

**Straight River Lobe  
Local Government Priorities**

LGU	Steele County Water Plan 2007-2016	Steele County SWCD Comprehensive Plan 2010-2014	Owatonna SWPPP May 2008 (6 categories all MS4 cities must have)	Waseca County Water Plan 2009-2018
<b>Priorities</b>	Soil, Fertilizers, and Pesticides from Agricultural Fields Flowing into Surface Waters	Water Quality: Sedimentation and Fecal Coliform (feedlots and non conforming septic systems)	Public Education and Outreach On Stormwater Impacts	Reducing Priority Pollutants: Protect and improve the quality of water resources throughout the County. (Removing waterbodies from impaired waters list, feedlots, septic systems, erosion and runoff, stormwater management)
	Sewage from Rural Septic Systems into Surface Waters	Erosion by water	Public Participation/ Involvement	Drainage/Wetlands Management: Maintain and enhance the County's drainage system and wetland resources
	Urban Stormwater Runoff	Drainage Problems: Wet cropland and lack of drainage outlets	Illicit Discharge Elimination	Natural Corridors and Shoreland Management: Protect and enhance the County's shoreland and natural corridors.
	Animal Feedlot Manure into Surface Waters	Erosion by wind	Construction Site Stormwater Runoff Control	Public Education: Increase awareness on key water planning issues.
	Clandestine Waste Dumps affecting Drinking Water	Public Awareness	Post-Construction Stormwater Management in New Development and Redevelopment	
	Participation in the Wetland Preservation Areas Program	Loss of Wetlands	Pollution Control and Good Housekeeping for Municipal Operations	
		Flooding		
		Other: Loss of prime farmland and wildlife habitat and natural areas		

Straight River Lobe

**Waterbody/Watershed: Straight River**

<b>Study</b>	Straight River Fecal Coliform TMDL, July 2002	Macroinvertebrate Assessment at Faribault, St. Olaf, 1994-96	Macroinvertebrate Assessment at Clinton Falls, St. Olaf, 1994-96	Macroinvertebrate Assessment at County Rd 31, St. Olaf, 1994-96	Stream Management Plan, DNR, April 1995
<b>Reason for Study / Goals</b>	Straight River impaired for swimming due to elevated fecal coliform levels				
<b>Issues/ Problems</b>	Nonpoint sources account for most bacteria loading. Livestock, particularly cattle, cows, and hogs produce most of the fecal coliform bacteria present in the watershed. Some of this manure reaches the river and its tributaries, mostly from manured fields, problem feedlots, and overgrazed pastures. The relatively small mass of bacteria created by humans utilizing insufficient sewage management systems may have a significant impact, as a greater percentage of it is probably being delivered to the water. Urban wildlife, dogs and cats, may be contributing considerable loads of bacteria via urban stormsewers.	The flow at this site has increased significantly since the Clinton Falls site because Crane, Mud, Medford, and Rush Creeks all empty into the Straight between here and Clinton Falls. From this site upstream to Medford the primary activity is along the river is sand and gravel mining. It is not known what impact this has on water quality.	Nutrient loading appears to be somewhat of a problem north of Owatonna compared to other sites sampled.	QHEI score is 59, lowest of all main stem sites in the study. Upper reaches very flashy. Following storm events water levels rose rapidly and water had a brown color indicating a heavy sediment load.	Wetland drainage and dams (Morehouse Park, Dartt's Park, and Oak Glen Lake, Crane Creek) restrict northern pike spawning habitat, and limit the potential of the species.
<b>Good Stuff</b>	Wildlife, such as geese and deer, were found to have very minimal impact potential, as they exist in limited populations in the watershed.		QHEI score is 77.5, highest of all main stem sites and second highest score of all sites monitored. Flow comparable to Upper Cannon at Morrystown.	Flow is about the same as Little Cannon site.	The dam on Maple Creek in Dartt's Park, Owatonna, is scheduled for removal in 1995.
<b>Goals Set / Actions Suggested</b>	In general the implementation approach is one of enhancing or accelerating existing programs that directly or indirectly address fecal coliform. Particular focus will be on feedlots, land application of manure, and urban stormwater management.	In general, high nutrient load and sediment load appear to be areas of concern for the mainstem of the Straight. Any interventions that can be put in place to reduce the nutrient and sediment load should be investigated and employed.		Erosion control measures need to be taken in the headwaters of the Straight River in order to decrease the sediment load.	Protect and restore wetlands (area in T105N, R19W, S17, inventory additional sites along Maple and Turtle Creeks). Better evaluate northern pike relative abundance and size structure. Determine if smallmouth bass become established as a result of the 1991 stocking.

