Bassett Creek Watershed Management Commission
Watershed Tour
June 21, 2016

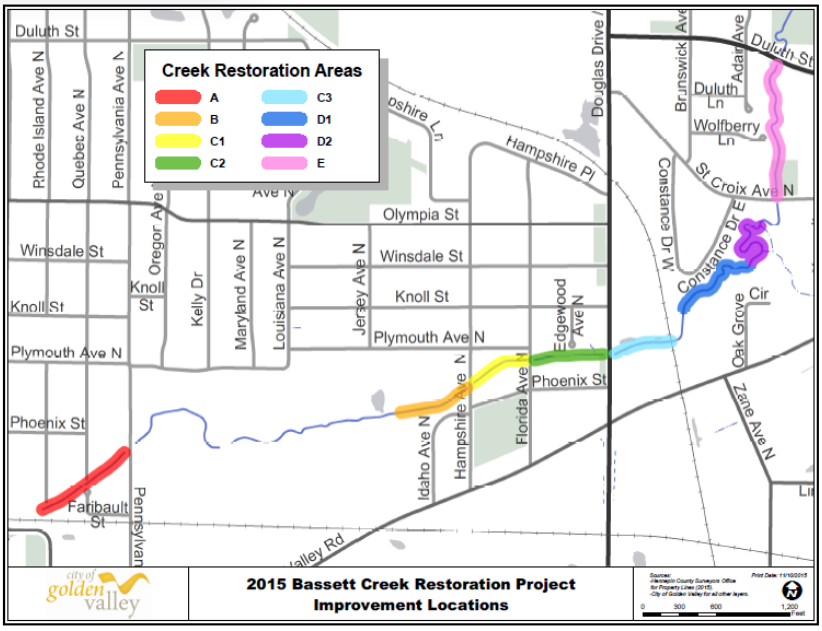
1:00 Depart from Golden Valley City Hall

1:10 Main Stem Bassett Creek Restoration Project, Golden Valley – Stop #1

The BCWMC, in cooperation with the City of Golden Valley, is restoring sites along the 9,500-foot reach of Bassett Creek from the intersection of 10th Avenue North and Rhode Island Avenue North to Duluth Street. Most of this stretch is along private property and city staff are working with 70 individual landowners to complete this project!

The project's feasibility report identified 29 sites where bank erosion, bank failure, and infrastructure repairs are needed. Restoration techniques include stone toe protection, stabilizing slopes, with vegetation, and other structural methods.

The completed project will reduce the total phosphorous load entering the creek by an estimated 60-100 pounds per year and will reduce the total suspended sediment load by an estimated 140,000-200,000 pounds per year. The total project cost was estimated at $1.5M but is likely to be completed for much less.



Presentation by Eric Eckman
City of Golden Valley

1:45 Main Stem Bassett Creek Erosion Repair Project and Redevelopment Plans @ Fruen Mill, Minneapolis – Stop #2

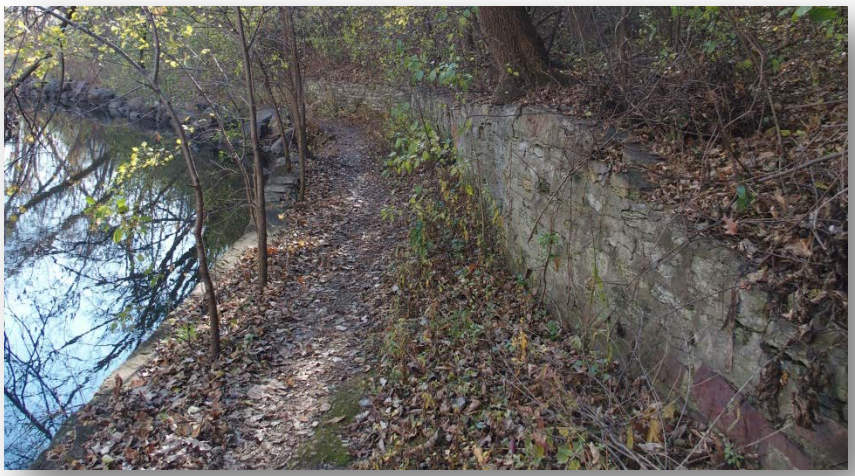
The BCWMC, in cooperation with the City of Minneapolis, is planning to stabilize the streambanks along Bassett Creek including 800 feet near the Fruen Mill and 3,200 feet from Cedar Lake Road to the entrances of both the new and old tunnels.

