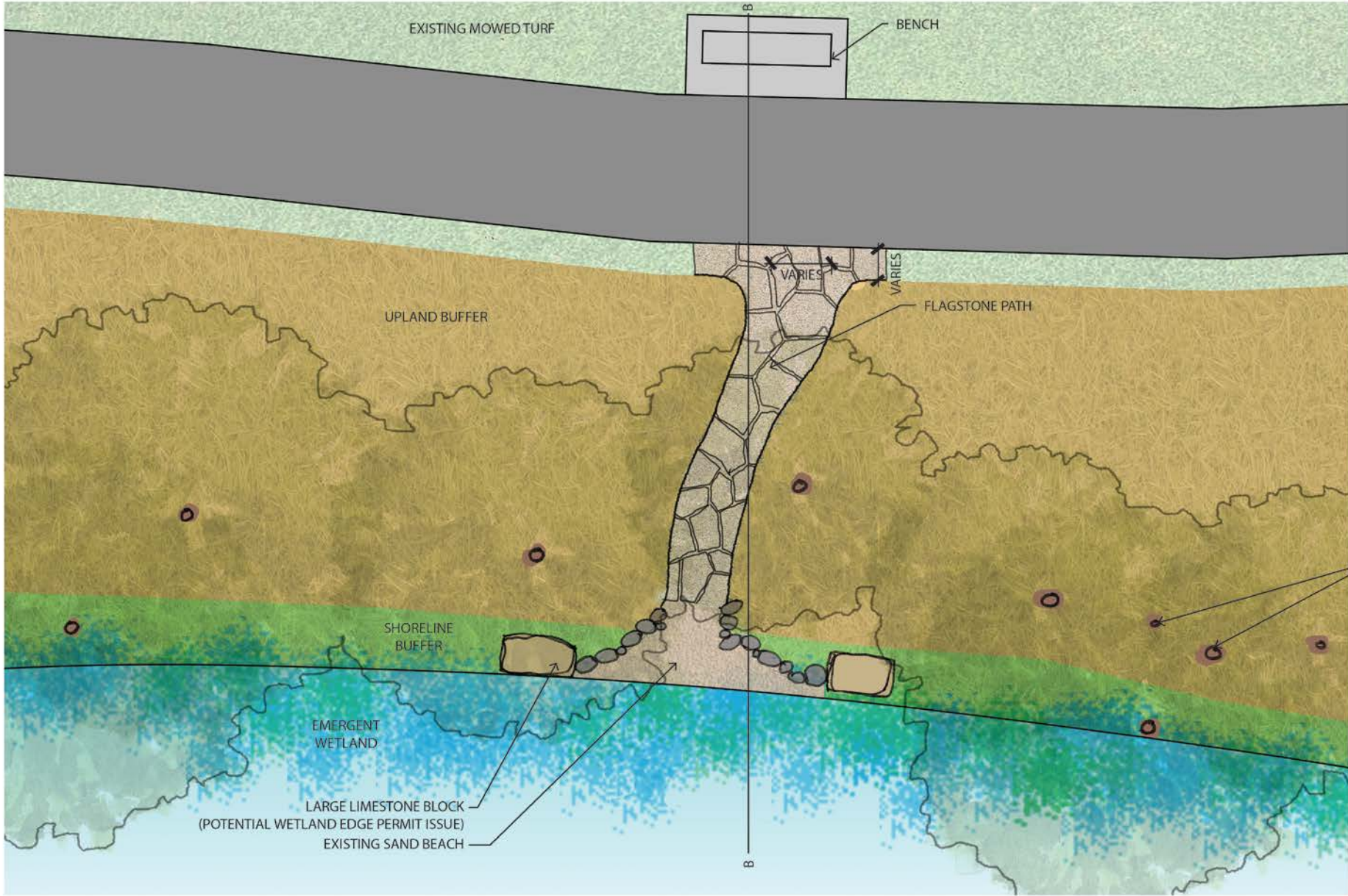
TREE TRIMMING /  
BRUSH REMOVAL TO  
INCREASE SUNLIGHT  
REACHING GROUND-  
LAYER