Straight River Lobe  
**Waterbody/Watershed: Straight River**

<b>Study</b>	Rice Co Water Quality Eval 1972-1985	Straight River Survey Headwaters to Faribault , DNR, Summer 1983	Water Quality Evaluation Rice County 1972	A Study of the State of Pollution of the Streams of the Cannon Valley Watershed - 1972, Cannon Valley Development Assoc	Investigation of the Pollution of the Straight and Cannon Rivers, MN Board of Health & Commissioner of Game and Fish 1928-30
<b>Reason for Study / Goals</b>	Assess change from 1972	For inventory and fish management purposes.	Assess conditions	Starting point in a campaign to stem the pollution of the rivers and eventually develop recreational potentials.	Samples above and below each municipality to determine causes of pollution and effects on rivers.
<b>Issues/ Problems</b>	Showed little improvement since 1972. Fecal coliform pollution abounds, from municipal plants, feedlots, and septic systems.	Ag and municipal pollution along with poor land use adversely affect this stream. Draining and tiling of adjacent wetlands and a dam to maintain water levels in Oak Glen Lake have cut off access to spawning areas for northern pike.	The Straight River has quite high nutrient levels and bacteria from when it enters Rice County until it joins the Cannon River at Faribault.	River system is an "abused treasure". Pollution from industrial sources needs kept in check. Major problem from feedlots and farming practice. Street runoff not measured - can be significant.	Owatonna has considerable effect on quality of the water. River sufficiently polluted to be menace to health and to fish live below Owatonna. Bathing in any section of river Owatonna to Welch is hazardous.
<b>Good Stuff</b>		The stream corridor consists of 45% wild-wooded, 34% grass/forb, 11% pasture, 6% municipal, 4% wooded pasture, and a trace amount of row crops and private campgrounds.		Staight River Owatonna to Faribault exciting canoeing	
<b>Goals Set / Actions Suggested</b>	Improving sewage treatment will address the worst problems. Water planning, if arranged around the Straight watershed, would allow promotion of upland treatments.	Protect what little access northern pike have to remaining spawning areas. Acquisition of wetland area in T105N, R19W, S17 is recommended for enhancement as a norther pike spawning area.	Municipal treatment facilities need attention		Control sewage and industrial wastes

Straight River Lobe  
**Waterbody/Watershed: Beaver Lake**

<b>Study</b>	MPCA Lake Assessment 1993
<b>Reason for Study / Goals</b>	
<b>Issues/ Problems</b>	
<b>Good Stuff</b>	<p>Water quality is better than most lakes in the Western Corn Belt Plains ecoregion. Primary reason for good water quality is lake's small watershed. Watershed area to lake ratio is 2:1. 10:1, 15:1 or greater is common in Western Corn Belt Plains. Larger watersheds generally deliver more water, soil, organic matter, and nutrients to lakes.</p>
<b>Goals Set / Actions Suggested</b>	<p>Lower phosphorus levels from 47 ug/L to 40 ug/L. Because the watershed is small, the activities of a relatively few people (the lakeshore community and a few larger land owners) can have a strong positive influence on water quality. The lakeshore community should not underestimate their potential to protect or improve water quality with upgraded wastewater treatment and better lawn and garden practices.</p>