Presentations by Jeff Weiss, Barr Engineering Co. and
Jeff Wallis, At Glenwood LLC

The project will stabilize streambanks, reduce erosion, reduce pollution, armor or dispose of contaminated soils, and improve stream habitat. It's estimated the project will reduce total phosphorus pollution by 27.8 pounds per year and suspended solids by 48,300 pounds per year.

A variety of stabilization techniques are proposed including establishing streambank vegetation and installing stone toe protection, vegetated reinforced soil stabilization structures, log or rock vanes, and some rip rap. Debris such as concrete, bricks, and rebar will also be removed from the stream.

Issues to consider in this area include the desire to maintain a footpath along the creek, historic walls in the area and the timing of redevelopment at the Fruen Mill site.



The total project is estimated to cost just over $1M which will be paid largely through a tax on watershed residents levied by the County on behalf of the BCWMC. A public hearing on the proposed project will be held at the BCWMC meeting on September 15, 2016.

2:20 Macroinvertebrate and Habitat Monitoring Demonstration – Stop #3

Macroinvertebrates are organisms without backbones which are visible without the aid of a microscope. Macroinvertebrate communities are often evaluated as an indicator of water quality, primarily in streams. This is because only certain species of macroinvertebrates are present in waterbodies with good water quality while other species can tolerate more degraded water. Metrics such as the Hillsenhoff Biotic Index (HBI) and the Invertebrate Community Index (ICI) are used to assess water quality based on the types and number of macroinvertebrates in the stream.

Habitat characteristics including the amount of sediment accumulated on the streambed and the amount of vegetation and woody debris in the stream are also measured during macroinvertebrate monitoring to further assess the stream's health. (See datasheet attached.)

The BCWMC began periodic monitoring of the macroinvertebrate communities in its priority creeks in 1980 and has monitored every three years since 2000 to help evaluate water quality and habitat. Macroinvertebrate sampling follows methodology specified by the Minnesota Pollution Control Agency. Samples are collected from primary habitats at each location including riffle-runs, undercut banks, aquatic plants, and woody debris. A total of 20 samples are taken at each monitoring station.

Macroinvertebrate monitoring performed in 2015 found that Bassett Creek, Plymouth Creek, and the North Branch of Bassett Creek do not meet State standards for macroinvertebrates. This may be due to high chloride levels or lack of good habitat. The Sweeney Branch of Bassett Creek does meet State standards.

Demonstration by Meg Rattei and Chris Bonick
Barr Engineering Co.

TRANSECT

MPCA

Field Number: Bassett Creek at ~~Fruen Mill~~ Date (mm/dd/yy): 06/21/2016 Crew: CJB and MRR

Transect # 1 Distance from Start (m): _____

Stream Width(m): 9.1 Channel Type: Riffle Pool Run

	1/5	2/5	3/5	4/5	Deep
WD cm	35	37	25	20	–
+DoFcm	35	37	25	20	–
Emb %	0	0	0	25	–
Bed					
Bou					
Rub	x	x	x	x	
Gravel				x	
Sand					
Silt					
Clay					
Detr					
Other					
Alg %	50	75	50	25	
Mac %	0	0	0	0	

Percent Cover for Fish:

0 UB 0 SM

0 OV 0 EM

5 WD 0 OD

0 Bo specify (other)_____

Riparian Land Use:

0 -- 30m	*L/R*	*30 -- 100m*	
___/___	Cropland	___/___	
___/___	Pasture	___/___	
___/___	Barnyard	___/___	
x /___	Developed	x /___	-specify:_____
___/___	Exposed Rock	___/___	
___/___	Meadow	___/___	
___/___	Shrubs	___/___	
___/x	Woodland	___/x	
___/___	Wetland	___/___	
___/___	Other	___/___	-specify:_____

Canopy/Shading:

16 LB 17 RB

10 CUp 16 CL 17 CDn 17 CR

Riparian Buffer (m): 2 LB >10 RB

Bank Erosion (m): 0 LB 3 RB

Comments:

Transect #_____ Distance from Start (m):_____

Stream Width(m):_____ Channel Type: Riffle Pool Run

	1/5	2/5	3/5	4/5	Deep
WD cm					
+DoFcm					
Emb%					
Bed					
Bou					
Rub					
Gravel					
Sand					
Silt					
Clay					
Detr					
Other					
Alg %					
Mac %					

Percent Cover for Fish:

_____ UB _____ SM

_____ OV _____ EM

_____ WD _____ OD

_____ Bo specify (other)_____

Riparian Land Use:

0 -- 30m	*L/R*	*30 -- 100m*	
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___/___	Pasture	___/___	
___/___	Barnyard	___/___	
___/___	Developed	___/___	-specify:_____
___/___	Exposed Rock	___/___	
___/___	Meadow	___/___	
___/___	Shrubs	___/___	
___/___	Woodland	___/___	
___/___	Wetland	___/___	
___/___	Other	___/___	-specify:_____

Canopy/Shading:

_____LB _____RB

_____CUp _____CL _____CDn _____CR

Riparian Buffer (m): _____LB _____RB

Bank Erosion (m): _____LB _____RB

Comments:

3:10 Northwood Lake Improvement Project, New Hope – Stop #4

The BCWMC, in cooperation with the City of New Hope, is constructing this storm water improvement project that will treat storm water runoff from more than 110 acres of currently untreated urban land.

The project is currently in construction and includes an underground stormwater reuse system with a 160,000-gallon underground chamber at the east end of Northwood Lake. The reuse system will irrigate adjacent ball fields, and an overflow system will direct extra runoff to rain gardens. (See diagram attached.) The stormwater reuse system maximizes runoff treatment while minimizing the amount of land removed from useable park space. At the west end of the lake, a wet ponding basin is being constructed to treat stormwater runoff from rear-yard areas and Jordan Avenue.

This project is estimated to remove 22 pounds of phosphorous per year from entering Northwood Lake and will reduce the amount of other pollutants carried to the lake in stormwater runoff and snowmelt. The total project cost is estimated at $1.6M. Funding is coming from the City of New Hope, the BCWMC (through tax levy on watershed residents), and $700,000 in State grants including Clean Water Funds from the Minnesota Board of Water and Soil Resources and a Clean Water Partnership Grant from the Minnesota Pollution Control Agency.