# Phase 1

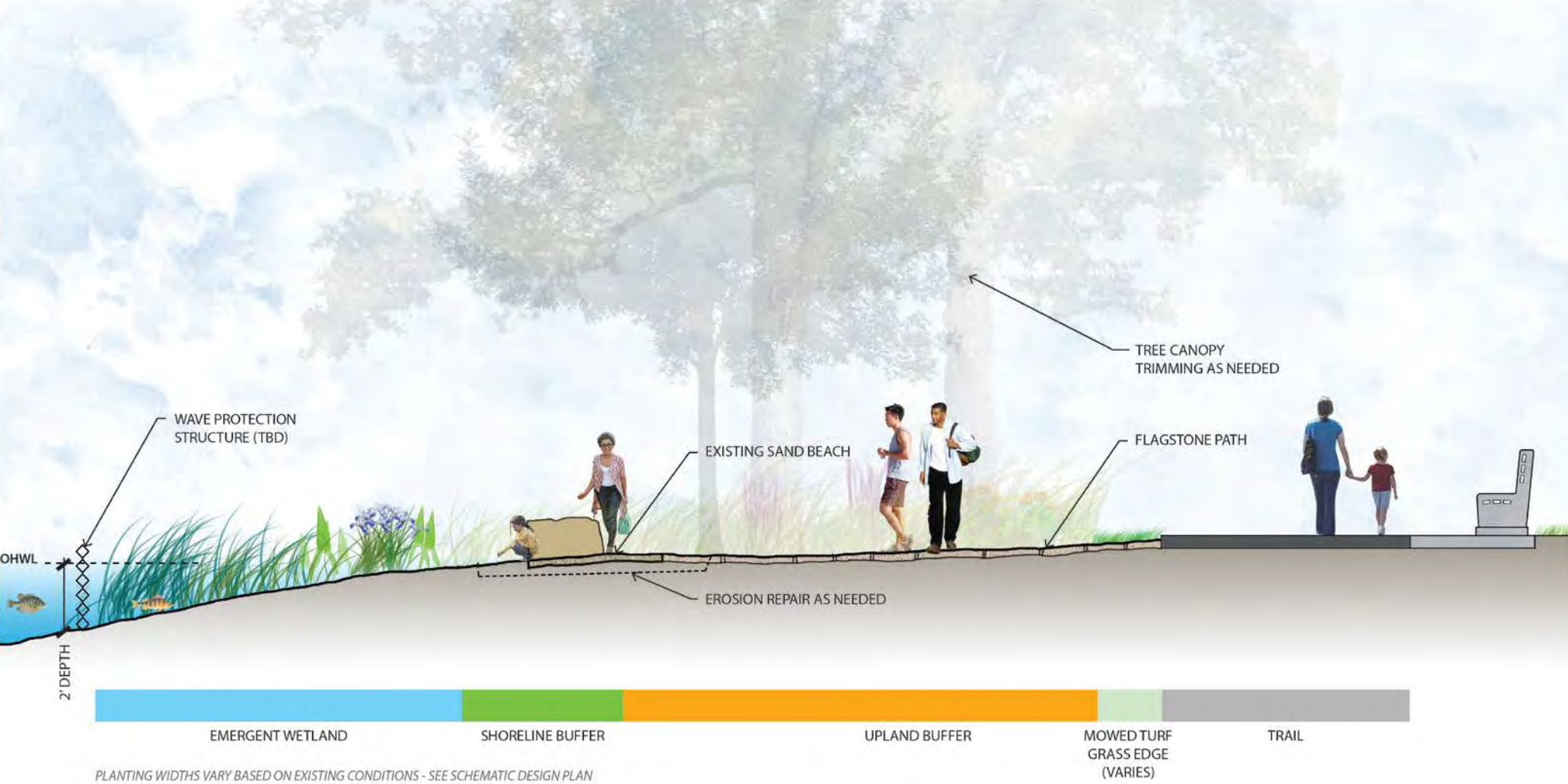


# Potential Future Phases

