
1.0 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 manage 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.

1.1 Plan Purpose

The purpose of this watershed management plan is to guide how the District will manage activities in the watershed between 2018 and 2028. The plan also describes how the District will fulfill the requirements given in Minnesota Statutes chapters 103B and 103D. In addition to the plan requirements given in statute, watershed districts in the Twin Cities metropolitan area must also follow the detailed plan requirements of Minnesota Rules chapter 8410. The rules, adopted by the Minnesota Board of Water and Soil Resources (BWSR), also contain requirements for local plans (see Section 9.15.1), and require the establishment of the necessary authorities to ensure implementation of programs.

This plan presents a summary of the District's goals, strategies, and activities necessary to accomplish the District's goals during the life of this Plan. The plan also describes the District's resource management frameworks and funding approach for capital improvement projects and programs.

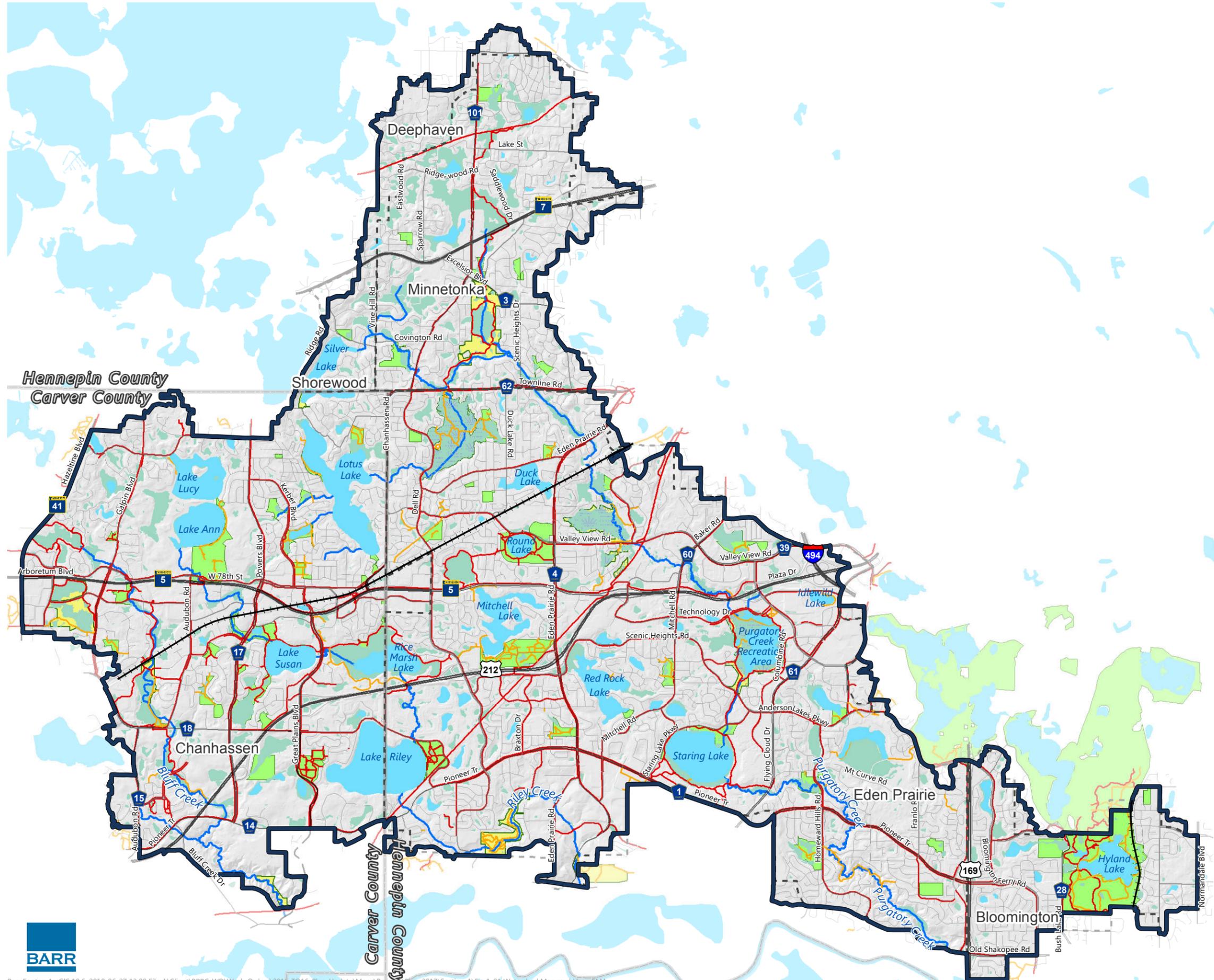
1.2 Location and Boundaries

The Riley-Purgatory-Bluff Creek Watershed District (District) is located in the southwestern portion of the Twin Cities metropolitan area and primarily consists of a developed urban landscape. It encompasses portions of Bloomington, Chanhassen, Chaska, Deephaven, Eden Prairie, Minnetonka, and Shorewood (Figure 1-1). It covers an area close to 50 square miles and includes three distinct major watersheds: the land that drains to Riley Creek, Purgatory Creek, and Bluff Creek. Approximately 32.8 square miles of the District are within Hennepin County and 14.5 square miles are in Carver County.

