About the Bassett Creek Watershed Management Commission (BCWMC)

The vision: Stewardship of the Ȟaȟá Wakpádaŋ / Bassett Creek Watershed to improve ecosystem health and reduce flood risk

About the BCWMC

- **Regional government organization** formed in 1969 to focus on flood control along Bassett Creek
- **Operates under 1982 Metropolitan Surface Water Management Act**
- **Focused on providing flood management and improving and protecting the water quality** of Bassett Creek and lakes/streams
- **Nine member cities:** Crystal, Golden Valley, Medicine Lake, Minneapolis, Minnetonka, New Hope, Plymouth, Robbinsdale, St. Louis Park,
- **Area:** approximately 40 square miles

Commission funding

- Contributions from nine member cities (approximately $660,000 per year)
- Hennepin County tax levy for major projects (approximately $2-2.5 million per year)
- Grant funds and application fees (varies)

Commission activities

- Implements capital improvement projects that reduce flooding and improve lakes, streams, and wetlands throughout the watershed
- Monitors water quality, performs studies, maps resources
- Provides water resource education and watershed-wide coordination
- Reviews developments for compliance with standards and requirements

EXAMPLE BCWMC CIP PROJECTS

Wirth Lake outlet

Bassett Creek restoration: bank stabilization and revegetation

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

Bassett Creek Main Stem Erosion Issues and Restoration Prioritization

Types of erosion observed along this segment of Bassett Creek

Streambank undercutting

Tributary erosion

Scour near culverts

- Project Stationing
- Legacy Trees
- Significant Trees
- Bassett Creek
- Existing Bank Stabilization
- Bike and/or Pedestrian Trail System
- Private Parcel
- Public Parcel
- Easement

Near Bank Stress Rating (NBS)

- Extreme
- Very High
- High
- Moderate
- Low
- Very Low

Bank Erosion Hazard Index (BEHI)

- Very High
- High
- Moderate

Utilities

- Gravity Storm Sewer
- Sanitary Main

0 350
Feet

Restoration Prioritization Factors

Several factors impacted prioritization of Bassett Creek Main Stem restoration locations, including:

- Severity of existing erosion
- Public access/ownership
- Protection of existing structures/infrastructure
- Impact to surrounding areas
- Public visibility/accessibility
- Potential for future erosion (near-bank stress and bank erosion hazard index ratings)
- Opportunity for habitat creation or restoration
- Maintaining healthy, native significant trees (minimize removal)
- Vegetation establishment potential (exposure to sunlight)
- Ease of construction access
- Consideration of proximity/ possibility for other improvements (e.g. new sediment trapping device in nearby storm drains)

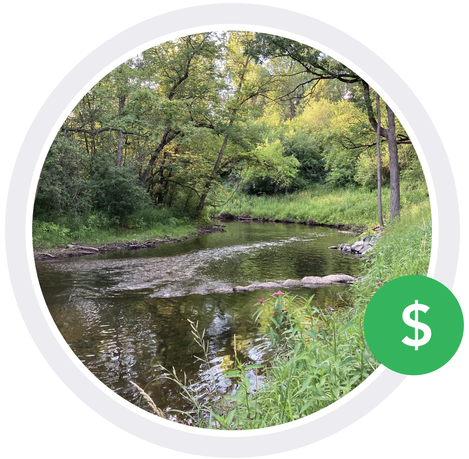
Any type of erosion comes with the associated issues:

- Introduction of sediment to stream and downstream water bodies
- Degradation of bank vegetation and reduced potential for re-growth
- Degradation of in-stream and bank habitats
- Increased risk of continued erosion leading to loss of bank and upland area
- Changing of the stream shape and size over time

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

Stream Stabilization Methods

1



In-stream structures

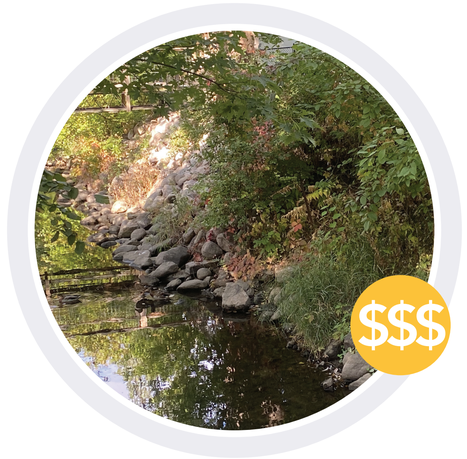
Examples include: J-hooks, vanes, and cross vanes constructed with boulders, wood, or a combination

2

Bank stabilization with bioengineering methods

Examples include: toe wood, coir logs, fscines, vegetated reinforced soil stabilization (VRSS), and live stakes

3



Bank grading with riprap and vegetation establishment

Examples include: grading a bank to achieve a flatter slope and placing riprap to partially or fully cover the bank with vegetative plantings above and sometimes in riprap

Pros

- Reduces near-bank stress
- Minimal bank disturbance
- Lowest construction cost
- Diversifies flow within stream, including energy dissipation pools
- Provides in-stream habitat