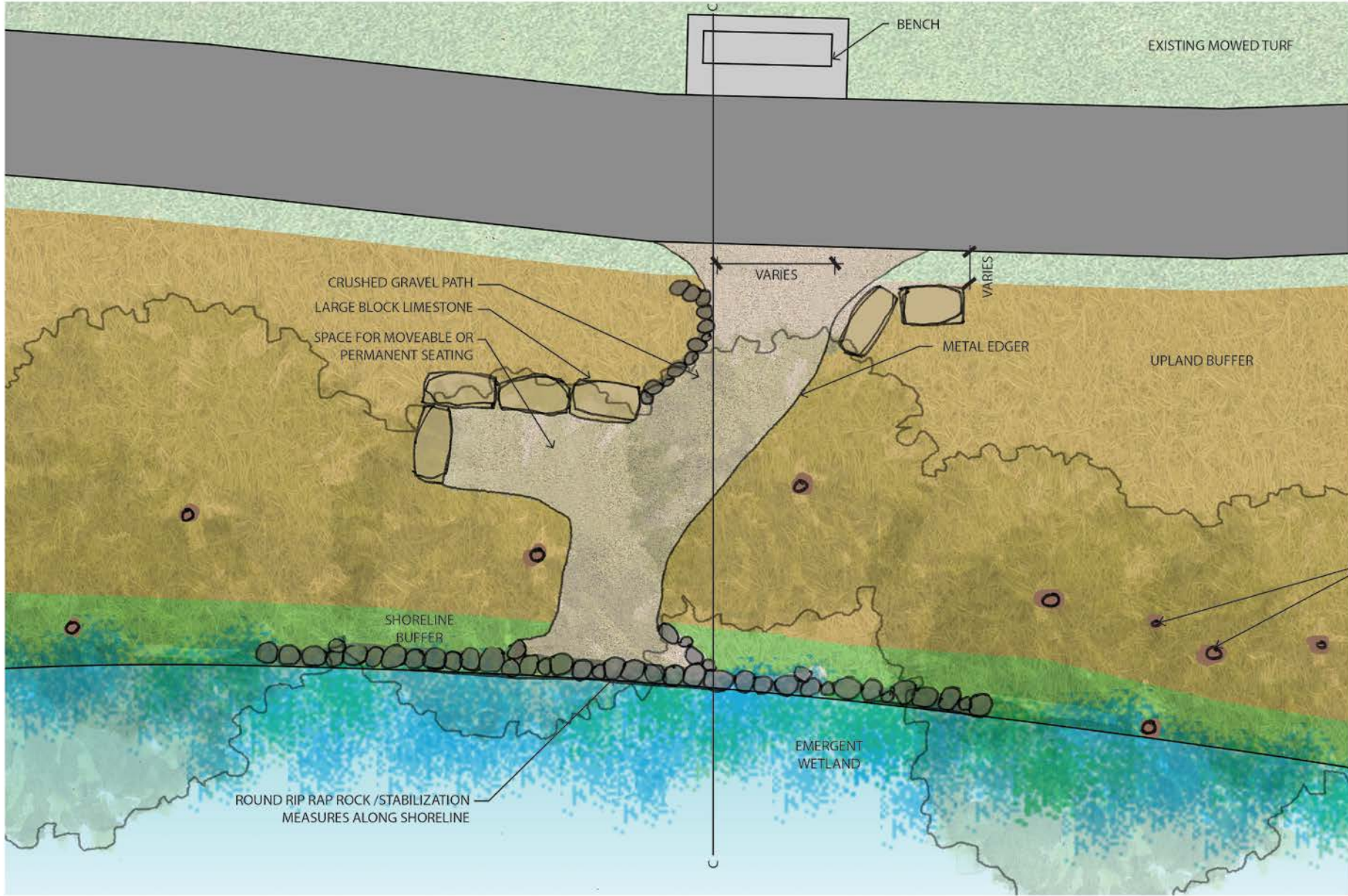


0 3 6 feet

# Potential Future Phases



