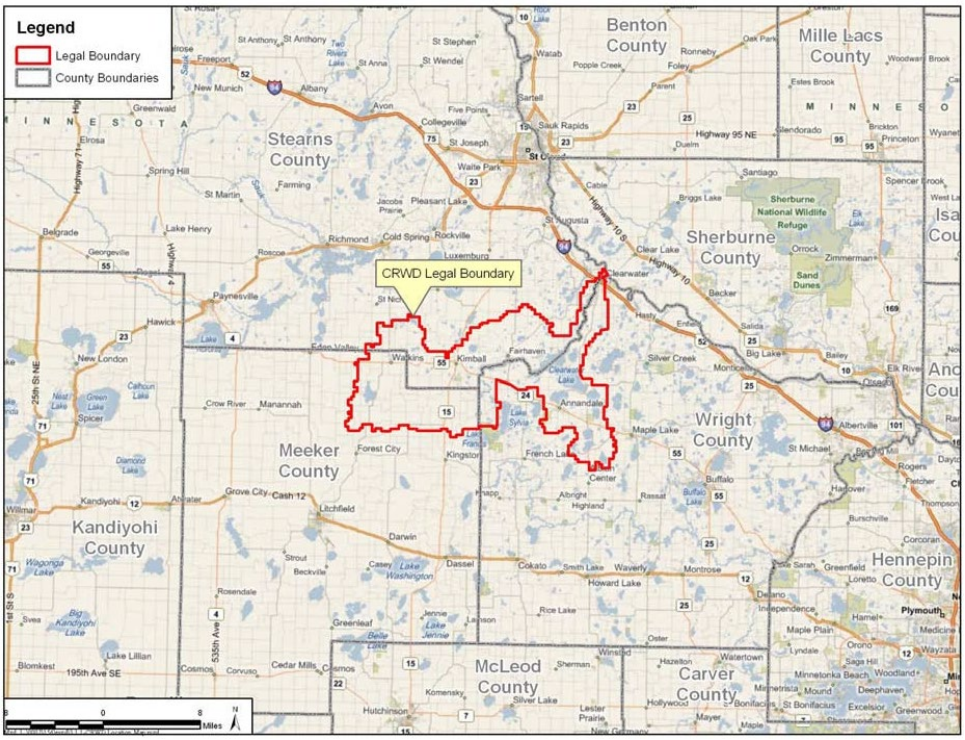
APPENDIX B: Land and Natural Resources Inventory and Assessment

Clearwater River

WATERSHED AREA



The watershed, with its 7,336 acres of lake basins, has its eastern boundary located about 40 miles northwest of the west edge of the Twin Cities Metropolitan Area.

Figure B- 1: CRWD Location

The District is situated generally in northeastern Meeker County, southeastern Stearns County and northern Wright County. The area of the District is 158.8 square miles; 46.1 square miles in Meeker County; 54.2 square miles are in Stearns County, and 58.5 square miles are in Wright County. The District extends 22½ miles from east to west and 16½ miles from north to south:

The watershed of the Sauk River is adjacent to the west end and to the west part of the north side of the Clearwater River Watershed District. Adjacent to the south side of the Clearwater River Watershed District is the watershed of the North Fork of the Crow River. For the most part, the watersheds of Fish Creek and Silver Creek, Plum Creek and Johnson Creek which are small drainage areas also border the Clearwater River Watershed.

The Clearwater River Watershed District encompasses the entire drainage area of the Clearwater River. It includes portions of Meeker, Stearns and Wright Counties in 'Central Minnesota and the municipalities of Watkins, Kimball and Annandale, as well as all or parts of various townships.

The lakes through which the Clearwater River flows are divided into an Upper and Lower Chain by the Fair Haven dam. The Upper Chain includes Lakes Betsy (Betty), Union, Scott, Louisa, Marie. The Lower Chain includes Lakes Caroline, Augusta, Clearwater, Grass and Wiegand. Other major lakes in the District are: Clear Lake, Willow Lake, School Section Lake, Pleasant lake, Cedar Lake, Bass Lake, Swartout Lake, Albion Lake and Otter Lake.

