RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

2017
ANNUAL REPORT

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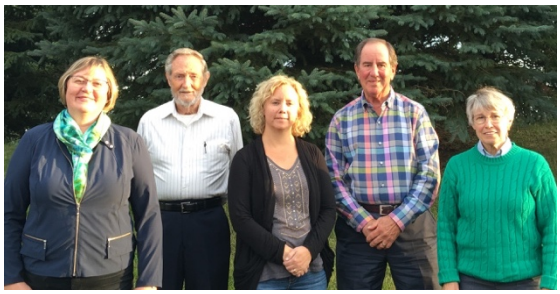
CONTACTS

The RPBCWD is governed by a five-person board of managers, advised by a Citizens Advisory Committee (CAC) and Technical Advisory Committee (TAC), and its daily operations are carried out by a team of employees and consultants. Contact information for each is listed below.

BOARD OF MANAGERS

The board of managers are listed by their position, and with their appointing county and term end-date noted. Four managers are appointed by the Hennepin County Commissioners and one by the Carver County Commissioners. They serve three-year terms. In 2017, two managers retired (Bisek and Forster), and two new managers were appointed (Pedersen and Ward).



President (middle)
Leslie Yetka - Hennepin 7/31/19
17452 Hampton Court
Minnetonka, MN 55345
Home: (952) 933-3281
Email: lyetka@rpbcwd.org

Vice President (far left)
Dorothy Pedersen – Hennepin 7/31/20
6155 Ridge Road
Shorewood, MN 55331
Home: (952) 933-2141
Email: dpedersen@rpbcwd.org

Treasurer (far right)
Jill Crafton - Hennepin 7/31/18
10351 Decatur Avenue South
Bloomington, MN 55438
Home: (952) 944-5583
Email: jcrafton@rpbcwd.org

Secretary (left)
Richard Chadwick - Carver 7/31/18
9530 Foxford Road
Chanhassen, MN 55317
Home: (952) 445 2425
Email: rchadwick@rpbcwd.org

Manager (right)
Dick Ward - Hennepin 7/31/20
8625 Endicott Trail
Een Prairie, MN 55347
Home: (612) 759-9150
Email: dickward@rpbcwd.org

Retired manager
Perry Forster - Hennepin 7/31/2017
9505 Highview Drive
Eden Prairie, MN 55347
Home: (952) 934-0938

Retired manager
Mary Bisek - Hennepin 7/31/17
4700 Sparrow Road
Minnetonka, MN 55345
Home: (612) 599-4479

CITIZEN ADVISORY COMMITTEE

The CAC is a volunteer advisory board comprised of community members. As representatives of citizen interests, members support the district's board of managers in their mission to protect, manage, and restore water resources. They provide recommendations to aid decision making, communicate concerns from the public, and help educate the community. The board of managers annually appoints members to the CAC. The 2017 CAC members were:

From left to right: Matt Lindon, Pete Iversen, Anne Deuring, Sharon McCotter, David Ziegler, Joan Palmquist and Paul Bulger

Chair
David Ziegler
16729 Baywood Terrace
Eden Prairie, MN 55346

Vice Chair
Sharon McCotter
7000 Utica Lane
Chanhassen, MN 55317

Secretary
Joan Palmquist
8905 Cove Point Road
Eden Prairie, MN 55347

Member
Jim Boettcher
7476 Crocus Court
Chanhassen, MN55317

Member
Paul Bulger
15807 South Lund Road
Eden Prairie, MN 55346

Member
Matt Lindon
9026 Belvedere Drive
Eden Prairie, MN 55347

Member
Peter Iversen
8002 Island Road
Eden Prairie, MN 55347

Member
Anne Deuring
17149 Chiltern Hills Road
Minnetonka, MN 55345

TECHNICAL ADVISORY COMMITTEE

The technical advisory committee (TAC) includes representatives of cities, counties, state and other agencies. Agencies represented on the committee vary from the Metropolitan Council, to the Minnesota Department of Natural Resources, and local cities. They provide technical advice on district projects and programs, including its regulatory program. The board of managers annually appoints members to the TAC. The 2017 TAC members were:

Name and position	*Organization*	*Address*
Steve Christopher *Board Conservationist* (651) 296-2633	Board of Water and Soil Resources	520 Lafayette Road North Saint Paul, MN 55155
Matt Lindon *Citizen Advisor*	Citizen Advisory Committee	9026 Belvedere Drive Eden Prairie, MN 55347
Paul Moline (952) 361-1825	Carver County	Government Center Administration Building 600 East Fourth Street Chaska, MN 55318
Mike Wanous *Administrator* (952) 466-5230	Carver County Soil & Water Conservation District	11360 Highway 212, Suite 6, Cologne, MN 55322
Steve Segar *Water Resources Engineer* (952) 563-4867	City of Bloomington	1700 West 98th Street Bloomington, MN 55431
Paul Oehme *City Engineer/Director of Public Works* (952) 227-1169	City of Chanhassen	7700 Market Boulevard P.O. Box 147 Chanhassen, MN 55317
Matt Clark *City Engineer* (952) 448-9200	City of Chaska	One City Hall Plaza Chaska, MN 55318
Robert Bean Jr. *Water Resources Engineer* (952) 448-8838 x2607	City of Deephaven (Bolton & Menk, Inc.)	2638 Shadow Lane, Suite 200 Chaska, MN 55318
Leslie Stovring/ Dave Modrow *Water Resources Coordinator/ Water Resource Engineer* (952) 949-8327	City of Eden Prairie	8080 Mitchell Road Eden Prairie, MN 55344

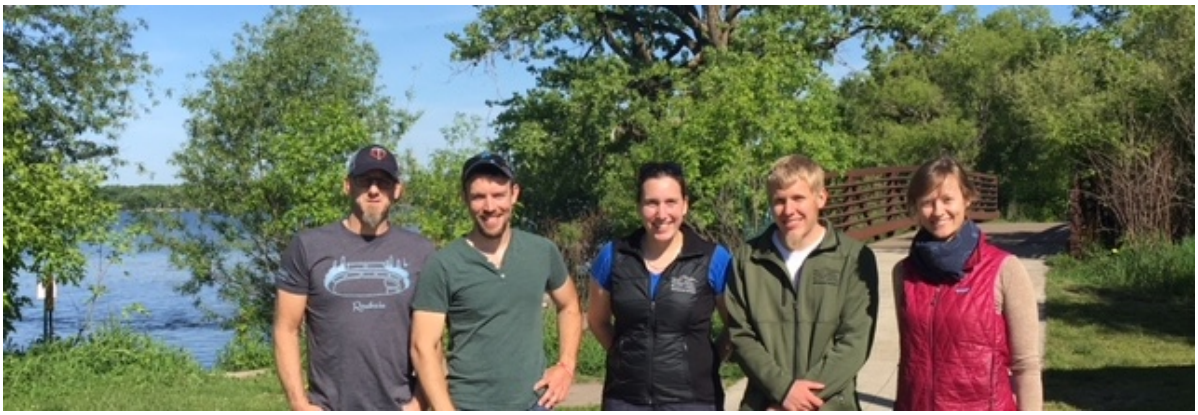
Tom Dietrich *Water Resources Engineering Coordinator* (952) 939-8239	City of Minnetonka	14600 Minnetonka Boulevard Minnetonka, MN 55343
Bill Alms (763) 231-4845	City of Shorewood (WSB Engineering)	701 Xenia Avenue South, Suite 300 Minneapolis, MN 55416
Karen Gallas *Land & Water Unit* (612) 348-2027	Hennepin County	701 Fourth Ave S, Suite 700, Mpls MN 55415
Linda Loomis *District Administrator* (763) 545-4659	Lower Minnesota River Watershed District	6677 Olson Memorial Highway Golden Valley, MN 55427
Joe Mulcahy *Water Resources*	Metropolitan Council	390 North Robert Street St. Paul, MN 55101
Jennie Skancke/ Jason Spiegel *Area Hydrologist* (651) 259-5790	Minnesota Department of Natural Resources	1200 Warner Road St. Paul, MN 55106
Chris Zadak *Watershed Division* (651) 757-2837	Minnesota Pollution Control Agency	520 Lafayette Rd. N. St. Paul, MN 55155
Melissa Jenny/Ryan Malterud *Senior Project Manager* (651)290-5286	US Army Corps of Engineer	St. Paul District Regulatory Branch 180 Fifth Street East, Suite 700 St. Paul, Minnesota 55101-1678

Other staff members from agencies or local government units are welcome to join us at our meetings.

2017 TAC Members: Back Row:
Paul Oehme (Chanhassen), Mike Wanous (Carver County Soil and Water Conservation District), Steve Segar (Bloomington), Tom Dietrich (Minnetonka), Vanessa Strong (Chanhassen), Leslie Stovring (Eden Prairie), Dave Modrow (Eden Prairie), Front Row: Bill Alms (Shorewood), Jennie Skancke (MDNR), Steve Christopher (BWSR), Bob Bean (Deephaven), Rod Rue (Eden Prairie).

EMPLOYEES AND CONSULTANTS

The watershed district employs five full-time staff members.



Left to right: Terry Jeffery, Zach Dickhausen, Claire Bleser, Josh Maxwell and Michelle Jordan

Administrator
Claire Bleser, PhD
cbleser@rpbcwd.org
952-687-1348

Permit coordinator & project manager
Terry Jeffery
tjeffery@rpbcwd.org
952-807-6885

Community outreach coordinator
Michelle Jordan
mjordan@rpbcwd.org
952-607-6481

Water resource coordinator
Josh Maxwell
jmaxwell@rpbcwd.org
952-607-6486

Water resource technician
Zach Dickhausen
zdickhausen@rpbcwd.org
952-607-6036

The District also contracts with consultants to provide engineering, legal, accounting, and auditing services.

District engineer
Scott Sobiech, BARR Engineering Co
4300 MarketPointe Drive, 200
Edina, MN 55435
Telephone: (952) 832-2755
Facsimile: (952) 832-2601
Email: ssobiech@barr.com

Legal
Louis Smith, Smith Partners PLLP
Old Republic Title Building
400 Second Avenue South, Suite 1200
Minneapolis, MN 55401
Telephone: (612) 344-1400
Facsimile: (612) 344-1550

Accounting
Dan Cavanaugh, JMSC Futurity, P.A.
5000 West 36th Street, #240
St. Louis Park, MN 55416
Telephone: (952) 697-3577
Facsimile: (952) 697-3566
Email: dan@jmscfuturity.com

Auditing
Peggy Moeller, Redpath and Company
4810 White Bear Parkway
White Bear Lake, MN 55110
Telephone: (651) 426-7000
Facsimile: (651) 426-5004
Email: pmoeller@hlbtr.com

INTRODUCTION

When it rains, water that falls on the landscape follows a natural path downstream to a waterbody or watercourse. This area of land is the body's watershed. Anything that happens within a watershed impacts the lakes, creeks, wetlands, or ponds it feeds. Watershed districts are special units of government with boundaries based on watersheds, and are charged with protecting and improving our communities' water resources. The Riley-Purgatory-Bluff Creek Watershed District (District) was established on July 31, 1969, by the Minnesota Water Resources Board acting under the authority of the Minnesota Watershed Act of 1955.

Watershed districts are led by district residents and water professionals who focus on managing local water resources. Districts partner with local communities to identify top priorities and plan, implement, and mange efforts, which protect and improve local water resources. Watershed districts educate and engage residents in protecting and improving local water resources, and the efforts they undertake benefit the quality and quantity of water in local, as well as downstream watersheds and communities.

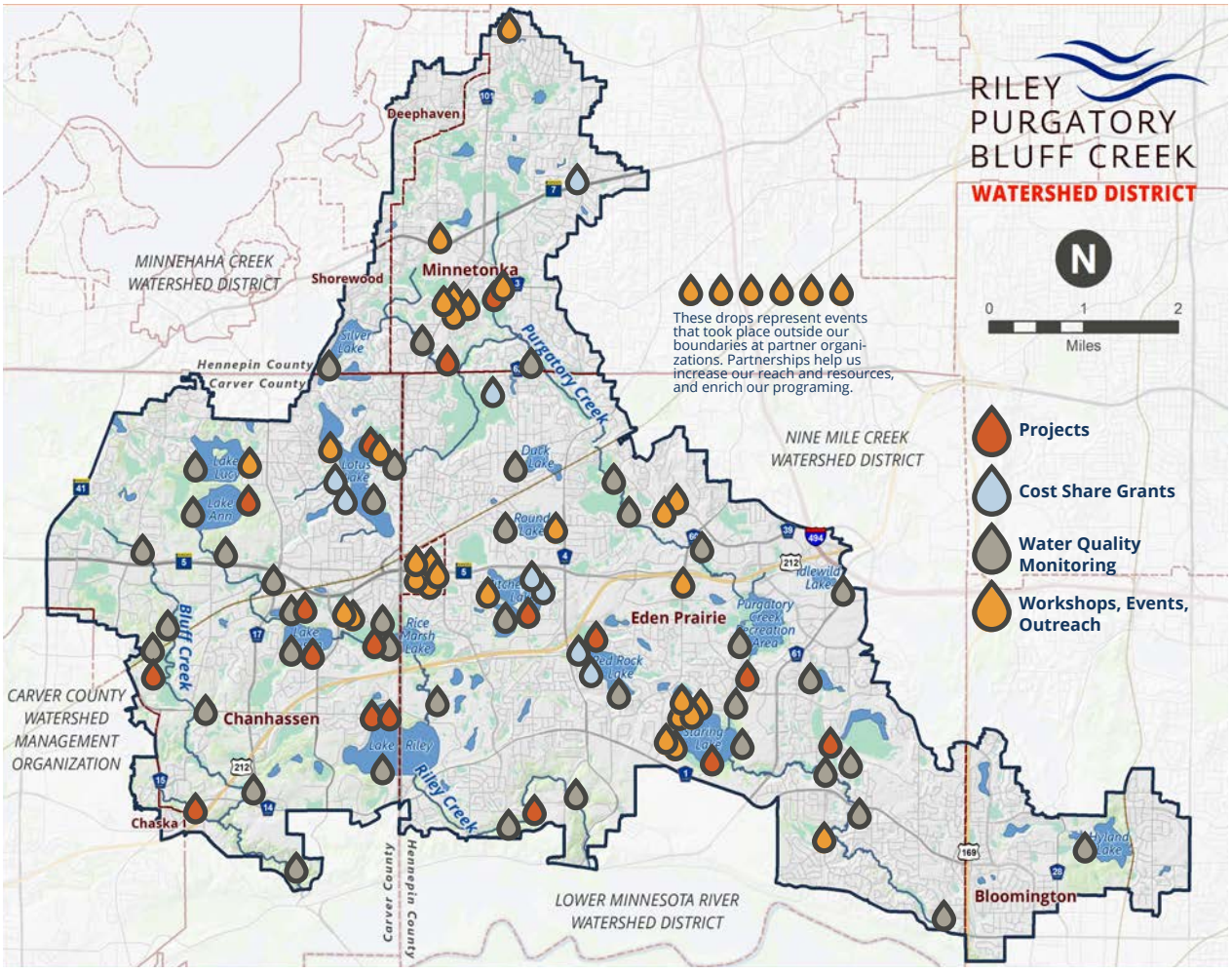
The following report is a summary of District activities in 2017.

2017 SUMMARY

Each year, the watershed district creates a work-plan with goals and objectives for its projects and programs. The plan is a guide for the year, and a way to track progress. This summary describes the district's accomplishments toward fulfilling its 2017 work-plan. The map below highlights the locations of projects, cost-share grants, data collection, and education and outreach activities.