Other than an area along the southern limits of the District, along the Minnesota River, and the far western portion of the District, the entire District is within the Metropolitan Urban Service Area (MUSA) boundary set by the Metropolitan Council. The District is bounded on the south by the Lower Minnesota River Watershed District, on the east by the Nine Mile Creek Watershed District, on the north by the Minnehaha Creek Watershed District, and on the west by the Carver County Water Management Organization which is administered by Carver County.

WATERSHED MAP

FIGURE 1-1



-  Hiking Trail
-  Hiking & Biking Trail
-  Streams/Creeks
-  Lake/Pond
-  Wetlands (NWI)
-  Park/Playground
-  Preserve/Recreation Area
-  District Legal Boundary
-  District Municipalities
-  County Boundary



Barr Footer: ArcGIS 10.6, 2018-06-27 13:00 File: I:\Client\RPBC_WD\Work_Orders\2016_TO16_Plan_Update\Maps\Report\Plan_2017\Section_1\Fig 1-01 Watershed Map.mxd User: EMA

**RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT**

1.3 Governance Structure

Multiple individuals contribute to the work of the District. These include the board of managers, advisory committees, staff, consultants, and volunteers. Figure 1-2 and the following sections summarizes roles and interaction of the various groups.

1.3.1 Board of Managers

Five managers govern the watershed District. Four managers are appointed by the Hennepin County Commissioners and one manager is appointed by the Carver County Commissioners. Each of the District’s five managers serves a three-year term.

Table 1-1 2017 Riley-Purgatory-Bluff Creek Board of Managers

<p>President Leslie Yetka (Hennepin 7/31/19) 17452 Hampton Court Minnetonka, MN 55345 Home: (952) 933-3281 Email: lyetka@rpbcwd.org</p>	<p>Vice President Dorothy Pedersen (Hennepin 7/31/20) Home: 6155 Ridge Road Shorewood, MN 55331 Home: (952) 933-2141 Email: dpederson@rpbcwd.org</p>
<p>Secretary Richard Chadwick (Carver 7/31/18) 9530 Foxford Road Chanhassen, MN 55317 Home: (952) 445 2425 Email: rchadwick@rpbcwd.org</p>	<p>Treasurer Jill Crafton (Hennepin 7/31/18) 10351 Decatur Avenue South Bloomington, MN 55438 Home: (952) 944-5583 Email: jcrafton@rpbcwd.org</p>
<p>Manager Dick Ward (Hennepin 7/31/20) Home: 8625 Endicott Trail Eden Prairie, MN 55347 Home: (612) 759-9150 Email: dickward@rpbcwd.org</p>	
<p>Retired Manager Perry Forster (Hennepin 7/31/17) 9505 Highview Drive Eden Prairie, MN 55347 Home: (952)-934-0938</p>	<p>Retired Manager Mary Bisek (Hennepin 7/31/17) 4700 Sparrow Road Minnetonka, MN 55345 Home: (612) 599-4479</p>



Board of Managers: (from left) Dorothy Pedersen, Richard Chadwick, Leslie Yetka, Dick Ward, Jill Crafton