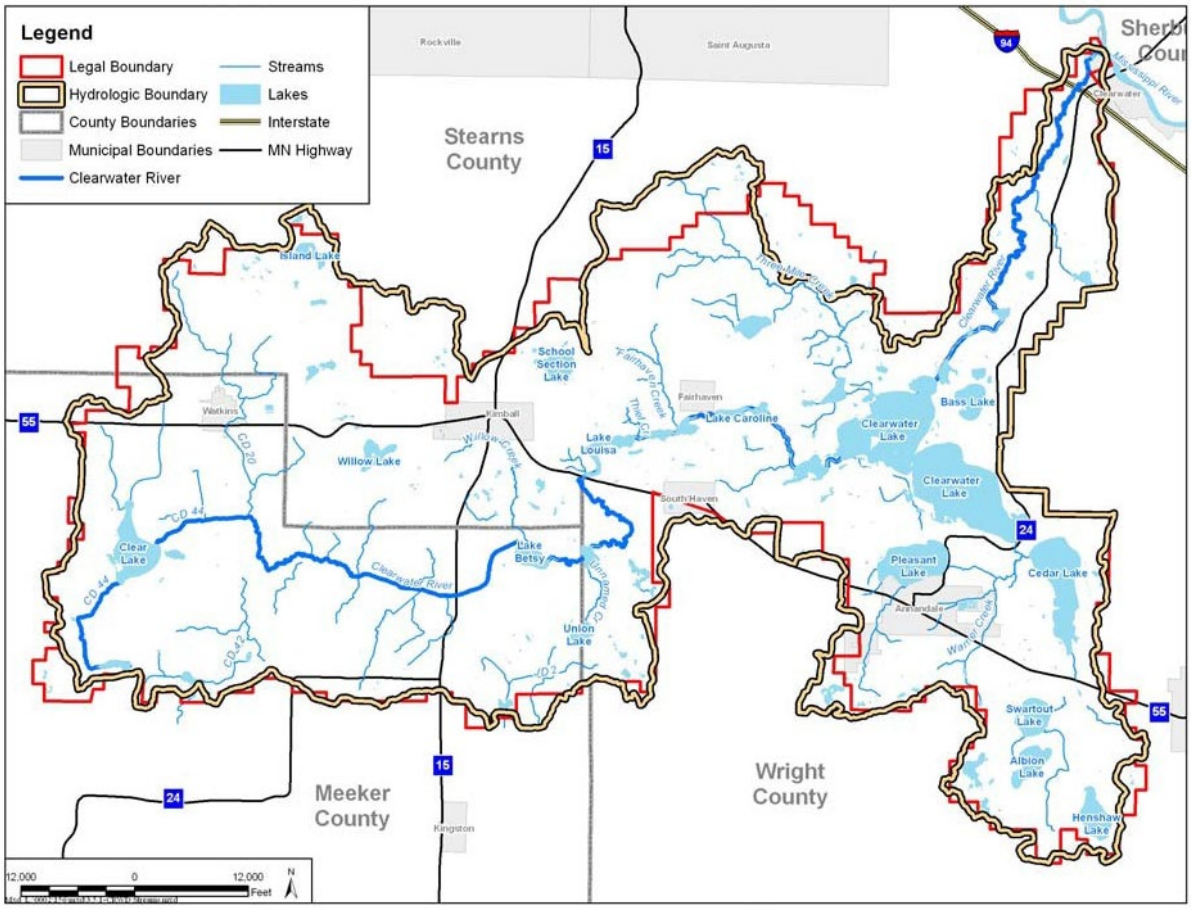


Figure B- 2: Water Resources within CRWD

The Clearwater River begins southwest of Watkins and is joined by a tributary known as County Ditch 20 as it meanders south, then east; where it enters the Upper Chain of Lakes. It flows north and under State Highway 55 between Kimball and South Haven, then the general direction of flow through the chain is east, then northeast out of Clearwater Lake, through Grass and Wiegand Lakes, and on into the mighty Mississippi at the City of Clearwater.

The following political units are located totally or in part within the boundary of the CRWD: Wright County, Stearns County, Meeker County, City of Watkins, City of Kimball, City of South Haven, City of Annandale, Lynden Township, Fair Haven Township, Forest Prairie Township, Maine Prairie Township, Kingston Township, Corinna Township, Luxemburg Township, and Southside Township.

TOPOGRAPHY

General

The topography of the area is dominated by rolling glacial moraines. The western portion of the watershed is composed of morainal hills, which have a high clay content. The area to the east is flatter and consists of sandier outwash and less clay. The elevation of the area ranges from 1220 feet in the west to 940 feet at the Mississippi River.

The headwaters of the Clearwater River is located in Meeker County at an elevation of about 1,160 feet, and the flow is generally northeasterly and easterly to Clearwater Lake, thence northeasterly to its outlet into the Mississippi River at the City of Clearwater. The river is about 39 miles long with a channel gradient of about 10 feet per mile between Clear Lake and Betsy (Betty) Lake in Meeker County. From Betsy (Betty) Lake to the outlet into the Mississippi River, the channel has a gradient of about 3.8 feet per mile.