The summary has nine sections:

Administration & Planning
Regulatory
Aquatic Invasive Species
Incentive Program
Data Collection
Education & Outreach
Bluff Creek Watershed
Purgatory Creek Watershed
Riley Creek Watershed



ADMINISTRATION & PLANNING

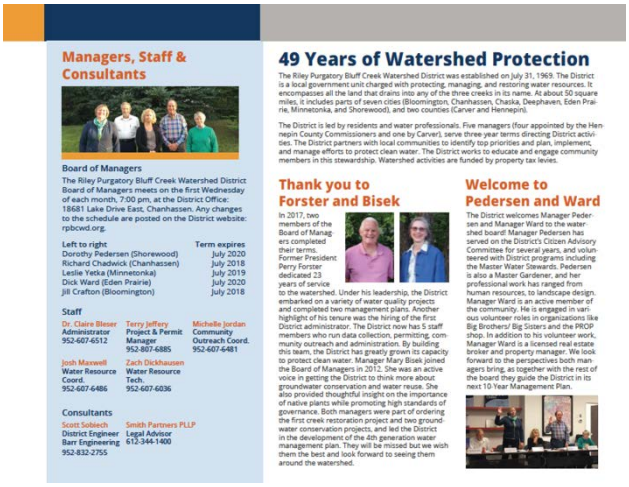
The District's administration and planning efforts are integral to achieve the goals set by the RPBCWD Plan and the Board of Managers. Effective execution of RPBCWD projects, programs, and other strategies requires sound fiscal management, adequate staff capacity and expertise, and planning efforts that are informed by past performance and adaptable to an evolving future.

ANNUAL COMMUNICATION

Every year, the District creates and distributes an annual communication. This publication contains general watershed district information, highlights from the year, and ways that the community can engage in the District's work.

This year, the annual communication was in the form of a twelve-month wall calendar. It featured photos from around the watershed, and tips for protecting and conserving clean water. Approximately 1500 copies were distributed. These were sent to local leaders, placed at local gathering spaces like city centers and libraries, and handed out at community events.

A copy of the communication can be found at:
http://rpbcwd.org/library/annual-reports-and-communications/



BIENNIAL SOLICIATION OF INTEREST PROPOSALS

Under Minnesota Statutes §103B.227, subd 5, the District must issue a biennial solicitation for legal, technical, and other professional services. The District issued a formal solicitation for accounting, engineering, and legal service in 2017. The District retained JMSC Futurity as its accountant and Smith Partners, PLLP as its legal counsel. BARR Engineering was selected as District Engineer in May 2017. Included in our pool of consultant were Wenck Associates, Limnotech, SRF, HDR, Next solicitation will be issued in 2019. Redpath and Company conducted the District's annual financial audit.

EVALUATION OF CAPITAL IMPROVEMENT PROGRAM

As part of the District's development of the 2018 10-year management plan, the District has evaluated and prioritized all District capital improvement project. Out of 175 projects identified, the District with input from our partners was able to identify 34 projects to be implemented within the next 10 years beginning in 2018. Three new projects (Lotus Lake Internal Control, Rice Marsh Lake Internal Control, Duck Lake Watershed Load Control) were identified for the 2018 year in addition to completing projects that were active in 2017 (Chanhassen High School Reuse, Lake Susan Park Pond Capture and Reuse, Lower Riley Creek Restoration and Stabilization, and Scenic Heights Habitat Restoration).

STATUS OF LOCAL PLAN ADOPTION AND IMPLEMENTATION

The District did not receive Local Surface Water Management Plans to review.

FINANCIAL STATUS

The District's fund balances and financial status are included in the District's Annual Audit. The Annual Audit is included as Appendix D to this report. The District's audited financial report was prepared by Redpath and Company, a certified public accounting firm. As required by Minnesota Rules §8410.0150, subp. 2, the Audited Financial Report includes classification and reporting of revenues and expenditures, a balance sheet, an analysis of changes in final balances, and all additional statements necessary for full financial disclosures. The 2017 Audited Financial Report may be found on our website at http://www.rpbcwd.org/library/annual-reports-andcommunications/.

2017 ANNUAL AUDIT

The District's annual audit can be found at the following website:
http://rpbcwd.org/library/annual-reports-and-communications/

2017 ANNUAL BUDGET

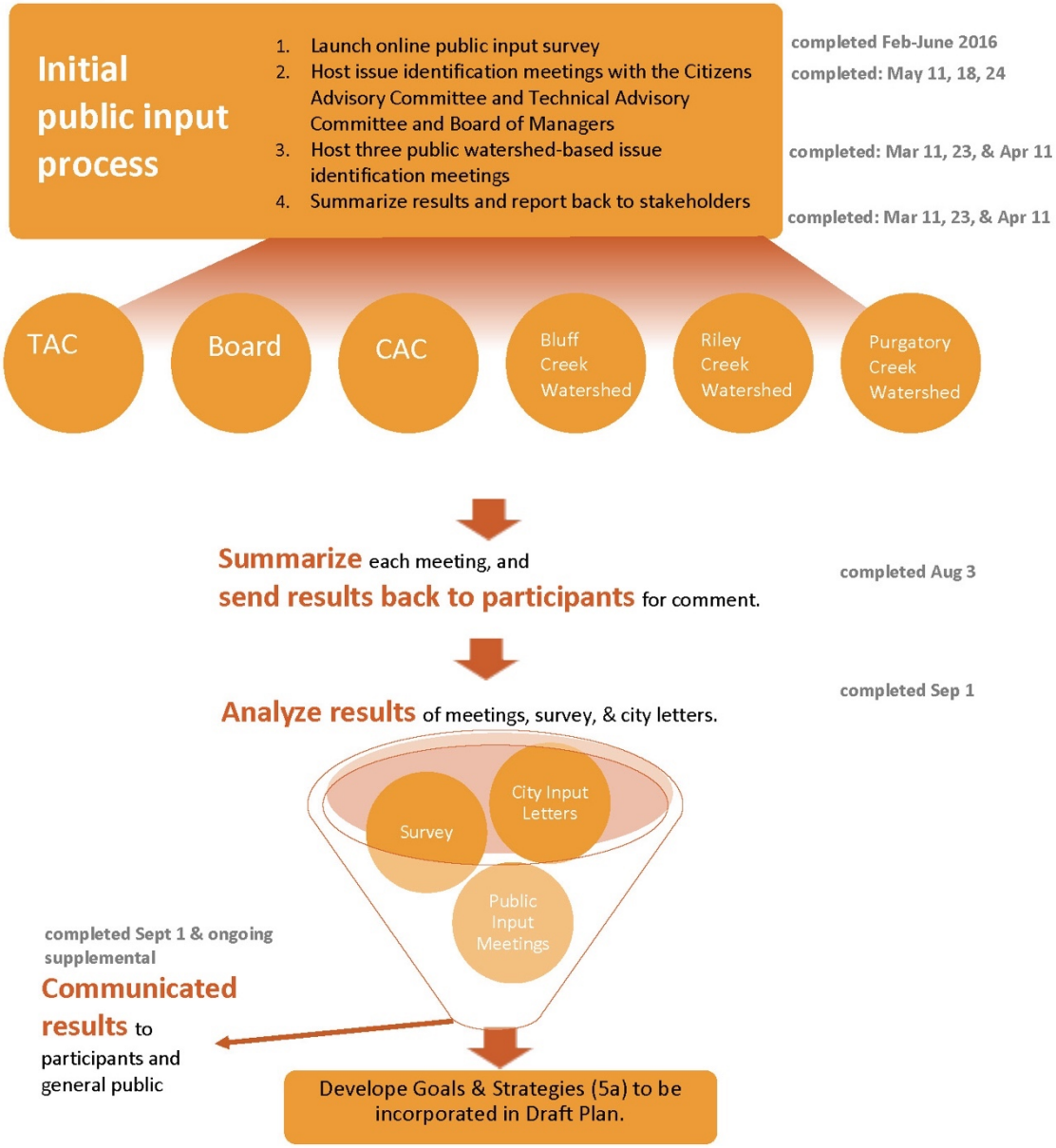
The District adopted its 2017 Annual Budget in September 2016 (see following figure).

LEVY	2015 LEVY	Actual Expenditures 2015	2016 LEVY	Actual Expenditures 2016	2017 LEVY	Actual Expenditures 2017	2018 LEVY
REVENUES							
Plan Implementation Levy	$ 2,431,500.00	$ 2,417,053.77	$ 2,481,500.00	$ 2,481,500.00	$ 2,859,000.00	$ 2,815,901.75	**$ 3,420,000.00**
Permit	15000	20100	15000	10540	15000	47400.1	**20000**
Grant Income		84,934.01					
Data Collection Income		8,830.50		1000			
Other Income		535.17		18.83		29450.24	
Investment Income						15239.98	
Past Levies							
Partner Funds							
TOTAL REVENUE	$ 2,446,500.00		$ 2,496,500.00	$ 2,493,058.83	$ 2,874,000.00	$ 2,907,992.07	**$ 3,440,000.00**
EXPENDITURES							
		Administration					
Accounting and Audit	$ 32,500.00	$ 31,134.72	$ 34,000.00	$ 25,559.79	$ 39,500.00	$ 39,530.80	**$ 40,000.00**
Advisory Committees	$ 4,500.00	$ -	$ 4,500.00	$ 147.45	$ 4,000.00	$ 5,694.50	**$ 4,000.00**
Insurance and bonds	$ 10,000.00	$ 3,191.64	$ 10,000.00	$ 7,649.28	$ 12,000.00	$ 10,587.22	**$ 12,000.00**
Engineering Services	$ 96,000.00	$ 100,824.23	$ 103,000.00	$ 3,358.62	$ 103,000.00	$ 82,712.20	**$ 103,000.00**
Legal Services	$ 130,000.00	$ 125,161.49	$ 75,000.00	$ 58,343.88	$ 75,000.00	$ 71,017.59	**$ 75,000.00**
Manager Compensation	$ 18,500.00	$ 12,394.36	$ 18,500.00	$ 7,180.05	$ 18,500.00	$ 18,526.80	**$ 19,000.00**
Dues and Publications	$ 3,500.00	$ 5,275.00	$ 3,500.00	$ 4,000.00	$ 8,000.00	$ 6,734.00	**$ 8,000.00**
Office Cost	$ 79,500.00	$ 68,161.04	$ 67,500.00	$ 46,851.83	$ 95,000.00	$ 156,031.87	**$ 100,000.00**
Permit Review and Inspection	$ 150,000.00	$ 155,420.03	$ 100,000.00	$ 122,299.66	$ 90,000.00	$ 187,739.66	**$ 90,000.00**
Recording Services	$ 15,000.00	$ 11,975.49	$ 15,000.00	$ 4,305.51	$ 15,000.00	$ 12,233.47	**$ 15,000.00**
Staff Cost	$ 248,500.00	$ 231,359.64	$ 265,500.00	$ 154,537.56	$ 450,000.00	$ 395,619.65	**$ 434,000.00**
Subtotal	$ 788,000.00	$ 744,897.64	$ 696,500.00	$ 434,233.63	$ 910,000.00	$ 986,427.76	$ 900,000.00
		Programs and Projects					
		District Wide					
10-year Management Plan			$ 100,000.00	$ 43,813.28	$ 82,000.00	$ 107,115.25	**$ 5,000.00**
AIS Inspection and early response	$ 50,000.00	$ 53,364.43	$ 75,000.00	$ 61,563.71	$ 75,000.00	$ 18,572.30	**$ 75,000.00**
Buffer Demonstration Site	$ 15,000.00	$ -					
Cost-share	$ 130,000.00	$ 90,549.93	$ 150,000.00	$ 63,983.08	$ 200,000.00	$ 47,509.65	**$ 200,000.00**
Creek Restoration Action Strategy	$ -	$ 36,467.55					
Creek Restoration Action Strategies Phase 2			$ 25,000.00	$ -	$ 20,000.00	$ 11,487.00	**$ 20,000.00**
Data Collection and Monitoring	$ 170,000.00	$ 172,636.26	$ 180,000.00	$ 109,171.73	$ 180,000.00	$ 165,526.96	$ 180,000.00
District Groundwater Assessment					$ 30,000.00	$ 29,568.50	
District Wide Floodplain Evaluation - Atlas 14/SMM model	$ 110,000.00	$ 117,996.50	$ 55,000.00	$ 73,243.00	$ 30,000.00	$ 3,632.26	**$ 30,000.00**
Education and Outreach	$ 65,000.00	$ 41,550.66	$ 114,000.00	$ 43,412.78	$ 114,000.00	$ 98,653.27	**$ 115,000.00**
Plant Restoration - U of M	$ 75,000.00	$ 43,212.04	$ 75,000.00	$ 37,746.04	$ 75,000.00	$ 52,500.55	**$ 40,000.00**
Repair and Maintenance Fund *					$ 100,000.00	$ 25,000.00	
Survey and Analysis Fund *				$ 24,165.26			
Community Resilience MPCA						$ 28,426.55	
Wetland Management*							**$ 150,000.00**
Groundwater Conservation*							**$ 130,000.00**
Lake Vegetation Implementation							**$ 75,000.00**
Opportunity Project*							**$ 100,000.00**
TMDL - MPCA			$ 30,000.00	$ 1,165.45	$ 10,000.00	$ 1,028.00	**$ 10,000.00**
Subtotal	$ 615,000.00	$ 555,777.37	$ 804,000.00	$ 458,264.33	$ 916,000.00	$ 589,020.29	$ 1,130,000.00
		Bluff Creek					
Bluff Creek Fish Passage and Creek Stabilization #	$ -	$ 19,466.54		$ 3,633.00		$ 29,666.68	
Bluff Creek Tributary*						$ 54,621.46	
Chanhassen High School *			$ 5,000.00	$ 11,137.10	$ 68,000.00	$ 99,384.77	$ 75,000.00
Subtotal	$ -	$ 19,466.54	$ 5,000.00	$ 14,770.10	$ 68,000.00	$ 183,672.91	$ 75,000.00
		Riley Creek					
Chanhassen Town Center#	$ 15,000.00	$ 11,286.50		$ 6,354.50		$ 12,605.56	
CLP Treatment - Lake Riley/Susan (WQ)	$ 12,000.00	$ 4,905.60	$ 10,000.00	$ 2,138.85	$ 10,000.00	$ 3,074.30	
CLP Treatment - Riley (WQ)	$ -	$ -	$ 10,000.00	$ 3,850.00	$ 10,000.00	$ 7,173.37	
Lake Lucy Iron Enhanced #	$ 50,000.00		$ 400,000.00	$ 62.32			
Lake Lucy Plant Management Plan	$ -	$ 466.81					
Lake Lucy Spent Lime	$ -	$ 3,152.16					
Lake Riley - EWM Treatment	$ 10,000.00	$ 3,430.72	$ 10,000.00	$ 4,819.00	$ 25,000.00	$ 22,325.20	
Lake Riley - Alum Treatment 1st dose *	$ 200,000.00	$ 19,375.53	$ 60,000.00	$ 215,289.49		$ 2,598.31	
Lake Susan Alum Feasibility			$ 11,500.00	$ 11,005.32			
Lake Susan Improvement Phase 1 *	$ 50,000.00	$ 49,538.10		$ 191,522.47			
Lake Susan Water Quality Improvement Phase 2 *~	$ 150,000.00	$ 9,331.68		$ 1,301.30		$ 93,292.64	$ 80,000.00
Rice Marsh Lake Alum Feasibility Phase 1	$ -		$ 11,500.00	$ 11,005.52			
Rice Marsh Lake Paleolimnology	$ -	$ 19,563.00					
Rice Marsh Lake Water Quality Improvement - Feasibility Phase 1					$ 20,000.00		
Rice Marsh Lake Winter Fish Kill Prevention (WQ)	$ 15,000.00	$ 1,656.41	$ 15,000.00	$ 732.02	$ 10,000.00	$ 1,008.68	
Rice Marsh Lake/Lake Riley UAA	$ -	$ 79,499.09					
Rice Marsh Lake in-lake phosphorus load							$ 150,000.00
Riley Creek Restoration (Reach E and D3) *~	$ -		$ 265,000.00	$ 75,787.18	$ 600,000.00	$ 61,225.60	$ 400,000.00
Subtotal	$ 502,000.00	$ 202,205.60	$ 793,000.00	$ 523,867.97	$ 675,000.00	$ 203,303.66	$ 630,000.00
		Purgatory Creek					
Fire Station 2 (Eden Prairie)	$ -	$ -	$ -		$ 20,000.00	$ 19,025.36	
Purgatory Creek Rec Area- Berm/retention area - feasibility/design					$ 50,000.00		
Hyland Lake UAA					$ 20,000.00	$ 20,247.45	
Lotus Lake in-lake phosphorus load control							$ 345,000.00
Lotus Lake - Feasability Phase 1					$ 20,000.00	$ 1,197.96	
Mitchell Lake Plant Management (CLP - WQ)	$ 15,000.00	$ 3,482.81	$ 15,000.00	$ 3,905.25	$ 15,000.00	$ 2,261.83	
Purgatory Creek at 101*	$ 250,000.00	$ 78,840.28		$ 27,057.53		$ 39,098.00	
Purgatory Creek Lakes UAA *	$ 200,000.00	$ 94,836.50	$ 50,000.00	$ 147,192.50			
Red Rock Lake Plant Management (CLP - WQ)	$ 15,000.00	$ 12,382.81	$ 15,000.00	$ 7,097.78	$ 15,000.00	$ 4,064.89	
Silver Lake Restoration - Feasibility Phase 1					**$ 20,000.00**	$ 8,996.88	
Silver Lake Paleolimnology	$ 22,000.00	$ 19,125.00		$ 2,188.00			
Scenic Heights						$ 51,042.94	
Hyland Lake in-lake phosphorus load control							**$ 20,000.00**
Duck Lake watershed load							**$ 220,000.00**
Staring Lake - Plant Management - EWM Treatment and CLP	$ 8,000.00	$ 7,968.00			**$ 20,000.00**	$ 9,823.98	
Subtotal	$ 510,000.00	$ 216,635.40	$ 80,000.00	$ 187,441.06	$ 180,000.00	$ 155,759.29	$ 585,000.00
		Reserve/Contingency					
Reserve	$ 16,500.00		$ 108,000.00		$ 135,000.00	$ -	**$ 100,000.00**
TOTAL EXPENDITURE	**$ 2,431,500.00**		**$ 2,486,500.00**	$ 1,618,577.09	**$ 2,884,000.00**	**$ 2,118,183.91**	**$ 3,420,000.00**
EXCESS REVENUES OVER (UNDER) EXPENDITURES	$ 15,000.00		$ 10,000.00		$ (10,000.00)	$ 789,808.16	$ 20,000.00