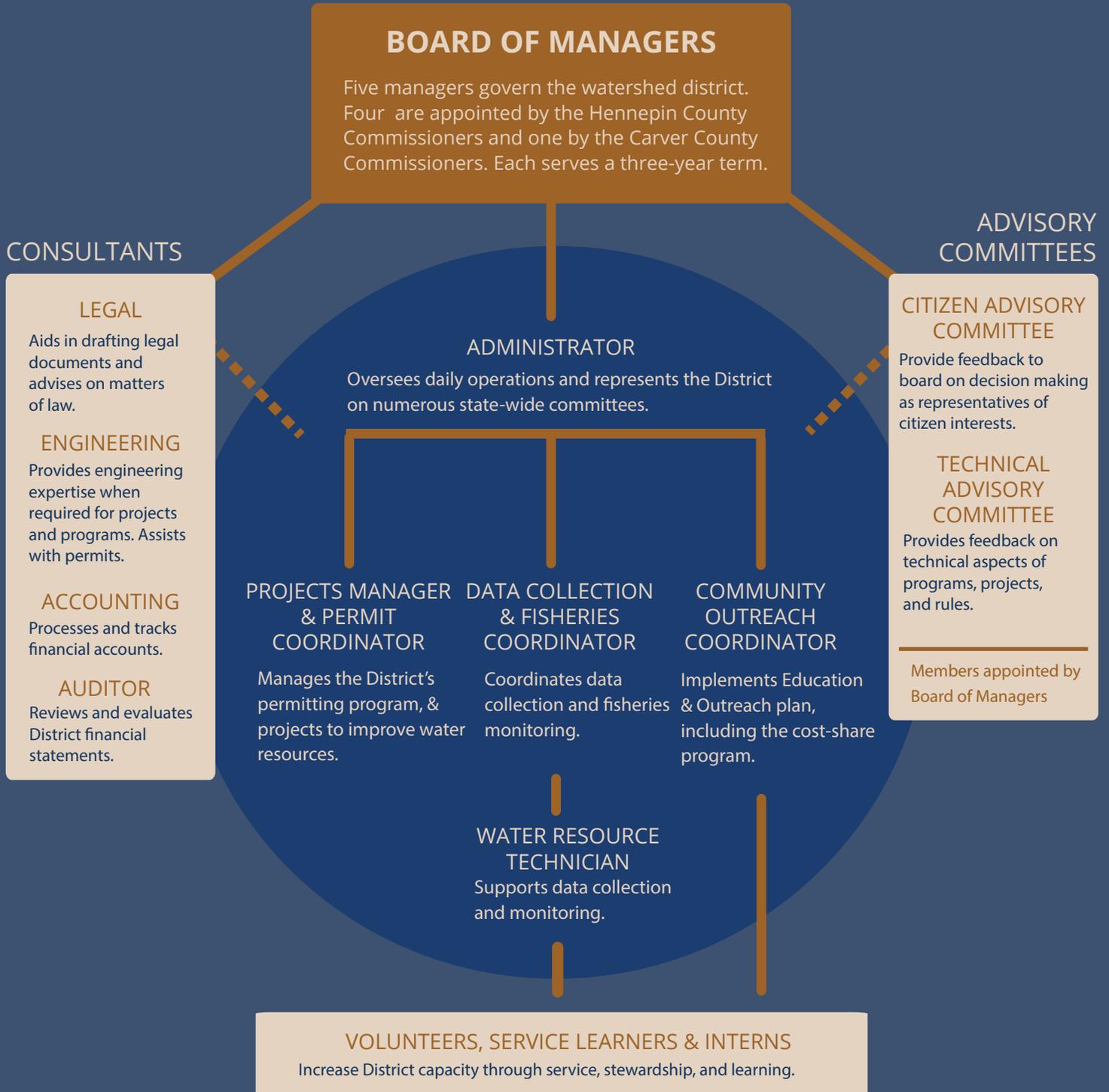
FIGURE 1-2



2017

ORGANIZATIONAL STRUCTURE

Multiple individuals are included in the governance of the Riley Purgatory Bluff Creek Watershed District. These include a board of managers, advisory committees, consultants, staff, and volunteers.



1.3.2 Employees and Consultants

The District employs five full-time employees. The administrator oversees daily operations and represents the District on numerous state-wide committees. A Community Outreach Coordinator, and a Water Resources Coordinator were hired in spring of 2014. A Water Resources Technician was hired in December of 2016. In 2017, the District hired a Permit and Project Manager. The District solicits and selects the services of an engineering consultant, a legal advisor and an accountant to assist with District activities every two years. The District contracts with another accounting firm to perform its annual financial audit.



Pictured from left to right: Terry Jeffery, Zach Dickhausen, Dr. Claire Bleser, Josh Maxwell and Michelle Jordan.

Table 1-2 2017 Employees

<p>Administrator Dr. Claire Bleser 18681 Lake Drive East Chanhassen, MN 55317 Telephone: (952) 607-6512 Email: cbleser@rpbcd.org</p>	<p>Project Manager & Permit Coordinator Terry Jeffery 18681 Lake Drive East Chanhassen, MN 55317 Telephone: (952) 607-6512 Email: tjeffery@rpbcd.org</p>
<p>Community Outreach Coordinator Michelle Jordan 18681 Lake Drive East Chanhassen, MN 55317 Telephone: (952) 607-6481</p>	<p>Water Resources Coordinator Joshua Maxwell 18681 Lake Drive East Chanhassen, MN 55317 Telephone: (952) 607-6486 Email: jmaxwell@rpbcd.org</p>
<p>Water Resources Technician Zachary Dickhausen 18681 Lake Drive East Chanhassen, MN 55317 Telephone: (952) 607-6036 Email: zdickhausen@rpbcd.org</p>	

Table 1-3 Primary Consultants

<p>Legal Counsel 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</p>	<p>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</p>
<p>Accountant Dan Cavanaugh, JMISC Futurity, P.A. 5000 West 36th Street, #240 St. Louis Park, MN 55416 Telephone: (952) 697-3577 Facsimile: (952) 697-3566 Email: dan@jmiscfuturity.com</p>	<p>Auditor 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</p>

1.3.3 Advisory Committees

The Board of Managers appoints two advisory committees, the Citizen Advisory Committee (CAC) and the Technical Advisory Committee (TAC), to provide recommendations on matters affecting the District, including all contemplated projects and improvements. Both groups play an important role in ensuring that the District is fulfilling the needs of the community and is aware of citizen concerns.

The CAC is a volunteer advisory board comprised of community members. As representatives of citizen interests, committee members support the District's board of managers in their mission to protect, manage, and restore water resources. They provide recommendations to aid in decision making, communicate concerns from the public, and help educate the community on best practices for protecting clean water.