Clearwater River

Land Use

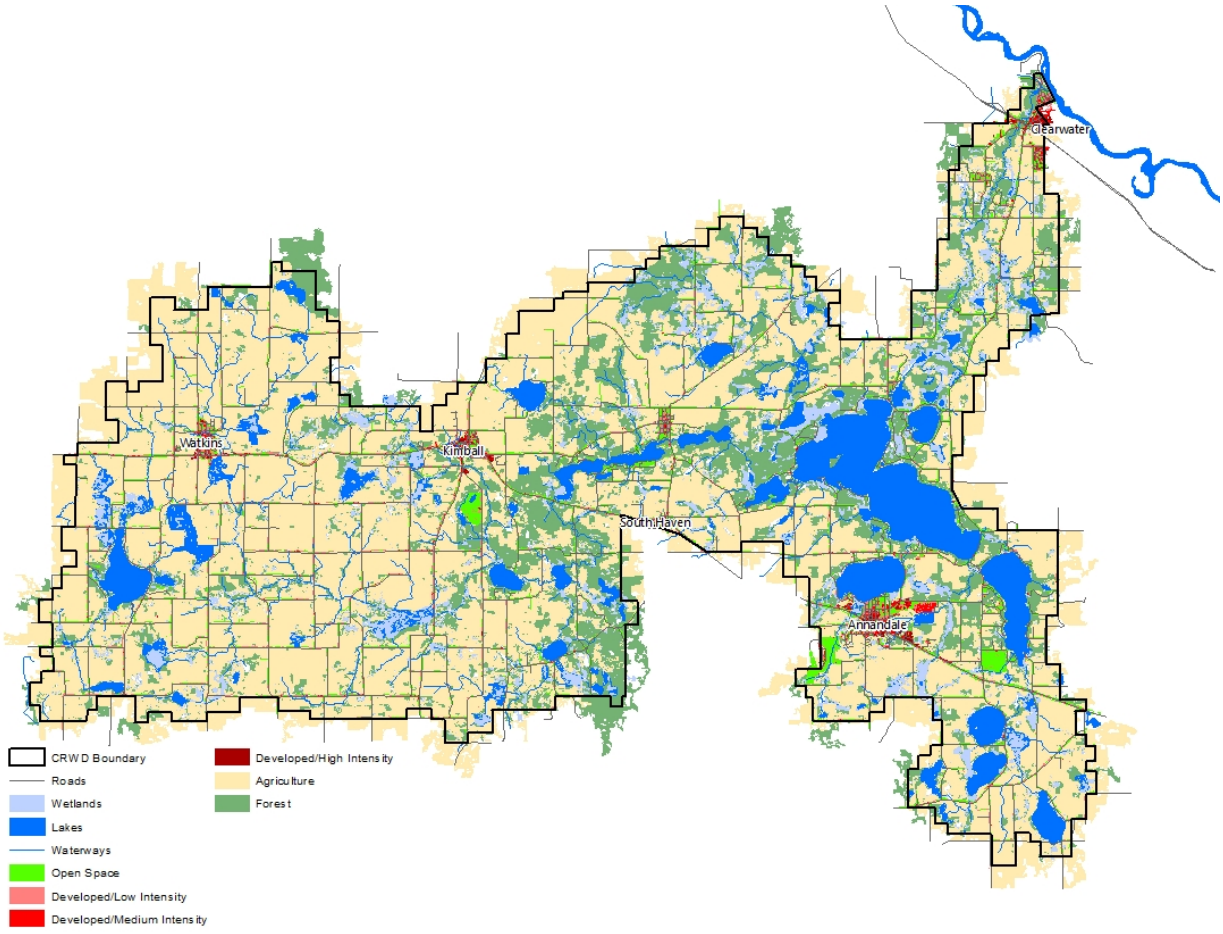
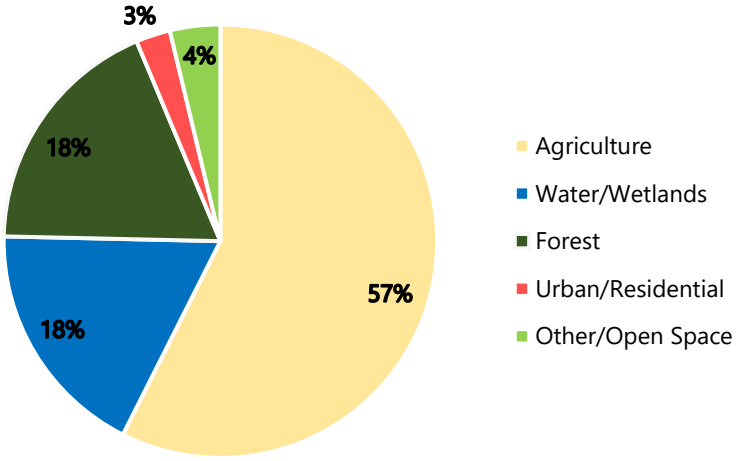


Figure B- 3: Land Use within CRWD

In very general demographic and geographic terms, the CRWD can be divided into two diverse areas. The eastern portion of the district is primarily urban/recreational in nature with scattered agricultural use. The western area is predominantly agricultural, consisting of cash crop, dairy, beef, hog, and turkey operations.