CLEAN WATER LAND & LEGACY AMENDMENT

Presenters: Bob Paschke, City of New Hope and Chris Long, Stantec

NORTHWOOD PARK - CONCEPT A

CITY OF NEW HOPE, MINNESOTA

2016 NORTHWOOD LAKE IMPROVEMENTS

FIGURE 3

DATE: August 2014 PROJ. NO.: 193802816

Stantec
2335 Highway 36 W
St. Paul, MN 55113
www.stantec.com

4:00 Winter Maintenance Equipment Demonstration, City of Golden Valley – Stop #5

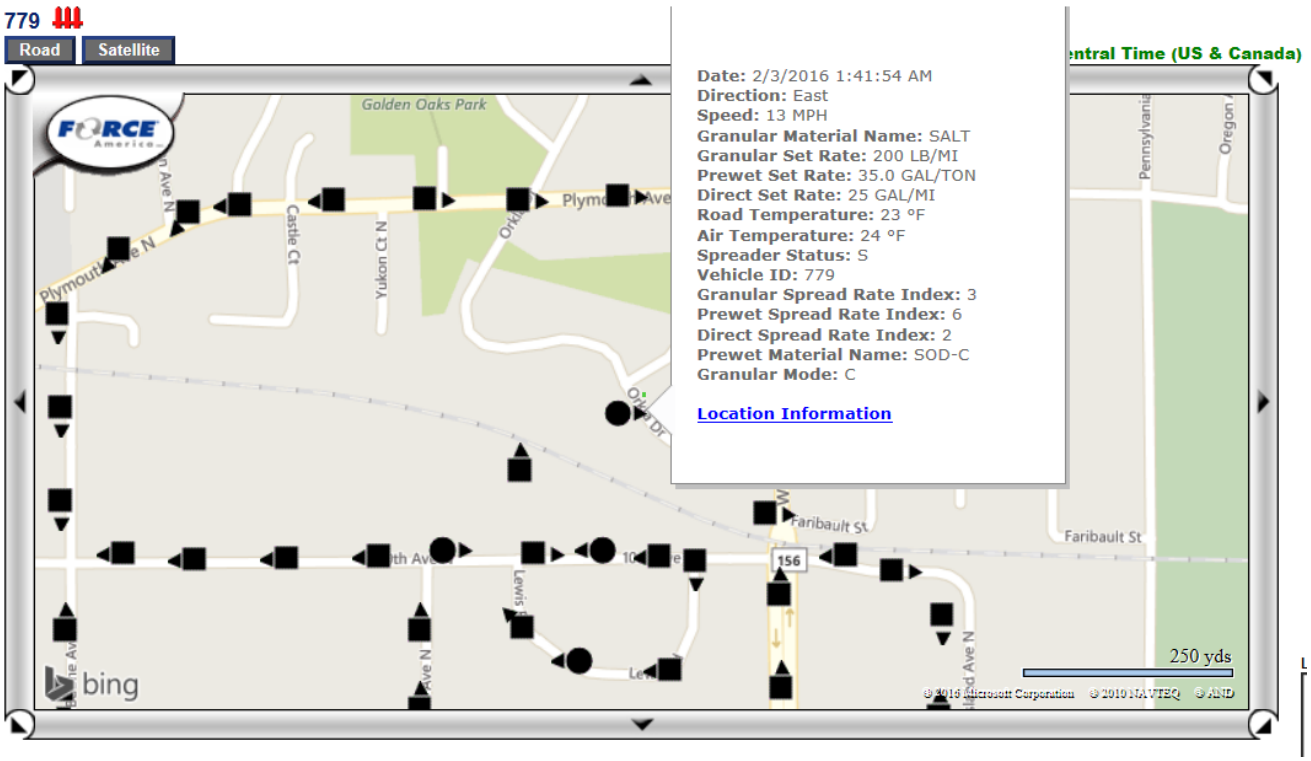
Unfortunately, even as the levels of phosphorus and sediment are decreasing in Bassett Creek, levels of chlorides are on the rise. And, it only takes one teaspoon of salt to permanently pollute just 5 gallons of water. The Minnesota Pollution Control Agency reports that although there are not environmentally safe, effective and inexpensive alternatives to salt for deicing, we can reduce salt at the source through smarter application strategies that will also save money on labor and products and reduce damage to infrastructure, vehicles, plants and water supplies.