2017 CAC Members: Back Row: Paul Bulger, Anne Deuring, Judy McClellan, Jim Boettcher, Dorothy Pedersen (past Chair), Pete Iversen Front Row: David Ziegler (Chair), Joan Palmquist (Recorder), Matt Lindon [not picture: Sharon McCotter (Vice Chair)]

Table 1-4 2017 Citizen Advisory Committee Members

Name	Residence	Mailing address
Jim Boettcher	Chanhassen	7476 Crocus Court Chanhassen, MN 55317
Sharon McCotter	Chanhassen	7000 Utica Lane Chanhassen, MN 55317
Paul Bulger	Eden Prairie	15807 South Lund Rd Eden Prairie, MN 55346
Matt Lindon	Eden Prairie	9026 Belvedere Drive Eden Prairie, MN 55347
Peter Iversen	Eden Prairie	8002 Island Rd Eden Prairie, MN 55347
Joan Palmquist	Eden Prairie	8905 Cove Pointe Road Eden Prairie, MN 55347
David Ziegler	Eden Prairie	16729 Baywood Terrace Eden Prairie, MN 55346
Anne Deuring	Minnetonka	17149 Chiltern Hills Road Minnetonka, MN 55345

The Technical Advisory Committee includes members of local government unit and agency technical staff involved in water resources. Agencies represented on the committee vary from the Metropolitan Council, to the Minnesota Department of Natural Resources, Counties, and Cities. The TAC provides feedback specific to the technical aspects of programs and projects, and to the District's regulatory program.



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).

Table 1-5 2017 Technical Advisory Committee Members

Name and Office	Organization	Mailing address
Steve Christopher Board Conservationist	Board of Water and Soil Resources	520 Lafayette Road North Saint Paul, MN 55155 (651) 296-2633
Matt Lindon Citizen Advisor	Citizen Advisory Committee	9026 Belvedere Drive Eden Prairie, MN 55347
Paul Moline	Carver County	Government Center- Administration Building 600 East Fourth Street Chaska, MN 55318 (952) 361-1825
Mike Wanous	Carver County Soil and Water Conservation District	11360 Highway 212, Suite 6, Cologne, MN 55322 (952) 466-5230
Steve Segar Water Resources Engineer	City of Bloomington	1700 West 98 th Street Bloomington, MN 55431 (952) 563-4867
Paul Oehme City Engineer/Director of Public Works	City of Chanhassen	7700 Market Boulevard P.O. Box 147 Chanhassen, MN 55317 (952) 227-1169
Matt Clark City Engineer	City of Chaska	One City Hall Plaza Chaska, MN 55318 (952) 448-9200
Robert Bean Jr. Water Resources Engineer	City of Deephaven (Bolton & Menk, Inc.)	2638 Shadow Lane, Suite 200 Chaska, MN 55318 (952) 448-8838 x2607
Leslie Stovring/ Dave Modrow Water Resources Coordinator/ Water Resource Engineer	City of Eden Prairie	8080 Mitchell Road Eden Prairie, MN 55344 (952) 949-8327
Tom Dietrich Water Resources Engineering Coordinator	City of Minnetonka	14600 Minnetonka Boulevard Minnetonka, MN 55343 (952) 939-8239

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

1.4 Local and State Coordination

The watershed district works regularly with various other units of state and regional government involved in regulating water resource related activities that have some jurisdiction overlapping that of the District. The roles of these agencies are described summarized in Figure 1-3.

Did you know?

The stormwater pipes and facilities are typically owned and maintained by the property owner or government unit responsible for installing it.

FIGURE 1-3



Agencies involved in **WATER PROTECTION**

The work of the Riley Purgatory Bluff Creek Watershed District to protect, manage, and restore water resources does not take place in isolation. There are federal, state, regional, and local agencies that work together for water protection.

FEDERAL



ARMY CORP OF ENGINEERS

includes water resource development activities including flood control, navigation, recreation, and infrastructure, environmental stewardship and emergency response.

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY

identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions; runs the National Flood Insurance Program (NFIP).

REGIONAL



METROPOLITAN COUNCIL

is a regional planning authority for the seven-county metropolitan area; conducts water quality monitoring including citizen science.



CARVER & HENNEPIN COUNTIES

Riley Purgatory Bluff Creek Watershed District lies within two counties: Carver and Hennepin. Counties are involved in a variety of different activities that affect water resources.



CARVER COUNTY SOIL & WATER CONSERVATION DISTRICT

provides assistance to the land managers and citizens of Carver County for the protection of land and water resources; provides technical support to watershed district in support of its cost share program.



RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

is an independent local government unit tasked with protecting, managing, and restoring the water resources within the 50 square miles that drain to Riley, Purgatory, and Bluff Creeks; regulates impacts to water resources through a permitting program; is not the wetland conservation act authority.

STATE

POLLUTION CONTROL AGENCY

monitors environmental quality, offers technical and financial assistance, and enforces environmental regulations; finds and cleans up spills or leaks; develops statewide policy; supports environmental education.



DEPARTMENT OF HEALTH

works on many environmental issues, including water quality; handle drinking water regulation, microbial and other contamination.