Streams and Local Drainage

There are five principal tributaries of the Clearwater River: County Ditch 20, which passes through Watkins; Willow Creek, which passes through Kimball; an unnamed creek from Union Lake; Three Mile Creek, which enters Clearwater Lake; and Warner Creek, which also flows into Clearwater Lake. Minor tributaries are Fairhaven Creek and an unnamed creek one mile West of Fairhaven, both trout streams, and Thiel Creek, which flows into Lake Marie. Much of the river has little or no flow at times. Baseflow in the river I sometimes low, leading to low or no flow in portions of the river. During the summer months and tributaries are often dry. This is a trend that has persisted through the monitoring period which began in the 1980s.

DITCHES WITHIN THE WATERSHED DISTRICT

Table B- 1: Ditches within CRWD

Name	County	Location	Comment
CD 20-Part	Meeker	Forest Prairie Twp	Outlet from Clear Lake to Clearwater River
CD 20-Part	Meeker	Forest Prairie Twp	Northeast part of twp
CD 42-	Meeker	Forest Prairie Twp	Southeast part of twp
CD 44-	Meeker	Forest Prairie Twp	Southwest part of twp
CD 46-	Meeker	Kingston Twp	In part of Clearwater River
JD 2-	Meeker-Wright	Kingston-Southside Twp	South of Union Lake Wright

Geology

The watershed lies in the Alexandria Moraine area. The great belt of lake-dotted moraine extending northward in an arc through west central Minnesota is the Alexandria moraine complex - a complex because it is 10-20 miles broad, is interrupted by extensive areas of outwash, and contains the drifts of two different ice lobes. The bulk of the moraine is believed to have been produced at the terminus of the Wadena lobe, concurrent with formation of the Wadena drumlin field. Later, during the last phase of the Wisconsin Ice Stage, the moraine was subsequently overridden from the west by the Des Moines lobe.

Soils

The CRWD consists of course- textured soils in the eastern area to fine-textured soils in the western area. Geologic events occurring during the Early Proterozoic eon (2,500-1,600 million years) and Early and Middle Archean eon (over 3,000 million years) established the bedrock structure of CRWD. Glacial events during the Late-Wisconsin period as early as 10,000 years ago have provided the surficial structure of CRWD. Combined, these geologic characteristics provide insight into the functional aspects of the land and allow informed land use decisions to be made based on the opportunities and constraints of the physical landscape. Geologic information is particularly important in determining groundwater susceptibility to contamination and for identifying potential mineral extract opportunities.

The underlying bedrock geology of the CRWD consists primarily of metamorphic rocks; granite and gneiss that are overlain by weathered metamorphic rocks and sedimentary rocks; and shale and siltstones. While some of these formations may be visible as outcrops at various points of the CRWD, the majority of bedrock is overlain by 50 to 150 feet of glacial outwash and till. Two

hundred fifty to 450 feet of glacial outwash and till overlie bedrock in the southwestern portion of the CRWD.

The oldest bedrock (2.6 billion years) consists of three gneiss groups (Undivided, Richmond and Sartell) and is located primarily in the northern and western portions of the CRWD. The next oldest bedrock formations (1.7 billion years) consist of the various granite formations concentrated in the CRWD.

The majority of bedrock in CRWD, now overlain by glacial till, was at one time exposed. This exposed bedrock underwent weathering, resulting in the mantling of weathered and kaolinite rock over bedrock. Another layer of sedimentary rock (siltstone and shale) was overlain as a result of rising seas.

Together, the above geologic events provide the foundation of the bedrock complex within CRWD. Glacial events further shaped the geology of the CRWD.

While many glacial events have occurred during the last 2 million years, the most visible surficial geologic formations took form in the last glaciation of the Late-Wisconsin period, approximately 20,000 years ago. The Wisconsin glaciation consisted of multiple advances and retreats of the Laurentide ice sheet. The Rainy Lobe; the Superior Lobe and the Des Moines Lobe of this ice sheet crossed paths frequently and carved the landscape of the CRWD that is visible today. These events deposited primarily glacial outwash in CRWD. These deposits provide the CRWD with an abundance of prime agricultural land and highly productive agricultural soils.

Associated with all glacial activity and providing many of the distinct features of the CRWD glacial landscape are the glacial moraine features. A series of these moraines were formed by the activity of the Rainy and Superior Lobes. the St. Croix Moraine, while heavily weathered, provides CRWD with its rolling hills and landforms.

Topography of CRWD was formed as a result of glacial events, the formation of the bedrock foundation and the process of erosion. The topography of CRWD ranges from rolling hills in the eastern part of CRWD to flat in the western part.

The Natural Resource Conservation Service (NRCS) has identified numerous soil classifications in CRWD. The majority of these soils provide a good foundation for agricultural activities, the principal land use in CRWD.

Lester-Hayden Association

The Lester-Hayden soil association occupies rolling slopes and depressions. The soils formed in calcareous, gray colored loam glacial till.

Lester soils make up about 35 percent of the association and these well drained soils occupy gently sloping and rolling slopes.