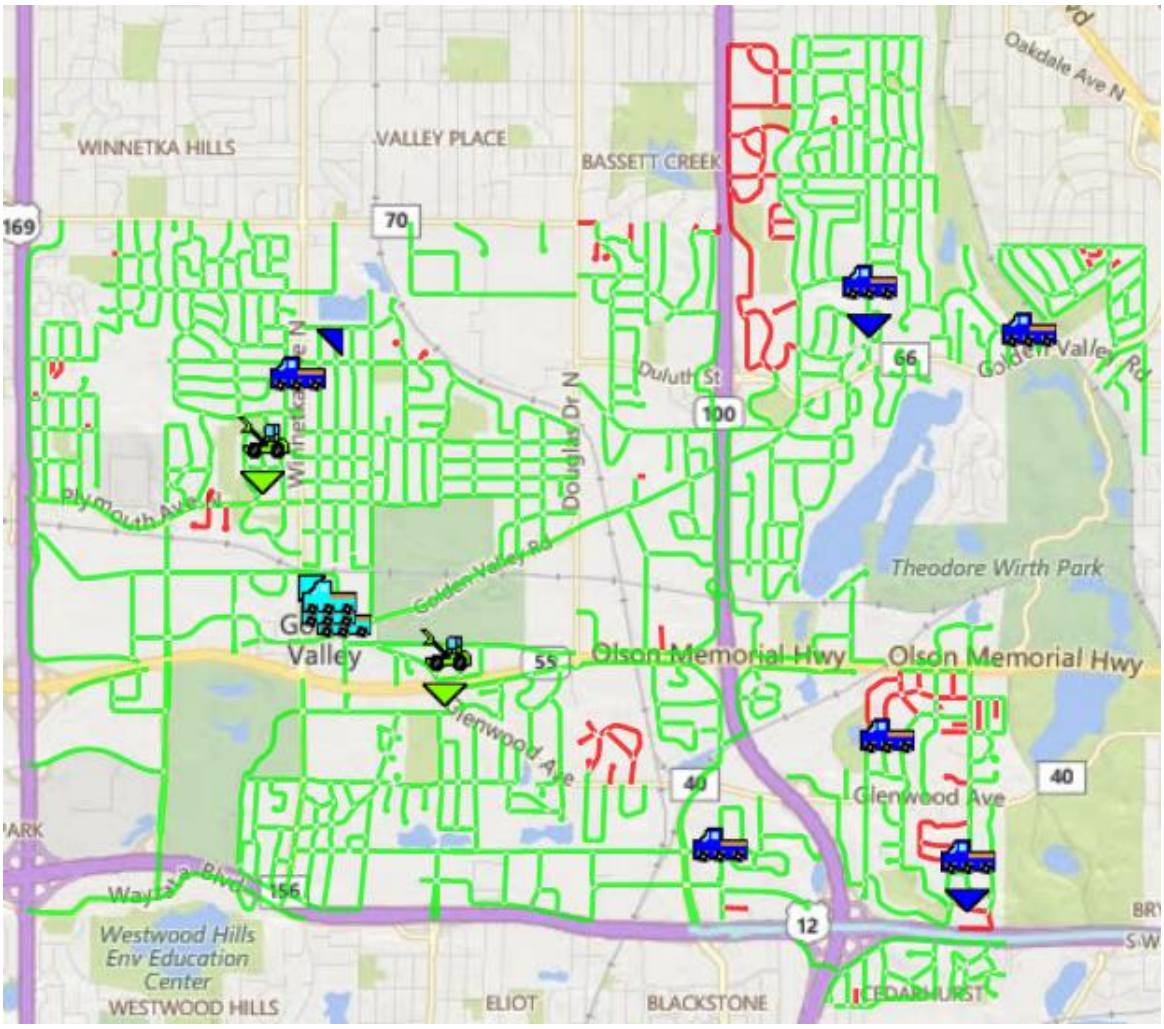
The City of Golden Valley's Street Maintenance Department is implementing the latest technologies to reduce the use of chlorides for deicing. By applying a brine solution before the storm, they greatly reduce the amount of granular salt needed during and after the storm. And, by analyzing multiple road and weather conditions, in-truck computers are used to dial-in the exact amount of salt needed in different sections of road. To top it off, street crews are trained and certified in snow and ice control best practices; and all data winter maintenance data are kept and analyzed to further refine practices the next year. (See application rate information and example of real time data attached.)