DEPT OF NATURAL RESOURCES

works with citizens, cities, and other governmental units to conserve and manage the state's natural resources (e.g., aquatic vegetation) to provide outdoor recreation opportunities and provide for commercial use of natural resources in a way that creates a sustainable quality of life, such as aquifer management.



DEPT OF AGRICULTURE

is responsible for or involved in many water quality programs including: the Agricultural Best Management Practices Loan Program, and the Comprehensive Groundwater Protection Act of 1989 - the department regulates most matters relating to pesticides and fertilizers.



DEPT OF TRANSPORTATION

works with design, construction and maintenance project managers to develop plans and procedures that promote cleaner project sites, and to protect the waters of the state during construction and maintenance activities.



BOARD OF WATER & SOIL RESOURCES

administers programs that prevent sediment and nutrients from entering our lakes, rivers, and streams; enhance fish and wildlife habitat; and protect wetlands.



LOCAL

CITIES Bloomington, Chanhassen, Chaska, Deephaven, Eden Prairie, Minnetonka, Shorewood

can regulate impacts to water resources, or leave that authority to the local watershed district or management organization; some are the wetland conservation act authority.

The watershed district is overseen by BWSR

1.5 Early District History and Accomplishments

In the mid-1960s several single-family homes were built on the western bay of Duck Lake. Duck Lake was a landlocked lake (not having a low level piped outlet) resulting in the lake level responding to wet or dry conditions. The lake water level was at a low elevation because of dry climatic conditions when the homes were built. Several years after the homes were built, the lake level responded to more normal rainfall conditions that resulted in higher lake level elevations and flooding of the basements of these homes.

On August 16, 1968, 70 citizens from the cities of Bloomington and Minnetonka and the Villages of Eden Prairie, Chanhassen, Shorewood and Deephaven petitioned the Board of Water and Soil Resources for the formation of the Riley Purgatory Creek Watershed District. In the petition, residents identified 11 purposes for the District. These included flood control, restoration, regulation and action to improve water quality (see Figure 1-4).

Figure 1-4 Original 1968 Purposes for District Establishment

The watershed district should be established to include, but not be limited to, the following purposes:

1. Control and alleviate flood water damage to lands in the Riley Creek and Purgatory Creek drainage basins.
2. Improve stream channels, lakes, marshes and other watercourses for drainage, recreation, wildlife, and other public purposes.
3. Regulate and manage the flow of surface waters and conserve the surface and ground waters of the basin for beneficial purposes.
4. Prevent damage to roads, bridges, and other public and private improvements within the basin.
5. Provide and conserve water for industrial, domestic, recreational or other public uses.
6. Consolidate and coordinate the drainage resulting from existing public drainage systems within the Riley Creek and Purgatory Creek drainage basins.
7. Adopt preventive and remedial measures for the control of waste discharges, land and soil erosion, the prevention of siltation of watercourses or other bodies of water within the proposed district.
8. Regulate improvements by riparian owners of the beds, banks, and shores of lakes, streams and marshes by permit or rules and regulations of the managers in order to preserve the same for beneficial public uses.
9. Provide for wildlife and recreational areas such as parks and camps by controlling, preserving, and regulating waters through reclaiming and filling wet and overflowed lands and acquiring lands where necessary in the public interest.
10. Provide for the regulation of improvements by individual municipalities within the Riley Creek and Purgatory Creek drainage basins, and regulate the installation of utilities, including water lines, sewer lines, natural gas lines, and other construction facilities placed in, under, or adjacent to the creek channels or water areas of the proposed district. Maintain and preserve the water quality of the drainage basin so as to preserve the natural and aesthetic characteristics to the fullest extent possible in an urban area
11. Create artificial water storage areas and maintain and improve natural water storage areas such as lakes and marshes within the basin.

Less than a year later, on July 31, 1969, the Riley-Purgatory Creek Watershed District (RPCWD) was formed and the first five managers were appointed: Donald Pennie, Howard Peterson, and Howard Merrimam from Eden Prairie, John Youngst from Minnetonka and Ray Peterson from Excelsior (4 from Hennepin and 1 from Carver Counties).

In 1983, the Cities of Chanhassen and Chaska requested that BWSR consider enlarging Riley-Purgatory Creek Watershed District to include the Bluff Creek watershed. On June 8, 1984, Bluff Creek Watershed District was incorporated into RPCWD and the name of the District was changed to Riley-Purgatory-Bluff Creek Watershed District (RPBCWD).