Hayden soils make up about 30 percent of the association. These well drained soils occupy the steeper slopes near lakes and streams. The Lester-Hayden association is well suited to intensive cropping. Dairying predominates, with some cash grain farming of corn and soybeans. The low wet bogs and meadows are used for pasture and wild hay. Wooded pastures and woodlots are common.

Estherville-Hubbard Association

The Estherville-Hubbard soil association consists of nearly level and undulating slopes on plains and terraces that border the Mississippi, Clearwater and Sauk Rivers. These dark colored soils formed in one to two feet of loamy material above calcareous grayish colored sands and gravels.

Estherville soils make up about 50 percent of this association. These somewhat excessively drained soils occupy nearly level and undulating slopes with occasional steep escarpments between terraces.

Hubbard soils occupy nearly level to very steep slopes and make up about 30 percent of the association.

The Estherville-Hubbard association is mainly used as cropland with many small areas of oak and aspen scattered about. Fairly dense strands of hardwoods are in areas near Clearwater Lake. Most farms are growing cash grain crops of corn and soybeans. These soils are well suited to irrigation and it overcomes the major obstacles to crop production. Wind erosion is a problem where the soil is cultivated. The soils in this association are a good source of sand and gravel and some commercial pits are operating here. These soils have few limitations for most urban and recreational purposes, but steep slopes may severely limit their use for these purposes.

Burnsville-Hayden Association

This is a distinctive soil association, which occupies very steep, rough, and irregular topography. The light-colored soils formed in calcareous, gray colored, moderately coarse textured drift and loam glacial till.

Burnsville soils occupy hilly to steep slopes that form about 60 percent of this association. They also occur as a complex with Hayden soils. Burnsville soils are somewhat excessively drained.

Hayden soils make up about 20 percent of this association. These well drained soils occupy sloping to steep irregular slopes.

The Burnsville-Hayden soil association is partly used as cropland with some in pasture or woodland. Cropland areas typically occur on the less sloping land. The slopes on the uplands severely limit the use of this association for most urban, recreational, and agricultural purposes.

Hayden-Peat-Marsh Association

The topography of this area is strongly rolling to hilly moraine with short, uneven slopes. The soils are light to moderately dark colored and medium textured. They formed under mixed northern hardwoods from limey, clay loam glacial till. Available moisture supplying capacity and

natural fertility are moderate. Most of the soils are well drained, but large areas of very poorly drained soils occur in the depressions.

Sheet erosion is severe throughout the area and gully erosion is also a serious problem.

Emmert-Flak Association

It occupies rugged hills, steep slopes, and marshy depressions. The light-colored soils formed from noncalcareous, brown colored glacial drift.

Emmert soils occur on rolling to very steep slopes and comprise about 50 percent of the association. They also occur as a complex with Flak soils and are excessively drained.

Flak soils make up about 40 percent of the association. These well drained soils occupy sloping and rolling slopes that are usually somewhat less sloping than the Emmert soils.

Dairy farming predominates and corn, oats, and alfalfa are the principal crops grown. Many lakes are present in the association to provide quality recreation. Several gravel pits are located in the area, which provide high quality aggregates. Limiting factors for urban development are mainly the problems associated with steep slopes.

Hayden-Lester-Peat Association

The Hayden-Lester-Peat soil association occupies strongly rolling and hilly areas. The mineral soils formed in calcareous, gray colored loam glacial till. The peaty soils formed in organic materials that vary in thickness and generally are underlain by loamy material.

Hayden soils make up about 60 percent of the association. These well drained soils occupy some of the roughest land and consist of strongly rolling and hilly slopes. Hayden soils are suited to intensive cropping. Features affecting non-farm uses include moderate shrink-swell potential and high susceptibility to frost action.

Lester soils make up about 20 percent of the association. These well drained soils occupy gently sloping and rolling slopes. Lester soils are well suited to intensive cropping. Features affecting non-farm uses include moderate shrink-swell potential and high susceptibility to frost action.

Peaty soils make up about 10 percent of the association. These very poorly drained organic soils occupy depressions. They vary in depth and generally are underlain by loamy material. Most of the peat is quite raw but in areas that have been drained and cultivated, the peat is more decomposed. Artificial drainage is needed before this soil can be used for growing crops. Large amounts of fertilizer are needed.

Summer frosts are a hazard. Features affecting non-farm uses include high water table, low bearing value, low shear strength and compacted permeability, high shrink-swell potential, and high susceptibility to frost action.

Minor soils occupy about 10 percent of this association and include the poorly drained Cordova and Webster soils and the very poorly drained Glencoe soils. Steep slopes and wet soils with lack of drainage outlets present problems for urban development.

Dairy farming predominates with corn, small grains, and hay grown on the less sloping soils. Wooded pastures and woodlots are common. The low wet bogs and meadows are used for pasture and wild hay.