- More erosion protection along the bank itself and base of the bank, known as the bank toe
- Bioengineering and vegetation features can improve in-stream and bank habitat

- Riprap allows for the most protection against damaging (high shear stress) flows
- Immediate stabilization of eroding areas

Cons

- In-stream features can be obstructed with sediment and debris
- Continued erosion on unprotected bank toe outside the zone of influence of the structures

- Requires establishment period for vegetation features
- Moderate grading can increase construction costs, bank disturbance, and potential tree removal

- Riprap provides minimal in-stream or bank habitat
- Riprap and grading are more cost intensive
- Most bank disturbance during construction, and potential tree removal

Examples of Stream Stabilization Methods

Vegetated Reinforced Soil Stabilization (VRSS) with Riprap Toe

Toe Wood with VRSS and Grading

Riprap Toe with Grading to Improve Floodplain Connection - Post construction

Riprap Toe with Grading to Improve Floodplain Connection - Two years after construction

Coir Log with Bank Grading

J-hook

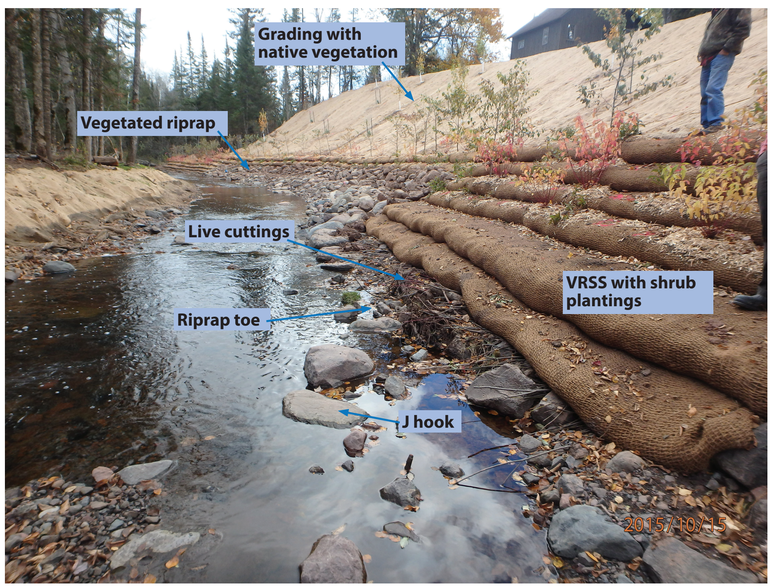
Cross Vane

Rock Toe with Log Vanes

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

Restoration Methods | Before and After

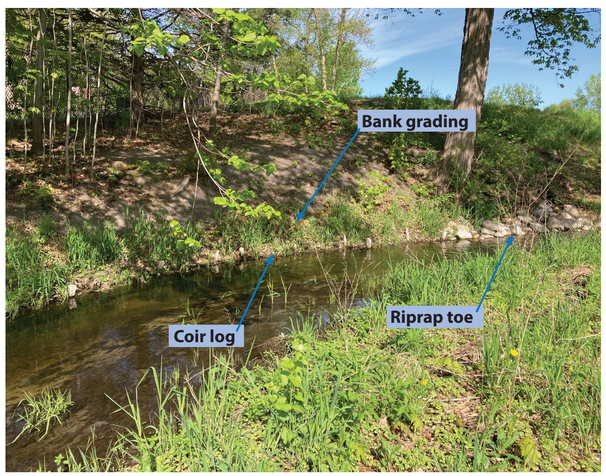
Before - Steep eroding bank with toe erosion and sloughing



Two months after construction

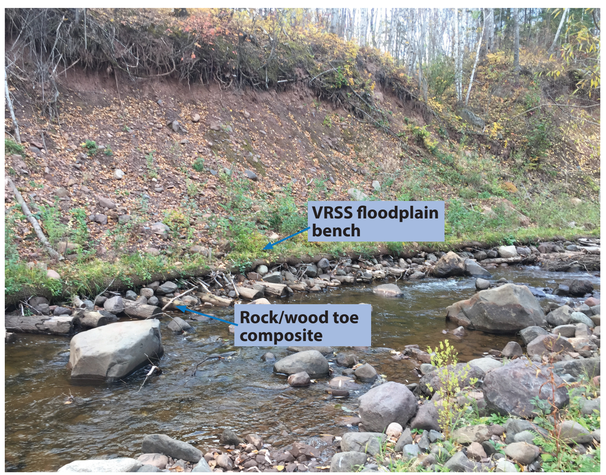
5 years after construction

Before - undercut bank



After - vegetated bank above coir log toe

Before - steep, eroding bank with unstable toe



After - vegetated floodplain bench above rock/wood toe prevents sediment migration into stream