Many challenges remain, however, including public expectations for ice and snow-free winter roads, the high cost of purchasing new equipment to keep up with new technologies, and the use of salt by private contractors in commercial and institutional settings who are often untrained and wary of liability.

Presenter: Tim Kieffer, City of Golden Valley

Real Time Data





How long an application will last depends on five factors: pavement temperature, application rate, precipitation, beginning concentration, and chemical type. These factors explain why one application rate will not fit all storm events.

- If your equipment is unable to deliver material at lower rates, consider exchanging the 9-inch-diameter auger for either a 6-inch or 9-inch special auger to deliver about two-thirds less material/revolution.

Anti-icing Application Rate Guidelines

These guidelines are a starting point. Reduce or increase rates incrementally based on your experience.

Condition	Gallons/Lane Mile			Other Products
	$CaCl_2$	$MgCl_2$	Salt Brine	
1. Regularly scheduled applications	15 – 25	15 – 25	20 – 40	Follow manufacturers' recommendations.
2. Prior to frost or black ice event	15 – 25	15 – 25	20 – 40	
3. Prior to light or moderate snow	15 – 25	15 – 25	20 – 50	

Pounds of Ice Melted Per Pound of Salt

Pavement Temp. °F	One Pound of Salt (NaCl) melts	Melt Times
30	46.3 lbs of ice	5 min.
25	14.4 lbs of ice	10 min.
20	8.6 lbs of ice	20 min.
15	6.3 lbs of ice	1 hour
10	4.9 lbs of ice	Dry salt is ineffective and will blow away before it melts anything.
5	4.1 lbs of ice	
0	3.7 lbs of ice	
-6	3.2 lbs of ice	

At temps below 15 degrees, it may be more cost-effective to use a chemical other than NaCl.

See research at www.dot.state.mn.us/maintenance/training

Deicing Application Rate Guidelines

24' of pavement (typical two-lane road)

These rates are not fixed values, but rather the low end of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Lbs/ two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted/ Pretreated With Salt Brine	Salt Prewetted/ Pretreated With Other Blends	Dry Salt*	Winter Sand (abrasives)
>30° ↑	Snow	Plow, treat intersections only	80 (40/lane mile)	70	100*	Not recommended
	Frz. rain	Apply chemical	80 – 160	70 – 140	100 – 200*	Not recommended
30° ↓	Snow	Plow & apply chemical	80 – 160	70 – 140	100 – 200*	Not recommended
	Frz. rain	Apply chemical	150 – 200	130 – 180	180 – 240*	Not recommended
25 - 30° ↑	Snow	Plow & apply chemical	120 – 160	100 – 140	150 – 200*	Not recommended
	Frz. rain	Apply chemical	150 – 200	130 – 180	180 – 240*	Not recommended
25 - 30° ↓	Snow	Plow & apply chemical	120 – 160	100 – 140	150 – 200*	Not recommended
	Frz. rain	Apply chemical	160 – 240	140 – 210	200 – 300*	400
20 - 25° ↑	Snow or frz. rain	Plow & apply chemical	160 – 240	140 – 210	200 – 300*	400
20 - 25° ↓	Snow	Plow & apply chemical	200 – 280	175 – 250	250 – 350*	Not recommended
	Frz. rain	Apply chemical	240 – 320	210 – 280	300 – 400*	400
15 - 20° ↑	Snow	Plow & apply chemical	200 – 280	175 – 250	250 – 350*	Not recommended
	Frz. rain	Apply chemical	240 – 320	210 – 280	300 – 400*	400
15 - 20° ↓	Snow or Frz. rain	Plow & apply chemical	240 – 320	210 – 280	300 – 400*	500 for frz. rain
0 to 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 – 400	Not recommended	500 – 750 spot treat as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 – 600**	Not recommended	500 – 750 spot treat as needed

*Dry salt is not recommended. It is likely to blow off the road before it melts ice.

**A blend of 6 – 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.