Straight River Lobe  
Waterbody/Watershed: Clear Lake

<b>Study</b>	Clear Lake Flyover, A.W. Research Labs, February 2006	Comprehensive Lake Study, Bolton and Menk, November 2003	Clear Lake Aluminum Sulfate Treatment Final Report, 1993	Clear Lake Restoration Project, City of Waseca, 1982
<b>Reason for Study / Goals</b>		To accumulate the multiple studies performed over the years and to categorize the benefits of those studies. To analyze the hydrological cycle relative to nutrient loading into Clear Lake and formulate possible solutions.		Restoration project involved diverting stormwater currently flowing into Clear Lake, to a peat marsh on the northwest side of the lake. The stormwater is filtered through the peat and then pumped into Clear Lake. This report assesses the success of the marsh in removing nutrients and assess the effect of the nutrient removal on the water quality of Clear Lake.
<b>Issues/ Problems</b>	Report highlights sites with possible setback violations, non-point source runoff locations, point sources (culverts and streams entering the lake), and areas in need of vegetative buffers.	Gaiter Lake and Memorial Park Inlets have the highest phosphorus loads to Clear Lake.	The increased growth of macrophytes (after the treatment), especially curly-leaved pondwee, appears to be one negative effect. The increased macrophyte growth does allow for more fish habitat and waterfowl feeding areas in the littoral zone of the lake.	The marsh filtration was considerably less efficient in terms of water percolation and nutrient removal than originally anticipated. A preliminary study by National Biocentric, Inc. (1978) indicated that phosphorus removal rates of greater than 80% could be expected. The phosphorus removal rate was 52%.
<b>Good Stuff</b>	No major septic issues were detected.		The alum treatment was successful in reducing internal phosphorus loading so that reductions of external loading were no longer masked. The treatment marsh has reduced the external load of phosphorus so that, in combination with the alum treatment, water quality improvements have made Clear Lake recreationally usable for a large part of the summer.	There were significantly lower values of phosphorus, nitrate, and nitrite nitrogen, and cholorphyll "a" in 1981 compared to the mean of the pre-operational data, which indicates improving water quality of Clear Lake. No blue-green algal blooms occurred on Clear Lake until August 20, 1981, approximately three weeks later than the formation of algae blooms in 1979 and 1980.
<b>Goals Set / Actions Suggested</b>	Lakeshore must be restored with native plants and trees. Roads must direct storm water to filtering buffer areas and rain gardens before entering the lake. Boat landings should use pervious materials, catch bassins, and terraces. Long term city plans should include draining all city streets into stormwater systems that "Do Not" enter the lakes. City needs to continue aggressive street cleaning program. All city property owners need to reduce amount of stormwater that runs of their property.	<u>Goal 1:</u> Re-establish a buffering shoreline. <u>Goal 2:</u> Reduce stormwater pollution entering the lake from the entire watershed. <u>Goal 3:</u> Reduce the phosphorus recycling in the lake. <u>Goal 4:</u> Establish a coordinated effort to manage lake quality and enforce standards. <u>Goal 5:</u> Engage the general public in all phases of lake management.	External phosphorus loads from Gaiter Marsh and Memorial Marsh are still quite high and will need to be controlled if the alum treatment's effectiveness is not to be shortened.	