Lester-LeSueur-Cordova Association

The Lester-LeSueur-Cordova soil association occupied nearly level and gently sloping areas. These dark colored soils formed in calcareous, gray colored loam glacial till. Lester soils make up about 40 percent of the association. These well drained soils occupy gently sloping slightly higher areas than the LeSueur soils. Lester soils are well suited to intensive cropping. Features affecting non-farm uses include moderate shrink-swell potential and high susceptibility to frost action.

LeSueur soils make up about 30 percent of the association. They are moderately well drained and occupy nearly level and gently sloping lower lying areas than the Lester soils. LeSueur soils are well suited to intensive cropping. Features affecting non-farm uses include a slightly wet condition during periods of high rainfall because of its topographic position. Other features include moderate shrink-swell potential and high susceptibility to frost action.

Cordova soils make up about 20 percent of the association, are poorly drained, and occupy nearly level areas. They are well suited for use as cropland if artificially drained or as pasture. The normally high seasonal water table and susceptibility to frost heave severely limits these soils when used for urban and recreational purposes.

Minor soils nearby are Glencoe and peaty soils and others that make up about 10 percent of the association.

The Lester-LeSueur-Cordova association is well suited and used for intensive cropping. Cash grain farming predominates with corn and soybeans being the main crops grown. Excess water can be removed with surface ditches and tile drains but for urban and recreational uses, wetness remains a limiting factor.

Climate

Temperature at St. Cloud has ranged from a low of 40 degrees below zero in 1951 to a high of 103 degrees above zero in 1947. The normal annual precipitation at St. Cloud is about 26.8 inches and has ranged from a minimum of 14.64 inches in 1910 to a maximum of 41.01 inches in 1897.

As part of the Clearwater Chain of Lakes Restoration Project, precipitation and river tributary flow monitoring were initiated in 1981. Precipitation is measured at four precipitation sampling stations distributed throughout the District as shown on Figure 1 and stream flow measurements are taken at 19 locations throughout the District. Area Weighted average precipitation during 1981-1999 was 29.47 inches. The watershed experienced a wet cycle from 1983 to 1986. Precipitation during 1987 was the lowest since 1981 and one of the driest since 1910. Two storms have been considered as a flash flood according to the State climatological office. These occurred on June 21, 1983, when a maximum of nearly 12 inches occurred in Watkins and on September 8 and 9, 1985 when 9.2 inches were recorded in western Sherburne County. The precipitation by year within the district is shown in the following table and for the period of 1981 through 2001.

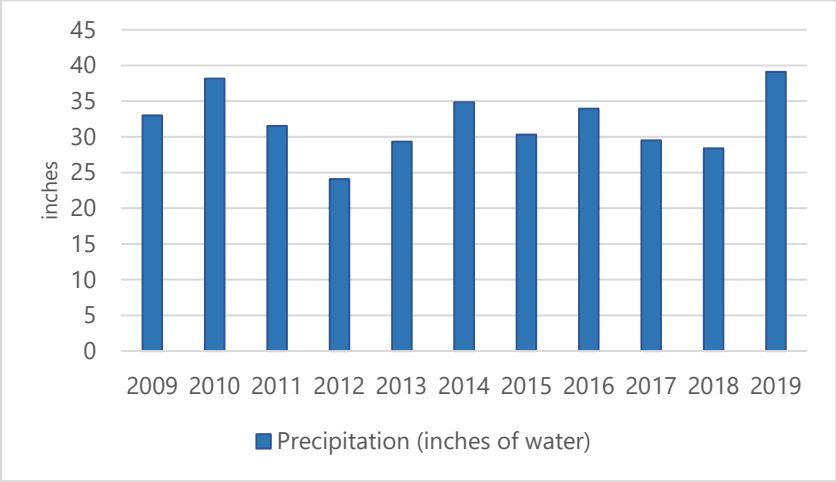


Figure B- 4: Precipitation in CRWD - Source: MN State Climatology Office

1981-2001 WHOLE-WATERSHED RUNOFF
Runoff (inches)
Measured at Clearwater Lake Outlet (CR10.5)

1981	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
3.6	6.8	17.4	13.3	12.0	16.0	1.4	0.7	3.0	11.7
1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
20.7	12.9	15.5	9.0	8.8	4.8	6.3	5.5	3.9	1.0
2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
2.8	7.6	6.5	2.8	8.6	4.2	3.0	2.0	7.6	13.1
2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Mean**		
18.8	5.6	3.9	8.1	6.0	7.6	5.1	7.7		

The impact of the high runoff has been an increase the District's pollutant loading to its waters and delay the response of remedial restoration measures.

Water Supply and Use

Clearwater River Flow Data

Mean normal stream flow at the inlet to Clearwater Lake is 31.07 cfs with normalized flows as high as 85.20 during the month of April.