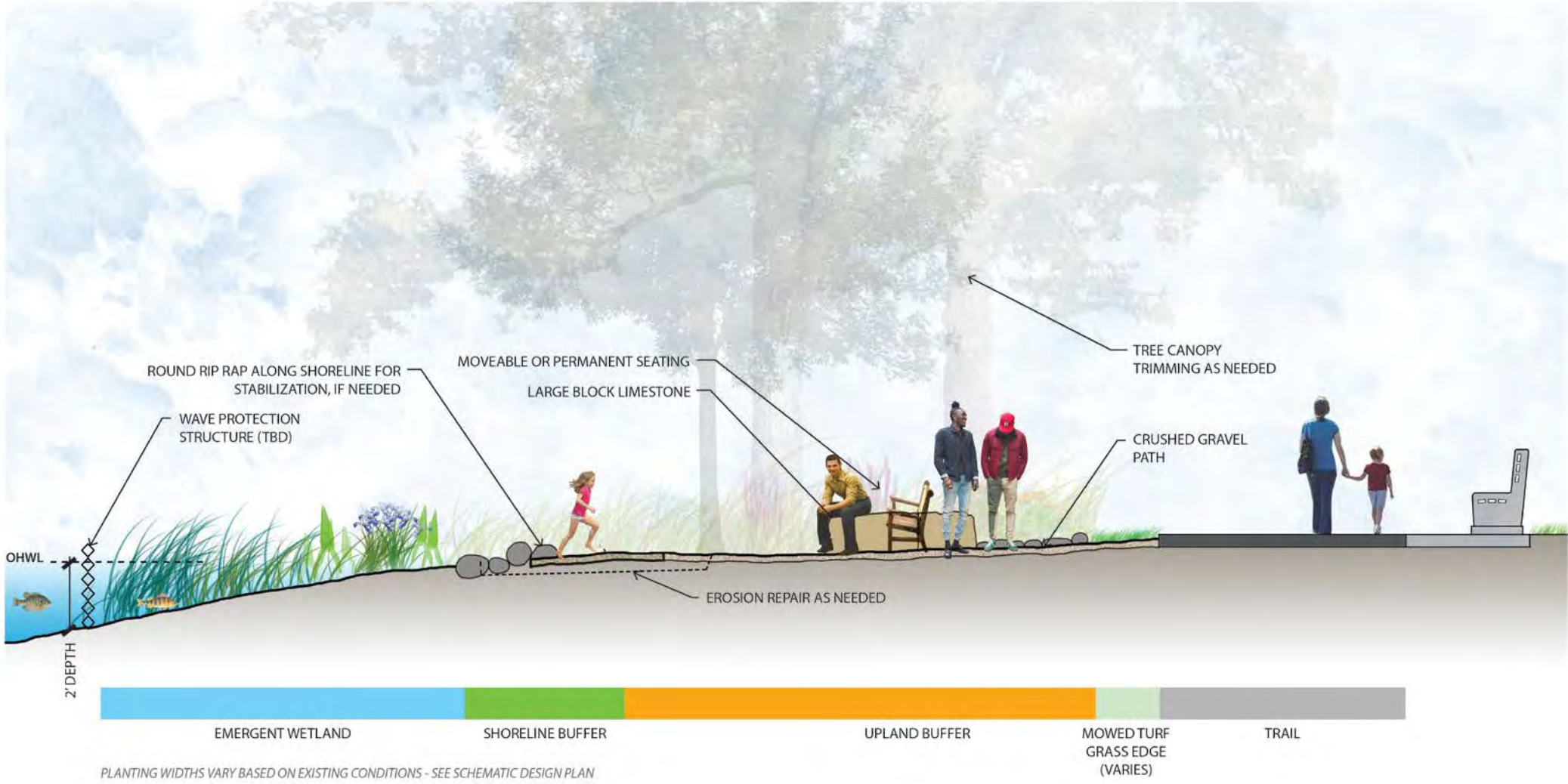
# Potential Future Phases



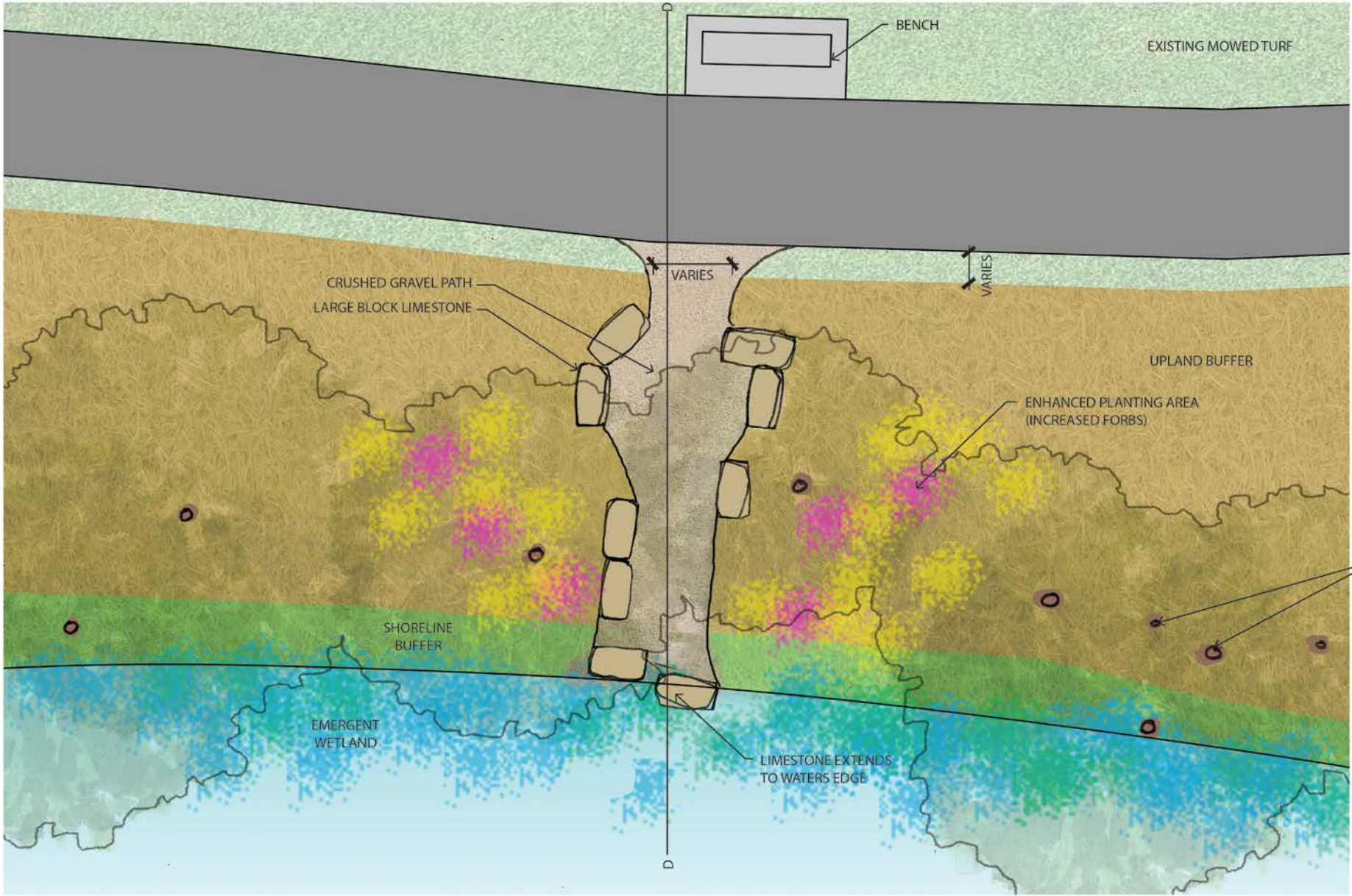
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# Potential Future Phases