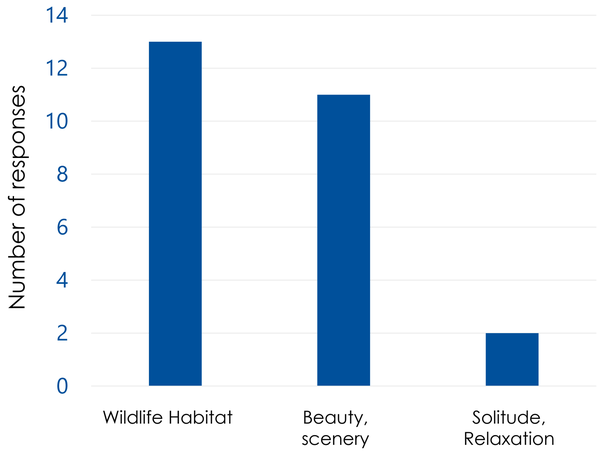
Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

Community Feedback

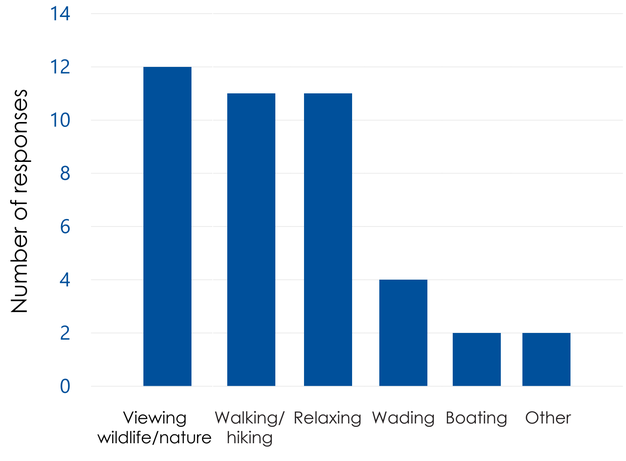
From Feasibility Study

Concern	Response
Tree removal and loss of wildlife habitat	Tree removal will be limited to only those trees essential to the project construction; our goal is to protect as many healthy, desirable trees as possible. The proposed stream restoration project will increase wildlife habitat by increasing native vegetation adjacent to streambanks, as well as by introducing woody habitat to the streams.
Property access and property damage	All areas disturbed during the stream restoration project will be restored to pre-construction conditions or better.
Cost to adjacent property owners	The stream restoration project will be funded by BCWMC Capital Improvement Project funds which are paid for via a tax levied by Hennepin County over the entire Bassett Creek watershed.
Effects on the floodplain and flood risk to properties	The proposed restoration will result in no net fill in the floodplain, and no increase in the flood elevation; therefore, flood risk will not increase.
Effects on utility lines	The project will be designed to avoid impacts to utility lines. A utility locate will occur during the design and construction process to ensure all utilities are avoided during construction. Restoration construction will be coordinated with city utility upgrades to the extent possible.
Concerns about the ability of fish to migrate upstream	Any in-stream structure that spans the width of the creek (i.e. cross vanes) will be designed to allow fish passage during low and high flow events.
Ability to inform restoration design	Public input gathered at public meetings will inform design decisions.
Communication	The City will create an email list for those that want project updates.
Existing erosion	Landowners near the creek have reported the creek banks have eroded over time and have lost yard area. The goal of the project will be to stabilize the creek and prevent further erosion.

What do you appreciate about Bassett Creek?



How do you interact with Bassett Creek?