10-YEAR MANAGEMENT PLAN

In 2016, the Riley Purgatory Bluff Creek Watershed District began the process of updating its 10-Year Management Plan. The plan guides all the District's actions, from monitoring to water quality projects, over a 10-Year period. Updating a management plan is not a small task. It requires a lot of data, analysis and prioritization, and input from stakeholders like city and state organizations, and the community. Since kicking off the process the District has made a lot of progress. At the end of 2017, the District was able to finally release its first draft to the public. Follow the District's journey below.

Plan process details



Draft plan & first review

5. Develop first draft based on data collected in the initial public input process, best available science, and board direction
6. Continue to work with Citizens Advisory, and Technical Advisory Committees
7. Release draft plan for agency and public review
8. Review and respond to comments

Fall 2017

5. Develop first draft based on data collected in the initial public input process, best available science, and board direction

a. Draft mission, vision, goals and strategies — completed Sept 2016
   a. Staff develop draft
   b. Board of Managers reviews draft
   c. CAC & TAC reviews draft
b. Develop prioritization tool — completed Feb 2017
   a. Staff develop draft
   b. Solicit and incorporate feedback
      i. Review with CAC, Board, TAC
   c. Finalize tool
      i. Review with CAC, Board, TAC
c. Solicit & summarize community input for updating education and outreach plan — completed May 2017
d. Review district boundaries
e. Write first draft of plan — completed Nov 2017

6. Continue to work with Citizens Advisory, and Technical Advisory Committees

a. Internal review of draft plan — Projected: Summer 2017
   a. Board of Managers reviews draft (final comments anticipated in August)
   b. CAC & TAC review draft (anticipated release September 7)
b. Board reviews comments and directs revisions

7. Release draft plan for 60 day agency and public review — completed: Nov 2017

a. Release for review
   a. Send to agencies for review
   b. Release to public for review
   c. Host information session for the public
   d. Board, CAC, & TAC review
b. Host public hearing — projected: March 2018

8. Review and respond to comments

a. Respond to comments received in 60 day review
b. Release for 90 day plan review — projected: Beginning of 2018

Final plan review & approval

9. Revise plan based on comments
10. Revise and submit final plan to Board of Water and Soil Resources
11. Adopt final plan

Projected: Mid 2018

2018 WORKPLAN

Administration	
Accounting and Audit	Coordinate with Accountant for the development of financial reports. Coordinate with the Auditor.
Internal Policies	Work with Governance Manual and Employee Committees to review bylaws and manuals as necessary
Advisory Committees	Engage with the Technical Advisory Committee on 10 year plan and emerging topics Engage with the Citizen Advisory Committee on the 10 year plan and annual budget and emerging topics. Facilitate recruitment of CAC members for 2019.
District-Wide	
Regulatory Program	Review regulatory program to maximize efficiency. Engage Technical Advisory Committee and Citizen Advisory Committee on possible rule changes. Implement regulatory Program.
Aquatic Invasive Species	Review AIS monitoring program Develop and implement Rapid Response Plan as appropriate Coordinate with LGUs and keep stakeholders aware of AIS management activities. Manage and maintain the aeration system on Rice Marsh Lake as per the Riley Chain of Lakes Carp Management Plan
Cost-Share	Review applications and recommend implementation. Review program to determine efficiencies and needs. Recommend modification as necessary.
Creek Restoration Action Strategy	Review updates to the field CRAS analysis.
Data Collection	Review and evaluate Data Collection program.
District Hydrology and Hydraulics Model	Coordinate maintenance of Hydrology and Hydraulics Model Coordinate model update with LGUs if additional information is collected.
Education and Outreach	Implement Education & Outreach Plan, review at year end. Manage partnership activities with other organizations. Coordinate Public Engagement with District projects.
Groundwater Conservation	Work with other LGUs to monitor assess and identify gaps.

	Engage with the Technical Advisory Committee to identify potential projects.
Lake Vegetation Management	Work with the University of Minnesota or Aquatic Plant Biologist, Cities of Chanhassen and Eden Prairie, lake association, and residents as well the Minnesota Department of Natural Resources on potential treatment. Implement herbicide treatment as needed. Secure DNR permits and contrat with herbicide applicator. Lakes the District is monitoring for treatment include: Lake Susa, Lake Riley, Lotus Lake, Mitchell Lake, Red Rock Lake and Staring Lake.
Opportunity Projects	
Total Maximum Daily Load	Continue working with Minnesota Pollution Control Agency on the Watershed Restoration And Protection Strategies (WRAPS). Engage the Technical Advisory Committee .
Repair and Maintenance Grant	Develop and formalize grant program.
University of Minnesota	Review and monitor progress on University of Minnesota grant. Identify next management steps.
Watershed Plan	Finalize the 10-year plan refresh. Finalize boundary changes. Engage CAC and TAC. Engage the public .
Wetland Management	Identify potential restoration/rehabilitatable wetlands and wetland requiring protection.
Bluff Creek One Water	
Chanhassen High School Re-use	Continue to work with all partners. Implement Project. Finalize and implement E and O for project
Bluff Creek Tributary Restoration	Implement and finalize restoration.
Riley Creek One Water	
Lake Riley Alum	Continue to monitor the waters.
Lake Susan Improvement Phase 1	Continue to monitor spent lime treatment facility.
Lake Susan Improvement Phase 2	Implement Project Finalize and implement E and O for project Final report of grant
Rice Marsh Lake Alum Treatment	Implement Alum Treatment. Notify stakeholders. Develop Education and outreach materials for stakeholders.

	Work with City of Eden Prairie and City of Chanhassen.
Lower Riley Creek Stabilization	Coordinate agreement and acquire easements if needed for the restoration of Lower Riley Creek reach D3 and E. Review implementation of project from feasibility to implementation. Develop Public Engagement for project and signage of restoration.
Purgatory Creek One Water	
Duck Lake Raingarden Project	Work with the City to incorporate WQ improvement on Improvement on Duck Lake Trail.
Fires Station 2	Evaluate and Monitor Project
Hyland Lake Internal Load control	Complete Hyland Lake internal phosphorus load control feasibility study.
Lotus Lake – Internal Load Control	Complete Lotus Lake internal phosphorus load control feasibility. Evaluate Invasive plant species in Lotus Lake. Determine timing of Alum application pending plant findings.
Purgatory Creek at 101	Review restoration site and determine if maintenance is required.
Scenic Heights	Implement restoration effort. Work with the City of Minnetonka and Minnetonka School District on Public Engagement for project as well as signage.
Silver Lake Restoration	Finalize Feasibility Work with the City of Chanhassen for Design and implementation
Professional Services	
Presentations	Present District findings at local, regional and national conferences.
Minnesota Association of Watershed District	Host 2017 Summer Tour

REGULATORY PROGRAM

Regulation plays an important role in managing water resource problems. For instance, municipal land use planning and zoning powers are invaluable for ensuring that land uses are compatible with the surrounding environment. The District's current regulatory program was adopted by the Board of Managers in November of 2014. It implements a watershed approach to potential impacts to water resources that ensures a consist level of protection across the watershed.

The program includes thirteen rules, A-M, which can be viewed in detail on the District's website: rpbcwd.org/permits/.

REGULATORY PROGRAM

Regulation ensures proper integration of water resource protection when development and redevelopment projects occur.

Regulation plays a very important role in managing water resource problems. For instance, municipal land use planning and zoning powers are invaluable in ensuring that land uses are compatible with the surrounding environment. City planning and zoning also establish best practices for preventing potentially harmful drainage patterns that may pollute our waters.

The various rules adopted by the Board of Managers on November 5, 2014 and are the backbone of the District's regulatory program. The rules apply to land and water resource-disturbing activities. Any person or entity undertaking an activity that triggers one or more District regulatory thresholds must obtain the required RPBCWD permit prior to commencing the activity.

The table below is summary of all permitting activities that occurred in 2017.

Summary		Estimated		
Permit Type	Number	Total TSS (lbs)	Total TP (lbs)	Volume (cft)
Governmental	21	3,212	19.5	24,090
Private Development	16	20,426	65.7	98,697
Ex. Single Family	31	Not Computed		
Withdrawn/ Review in Progress	5	Not Computed		
TOTAL	73	23,638	85.2	122,787

The District also hosted a builder's workshop on April 26 to help builders learn about the District's permitting program.

The regulatory program prevented sediment pollution, reduced food for algae ad helped slow down and soak in water it falls.

100 Dump trucks of sediment

110 Tons less algae

Infiltrated enough water to fill TCF Bank stadium **84** ft deep

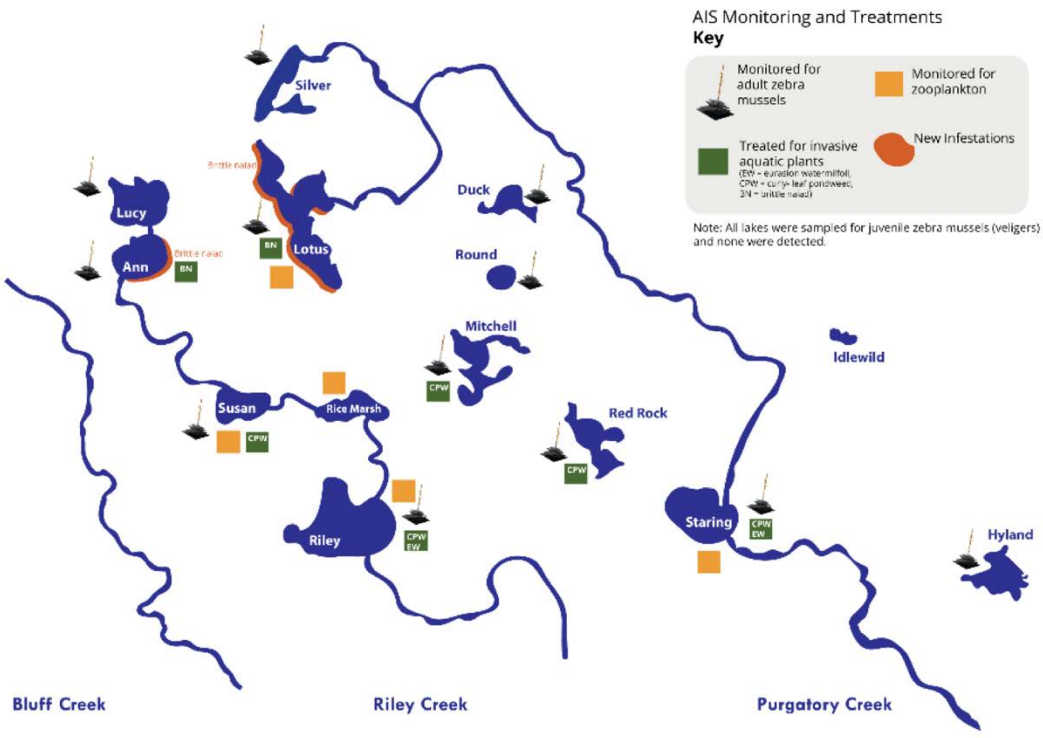
AQUATIC INVASIVE SPECIES

The District understands the importance of AIS monitoring, inspections, and preventions. The District also recognizes that it is more cost effective to prevent an infestation than to restore a resource after an AIS has established itself. The AIS program is to help support AIS inspections, AIS monitoring and rapid responses to a new infestation.

AQUATIC INVASIVE SPECIES

Inspecting and implementing early response to protect and maintain the ecology of water resources.

The District understands the importance of AIS monitoring, inspections, and preventions. The District also recognizes that it is more cost effective to prevent an infestation than to restore a resource after an AIS has established itself. The AIS program is to help support AIS inspections, AIS monitoring and rapid responses to a new infestation.



The District with help of 15 volunteers monitored our lakes for zebra mussels. None were found in 2017.

In addition, the District performed two rapid responses on Lotus and Lake Ann for brittle naiad new infestation. Seven other treatments were performed for curlyleaf pondweed and eurasian watermilfoil, please see map for details.

The District continues to manage carp in the Riley Creek Watershed through our aeration unit on Rice Marsh Lake. We are currently in identifying a solution for Purgatory Creek.

Don't Forget!

Clean, Drain, Dry

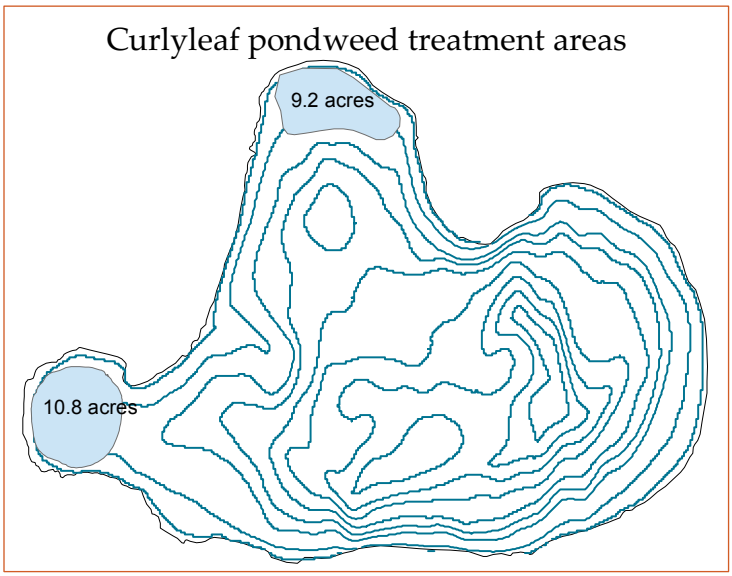
Help keep our waters safe from these invaders by pulling the plug, wiping it clean and letting it dry.