The U.S. Army Corps of Engineers estimated the discharges for the Clearwater River and elevations for specified lakes were determined using the HEC-1 Flood Hydrograph Package. The entire watershed above the mouth at the Mississippi River was modeled. Thirteen (13) subbasins, nine (9) reservoir routings and eleven (11) combining units were used.

The model was calibrated to an U.S. Geological Survey peak discharge estimate based on a discharge measurement made on the Clearwater River upstream of the State Highway 55 bridge following the June 21, 1983 storm. This site is just upstream of the inlet to Lake Louisa. A discharge of 2,150 cfs was recorded on June 23, 1983 and is believed to be within 0.2 feet of the peak stage with an estimated peak discharge of 2,610 cfs. This storm produced an average rainfall over the watershed of 9.19 inches.

Selected Lake Elevations and Discharges from HEC-1 Model for the 10-, 50-, 100- and 500-Year Events for Various Locations in the Clearwater River Basin are shown below.

Table B- 2: Discharge Predictions within CRWD

Recurrence interval years	Lake Louisa Inlet Hwy 55 Discharge cfs ft	Fairhaven Dam Fairhaven, MN Elev Discharge		Lake Caroline Outlet Elev Discharge		Bridge Below Weigand Lake Elev Discharge		Mouth Clearwater River Discharge cfs ft
		NGVD ft	cfs ft	NGVD ft	cfs ft	NVGD ft	cfs ft	
10	610	1007.75	640	993.70	670	990.91	730	740
50	1010	1008.47	1070	995.15	1110	992.09	1280	1310
100	1190	1008.79	1280	995.70	1320	992.62	1530	1560
500	1790	1009.66	1940	997.20	2020	994.21	2290	2340

Source: U.S. Army Corps of Engineers, Interim Hydrology Report

Groundwater

The watershed lies almost entirely in glacial drift over igneous and metamorphic rocks. Thickness of the drift averages 200 feet. In glacial drift aquifers, specific capacity of small yield wells (less than 30 gpm) averages 1.31 gpm per foot of drawdown.

Locally, groundwater is discharged to small streams and lakes. Most recharge is from snowmelt in the spring, although excessive precipitation in the summer or fall can result in high water levels. Extreme high-water levels in 1972, 1984-1986, and 2019 are attributed to record-breaking rainfall.

Regional groundwater movement in the glacial drift is from upland areas toward the Mississippi and Clearwater rivers.

An area of surficial outwash lying a short distance to the north of Clearwater River and north of Kimball has soils of low water-holding capacity and is the primary area in the watershed with a probability of future irrigation development.

A situation developed in School Section Lake during 1984, which resulted from the heavy rainstorms beginning in the summer of 1983. School Section Lake is a land-locked lake in southeastern Stearns County, just north of Kimball. The lake level increased approximately seven feet, which caused 14 houses and cabins around the lake to be flooded. The lakeshore owners petitioned the Clearwater River Watershed District to install an outlet and the outlet was completed in September 1984. The Minnesota Department of Natural Resources completed a study in January 1986 evaluating the relationship of lake to the groundwater system. It is apparent that lake-groundwater interaction is a major factor in developing lake water budgets.

Lakes

LAKES IN THE WATERSHED DISTRICT

Table B- 3: Lakes within CRWD

County	Name	Acres
Meeker	Betsy	153.66
	Clear	529.07
	Little Mud	37.37
	Rohrbeck	62.67
	Round	33.65
Stearns	Carter	31.25
	Island	80.74
	Laura	139.86
	Lynden	15.74
	Marie	145.81
	Otter	91.75
	School Section	201.02
	Swamp	22.68
	Willow	155.51
Wright	Albion	249.04
	Caroline	135.16
	Cedar	790.31
	Cornell	28.55
	Grass	71.47
	Helmbrecht Pond	8.45
	Henshaw	272.38
	Little John	47.63
	Mead	15.27
	Nixon	59.57
	Pleasant	597.00
	Swartout	292.87
	Unnamed (Goble)	12.07
	Unnamed (Hidden)	7.90
Wright & Meeker	Scott	82.70
	Union	92.94
Wright & Stearns	Augusta	187.12
	Bass	222.47
	Clearwater East	1660.12
	Clearwater West	1498.15
	Edward	100.34
	Louisa	189.43
	Wiegand	42.45
Total Lake Acres		**8364.17**

Recreational Water Use

All lakes in the watershed are used for recreational purposes, and there is intensive use of certain of the recreational lakes.

Waste Treatment Systems

Municipal

The cities of Kimball, Watkins and Annandale have all upgraded their waste treatment plants to include spray irrigation of the treated effluent.

The city of Watkins treatment system is located on the north edge of the District, and in fact; the spray sites are located outside the District. Thus, there is no discharge from this system to the Clearwater River.

The Kimball waste treatment system is located east of Kimball and, again, there is no point discharge from this system. However, runoff from this system would eventually reach Lake Louisa, which is part of the Clearwater River.