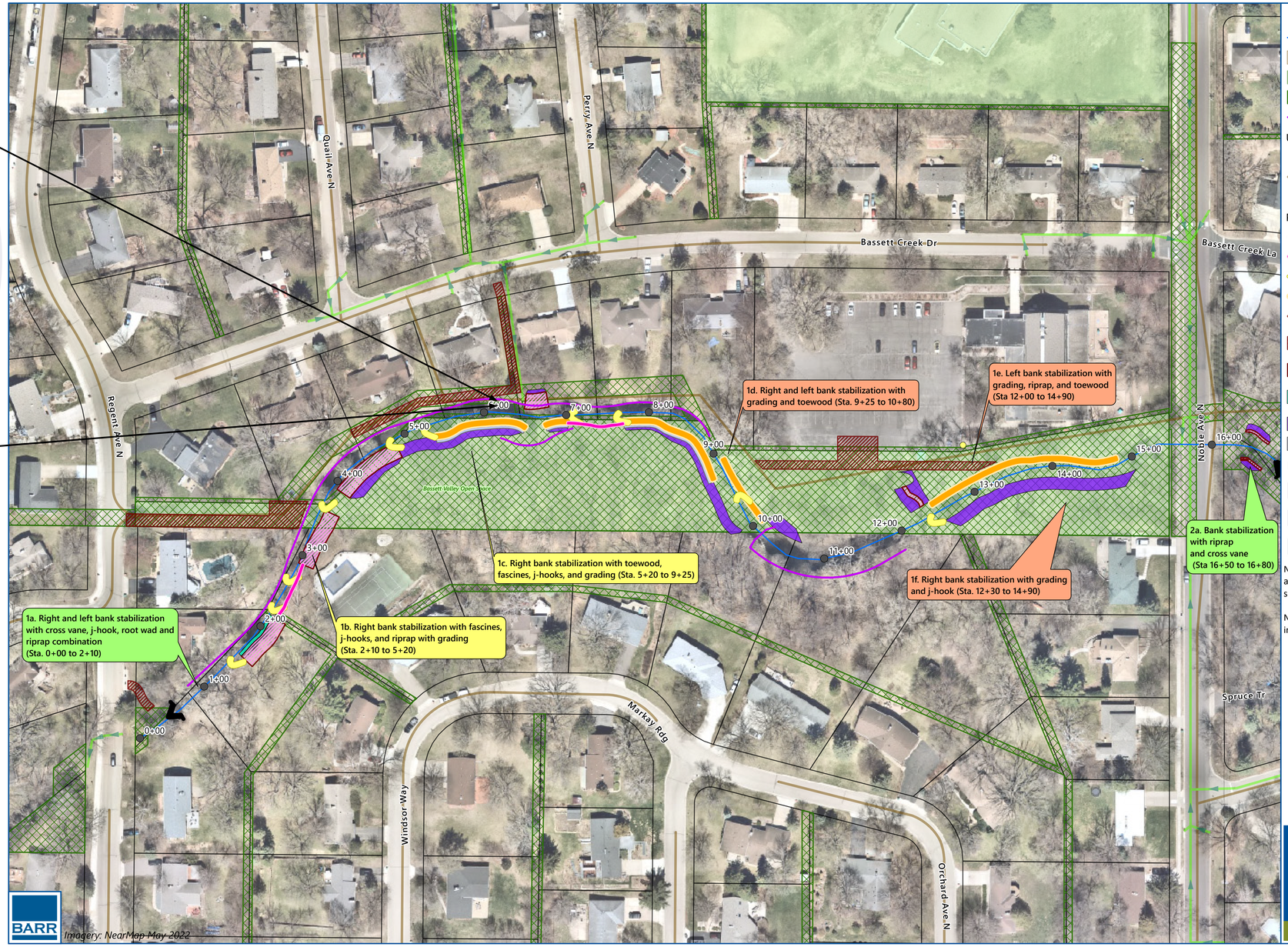


New Feedback from 50% Design

Concern	Response
Removal and maintenance of invasive species along the reach	The goal is to remove invasive species within the project area, as shown on the easement documents and Phase 2 design plans. The first three years of invasive species removal and maintenance will be completed by the City. After that timeframe, invasive species removal and maintenance becomes the homeowner's responsibility.
The ability to kayak in the creek	The in-stream structures will be designed to allow for kayak passage through the channel.
Design preferences (such as placement of riprap)	The restoration goals include reduction of sediment loading, prevention of future erosion, preservation of natural features, and enhancement of habitat. The restoration design will incorporate landowner preferences when they are feasible and align with project goals.
Impacts to existing private riprap	The proposed project will not remove existing riprap along the creek. The only modification to existing riprap would be enhancing the existing riprap through placement of new rock or boulders.

90% Design for Reach 1, Regent Avenue to Noble Avenue

- Regrade channel and stream banks to improve floodplain connection
- Stabilize stream bank toe with rock riprap, toe wood, and fascines
- Install J-hook vanes to maintain channel grade and route erosive flows away from stream banks
- Grade and restore washed out gully



Project Stationing
Bassett Creek
Private Parcel
Public Parcel
Easement
Existing Bank Protection

Utilities
Gravity Storm Sewer
Sanitary Main
Power Pole

Proposed Restoration
Cross Vane
Fascines
J-hook
Toewood
Root Wad
Proposed Construction Access
Riprap
Root Wad and Riprap Combination
Grading with Vegetation
VRSS

Priority Level Call Out Boxes
Low
Medium
High

Note 1: Number in priority site restoration area callouts refer to the Bassett Creek subreach.

Note 2: Proposed tree removals are included in the 90% design plans.