LAKE VEGETATION MANAGEMENT

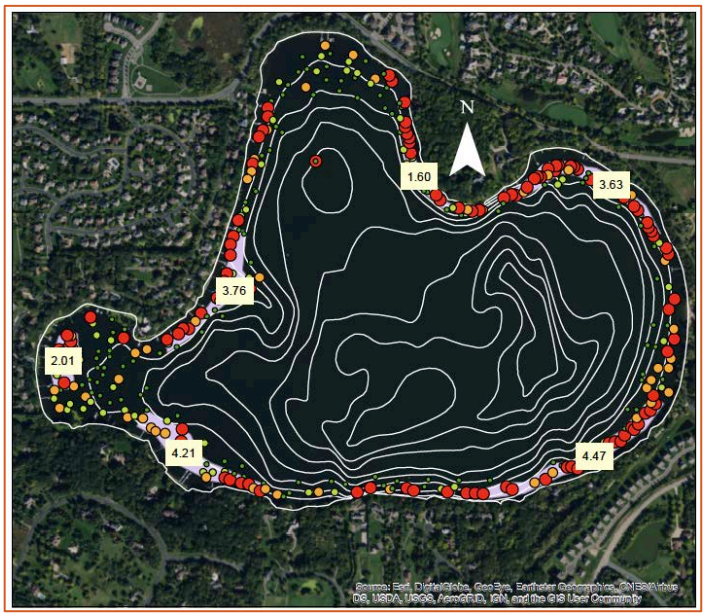
In 2017, the District conducted herbicide treatments on aquatic invasive species as part of 4 vegetation management plans and 1 rapid response plan.

Lake Vegetation Management Plans

Lake Riley

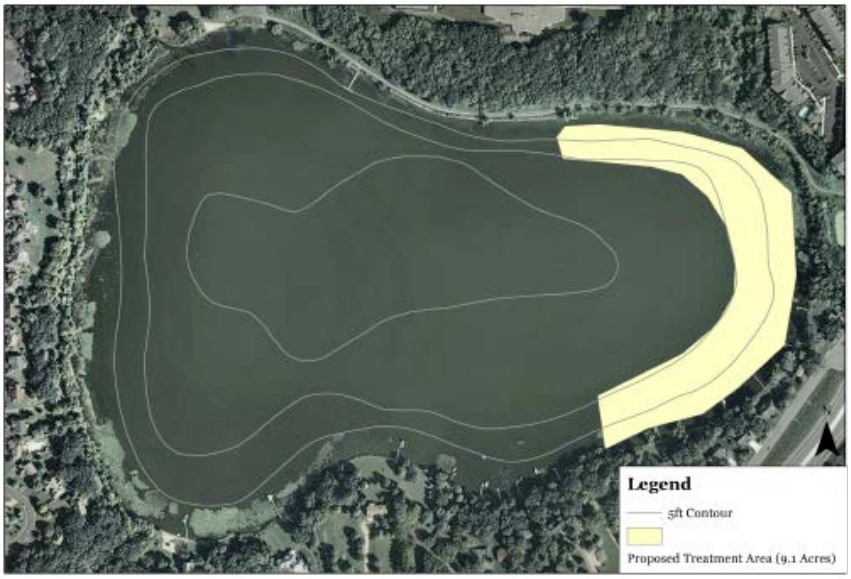


As part of a restoration effort post-carp removal and after the alum treatment, the District has been monitoring and targeting herbicide treatments for both curlyleaf pondweed and eurasian watermilfoil. In 2017, the District conducted two herbicide treatments on Lake Riley. The first treatment treated 20 acres for curlyleaf pondweed and the second treated close to 20 acres of eurasian watermilfoil. These treatments are part of an effort to restore the native vegetation post carp removal and management. The District will continue to monitor and assess the need for herbicide treatment for these invasive species.



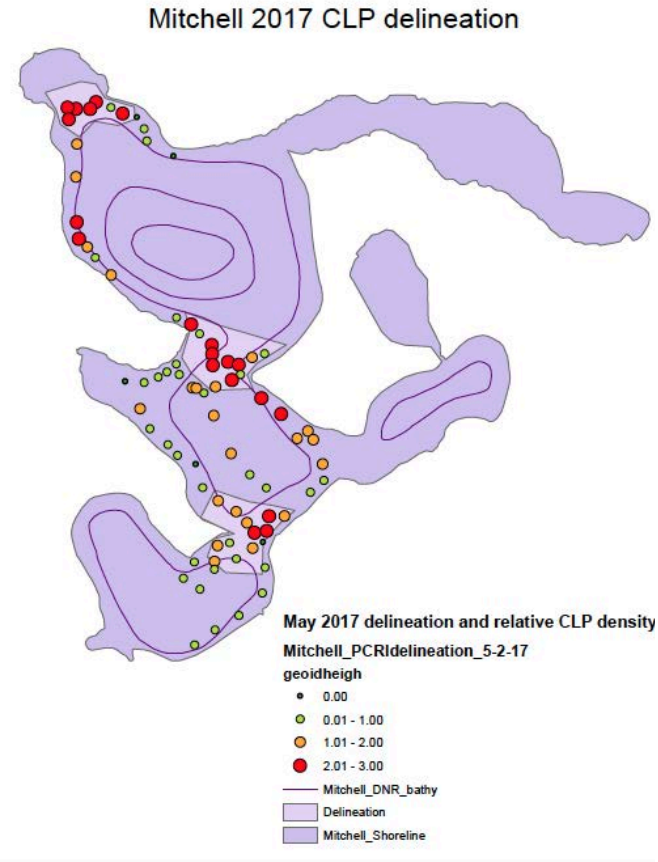
Eurasian watermilfoil treatment

Lake Susan



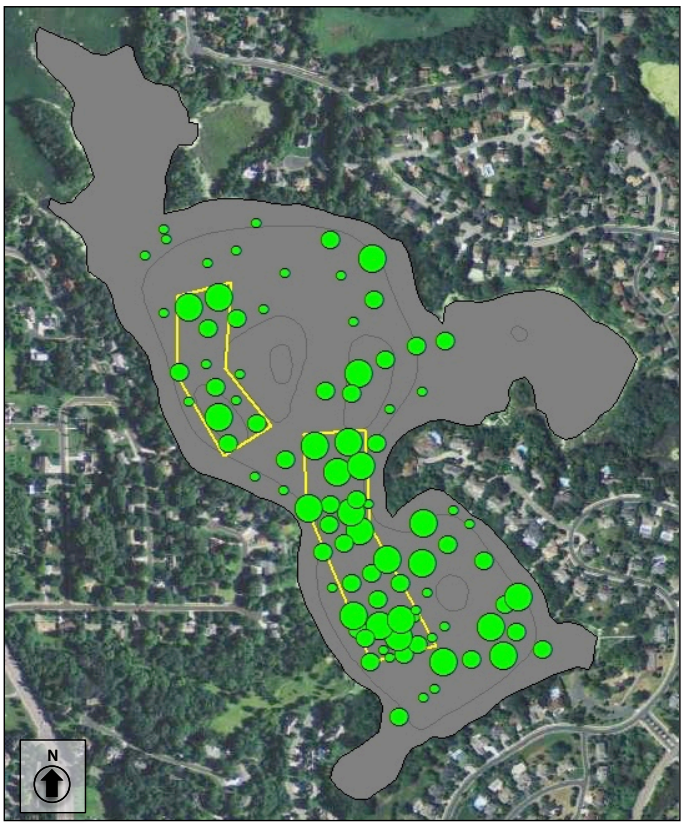
Over 9 acres are curleyleaf pondweed were treated on Lake Susan. The treatment is part of an effort to restore the native plant population in Lake Susan post carp control and prior to a future alum treatment. We will continue to monitor curlyleaf pondweed in 2018 to determine if there is a need to do additional treatments.

Mitchell Lake



In 2017, the District treated 9.7 acres of Mitchell Lake for curlyleaf pondweed. In addition, the City of Eden Prairie conducted 15 acres of mechanical harvesting. This treatment is part of a vegetation management plan to manage curlyleaf pondweed drafted between the City of Eden Prairie and the Watershed District. The District and the City of Eden Prairie will reevaluate the plan in 2018.

Red Rock Lake



Red Rock Lake is classified as a shallow lake by the Minnesota Pollution Control Agency. In 2015, the District along with the city of Eden Prairie completed a public engagement process to develop a plant management plan for Red Rock Lake. Part of the plan identified the need for managing curlyleaf pondweed and as such the District has taken leadership in managing for this invasive plant. Thirteen acres were treated in May for curlyleaf pondweed. The District will be surveying the aquatic plant community to determine if there is a need to treat in 2018.

Rapid Response

Lake Ann and Lotus Lake

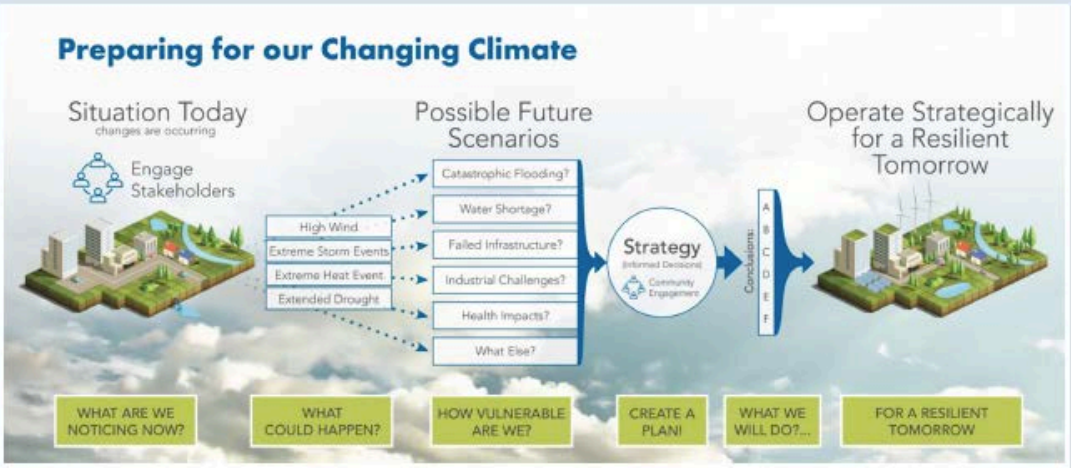
Brittle Naiad, also known as Brittle Waternymph, is an aquatic plant which easily breaks into pieces that can spread the plant to new locations. This plant can form dense mats that can outcompete native species and interfere with recreational activities such as boating, swimming, and fishing. The District conducted a rapid response plan to treat Lake Ann and Lotus, using a herbicide known as diquat, on 0.25 and 2.42 acres of the water body respectively. The Lake Ann treatment was located near the beach on the northeastern shore.

COMMUNITY RESILIENCY

RPBCWD IS PREPARING!

Making Adaptation Plans for Minnesota's Changing Climate

Riley Purgatory Bluff Creek Watershed District participated in a workshop series to identify opportunities to build resilience related to local climate change. Climate change is one of the greatest challenges facing society today. In Minnesota, there is a risk due to increases in extreme heat, extreme rainfall, higher summertime dew points, warmer winters, and the intensity of severe storms. Outcomes from the workshop are being used to inform recommendations in the Riley Purgatory Bluff Creek Watershed District Ten Year Plan.



The Climate Adaptation Planning Process *The workshop series walked RPBCWD participants through the first three stages of climate planning, shown above. The workshop began the process of brainstorming strategies to address RPBCWD's climate concerns to be incorporated into the District's Ten Year Plan. Implementation and operation of solutions to follow.*

WORKSHOP SPONSORS

Minnesota Pollution Control Agency · Riley Purgatory Bluff Creek Watershed District · 9 Mile Creek Watershed District · Freshwater Society · Metropolitan Council · Barr

RPBCWD's Top Climate Hazards

Climate hazards are natural events or patterns related to climate change that can cause harm to people, infrastructure, and the environment. Workshop participants identified the following four hazards as the ones of most concern in Riley Purgatory Bluff Creek Watershed District:

Extreme Precipitation

An increase in large storm events is documented in Minnesota. Riley Purgatory Bluff Creek Watershed District experienced this issue in June of 2014. Duluth's staggering 2012 extreme precipitation event demonstrated the serious impacts of such storms.

Drought

Climatologists point out that within Minnesota's normal range of weather extremes is the drought of the dustbowl days in the 1930s. Although there is no recent trend for drought (except for 2012), Riley Purgatory Bluff Creek Watershed District can expect drought to occur again. Long-term predictions of greater than ten years show an increased likelihood of drought.

Extreme Heat

Although not currently experiencing abnormal heat events, Riley Purgatory Bluff Creek Watershed District is experiencing greater summer humidity, which pushes up the heat index and makes it harder to cool off. Extreme heat is predicted for the not-too-distant future.

Warmer Winters

Riley Purgatory Bluff Creek Watershed District is currently experiencing an increase in winter nighttime low temperatures. Consequences include better survival of invasive species and the loss of winter recreational activities as snow and ice season shortens.

Climate Impacts & Recommendations for RPBCWD

Participants of the workshops focused on three sectors of the community and impacts from locally changing climate:

1. Impacts to Society
2. Impacts to the Environment
3. Impacts to Built Infrastructure

Participants listed solutions to these impacts and set priorities. The top ranked priorities for actions to bolster resilience are listed below.

Source: Milwaukee Community Journal

SOCIETY

1

Primary areas of concern for people in Riley Purgatory Bluff Creek Watershed District include impacts to vulnerable populations such as the elderly, disadvantaged children, and the disabled in times of emergency. Also of importance is maintaining access routes to nursing homes and hospitals during emergency events. A dwindling drinking water supply may become an issue during times of drought.

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's People:

- Continue to work with cities to alert them of potential flooding of streets during extreme storm events — Be certain that routes for emergency vehicles (especially to hospitals) remain open.
- Establish an education program to make citizens aware of the causes of aquifer drawdown and how to prevent future drinking water shortages — Create education and incentive programs that encourage the storage and reuse of stormwater. Work where possible to promote state regulations that allow for the use of grey water within and outside of buildings.
- Translate EMS emergency response instructions into different languages spoken within the District — Work with organizations such as the non-profit PROP to access and educate vulnerable populations on District and climate related issues.

2 ENVIRONMENT

Primary impacts of concern to the environment in Riley Purgatory Bluff Creek Watershed District include aquifer drawdown with increased water demand as the population grows and during dry periods. It is suggested that implementing rainwater gardens across the District along with other forms of green infrastructure (such as a robust urban tree canopy) will allow for water to soak into the ground and recharge the aquifer, while trees will help keep the city cool during hot summers. Invasive plant and animal species such as buckthorn, curly-leaf pondweed, and zebra mussels are a concern because of their complete takeover of their environment and elimination of biodiversity. Another concern includes warming lake temperatures.

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's Natural Environment:

- Educate citizens about the issue of local aquifer draw-down — Encourage potable water conservation, especially through the reduction of lawn irrigation. Consider implementing stormwater and grey water reuse systems where they make sense.
- Educate constituents on the impacts of warming lakes through warmer winter minimum temperatures — Discuss impacts on water quality, recreation, and fish habitat. Consider mitigation progams.
- Conduct a study to identify slopes along the Minnesota River valley that are vulnerable to failure — Create an action plan to protect people, structures, and infrastructure in high risk areas.
- Continue to conduct public education on problematic invasive plant and animal species — Partner with environmental agencies and cities to control the most destructive species.