The Annandale waste treatment system includes spray irrigation sites east of Annandale near Warner Creek. Again, there are no point discharges from this system. However, runoff from the spray fields could enter Clearwater Lake via the Warner Creek.

The cities of South Haven and Fairhaven do not have public sewage disposal systems and the residents utilize private sewage systems.

Industrial

The only industry in the District that discharged to a stream was the Mid-America Dairyman's Association facility located in Watkins. This facility was engaged in the manufacture of cheese products. This facility closed in mid-1986.

The Upper Watkins Wetland Isolation Project (Number 81-7) was completed in 1985 to capture and retain large quantities of nutrients, which had previously been discharged to this wetland. The facility had attempted several treatment systems to meet the requirements of their NPDES permit before closing.

Various institutional contributors are connected to the municipal sewage treatments systems in multiple cities, including the public schools in each of the cities, laundromats, senior citizen homes, trailer parks and other such contributors.

Economy

Population

Population census from 1980 to 2010, along with the population estimates from 2019 of the townships and cities partially or wholly within the District are given in the following table:

Table B- 4: Population within CRWD

Township or City	County	1980 Census	2000 Census	2010 Census	2019 (estimate)	Change (2010-2019)	% Change (2010-2019)
Albion Twp	Wright	1,127	1,146	1,255	1,326	71	5%
Annandale City	Wright	1,568	2,684	3,228	3,517	289	8%
Clearwater City	Wright	379	858	1,735	1,818	83	5%
Clearwater Twp	Wright	1,153	1,368	1,306	1,390	84	6%
Corinna Twp	Wright	1,831	2,457	2,322	2,466	144	6%
Fairhaven Twp	Stearns	1,102	1,458	1,507	1,612	105	7%
Forest City Twp	Meeker	661	666	653	656	3	0%
Forest Prairie Twp	Meeker	920	869	972	980	8	1%
French Lake Twp	Wright	936	1,130	1,172	1,249	77	6%
Kimball City	Stearns	651	635	762	798	36	5%
Kingston Twp	Meeker	971	1,266	1,256	1,262	6	0%
Luxemburg Twp	Stearns	912	689	637	688	51	7%
Lynden Twp	Stearns	1,389	1,919	1,938	2,076	138	7%
Maine Prairie Twp	Stearns	1,518	1,686	1,887	2,009	122	6%
South Haven City	Wright	205	204	187	193	6	3%
Southside Twp	Wright	1,475	1,576	1,521	1,618	97	6%
Watkins City	Meeker	757	880	962	953	(9)	-1%
TOTALS		**17,555**	**21,491**	**23,300**	**24,611**	**1,311**	**5%**

In several instances, only a small part of a township in the above list is within the area. The cities of Annandale, Kimball and South Haven are entirely within the area, but the city of Clearwater is only partly within the area. Since in most instances the census units tabulated in the population list are partly outside of the area, the population of the area is less than the total given above. The total estimated population (2019) of the District is 17,228.

Population is greater per square mile in the eastern area with an expected 8-10% increase in growth over the next 10-year period. The western area population will likely remain somewhat constant or decrease slightly.

Agriculture

The small family farm predominates in the District, with no major trend visible towards corporate operation. In Wright County there is a steady shift towards cash grain production and away from dairy farming. As the metropolitan area expands northwestward, there is a growing trend toward working in the city and managing the farm as a secondary source of income. In the Stearns and Meeker portions of the District, dairying predominates.

Cash grain crops are corn, soybeans, oats, and wheat, with more and more wheat replacing oats in areas of intensive grain production as world market demand increases for this commodity.

Irrigation is emerging as an agricultural practice north of the Clearwater River, near Kimball. A large area of soils of low water-holding capacity in the vicinity of Kimball indicates the potential for future irrigation development.

Industry

Industrial development in the District is agriculturally oriented with some light manufacturing.

Transportation

Interstate Highway No. 94 and State Highway No. 55 pass or enter the District generally from east to west providing quick, ready access to the lakes from the Twin Cities. State Highways Nos. 15 and 24 pass through the District generally from north to south. The Soo Line Railroad provides rail transportation from Twin City terminals to points west. Facilities are provided for bus and private aircraft transportation within and near the District.

Property Valuation

The 2020 total taxable market value of the District is $16,168,181. Lakeshore property contributes significantly to the tax base of the communities.

Recreation and Tourism

There is one resort within the District. There are four seasonal camps, which are resort type facilities to aid those with mental and physical disabilities, and a scout camp. They are Camp Courage on Cedar Lake; Camp Friendship on Clearwater Lake; Camp Challenge on Swart-Watts Lake; and Camp Heritage on Lake Caroline. The total recreational tourism of the District is difficult to assess; however, it should be fair to state that considering the permanent and seasonal residents, their families and friends, the tourists availing themselves of the resort, the individuals utilizing the four camps, the state and privately owned public accesses, the individuals availing themselves of the facilities of the District would measure in the tens of thousands annually.