Did you know?
One of the names BWSR considered naming the District as per the 1983 petition was The Tri-Creek Watershed District

During the first three decades of existence the District focused on establishing a robust flood control approach, lake water quality improvements, and development/implementation of rules and regulations to protect the resources. Some of the District's key accomplishments during this timeframe are highlighted below:

- 1970:** The District began the preparation of an Overall Plan to guide the District in the management of water. This included the development of a 100-year frequency floodplain along the various reaches of Riley and Purgatory Creeks. The District also started a data collection program that included monitoring of lake levels, groundwater levels, precipitation, stream flow, and water quality.
- 1971:** The District began a multi-year study of the eutrophication of Hyland Lake, which was finished in 1973. The monitoring of Hyland Lake indicated that the lake was hypereutrophic and had a definite algal and nutrient problem. Because of the importance of Hyland Lake as a recreational resource, the District began working with the Hennepin County Park Reserve District (now Three Rivers Park District) in implementing a program to locate nutrient sources entering the lake. As part of the District's core flood control mission, RPBCWD reviewed and commented on plans and a Minnesota Department of Natural Resources (MDNR) permit submitted by Eden Land Corporation for the installation of a 54-inch reinforced concrete pipe or a 60-inch corrugated

-
- metal pipe for the Mitchell Road crossing of Purgatory Creek. This crossing created the flood storage impoundment within the Edenvale (now Bent Creek) Golf Course.
- 1972:** The District's 100-year frequency floodplain along the creeks and major tributaries was published. The MDNR approved of the floodplain delineation in 1973. The District also completed an inventory of the water quality of the lakes within the District.
- 1973:** The District Overall Plan was prescribed by the Minnesota Water Resources Board on August 5, 1973. In addition, the District initiated a study in cooperation with Eden Prairie and Minnetonka to investigate the open space possibilities along Purgatory Creek throughout the communities.
- 1974:** The District's Rules and Regulations were enacted by the Board in June that required permits to be obtained from the District for land altering activities associated with development within the urbanizing watershed. The goal of the permitting program was to minimize sediment and nutrient loading from reaching the waters of the District, resulting in a decline in water quality.
- 1977:** A petition was received from the City of Minnetonka for the improvements of the roadway crossings of Purgatory Creek at Trunk Highway 101, Trunk Highway 7, and Excelsior Boulevard (County Road 3). The District contributed \$100,000 of a \$3.5 million dollar roadway and drainage improvement project undertaken by MnDOT. The District funding was for the upgrading of the culverts at these three crossings.
- 1977:** The District Rules and Regulations were updated.
- 1980:** The Round Lake Restoration project through biomanipulation was completed. This project was undertaken in conjunction with the University of Minnesota Limnology Research Center and MDNR. The purpose of the project was to restore a balanced fishery in the lake and provided some temporary improvement in water clarity.

1985: A petition was received from the city of Eden Prairie for the Eden Prairie Chain-of-Lakes Project to provide low-level piped outlets to these landlocked lakes: Round Lake to Mitchell Lake, Mitchell Lake to Red Rock Lake, Red Rock to McCoy Lake and McCoy Lake to Staring Lake. Prior to this project being undertaken, during a wet cycle resulting in high water levels in Round Lake, the city of Eden Prairie pumped water from Round Lake, in 1984 to Mitchell Lake and in 1986 to Purgatory Creek (along Valley View Road). The Chain-of-Lakes system was completed and functioning in 1988.



Plaque commemorating the completion of the Eden Prairie Chain-of-Lakes Basic Water Management Project

1987: The success of the District's flood control efforts were clearly seen in 1987. Metropolitan Minneapolis-St Paul experienced what is commonly called the 1987 Superstorm on July 20 – 23. This was composed of two high volume rain events totaling over 10 to 12 inches that caused flash flooding throughout the region. Within the District, several neighborhoods and dozens of homes were impacted with flood damage, and reports of severe erosion or road wash out were



Source: Earl Kuehnast & Jim Zandlo, DNR, Division of Waters and State Climatology Office

In the Interagency Flood Hazard Mitigation Report for Minnesota, dated August 21, 1987, the report stated the following: "It was evident from this significant rainfall event that a tremendous amount of damages were prevented by the sound development policies and capital improvements programs of the communities and watershed organizations in the metropolitan area. These local governmental bodies are to be congratulated."

noted in extreme cases. Overall flood control was successful, especially given the historic circumstances.

1991: Petition received from the city of Eden Prairie for the Purgatory Creek Recreation Area project to provide for control of flood water, water quality improvement, wildlife recreation, and wetland restoration, while achieving the primary benefit of controlling the discharge of waters entering the Purgatory Creek valley. The project was delayed for several years while the City of Eden Prairie received easements or dedication of properties within and riparian to the project area. The



Purgatory Creek Park Area provides for control of flood waters, water quality improvement, recreation and wetland restoration.

The project was divided into phases; construction of the outlet structure located between Anderson Lakes Parkway and the major floodplain area; the construction of the embankment separating the open water area from the rest of the project area; excavation of the open water area for water quality treatment; and the construction of the pedestrian trails encircling the project area and connecting to the pedestrian system around Staring Lake. This project was completed in the early-2000's and continues to serve the community as a much enjoyed valued recreation area within Eden Prairie. This project also continues performing a key water quality improvement role for Staring Lake.

1996: With completion and approval of the District's 2nd Generation Water Management Plan, the District's emphasis started to change to ecological classification and eventually use attainability. Following the 1996 plan, the District developed Use Attainability Analyses (UAAs) for all the lakes in the District and Purgatory Creek.