3 INFRASTRUCTURE

Primary impacts of concern to the built infrastructure in Riley Purgatory Bluff Creek Watershed District include providing protection to homes in areas of high risk from landslide and flooding. There is also a concern of future damage to culverts at critical road crossings during extreme weather events, as well as interest in addressing erosion within Riley creek.

Source: Spiekel On Line

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's Built Infrastructure:

- Repair erosion damage at points within Riley creek where stormsewers enter the channel — Also, continue to promote the use of BMPs such as pavement reduction, implementation of rainwater gardens and stormwater reuse systems to reduce the volume of water flowing into the creek via stormsewers.
- Conduct a study to identify culverts at greatest risk of damage during extreme storm events — Work with cities to replace the most vulnerable culverts in the District.
- Recognize that aging stormwater ponds are losing storage capacity because of sediment accumulation — Continue to identify those ponds that have lost the greatest amount of stormwater storage and assist in the revitalization of these ponds.
- Conduct a study in conjunction with local municipalities of those slopes vulnerable to landslides due to saturated soils — Assist them in protecting homes along the slopes.
- Continue to work with home owners in areas expected to flood in the future to help them prepare for potential extreme weather situation

Moving Forward

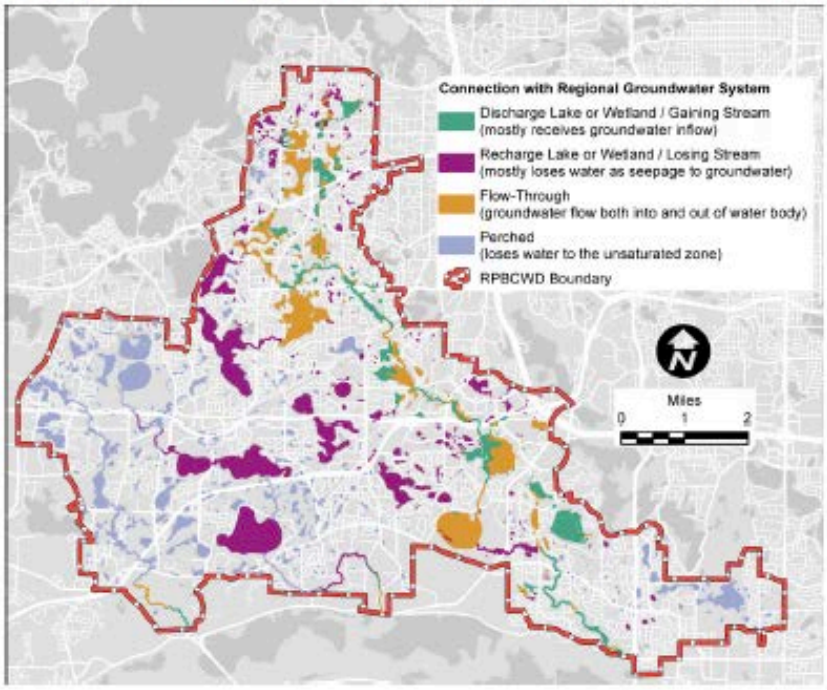
Riley Purgatory Bluff Creek Watershed District is in the planning process to adapt to Minnesota's changing climate and the multiple impacts that the community will experience. Proactive planning is the economically efficient route to climate adaptation, rather than reacting to the impacts of heat, storms, ice, and warm winters as they occur.

The purpose of the workshops was to build relationships across the community, create a shared knowledge base, and harvest potential strategies. They were intended to be the first of many community conversations to make RPBCWD resilient in the face of climate change. This planning effort is being used to inform Riley Purgatory Bluff Creek Watershed District's Ten Year Plan, which is in the works.

GROUNDWATER ASSESSMENT

SUMMARY

A groundwater/surface water interaction and slope stability study was performed for the Riley Purgatory Bluff Creek Watershed District (District). This study used publically available GIS datasets to evaluate: 1) the connection of regional groundwater and surface water across the district; 2) the vulnerability of surface waters to changes in the groundwater system; 3) areas that are most conducive for large-scale infiltration; and 4) the current slope stability across the District and areas where the risk of slope failure is greatest in the presence of increased infiltration.

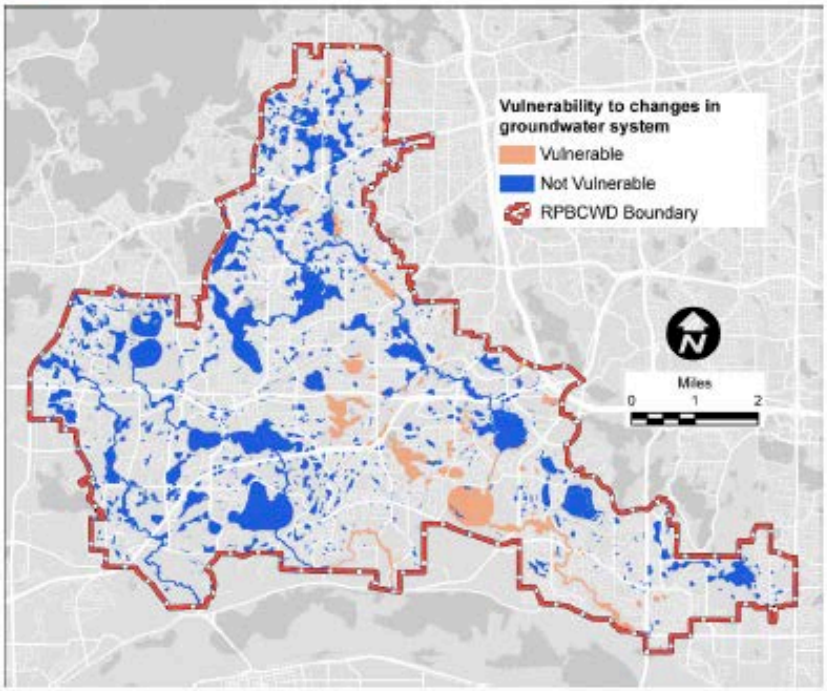


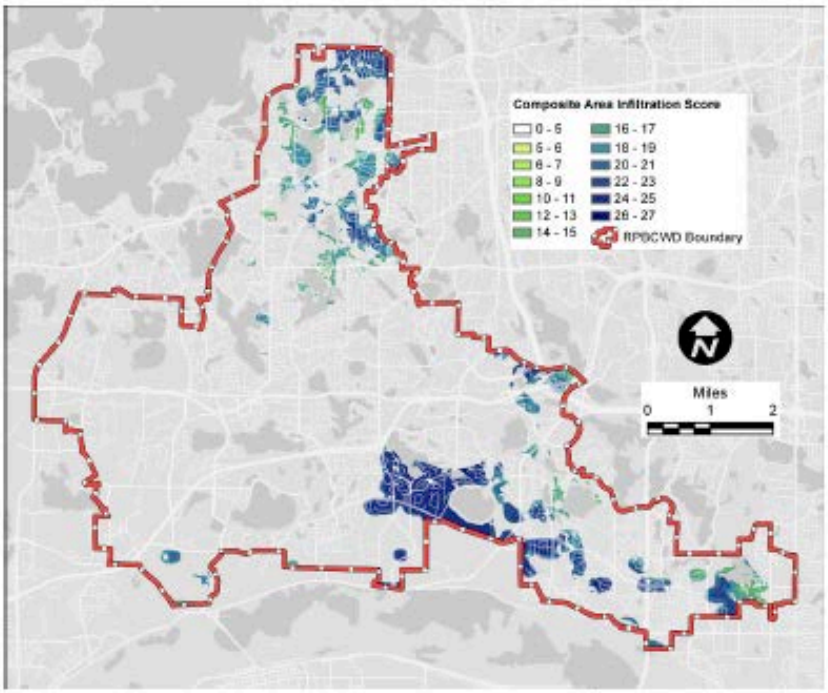
REGIONAL GROUNDWATER/ SURFACE WATER INTERACTION

Surface water features in the western part of the District interact with groundwater differently than surface waters in the eastern and northern part of the District. In the west, lakes and wetlands are mostly perched or recharge the groundwater system. In the east and north, lakes and wetlands mostly gain water from the groundwater system or are flow-through features

VULNERABILITY OF SURFACE WATERS TO CHANGES IN THE REGIONAL GROUNDWATER SYSTEM

Surface waters in the southcentral part of the District are most vulnerable to changes in the groundwater system. Surface water features in the western part of District are less vulnerable.





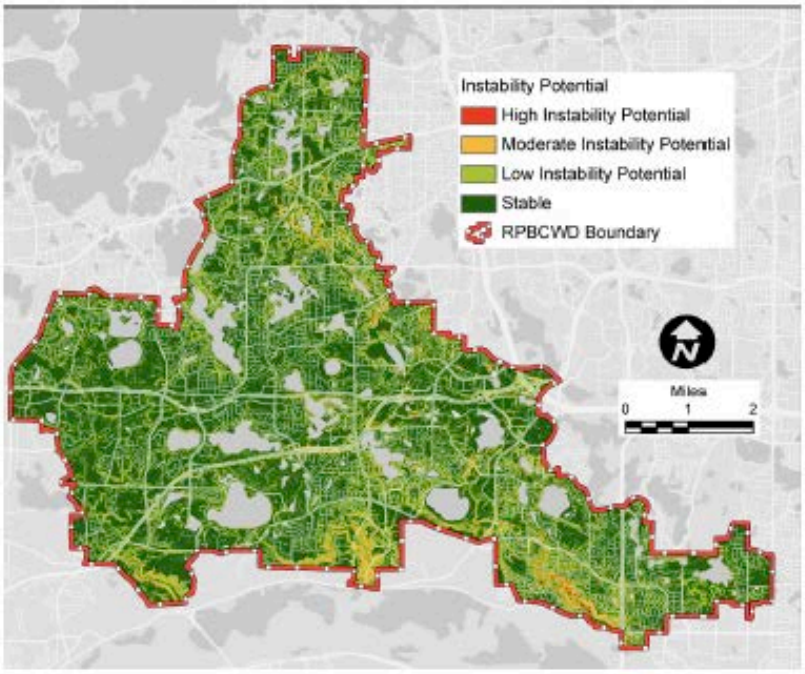
AREAS BEST SUITED FOR LARGE-SCALE INFILTRATION

For large-scale infiltration, areas in the northern and southeastern part of the District were identified as being the best potential locations.

Areas west and southwest of Staring Lake, north of County Road 62, and southwest of Hyland Lake were identified as some of the best areas suited for large scale infiltration.

SLOPE STABILITY

The banks of Riley and Purgatory Creek are most vulnerable to slope instability due to increased infiltration near steep slopes.



RECOMMENDATIONS

- Establish baseflow thresholds for the creeks within the District
- Establish either lake stage or outlet discharge, thresholds for lakes identified as vulnerable to changes in the groundwater system.
- Establish target hydrographs for wetlands identified as vulnerable to changes in the groundwater system.
- Re-establish a monitoring well network within the District and implement a monitoring program.
- Develop a fully coupled groundwater-surface water model for the District.
- Establish a formal process for tracking groundwater data submitted to the District with permit applications.

INCENTIVE PROGRAM

The District has three incentive programs. The cost-share program funds and supports community projects that protect, improve, and increase awareness to water resources. The earth day mini-grant provide funds to educators to engage their students in an activity relating to our water resources. The repair and maintenance program helps cover some of the normal and routine maintenance cost.

COST-SHARE PROGRAM

Funding and support for community projects that protect, improve, and increase awareness of water resources.

The cost-share program provides funding and technical assistance for projects that protect and conserve water resources, and increase public awareness of the vulnerability of these resources and solutions to improve them.

In 2017, the watershed district's cost-share program funded 5 lake buffer projects, 1 wetland buffer, and 1 pond buffer. 6 projects were taken on by homeowners, and one by a home-owner's association. Together, these projects restored 14,250 square feet of shoreline. Buffers help to filter runoff, stabilize the shore, and provide habitat.

2017 marked 5 years of a cost-share program at the watershed and staff conducted inspections of past projects to see how they were fairing. The watershed also provided technical guidance to community members through a partnership with the Carver County Soil and Water Conservation District. Some of these community members did not apply for a cost-share grant, but still went on to engage with the district in other meaningful ways.

In 2017, the watershed district's cost-share program funded seven community projects to protect and improve water resources:

7 projects

14,250 ft² of shoreline restored

EARTH DAY MINI-GRANTS

Six applications were received for the mini-grants. 5 of the applications were approved. The approved grants included: a small raingarden planting, funding for a field trip to a nature center, creating terrariums to learn about the water cycle, purchasing a rainbarrel, and purchasing binoculars to better observe wildlife that live in an along Purgatory Creek.

Cedar Ridge Elementary students uses their new grant purchased binoculars to explore the small creek that runs past their school.

REPAIR & MAINTENANCE FUND

In 2017, he City of Minnetonka applied for repair and maintenance funds to repair and stabilize the section of Purgatory Creek underneath Covington Road. The Silver Lake branch of Purgatory Creek passed underneath Covington Road in a 36-inch corruagated metal pipe, which had deteriorated significantly over the last few years. In coordination with the Riley Purgatory Bluff Creek Watershed District, the 36-inch corrugated metal pipe was removed and replaced with a 30-inch to 36-inch concrete increaser pipe, which was realigned with the natural shape of the stream channel. The site has been stabilized and will be monitored in the spring to ensure full establishment of buffer vegetation. The District cost-shared with the City of Minnetonka for $25,000.

DATA COLLECTION

The District understands that data collection and decisions based on sound science are critical to the success of this Plan. Because of the dynamic and ever changing nature of the water resources, the District operates an extensive lake and stream management program. This program is intended to improve the District's understanding and inform sound decision making to protect and enhance the surface and groundwater resources in the District. Generally, the program includes:

- Data Collection (monitoring)
- Analysis (e.g., research, studies, etc.)

EXECUTIVE SUMMARY

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) had a successful water quality sampling season in 2017, completing a full year of sample collection and data analysis. This effort was made possible through multiple partnerships with municipalities and organizations based within the watershed. Overall, water quality across both creeks and lakes generally improved in 2017. The results from the 2017 sampling effort are presented in this report.

Lake Monitoring

During the 2017 monitoring season, 13 lakes were monitored across the District. In addition to the lakes sampled, Lake Idlewild was monitored by the city of Eden Prairie and was included in this analysis, even though it was classified as a high value wetland in 2015. Regular water quality lake sampling was conducted on each lake approximately every two weeks throughout the growing season (June-September). In addition to regular lake sampling, the District monitored water levels of these 14 waterbodies, assessed carp populations within the Riley and Purgatory Chain of Lakes, and assessed zooplankton and phytoplankton populations in five lakes. The District also monitored public access points and analyzed water samples for the presence of zebra mussels in these 14 waterbodies. No zebra mussel (adults or juveniles) or invasive zooplankton were found in any District lake. Herbicide treatments were conducted on Lake Ann, Lotus Lake, Lake Susan, Mitchell Lake, Red Rock Lake, Staring Lake, and Lake Riley. Brittle Naiad was discovered in Lake Ann and Lotus Lake in 2017.

Surface water samples were collected, analyzed, and compared to standards set by the Minnesota Pollution Control Agency (MPCA) to assess overall lake health. Figure 1 displays lakes sampled in 2017 that met or exceeded the MPCA lake water quality standards for Chlorophyll-a (Chl-a), Total Phosphorus (TP), and Secchi Disk depth during the growing season (June-September). The MPCA has specific standards for both 'deep' lakes (Lake Ann, Lotus Lake, Lake Riley, and Round Lake) and 'shallow' lakes (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake) (MPCA 2016). Lake Ann, Lake Idlewild, Red Rock Lake, and Rice Marsh Lake met all three MPCA standards in 2017; Rice Marsh (TP) and Red Rock (Chl-a) did not previously meet all the standards in 2016. Lotus Lake, Mitchell Lake, and Lake Susan all exceeded both the Chl-a and TP standards in 2017. These lakes did not meet these two standards in 2016 as well. In 2016, four lakes did not meet any MPCA standards, Hyland Lake, Mitchell Lake, Silver Lake, and Staring Lake. In 2017, only Hyland did not meet all three standards. All lakes within the

Riley Chain of Lakes met the MPCA's chloride chronic standard for class 2B water bodies in 2017.