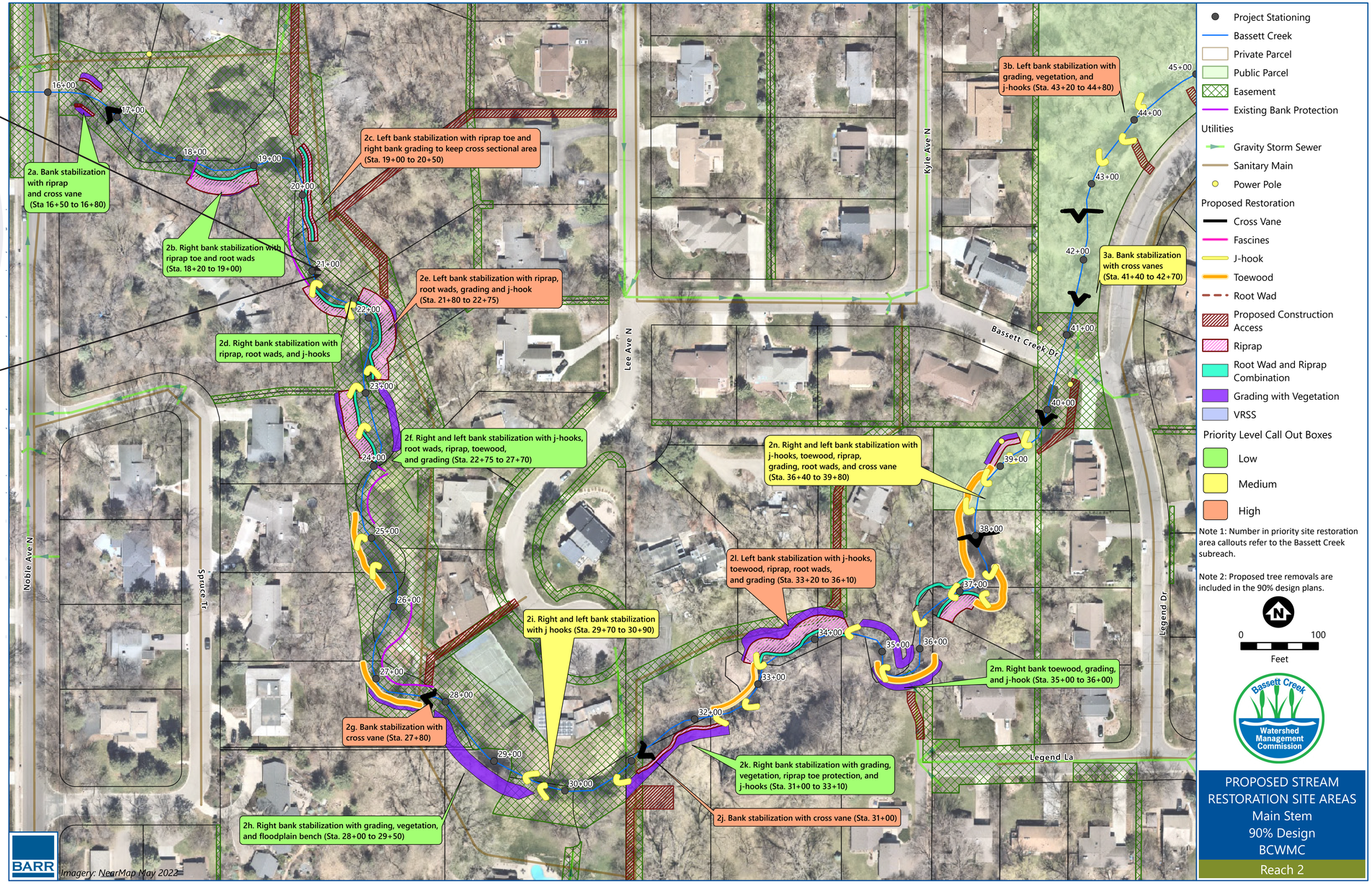
0 100
Feet

PROPOSED STREAM RESTORATION SITE AREAS
Main Stem
90% Design
BCWMC
Reach 1

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

90% Design for Reach 2, Noble Avenue to Bassett Creek Drive

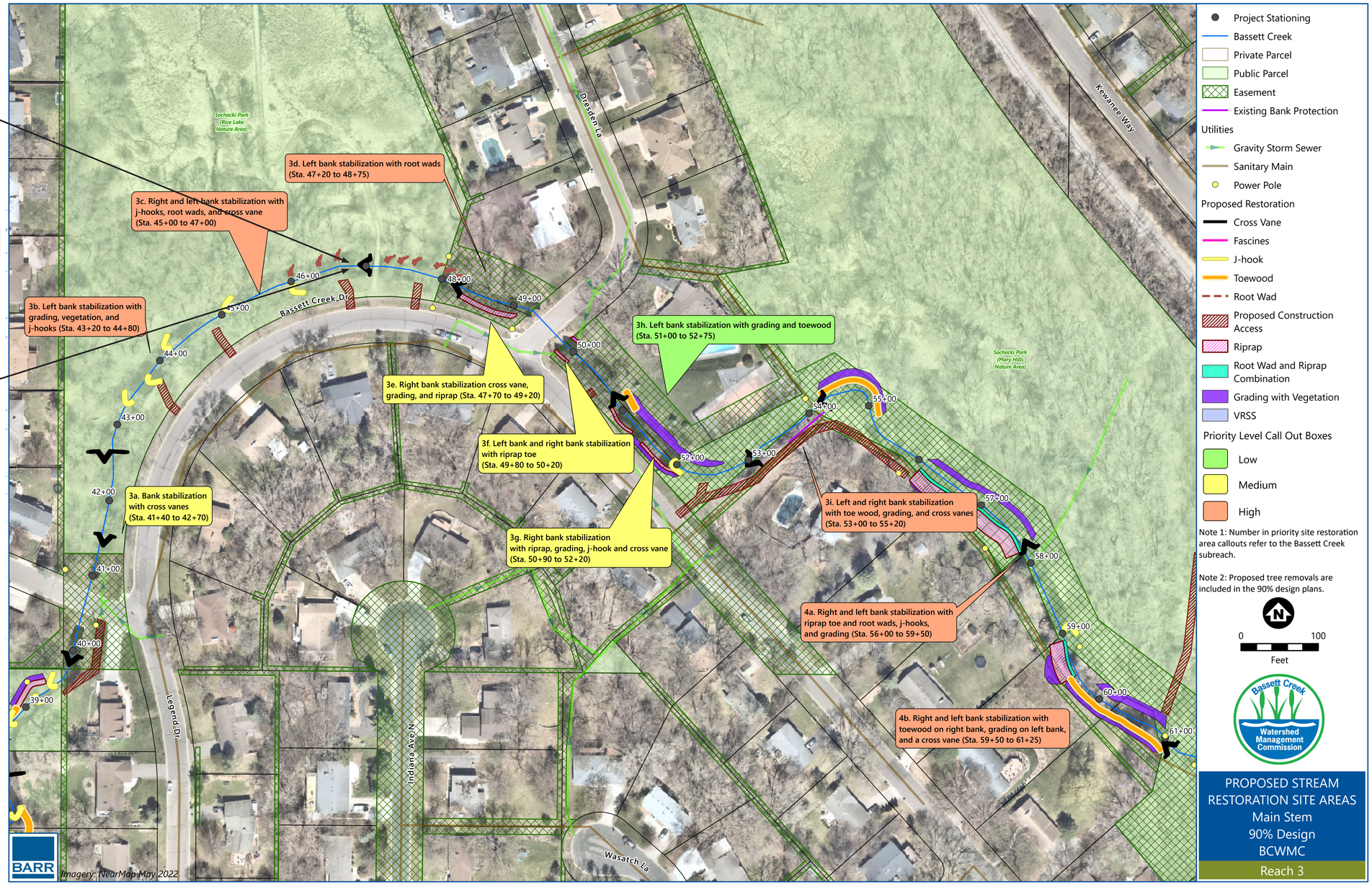
- Install cross vanes to provide protection for sanitary sewer crossings
- Stabilize stream bank toe with rock riprap, toe wood, and fascines
- Regrade channel and stream banks to improve floodplain connection
- Stabilize stream bank with vegetative material (seed, live plugs, shrubs, and/or live cuttings)



Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

90% Design for Reach 3, Bassett Creek Drive to Station 61+00

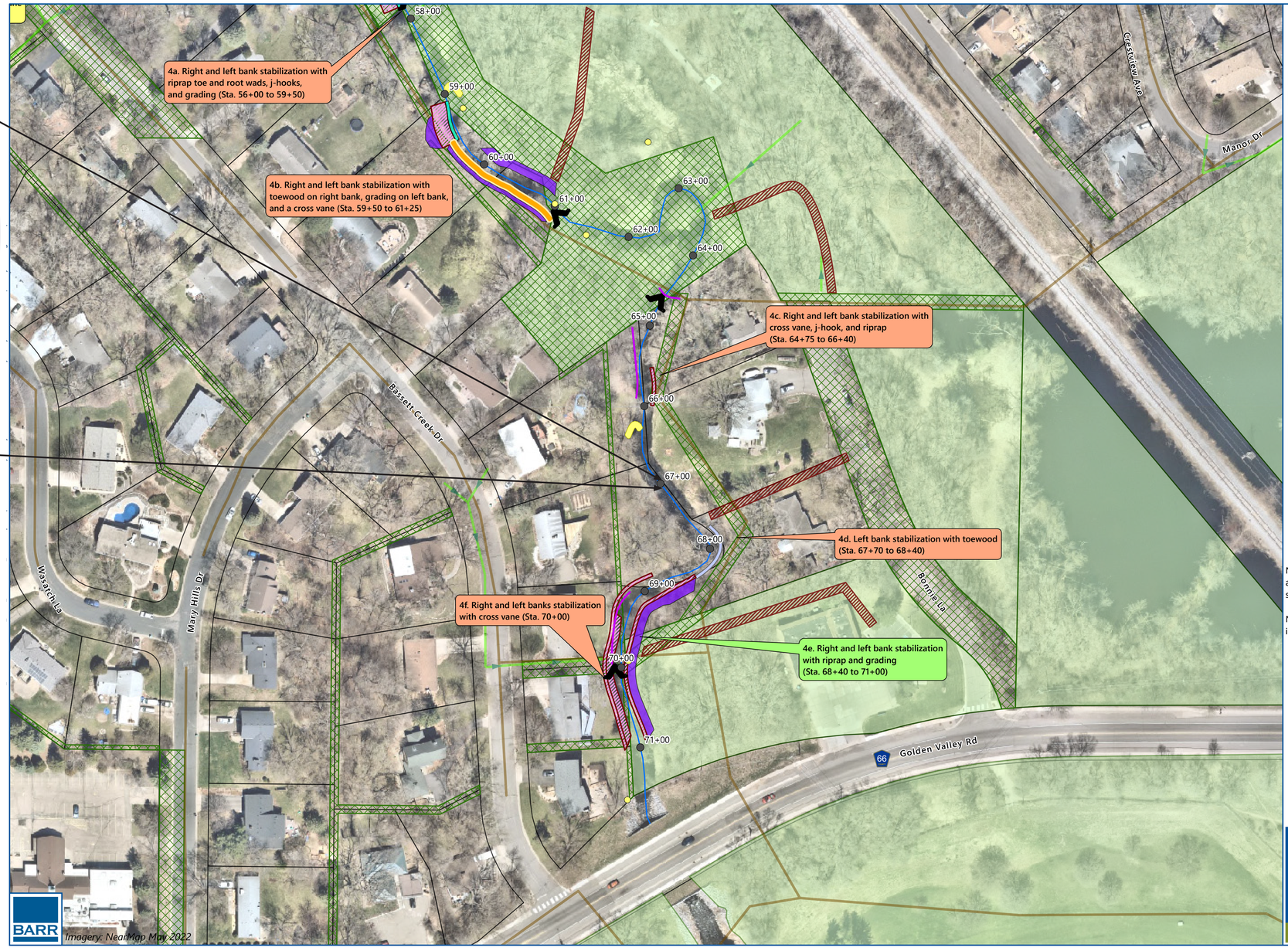
- Regrade channel and stream banks to improve floodplain connection
- Stabilize stream bank with vegetative material (seed, live plugs, shrubs, and/or live cuttings)
- Install cross vanes to prevent erosion upstream and downstream of road and bridge crossings
- Install J-Hooks to route erosive flows away from the bank and towards the center of the channel



Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

90% Design for Reach 4, Station 61+00 to Golden Valley Road

- Regrade channel and stream banks to improve floodplain connection
- Stabilize stream bank with vegetative material (seed, live plugs, shrubs, and/or live cuttings)
- Install cross vanes to maintain channel grade and j-hook vanes to route erosive flows away from stream banks, especially those that have sanitary sewer
- Stabilize stream bank toe with rock riprap, toe wood, facines, and coir log



Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

city of golden valley

Bassett Creek Watershed Management Commission

Timeline, Funding, and Project Impacts

Timeline (watch for project updates!)

Through July, 2025	Through December 2025	2026	2027-2029
50% Design	90 to 100% Design	Project Construction	Restoration and Vegetation Establishment

Funding

- BCWMC Capital Funds levied by Hennepin County on all watershed residents
- Estimated planning level cost of feasibility study, design, administration, construction and engineering services: $3,265,000

Project Impacts

- Improve water quality
  - Estimated total phosphorous reduction: 184.4 lb/year
  - Estimated sediment reduction: 368,710 lb/year (as measured by total suspended solids)
- Reduce erosion along creek and protect upland areas
- Improve in-stream and riparian habitat
- Protect infrastructure and utilities along creek
- Limit trail closures
- Limit tree removals or replace, as warranted

BCWMC Project Page

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project

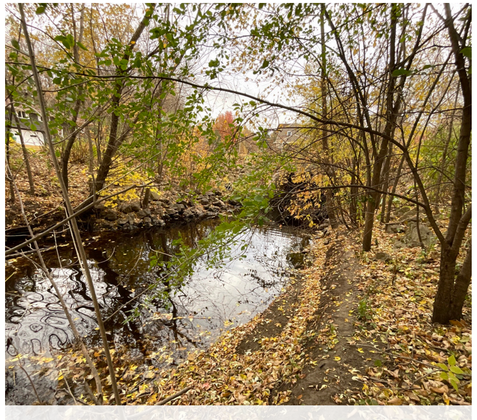
Ȟaȟá Wakpádaŋ/Bassett Creek Potential Riparian Vegetation Regeneration Overview

Bassett Creek riparian areas have lost much of their ecological value and stormwater runoff treatment capacity due to changes within the watershed. Regenerating native vegetation within the riparian zone of Bassett Creek provides many opportunities to meet BCWMC goals including:

- **to restore ecological value**
- **to provide additional stormwater runoff treatment**
- **to clean up debris**
- **to restore wildlife habitat**
- **to provide passive recreation**

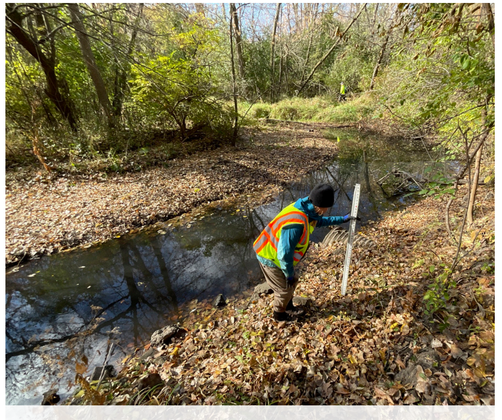
Understory and herbaceous ground layer species within the riparian corridor vary from non-native invasives (e.g., Tatarian honeysuckle, common burdock, thistles, garlic mustard, and buckthorn) to native generalists (e.g., snakeroot, woodbine, Canada goldenrod, and asters). This plant community structure and species composition is a direct result of past human disturbance (e.g., plowing, grading, grazing, etc.).