2003: A petition was received from the cities of Chanhassen and Eden Prairie for the Lake Riley Water Quality Improvement Project. The purpose of the project

was to reduce phosphorus loading to Rice Marsh Lake and Lake Riley through the enhancement of existing and construction of new stormwater ponds, controlling the release of internal phosphorus to both lakes, and installing fish barriers. The project also included the recommendation for internal phosphorus load control for both lakes. The District's portion of the pond enhancement and construction project was completed in 2007. The Minnesota Department of Transportation also played a key role in the project by implementing the recommended stormwater ponds with the construction of US 212. Based on the recommendation from the University of Minnesota, the internal phosphorus load control was put on hold until a strategy could be developed to effectively manage the overabundance of carp in the system.

2008: A petition was received from the city of Minnetonka for the District to reestablish, improve, enhance and protect Purgatory Creek between County State Aid Highway 101 and 62, which had deteriorated due to urbanization of the watershed. The project was intended to improve the physical characteristics of Purgatory Creek by providing the stream with the ability to continue to meander naturally without excessive bank erosion and improve the ability of the stream to convey flood flows effectively without degradation. Following completion of an engineer's report and public hearing on the project, the Managers ordered the streambank restoration of 1100 feet along the petitioned portion of Purgatory Creek in 2014. Construction activities to restore and stabilize the streambank began in 2016 with the project being substantially complete in 2017. The District began working on a 3rd generation watershed management plan (later known as the 2011 Water Management Plan) as required by Minnesota Statutes section 103B.231.

2009: In 2009, the District completed the Lake Riley Outlet Basic Water Management Project petitioned by the City of Eden Prairie to stabilize lake water levels and abate persistent high water levels which were impairing recreational use. Work in Mitchell Lake focused upon an Oxygenation Pilot Project. In this project pure oxygen was injected into the deep area in the northern bay of Mitchell Lake. The technical criterion was met, but at a flow of oxygen lower than was intended occurred due to iron-fouling issues of the diffuser system. Even with lower than expected oxygen flow, data showed tremendous success in reducing phosphorus discharge. The success though also revealed potential

difficulty in application to shallow lakes due to repeated wind mixing potential. The District's continued carp management efforts, with assistance from the University of Minnesota, successfully completed under-ice seining of the adult carp in Lakes Susan and Riley with single, strategic hauls. The District continued working on a 3rd generation watershed management plan (2011 Water Management Plan).

2010: The District completed the Round Lake Basic Water Management Project after complying with recently promulgated sediment analysis and disposal requirements. During the project additional minor repairs were made to outlet structures. The maintenance of this basin provided a control pond for assessment of soluble phosphorus loadings associated with detention basins. For the Lotus Lake Outlet Analysis and Volume Control Project the District continued development the hydraulic and hydrologic model. With 2010 seining, approximately 80% of all adult common carp found in the Riley Creek Watershed (lakes Riley, Rice Marsh Lake, Susan, Ann and Lucy) have been removed. Lake vegetation harvesting for curlyleaf pondweed and Eurasian milfoil removed roughly 900,000 pounds of vegetation from Mitchell Lake. The District continued working on a 3rd generation watershed management plan to be known later as the 2011 Water Management Plan.

2011: An aeration system was installed in Rice Marsh Lake in November and December of 2010 and began full operation in January of 2011. The system aerated the deeper portion of the lake from January through ice-out in April. The purpose of aerating is to prevent winter fish kills, which provide opportunity for carp recruitment to gain an advantage over other species and allow re-infestation and re-injury to the aquatic plant communities. A temporary winter aeration system was also installed in Lake Lucy. The primary purpose of the aeration system is to maintain a low carp population by preventing winter fish kills. The secondary purpose is to improve water quality by reducing winter internal phosphorus loading. The District ordered implementation of a low impact development project within the Lotus Lake Watershed to construct infiltration and related treatments to reduce runoff. Third generation plan was approved by BWSR and adopted by the Board of Managers.

1.6 2011 10-Year Management Plan Accomplishments

In the years since completion of the 2011 Plan, the District has been actively implementing the programs and projects it outlined. Below is a yearly summary of District activities and accomplishments from the 2011 Plan.

1.6.1 2012 Summary

The District hired its first full-time employee and opened its first office at Eden Prairie City Center. It hosted two “Evening with the Watershed” educational events for residents, staff, and elected officials, presenting updates on District activities and presentations on current and emerging topics and technologies. The Board of Water and Soil Resources awarded the District its first Clean Water Fund Grant. The grant called for the development of a cost-share program targeting non-profits to



Commercial fishermen remove carp through winter seining.

implement medium-sized best management practices. The District also worked with the University of Minnesota to restore waters that have been impacted by carp. The focus in the Riley Creek watershed was on restoration and for the Purgatory Creek watershed on controlling invasive species (plants and carp). Another project worth noting was the completion of the Lotus Lake Low Impact Development Pilot Project.