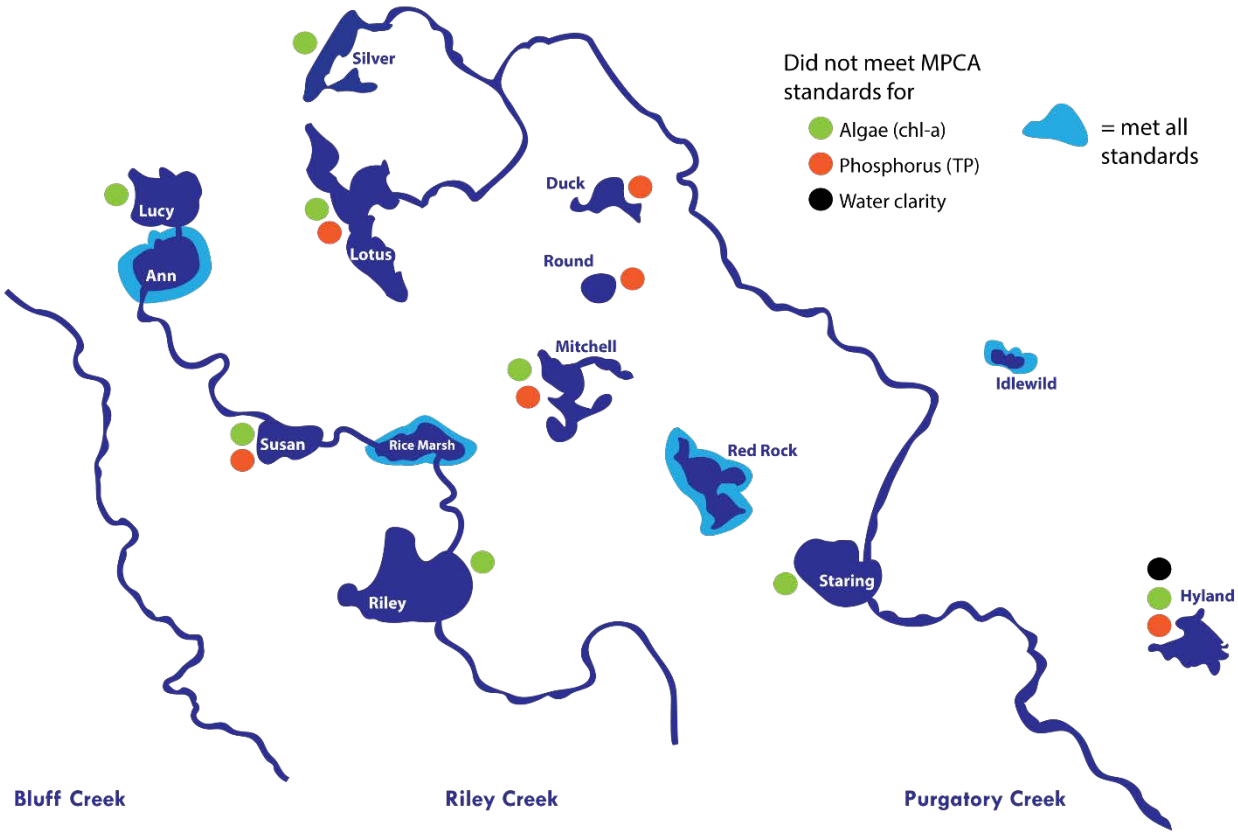


Figure 1 2017 Lake Water Quality

Summary of the lake water quality data collected in 2017 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency Water Quality Standards. Chlorophyll-a (green), Total Phosphorus (orange), and Secchi Disk depth (black) were assessed during the growing season (June-September) for both 'deep' lakes or lakes >15 ft deep and < 80% littoral area (Lake Ann, Lotus Lake, Lake Riley, and Round Lake), and 'shallow' lakes or lakes <15 ft deep and >80% littoral area (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake). The corresponding dots next to each lake indicate which water quality standard was not met and the lakes surrounded by blue met all water quality standards.

Creek Monitoring

In 2017, the District collected water quality samples and performed data analysis on 21 different sampling sites along Riley Creek (six sites), Bluff Creek (five sites), and Purgatory Creek (ten sites). During the 2017 creek monitoring season (April-September) water chemistry and turbidity were regularly measured at the 18-regular water quality monitoring sites every two weeks. Water samples were collected to assess nutrient (TP and Chl-a) and total suspended sediment (TSS) concentrations. Creek flow was calculated from velocity measurements taken at consistent creek cross sections at each water quality monitoring location. Sections of upper Riley Creek and the Lotus Lake ravines were also walked and assessed using the Creek Restoration Action Strategy (CRAS) evaluation, which identifies stream reaches in the most need of restoration. Overall scores improved on Riley Creek and declined slightly on the Lotus Lake Ravines.

The summary for all three creeks is based on water quality parameters developed by the MPCA in 2014 for Eutrophication and TSS. The standards include some parameters the District has not yet incorporated into monitoring procedures. Therefore, this is the evaluation of the stream reaches that did not meet MPCA water quality standards using the current parameters measured by the District. The parameters measured during the summer growing season (April-September) and the associated MPCA water quality limits for streams located in the Central River Region include: Dissolved Oxygen (DO) daily minimum > 4mg/L, summer season average TP < 0.1mg/L, TSS < 10% exceedance of 30mg/L limit during the summer season, summer season average Chl-a <18ug/L, and summer season average pH < 9su and >6su (MPCA, 2016).

Overall water quality improved in from 2016 to 2017. A total of six stream water quality sites (R5, R3, R2, P5, P3, and P1) met all MPCA water quality standards in 2017 (Figure 2). Each stream varied in the number of water quality standards they did not meet; Bluff had ten, Riley had two, and Purgatory had seven. Bluff Creek remained the stream with the worst water quality, as previously seen in 2015 and 2016. Site B5 did not meet the most MPCA standards, DO, TSS and TP. Exceeding the TP water quality standard was the most violated water quality parameter in 2017 with 8 out of the 18-regular water quality monitoring sites not meeting the standard (summer average <0.1 mg/L). This, however, is down from 15 TP violations in 2015 and 11 in 2016. TSS violations were reduced to two in 2017, down from seven in 2016 and three in 2015. The dissolved oxygen minimum of 4mg/l was violated across four stream sites, Upper Purgatory Creek containing three of these sites.

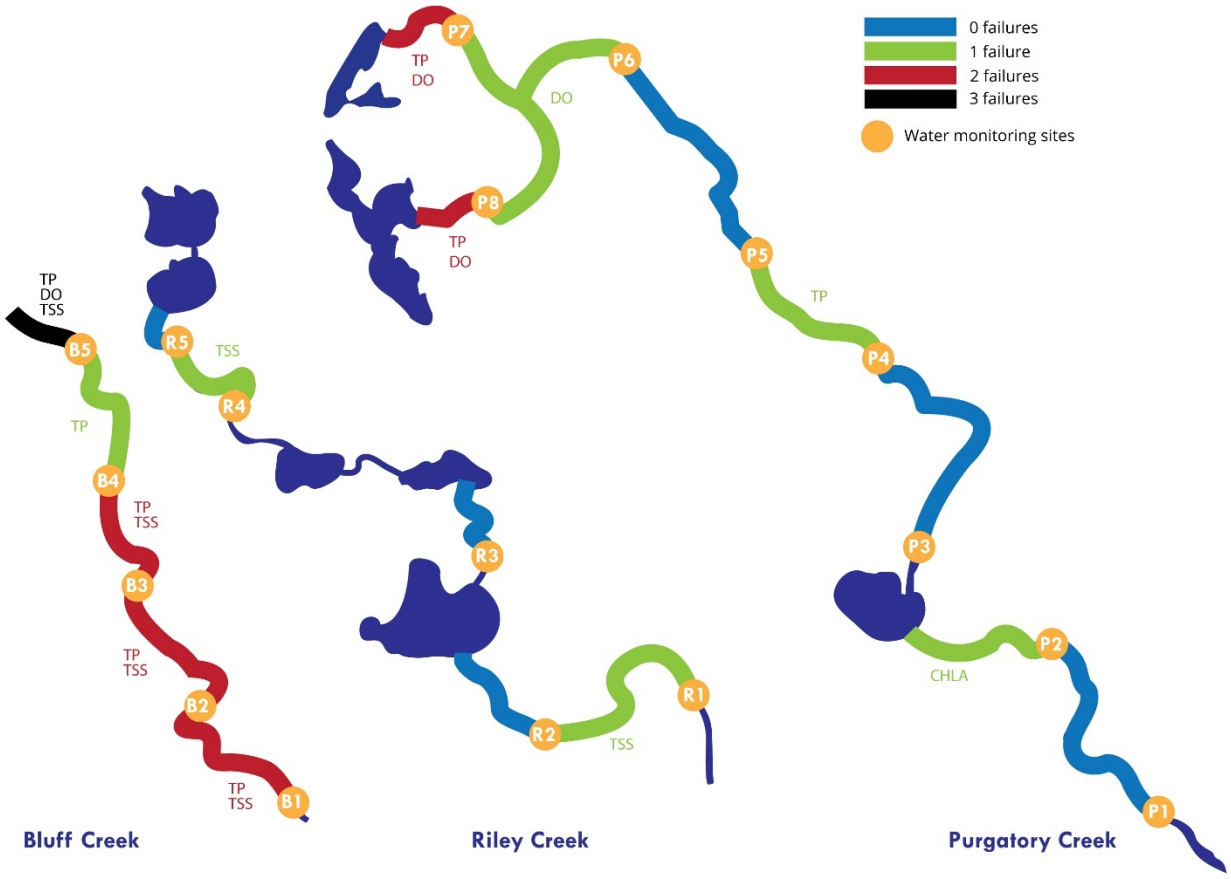


Figure 2 2017 Stream Water Quality

Summary of stream water quality data collected on Bluff Creek, Riley Creek, and Purgatory Creek in 2017 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency (MPCA) Water Quality Standards. A total of 18 water monitoring locations (orange circles) were sampled and information gathered from the individual sites were applied upstream to the next monitoring location. The summer season (April-September) eutrophication and total suspended solids water quality standards used in this assessment included: Dissolved Oxygen (DO) daily minimum > 4mg/L, average Total Phosphorus (TP) < 0.1mg/L, Total Suspended Solids (TSS) < 10% exceedance of 30mg/L limit, average Chlorophyll-a (CHLA) <18ug/L, average pH < 9su and > 6su. The corresponding labels next to each stream section indicate which water quality standard was exceeded.

The full text of the report can be found at:
http://rpbcwd.org/library/annual-reports-and-communications/

EDUCATION & OUTREACH

Community-scale problems require community-scale actions, and water quality is an issue that affects and belongs to all. The District's education and outreach (E&O) programs aim to fulfill its clean water objectives by fostering a community of stewards.

Improving water quality by leveraging the power of an engaged community to effect meaningful change.

The goal of these programs is to improve water quality by leveraging the power of an engaged community to effect meaningful change. To accomplish this, the E&O programs strive to increase awareness, grow stewardship, and build capacity to achieve a shared goal of protecting clean water.

In 2017 the District developed a new education and outreach plan as a part of its Watershed Management Plan update. The E&O plan is in draft form as of this writing, and is anticipated to be finalized and implemented in 2018. The following pages describe the District's E&O programs and major activities implemented in 2017, beginning with a summary report card.

Program Report Card

	Activity	Description	Engagement type (s)	Audience	Reach
Volunteer Program	Adopt a Dock	citizen science engaging lakeshore residents in monitoring for aquatic invasive species	Stewardship, Building capacity	Residents	15 volunteers 55 observations
	Master Water Stewards	volunteer training in stormwater pollution prevention & education	Stewardship, Building capacity	Residents, K-12	10 certified trainees 167 volunteer hours 662 interactions 3 new projects
	Service Learners	volunteer positions in data collection and outreach	Stewardship, Building capacity	Residents, K-12	8 volunteers 178 hours
	Volunteer events	misc events for community volunteers	Stewardship, Building capacity	Residents	4 events 82 participants

	Activity	Description	Engagement type (s)	Audience	Reach
Local Leaders Program	Watershed tour	a tour of water projects and resources in the District	Public engagement, Awareness	Local leaders, Residents	59 attendees
	*Community resiliency workshops	a facilitated planning exercise to help cities and watersheds identify and plan for climate hazards	Awareness, Building capacity	Local leaders, Residents	3 workshops. 4 cities engaged 2 follow-up presentations
	*Funded by an MPCA grant and conducted in partnership with the Nine Mile Creek Watershed District. For full report, see Annual Report Appendices.				
	Council presentations	presentations to city councils on varied topics	Public engagement, Awareness	Local leaders	1 city engaged: Shorewood
Youth Outreach Program	Earth Day Mini Grants	small grants for teachers and informal educators	Awareness, Stewardship	K-12	3 projects 110 student
	Staring Lake Environmental Center Classes	a partnership to support and enrich their water resource programing	Awareness, Stewardship	K-12	3 schools visiting three times each (~120 students)
	Other presentations	lectures and hands-on programs in formal or informal education settings	Awareness	K-12	11 events/activities 940 participants
Continuing Education	Project WET	certification training for educators	Building Capacity	K-12	18 participants
	Maintenance professional trainings	trainings in turf-grass and winter maintenance best practices	Awareness, Stewardship	Businesses & Professionals	3 trainings 75 attendees
	Other opportunities	workshops & activities on misc topics	Awareness	Residents	3 events 85 participants
Communications	Annual Communication	yearly publication to the community	Public engagement, Awareness	Local leaders, Residents	2000 copies distributed
	Newsletters	electronic communication about watershed news	Public engagement, Awareness	Local leaders, Residents	6 bi-monthly newsletters
	Press releases	news pieces sent to local media	Public engagement, Awareness	Local leaders, Residents	Submitted quarterly or more
	Fact sheets	informational sheets for District lakes and creeks	Public Engagement, Awareness	Residents	~1000 distributed

VOLUNTEER PROGRAM

Fostering stewardship and growing capacity through fun, impactful volunteer opportunities.

The watershed district's volunteer program supports its mission to protect, manage, and restore waters resources by engaging community members in stewardship opportunities. The district strives to create meaningful experiences for volunteers, while growing its own capacity to protect clean water. The 2017 program included three ongoing programs – Adopt a Dock, Master Water Stewards, and Service Learners. The district also cosponsored two volunteer clean-up events, and hosted its first-ever volunteer orientation and year-end celebration.

Adopt a Dock

Adopt a Dock is a citizen science initiative. Lakeshore residents to monitor for aquatic invasive species. 15 community members made 55 observations on 9 lakes in 2017. No invasive mussels were found.

Master Water Stewards

A partnership with the Freshwater Society, MWS trains community volunteers to prevent A through projects and education. In 2017, stewards completed 167 volunteer hours and built three projects.

Service Learners

Service learners are college students or other community members who gain first-hand experience at the district through volunteering. In 2017, 8 community members volunteered 178 hours.

In 2017, the watershed district's volunteer program engaged community members through three different opportunities and four events:

40 volunteers

345 hours volunteered

7 programs & events

LOCAL LEADERS PROGRAM

Engaging and supporting appointed, elected, and informal leaders in the shared work of protecting clean water.

This effort offers educational programming, provides resources, and creates effective tools to assist and enable community leaders to make informed decisions regarding water resources. It may include activities such as participating in the University of Minnesota Extension's NEMO program (Non-point source Education For Municipal Officials), presentations to city councils and commissions, and watershed tours or workshops.