An invasive plant is defined as a plant that is non-native that has negative effects on our economy, environment, or human health. Invasive plants are aggressive species that can establish rapidly and outcompete desirable native plants. When invasive species displace native plants they degrade wildlife habitat by altering the physical structural cover of a plant community and by eliminating essential food sources. Invasive species present along the creek, like buckthorn and garlic mustard, can create areas of exposed soils which lead to erosion and result in the degradation of water quality in lakes and streams. The removal of invasive species and the prevention of future species establishing is a project priority.



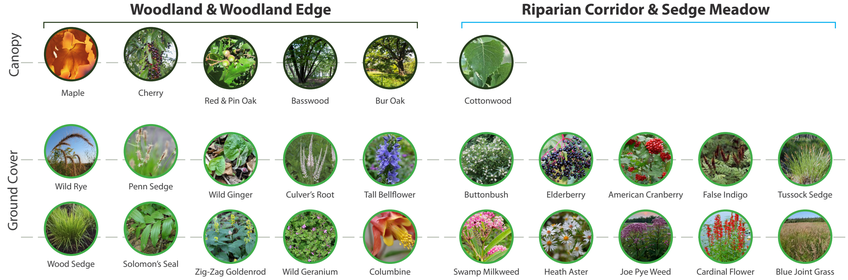
Existing Riparian Plant Community: **Bassett Creek and Legend Dr**

Existing Plant Community: **Bassett Creek and Spruce Tr**



Existing Plant Community: **Bassett Creek and Bassett Creek Dr**

Target Plant Communities



Example Target Plant Community: **Sedge Meadow**

Example Target Plant Community: **Sedge Meadow**

Example Target Plant Community: **Woodland**

Riparian Buffers

Riparian buffers are the assemblage of trees, shrubs, grasses and forbs that grow along bodies of water. They protect water quality, stabilize banks, slow floodwaters, and provide shade, habitat, and food for both aquatic and terrestrial animals. Restoring the native plant communities along the banks will increase the ecosystem function of Bassett Creek.

Before re-introducing native plant communities, invasive plant species as well as trees that are diseased, dying, and prone to infestation are removed, allowing for the reintroduction of the native plant communities that were once present. Trees will be removed or strategically reused as part of the stream restoration.

Bassett Creek Riparian Buffer: **Existing Invasive Species**

Bassett Creek Riparian Buffer: **Erosion Due to Lack of Vegetation**

Degraded Riparian Buffer - Lower Riley Creek: **Before**

Restored Riparian Buffer - Lower Riley Creek: **After**

How long will it take?

It can take 3-7 years for restored native plant communities to reach full maturity. For the first three years after construction, professional restoration contractors will perform essential site maintenance to reduce weed competition and ensure project success.

Year 1

The site will look bare and weedy during the first growing season. Cover crop grasses establish quickly (to stabilize soils) but native perennial plants may only grow to a height of six inches in the first season. Various weed control methods will be used to prevent opportunistic annual weeds from going to seed.

Example Woodland Restoration: **Year 1**

Year 2

Some of the short-lived flowering species bloom in abundance during the second year. Plants like native asters, goldenrods, and columbine are usually the first native species to flower during restoration.

Professional restoration contractors will typically limit site mowing to one or two times during the second year. Additional site maintenance techniques may include hand removal, spot mowing, and herbicide application by professional restoration contractors as needed.

Example Woodland Restoration: **Year 2**

Year 3 & Beyond

The composition and appearance of these planted communities will continue to fluctuate and evolve over time. Most native flowers and grasses begin to reach maturity during the third year. The frequency of weed management activities will be reduced over time but continued management is important for most restoration projects.

After Year 3, landowners will be responsible for the ongoing maintenance of these areas including maintaining desirable vegetation and removing invasive species.

Example Woodland Restoration: **Year 3**

Stream Restoration Construction: Methods and Access

Stream restoration construction can involve construction equipment along the stream banks or in the stream itself.

Construction equipment may be used along the banks of the stream. Equipment may also be temporarily stored on the banks along with construction materials, as seen above left.

Construction equipment may access work areas via shallow water, as seen in pictures above.

Construction access refers to a defined path to be used by construction equipment to access or move along stream banks. Homeowners should coordinate with the city to identitfy landscaping, trees, utilities, or other items to avoid and/or protect, if possible, on their property.

Construction access can be composed of rock, dirt or mat. Any area used as construction access will be returned to pre-construction conditions or better.

Following construction, access routes will be blanketed and seeded for restoration.

Ȟaȟá Wakpádaŋ/Bassett Creek Main Stem Restoration Project