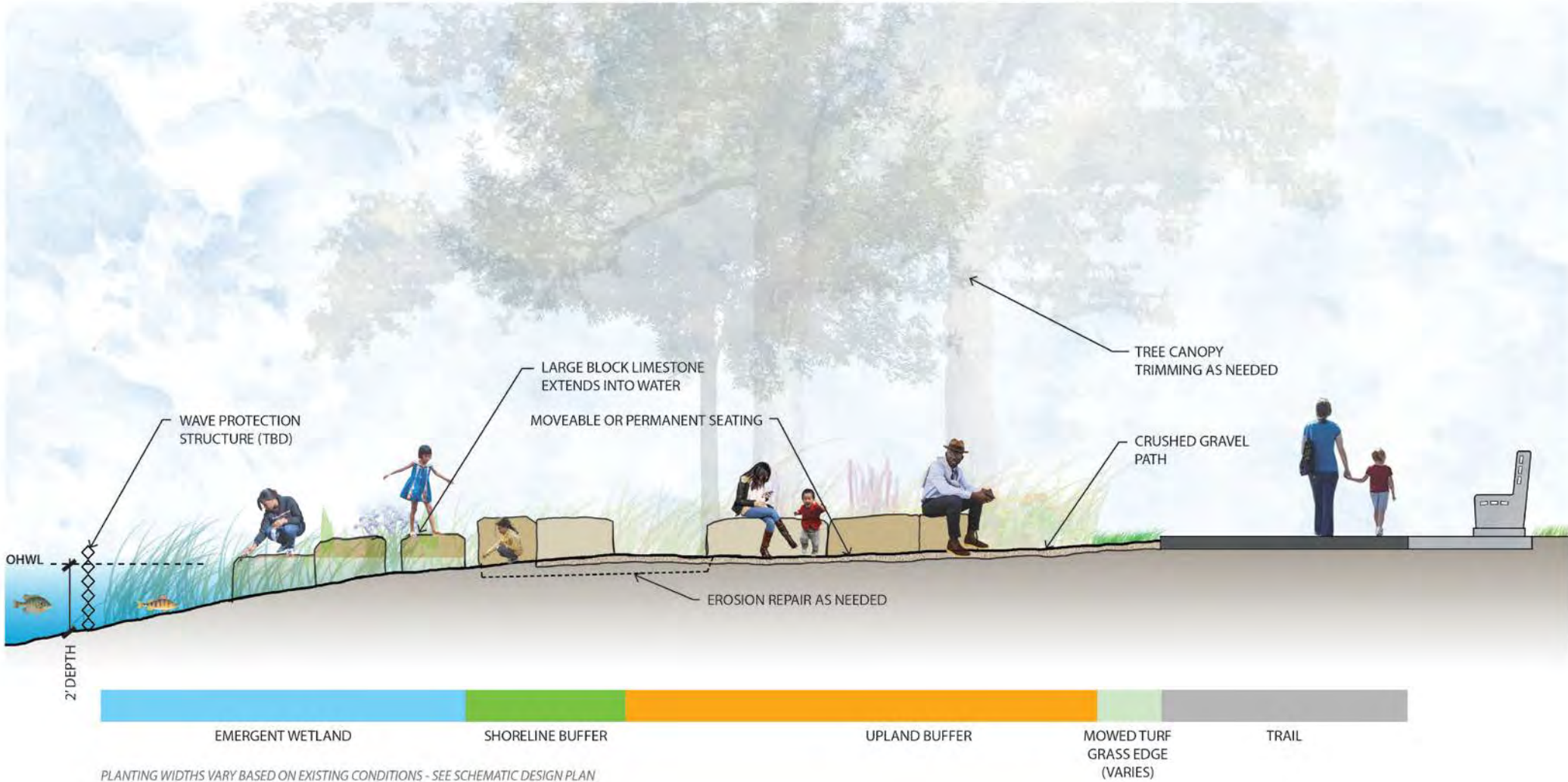
# Potential Future Phases



TREE TRIMMING /  
BRUSH REMOVAL TO  
INCREASE SUNLIGHT  
REACHING GROUND-  
LAYER



# Potential Future Phases



0 2 4 feet

A scenic view of a riverbank. The foreground shows a sandy shore with some debris and a blue pipe or structure extending into the water. The middle ground is dominated by tall, green grasses and reeds. The background features a dense line of trees with green and yellow foliage, suggesting a natural, wooded area. The water is calm and reflects the surrounding greenery. The text "Long-term Care" is overlaid in the center of the image in a bold, blue font.

**Long-term Care**

# Long-term Care

Will be led by MPRB environmental stewardship staff.

- Focus will be to continue to remove invasive tree and herbaceous species from the shoreline
- Monitor and repair shoreline restoration areas as needed
- MPRB may contract with Conservation Corps Minnesota
- MPRB will utilize its youth employment program, Teen Teamworks, to help with invasive removals
- Water Resources will also conduct aquatic plant surveys
- Assistance from volunteer organizations to help sustain the enhanced habitat

# Discussion Questions

- How do people feel about our overall approach?
- Where would you prefer taller plantings?
- Are the proposed lake access points appropriate?
- Do you have special access wishes in particular areas?
- Do you have any recommendations regarding the design of future phase accesses?

*Thank you!*