Watershed tour

The 2017 local leaders program featured a tour of the watershed district lakes, creeks, and wetlands. Participants ranged from city mayors and commissioners, to community members and the watershed district board of managers. The tour offered a backdrop for conversations about protecting clean water and how the district's new watershed management plan is being crafted using community input and ideas.

Community resiliency workshops

The District, along with the Nine Mile Creek Watershed District lead a public planning process to educates and engage communities on the importance of climate change, current and anticipated impacts, and the need to build community resilience through planning. Four communities participated: Bloomington, Chanhassen, Edina, and Hopkins. A watershed district planning effort was also conducted. The work was funded by a Minnesota Pollution Control Agency Grant, and received support from the Metropolitan Council. Reports were drafted and two additional meetings were held to communicate results to the public. View the District's report on the website.

In 2017, the watershed district's local leader program engaged community members through a watershed tour, workshops, and presentations:

59 tour attendees

Resiliency planning

7 activities

YOUTH OUTREACH PROGRAM

Creating meaningful childhood experiences connected to water resources to inspire the next generation of water stewards.

The youth outreach program seeks to create meaningful childhood experiences connected to water resources, and increase understanding and stewardship of water resources in children and their families. Examples activities include guest presentations and citizen science opportunities for local schools and scout groups, service learning opportunities for high-school and college students, and providing financial and other resources to increase education about, and access to local water bodies.

Earth Day Mini-Grants

The mini-grant program offers funding to educators for projects that or activities related to water resources. 3 projects were funded in 2017: a trip to a nature center, binoculars for nature observation, and studying the water cycle.

Staring Nature Center Partnership

The district partners with the Staring Lake Nature Center in Eden Prairie to support their water resources programing. In 2017, three schools (~120 4th graders) visited the center three times to learn about the health of Staring Lake.

Presentations & Events

The district seeks out and responds to requests to present at schools and other youth event. In 2017 it participated in 11 events in addition to the three held at the nature center.

In 2017, the watershed district's youth outreach program engaged children and their families by:

3 mini-grant projects

1170 individuals engaged

14 activities & events

CONTINUING EDUCATION

Educational opportunities for community members to grow their water resource and best practices knowledge.

The District offers continuing education which may take many forms. Examples of continuing education programs include seminars for professionals on best management practices, workshops for residents on raingardens, Project WET trainings for educators, and tours of resources or projects.

Project WET

Project WET – Water Education for Teachers is an international, interdisciplinary, water science and education program for formal and non-formal educators of K-12 students. With 9 Mile Creek Watershed, the district held a training on the curriculum in 2017 with 18 attendees.

Turf & Winter Maintenance Training

Through a Minnesota Pollution Control Agency Grant, the watershed district is able to offer certification trainings in best practices for turfgrass and winter maintenance professionals. In 2017 the district hosted two grant-supported workshops, and funded an additional workshop for seasonal staff.

Topics of interest

The district hosts and partners on different training opportunities each year. In 2017 for example, the district held a Shoreline Maintenance Workshop for residents to learn how to care long-term for shoreline plantings.

In 2017, the watershed district's continuing education program served the community through:

178 participants

7 Trainings & events

COMMUNICATIONS PROGRAM

Engaging the public through diverse communication methods from event tabling to social media and publications.

The communication program encompasses both passive and active communications. Passive communications include press releases and advertisements with both traditional and social media, as well as print materials and interpretive signage. Active communications include direct connections between district staff and representatives, and the community.

Annual Communication

Each year, the district prepares and distributes a communication about the work it does in the community. 2000 copies were distributed in 2017 as wall calendars.

Fact sheets

Water quality fact sheets tell the story of each lake and creek in the watershed. Over 1000 copies were distributed in 2017.

Newsletters & releases

Electronic newsletter and print press releases are written throughout the year. 6 newsletter went out in 2017, and several releases were published by local papers.

Engagement events

From tabling at local fairs, to hosting a rain barrel sale and a bike ride along Riley Creek, the district engaged with the public in a variety of ways in 2017.

In 2017, the watershed district's communications program engaged the community and raised awareness through:

1000 fact sheets

6 newsletters

12 events

2000 annual communications

VOLUNTEER HIGHLIGHT: CITIZEN ADVISORY COMMITTEE

Advising the watershed district as representatives of citizen interests and promoting clean water action in our community.

The Citizens Advisory Committee (CAC) of the Riley Purgatory Bluff Creek Watershed District, is a volunteer advisory board that supports the district's board of managers in their mission to protect, manage, and restore water resources.

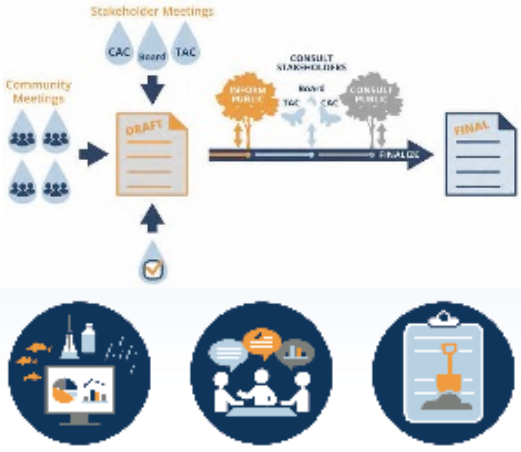
As representatives of citizen interests, committee members advise the board on decision making, communicate concerns from the public, and help educate the community on clean water action. Some of the 2017 CAC highlights and accomplishments include:

Action Projects

Recently the CAC began forming subcommittees around topics of interest. These committees include stormdrains, groundwater, and community cleanups and have led to action projects. 2017 action projects included a fall cleanup, and the initiation of a speaker's bureau project.

10-Year Plan Update

The district continued the process of updating its 10-Year Management Plan in 2017. The CAC was an integral part of this process, reviewing drafts of both the plan itself, and appendices like the Education & Outreach Plan.



25 x 25 Meeting

25BY25

After hearing about Governor Dayton's 25 by 25 initiative, CAC members proposed hosting one of the community meetings to the board. Members both helped prepare for, and participated in, the facilitated discussion around goals for Minnesota's water resources.

In 2017, the watershed district's Citizen Advisory Committee contributed to the district's work through:

8 members

Review of projects & programs

Action projects

BLUFF CREEK WATERSHED

The District is actively engaged in two projects in the Bluff Creek Watershed:

- Bluff Creek Tributary Restoration Project
- Chanhassen High School Reuse Project

BLUFF CREEK TRIBUTARY RESTORATION PROJECT

In 2017, the District conducted a feasibility and began design of the Bluff Creek Tributary Restoration Project. The site is located between Audubon Rd and Highway 212. The reach approximately 1400ft. The vision for this Project is to provide an ecologically diverse stream reach that significantly reduces streambank erosion and provides diverse habitat layers. Presently, the upper part of the reach has significant erosion. It is not as severe in the lower half of the reach, but the channel is incised and disconnected from the floodplain throughout. The Project will provide greater stream depth variability, more channel bed substructure types, and varied channel velocities. The Project will reduce erosion and improve water quality while also improving natural stream habitat for aquatic organisms. Providing better floodplain connectivity for Bluff Creek also enhances surrounding riparian habitat. By establishing a stable stream corridor, the Project will also address the Minnesota Pollution Control Agency's (MPCA's) identified turbidity impairment within this reach of Bluff Creek.

CHANHASSEN HIGH SCHOOL

The District partnership with the city of Chanhassen and Eastern Carver County School District designed in 2017 a stormwater reuse for irrigation at Chanhassen High School with the goal of implementing a project to reduce groundwater consumption, reduce discharge rates, volumes and pollutants to Bluff Creek (an MPCA impaired water), and increase the public awareness of stormwater reuse and groundwater conservation.

According to irrigation meter records, the school campus purchases an average of 3.8 million gallons (MG) of groundwater annually from the city of Chanhassen's domestic water supply to irrigate about 11 acres of green space (athletic fields and areas around the school building). This is equivalent to six Olympic-size swimming pools being filled

annually or an average weekly irrigation rate at Chanhassen High School is 0.57 inches per week between May through September.

Through a partnership between the RPBCWD, city of Chanhassen and Independent School District 112, a stormwater reuse system could effectively irrigate nearly 75% of the green space on the high school campus by using 16% of the annual watershed run-off. The proposed reuse system would meet 51% of the total school campus annual irrigation demand by using 14 stormwater from a stormwater pond on the school campus to irrigate the north side of the high school campus (8.2 acres) through the irrigation system. The proposed stormwater irrigation system will decrease the demand for groundwater at the high school athletic fields and grounds, with the potential for improvements and expansion in the future to meet additional demands.

Design will be completed in 2018 and will be going out for bids an implemented during that year. The District received a $200,000 grant from the Metropolitan Council for this project.

PURGATORY CREEK WATERSHED

The District is actively engaged in two projects in the Purgatory Creek Watershed:

- Fire Station 2 Water Reuse
- Lotus Lake Alum
- Purgatory Creek Restoration
- Scenic Heights
- Silver Lake Water Quality Project

FIRE STATION 2 WATER REUSE

Through a grant from the Metropolitan Council, the District partnered with the city of Eden Prairie to implement water conservation practices at Fire Station Two. A cistern captures and treats rainwater from the station's roof. This can then be used for irrigating the grounds and washing fire trucks.

A cost-sharing grant from the District also supported the transition of the grounds to low-mow grasses and native plants. This type of landscaping requires less water and upkeep. Both practices also help to reduce stormwater runoff and pollution.

Signs along the trails invite visitors to explore, and to get involved by taking these practices back to their homes, workplaces, and gathering spaces.

LOTUS LAKE ALUM

In 2017, the District began a feasibility to determine the dosage needs in conducting an alum treatment. Cores were taken from Lotus Lake and are currently being processed.

PURGATORY CREEK RESTORATION

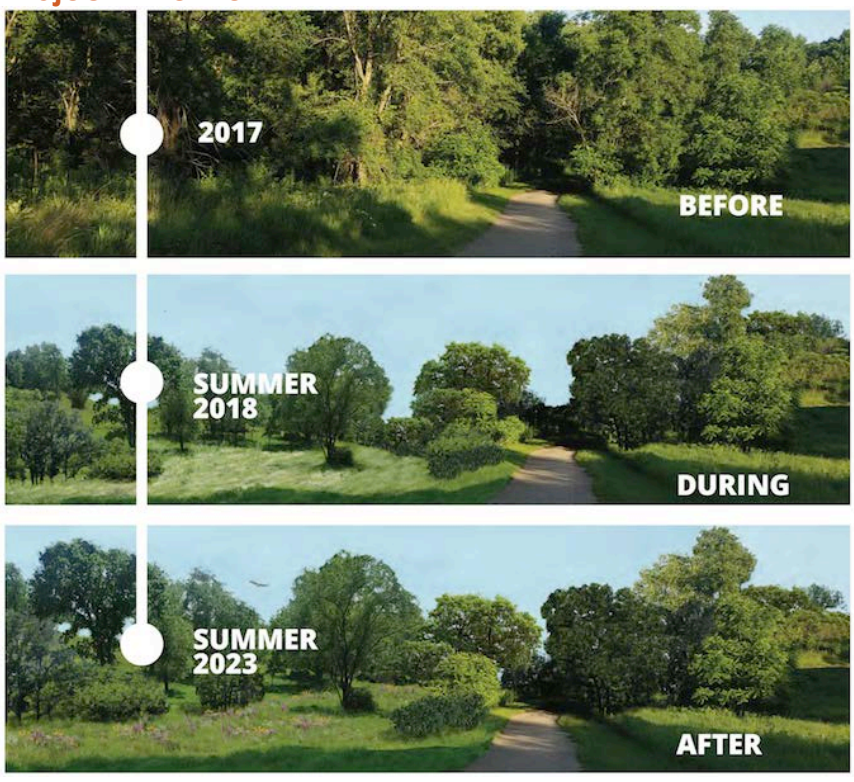
The Purgatory Creek Restoration on the northeast corner of 101 and 62 was implemented in 2016. The District continued to monitor the reach. Members of the public have walked this corridor creating an unofficial trail. The District placed a sign to indicate that this is a restoration site.

SCENIC HEIGHTS SCHOOL OF FOREST RESTORATION

This project will restore a healthy ecosystem in the school forest, one that promotes clean water in nearby Purgatory Creek, and provides habitat for wildlife. In the fall of 2017, the restoration began.

Project map

Project timeline



Project partners

Riley Purgatory Bluff Creek Watershed District

Department of Natural Resources

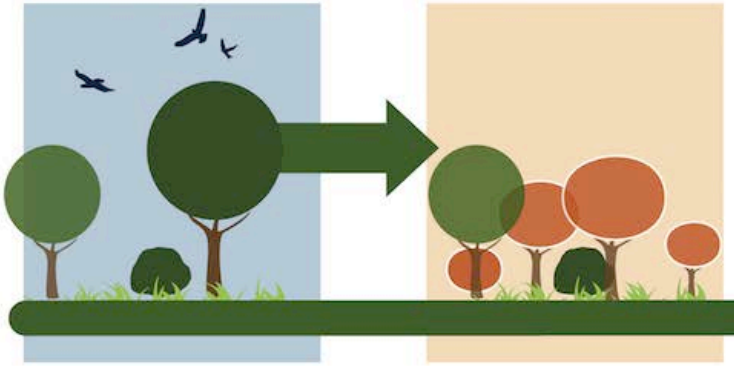
Minnetonka Public Schools

City of Minnetonka

Hennepin

Promoting Stewardship Through Restoration

Welcome to the Scenic Heights School Forest Restoration! This project will help restore a healthy ecosystem in the school forest that promotes clean water in nearby Purgatory Creek and critical habitat for local wildlife.



200 Years ago this landscape looked much different. It was a diverse ecosystem of tallgrass prairies and oak savannas. Deep-rooted grasses held the soil in place while wildflowers, shrubs and sparse trees porvided habitat for many animal and insect species.

Oak Savanna

Now **invasive species** like garlic mustard and buckthorn have outcompeted native plants, and erosion is common. When European settlers suppressed fire, cleared vegetation and introduced agriculture and livestock, the soil became degraded and many native plants disappeared.

Buckthorn

Honeysuckle

Undesirable Tree Species

Erosion

RESTORATION

By restoring the forest we can re-establish a healthy ecosystem in the Scenic Heights School Forest. The first step will be to remove invasive plants and unhealthy or undesirable trees. Secondly, native species will be planted and cared for so they can establish. Finally, long-term care of the site is critical in order to keep invasive species at bay and keep the native plant communities thriving.

What Does Restoration Look Like?

Invasive Removal | Tree Removal | Controlled Burning | Invasive Control | Planting

A diverse native plant based savanna will fully establish with thoughtful on-going site management.

NO ACTION

If we don't act many native plants will be lost, and there will be less habitat for wildlife such as birds, mammals, frogs and pollinators. Invasive species will dominate the landscape and the soil will continue to erode.

SILVER LAKE WATER QUALITY PROJECT

The 2017 UAA update identified the Silver Lake subwatershed SiL_2 as a targeted location within the Silver Lake watershed to reduce the phosphorus loading and improve the water quality of Silver Lake. The UAA indicates that runoff from approximately 13.5 acres drains through the location of the potential stormwater treatment system.

This site presents several design and maintenance challenges including, but not limited to, drainage patterns, tree canopy, and topography. The UAA suggests that an iron enhanced sand filtration system treating discharge from Pleasantview Road and Ridge Road would be approximately 0.4 acres at the surface with the potential to reduce the annual phosphorus loading to Silver Lake by 6.3 pounds. The District began a feasibility study in 2017to evaluate the viability of constructing a BMP to treat runoff from Pleasantview Road and Ridge Road, and to identify if an iron enhanced sand filtration system would be the preferred BMP for the site. This study evaluates the feasibility of other stormwater BMPs, as well. Estimated total phosphorus removals and engineer's opinion of project costs were determined for five feasible BMPs.