1.6.2 2013 Summary

The District moved its data-collection in-house by hiring two temporary staff to run the program. It also began the rulemaking process, developed a cost-share program to implement projects that would help improve water quality, and revised the website. The District again hosted its semi-annual “Evening with the Watershed” educational events. In Spring of 2013, the Department of Natural Resources awarded the District two aquatic invasive species (AIS) grants for its lake-wide treatment of Lake Susan and Lake Riley for curlyleaf pondweed. Furthermore, the District applied for Clean Water Funds from the Board of Water and Soil Resources for projects in the Lake Lucy subwatershed, Lake Susan subwatershed and Bluff Creek Watershed. The District was notified in 2014 that the Bluff Creek application was awarded the grant. The District continued its work with the University of Minnesota to restore waters that have been impacted by carp.



A volunteer helps staff collect water data.

1.6.3 2014 Summary

The District was awarded three MDNR grants (two for curlyleaf pondweed management, one for invasive species inspections) as well as a Clean Water Legacy grant for the Bluff Creek fish passage and stabilization project. The District hired two full-time employees to run its data collection program and developed a broad outreach program. Outreach efforts included a forum on shallow lakes, continuing education workshops for professionals, youth engagement programs



Students learn to inspect a boat for aquatic invasive species through the AIS Jr Inspector program

around invasive species, and water quality fact sheets for local lakes and creeks. In 2014, the District finalized carp management in the Riley Creek Chain of Lakes. This project was part of a multiple-year grant with the University of Minnesota. Finally, the Board of Managers adopted new regulatory requirements to ensure proper integration of water resource protection when development and redevelopment projects occur.

1.6.4 2015 Summary

Two District programs were finalists for the Minnesota Association of Watershed Districts (MAWD) Program of the Year Award: Adopt-A-Dock and the Creek Restoration Action Strategy (CRAS) programs. The CRAS won the award. The CRAS was a staff and engineer led effort to evaluate the overall health of the creeks and determine where sites in most need of restoration were located. The District was also awarded two Clean Water Legacy grants. The Clean Water Legacy grants focused on studying downtown Chanhassen to determine where best management practices could be implemented, as well as grant funds to retrofit a stormwater pond to reduce phosphorus loads discharging to Lake Susan and reusing pond water to irrigate ball fields adjacent to the pond. A Department of Natural Resources grant enhanced our efforts on Lake Riley to manage the invasive curlyleaf pondweed as part of the District's effort to restore the ecological balance in the lake after reducing the carp population. 2015 also marked the first full year of implementing the District's reinstated regulatory program to ensure proper integration of water resource protection when development and redevelopment projects.



Riley-Purgatory-Bluff Creek Watershed District receiving Minnesota Association of Watershed District Program of the Year Award

1.6.5 2016 Summary

The District completed 10 projects, engaged residents in developing the next 10-Year Management Plan, received over \$300,000 in grants, and was recognized as the "District of the Year" by the Minnesota Department of Natural Resources. Projects included

combating aquatic invasive species with herbicide treatments, reducing phosphorus pollution, and implementing the District's first creek restoration. Phosphorus reduction projects included a spent-lime filtration system at Lake Susan, and an aluminum sulfate treatment on Lake Riley. The creek restoration project took place along Purgatory Creek. In partnership with the city of Minnetonka, the District stabilized close to 2,000 feet of eroding banks. District staff continued to monitor carp populations in the Riley Creek and Purgatory Creek chain of lakes. In 2016, the District sponsored its first cohort of master water stewards.



Riley-Purgatory-Bluff Creek Watershed District receiving Minnesota Department of Natural Resources District of the Year Award Program of the Year Award

1.6.6 Key Lessons Learned from the 2011 Plan

While the 2011 plan focused primarily on lakes, with some recognition of the interconnective importance of creeks, the District adopted the “One Waters” approach recognizing the benefits to downstream resources by activities performed to improve lakes and creeks in the upper watershed. The District also implemented an adaptive management approach to protecting and restoring the resources. The One Waters philosophy continues to be a key element to resource management and a component of the District’s prioritization approach (see Section 4.0). The adaptive management philosophy is also carried forward into this plan and is instrumental in the District’s lake and creek management approach (see Section 9.1.1 and Section 9.1.2).



The creek management framework used in the CRAS is highlighted above and will be key to future District management efforts in this Plan. (see Section 9.1.2)

1.7 The Next 10 Years

To help guide the District in its work, the District engaged its stakeholders in the development of this 10-year management plan. These groups and individuals included the TAC and CAC, community members, city partners, and local and state government organizations, among others. The plan identifies goals and strategies – developed through an extensive public input process - and establishes the basis for the District’s regulations and funding authority.

The plan gives the District the foundation for choosing projects and activities. It is also a tool that ensures the District is in tune with the issues and solutions our water resources need in the future. Our plan includes the following elements:

1. Watershed issue identification and assessment through a public input process
2. Goals and strategies developed as a result of the public input process
3. Project prioritization process
4. Land and water resource inventory

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5. Problem and solution assessment for each watershed
 6. Implementation: Identifying programs for the next 10-years
 7. Evaluation scheme

1.8 Acknowledgements

The District would like to thank all of the stakeholders who contributed their thoughts, concerns, time and effort, and technical expertise to the creation of the new 10-Year Plan.