RILEY CREEK WATERSHED

The District is actively engaged in two projects in the Riley Creek Watershed:

- Lake Susan Park Pond
- Chanhassen Town Center
- Lower Riley Creek Restoration

LAKE SUSAN PARK POND

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) in partnership with the City of Chanhassen, conducted a study of watershed treatment and stormwater reuse enhancement alternatives at the Lake Susan Park Pond in March 2017, building upon the Lake Susan and Rice Marsh Lake use attainability analysis (UAA) prescribed by the 1996 RPBCWD Water Management Plan (i.e. District Plan) and completed in 1999. The updated Lake Susan UAA recommended remedial measures to improve the lake's water quality and was completed in July 2013.

The 2013 UAA Update included several near-term projects in the Lake Susan implementation plan, including construction of an iron-enhanced sand filtration system at Lake Susan Park Pond and modifying the pond to increase dead pool storage by one foot. The 2017 Engineer's Report for the project evaluated several conceptual design combinations for water quality improvement and stormwater reuse. The recommended alternative includes water quality treatment through use of an iron enhanced sand filter (IESF) and stormwater reuse through irrigation of an adjacent ballfield.

The project includes providing water quality treatment at Lake Susan Park Pond through use of an IESF and stormwater reuse through irrigation of an adjacent ballfield. It also includes erosion protection at the outlet of Lake Susan Park Pond to Riley Creek. The filtration system will be located along the south side of Lake Susan Park Pond, in an area formerly used as an archery range to minimize impacts to upland vegetation.

In 2017, the District completed the feasibility and began design for the system. The District anticipates installing it in 2018.

Financial partners include the State of Minnesota and the City of Chanhassen.

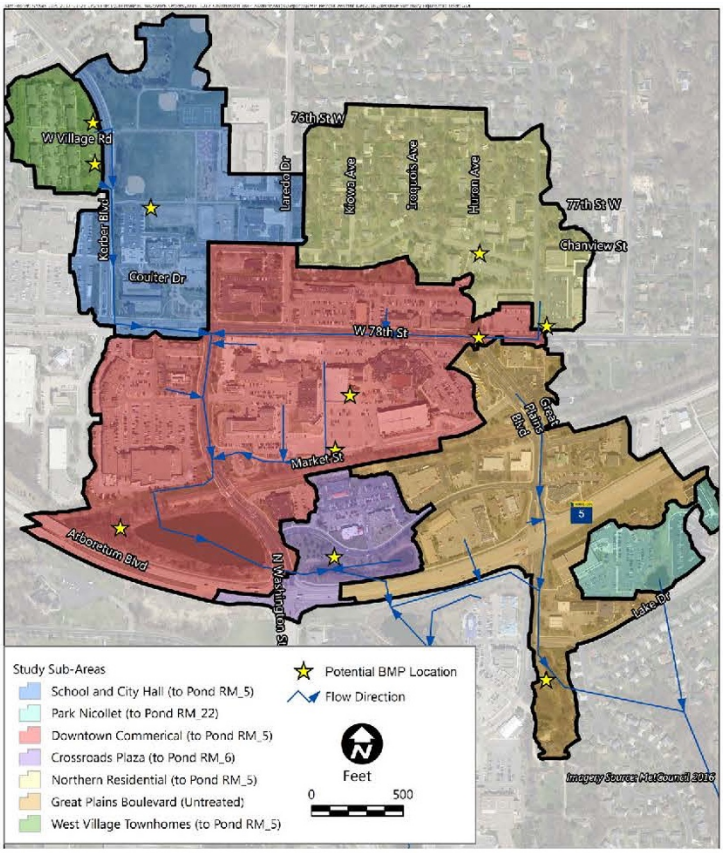
CHANHASSEN TOWN CENTER

STUDY PURPOSE AND GOALS

The purpose of this study is to provide a list of potential stormwater best management practices (BMPs) within the downtown area of Chanhassen that will provide stormwater treatment, volume reduction and phosphorus load reductions for the downstream water resources, including Rice Marsh Lake and Lake Riley. The study goals were to:

- Identify innovative BMP retrofit locations that would remove soluble phosphorus, promote infiltration and groundwater recharge, improve the quality of the downstream water resources, and educate the public about stormwater management.
- Develop a framework for evaluating future potential BMP locations as opportunities for redevelopment and capital improvement projects arise.

The study produced concept designs, preliminary opinions of cost, and phosphorus removal estimates for three potential stormwater BMPs.



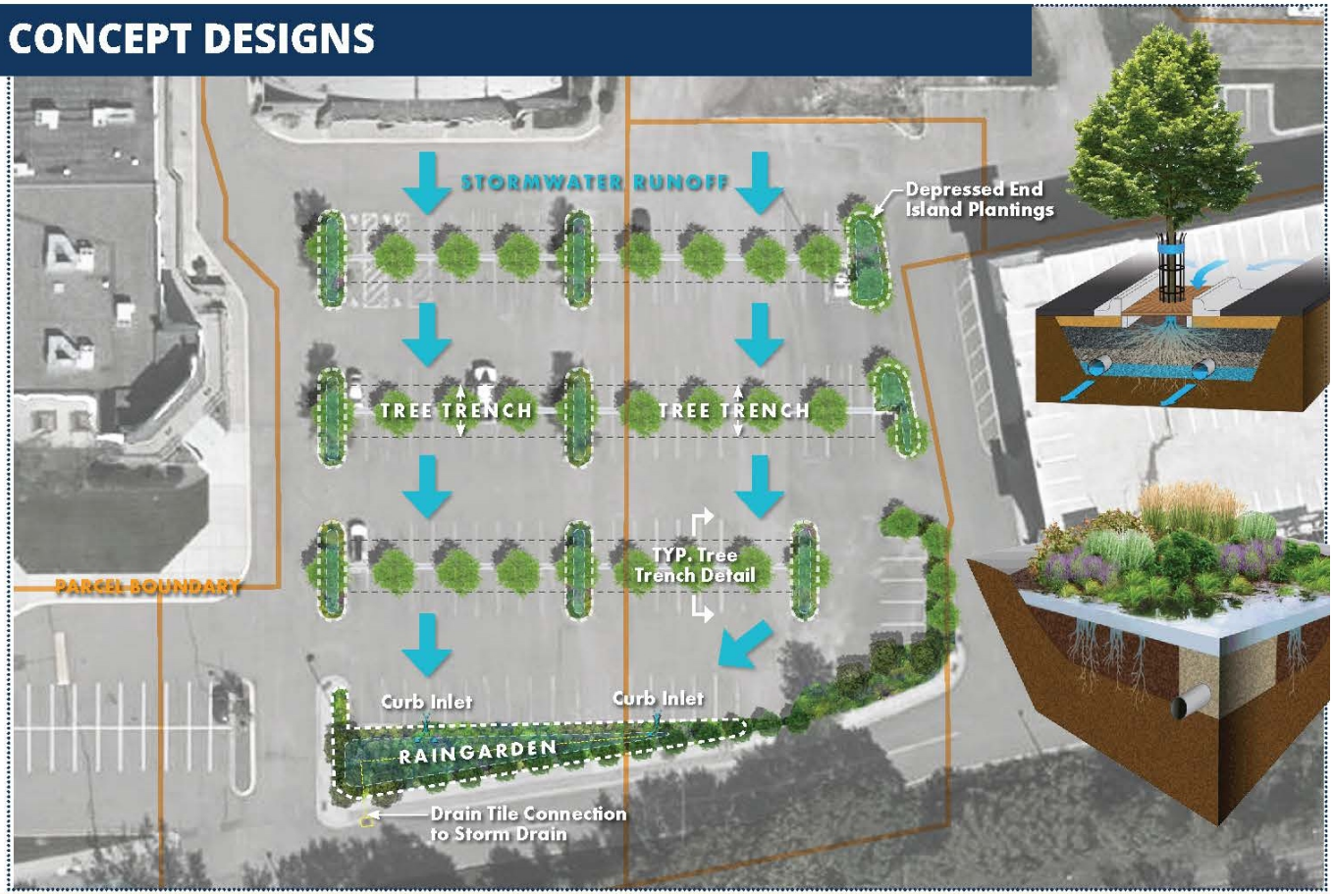
BMP	ESTIMATED ANNUAL WATER VOLUME ABSTRACTION	ESTIMATED PHOSPHORUS REMOVAL	PRELIMINARY OPINION OF COST (RANGE, 2016 DOLLARS)
West Village Rain Gardens	2.4 ac-ft (0.8 million gallons)	2.7 Pounds	$47,000-$83,000
Chanhassen Cinema Parking Lot Tree Trench and Rain Garden	2.5 ac-ft (0.8 million gallons)	2.6 pounds	$430,000-$730,000
Stormwater Re-Use System	14 ac-ft (4.5 million gallons)	11.4 Pounds	$275,000-$688,000

RECOMMENDATIONS

This study showed that stormwater treatment BMPs for removing soluble phosphorus and reuced runoff volume are feasible within the Downtown Chanhassen area and present the opportunity for close cooperation between city, watershed district, and property owners to maximum the stormwater management opportunities while enhancing the economic viability of the area. Specific opportunities include, but are not limited to:

- Implementing the West Village Townhome Rain Garden, Movie Theater parking lot improvement and potentially a large scale reuse system.
- Implementing targeted cost share projects.
- Promoting volume reduction stormwater BMPs such as rainwater gardens (infiltration basins), permeable pavement, rainwater harvesting (rain barrels, underground storage), and vegetation management (tree planting).
- Providing stormwater utility credits to businesses that implement green infrastructure BMPs
- Coordinating and communicating regularly with owners of redeveloping property to maximize stormwater treatment and volume reduction opportunities.
- Continued implementation of a coordinated regulatory programs by the City and RPBCWD
- Pursuing MPCA Point Source Implementation Grants (PSIGs), which are available for areas discharging to water bodies that have an approved TMDL.
- Pursuing Clean Water Legacy grants and low-cost MPCA Clean Water Revolving Fund loans for construction of green infrastructure projects
- Encouraging BMPs that incorporate additional benefits such as decorative and educational components
- Pursuing a complete green street approach to street reconstruction projects within the town center study area to balance grey and green infrastructure

CONCEPT DESIGNS

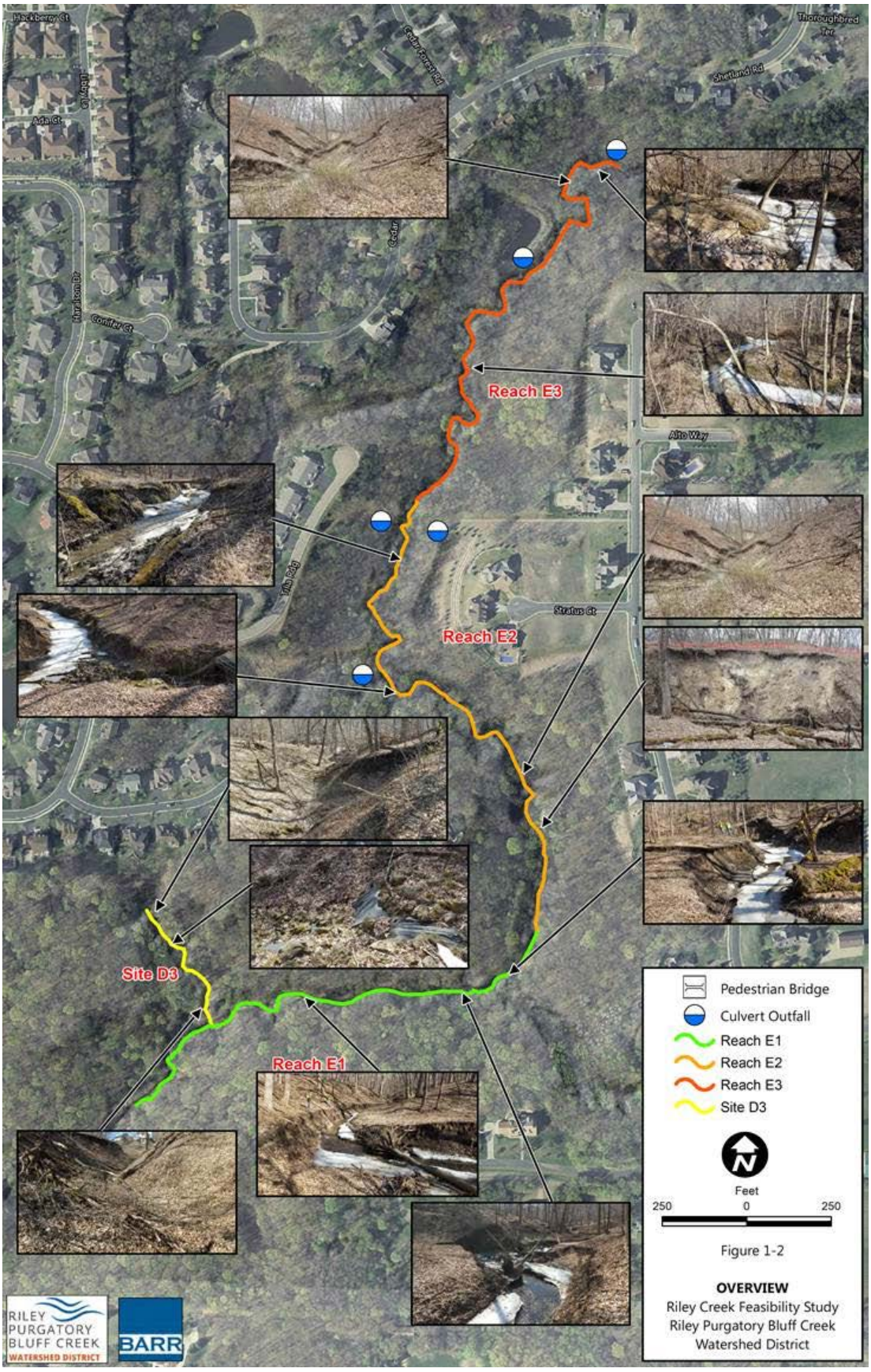


LOWER RILEY CREEK RESTORATION

The Lower Riley Creek Restoration is a multi-year project that began in 2017. This section of the creek is severely eroded, incised and has many bank failures. Reach E has a deeply incised channel. As such, floods flows are concentrated in and near the main channel. This confinement results in faster flows and increases erosion potential within that reach. Site D3 is a ravine feature that conveys intermittent runoff from several residential lots to Riley Creek via a storm sewer outfall near the start of the ravine. Past agricultural practices and current runoff from the residential lots has resulted in an increase of both volume and runoff rate to the ravine. The increased volume and rate is exasperated by the steep channel slope of the ravine. The existing storm sewer outlet includes riprap and geotextile, which has currently failed, resulting in further erosion near the storm sewer outlet. The invert of the ravine is actively eroding because the flows are highly confined by tall banks, resulting in the creation of several large scarps.

The vision for this project is to provide an ecologically diverse stream reach that significantly reduces streambank erosion, provides diverse habitat layers, and enhances the public's access and their understanding of why stable stream systems are important. This project will reduce erosion and improve water quality while also improving natural stream habitat for aquatic organisms. Providing better floodplain connectivity for Lower Riley Creek also enhances surrounding riparian habitat. By establishing a stable stream corridor, the Project will also address the Minnesota Pollution Control Agency's (MPCA's) identified turbidity impairment within this reach of Riley Creek. The Project's location in the Riley Creek Conservation Area provides opportunities for interpretive signage and future programming to educate the public on the importance of diverse stream corridors.

The District with the Lower Minnesota River Watershed District and the City of Eden Prairie are financially contributing to this project.


Reach E3
Reach E2
Reach E1
Site D3
Pedestrian Bridge
Culvert Outfall
Reach E1
Reach E2
Reach E3
Site D3
Feet
250
0
250
Figure 1-2
OVERVIEW
Riley Creek Feasibility Study
Riley Purgatory Bluff Creek
Watershed District
RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
BARR