Straight River Lobe  
**Waterbody/Watershed: Crane Creek**

<b>Study</b>	Macroinvertebrate Assessment West of Owatonna, 1994-96, St. Olaf
<b>Reason for Study / Goals</b>	
<b>Issues/ Problems</b>	The QHEI score for the site is 54 which is the 3rd lowest behind Turtle Creek and the Little Cannon at Sogn. The instream cover and channel morphology metrics scored very low causing the overall low score.
<b>Good Stuff</b>	Number of different taxa found at this site was quite surprising considering Crane Creek appears to be just a drainage ditch. Everything from leeches to stoneflies were found at the site. The ICI and Diversity indices ranked slight in impact while Richness and Equitability ranked moderate. Nitrogen concentrations in surface water were surprisingly low. Given the drainage ditch nature of the stream, the chemistry and macroinvertebrate community is surprisingly good.
<b>Goals Set / Actions Suggested</b>	In the future, a second site nearer to the mouth should be considered when monitoring this stream.

Straight River Lobe  
**Waterbody/Watershed: Falls Creek**

<b>Study</b>	Stream Management Plan, DNR, April 1993
<b>Reason for Study / Goals</b>	
<b>Issues/ Problems</b>	Reconstruction of State Highway 60 in 1990 created a fish barrier on the upstream end of the culvert inlets. Modifications will be applied in 1993 to restore unrestricted fish movement. Agricultural practices in the upper portion of the stream have produced an abundance of fine substrates and a general lack of habitat. These fine substrates limit spawning habitat and invertebrate production above mile 5.0. Mile 6.2 to the source has been previously channelized and is bordered predominantly by row crops. The poor land practices associated with the hog farm at mile 3.0 contribute excessive nutrients to the stream.
<b>Good Stuff</b>	The stream may serve as an important source of forage to the Straight River and may also provide seasonal spawning and nursery habitat for gamefish.
<b>Goals Set / Actions Suggested</b>	Evaluate the stream's potential to provide rearing-nursery habitat for gamefish species of the Straight River. Investigate poor land use by hog farm at mile 3 and possibly meet with landowner and MPCA personnel to discuss alternatives. Compare species composition from future assessments to determine if alteration of the fish barrier allowed better distribution of species throughout the stream corridor.

Straight River Lobe  
**Waterbody/Watershed: Loon Lake**

<b>Study</b>	Flyover, A.W. Research Labs, February 2006	Clear Lake Aluminum Sulfate Treatment Final Report, 1993
<b>Reason for Study / Goals</b>		
<b>Issues/ Problems</b>	Report highlights sites with possible setback violations, non-point source runoff locations, point sources, and areas in need of vegetative buffers.	Water quality in Loon Lake could be improved. Operation of the newly constructed storm water treatment system should lead to water quality improvements in Loon Lake. Data will need to be collected on this system as it becomes operational.
<b>Good Stuff</b>	No major septic issues were detected.	
<b>Goals Set / Actions Suggested</b>	Roads must direct storm water to filtering buffer areas and rain gardens before entering the lake. Lakeshore must be restored with native plants and trees. Boat landings should use pervious materials, catch bassins, and terraces.	

Straight River Lobe  
**Waterbody/Watershed: Maple Creek**

<b>Study</b>	Macroinvertebrate Assessment at County Rd 35, St. Olaf, 1994-96
<b>Reason for Study / Goals</b>	
<b>Issues/ Problems</b>	The flow is less than that of any other tributary in the Cannon River Basin. During dry weather this stream has very little flow and may even stop altogether during an extended drought. The total number of insects collected at this site was not very great, however there were 10 different species of mayflies, 6 species of caddisflies, and 17 species of midges collected at the site.
<b>Good Stuff</b>	The QHEI score is 71, which ranks it highest among the Straight River tributaries and about equal to Pine, Heath, and Wolf Creeks. The ICI and Diversity Indices ranked in the slight impact range while Richness was in the moderate range and the Equitability Index was in the non impacted range.
<b>Goals Set / Actions Suggested</b>	This quiet little stream is going to receive more pressure from human impact as the residential area northeast of Owatonna continues to expand in the years to come. Efforts should be taken to ensure that development does not impact the quality of the riparian zone and water of this quiet little stream. Storm and melt water flowing into newly installed storm sewers could adversely affect the nature of this watershed.

Straight River Lobe  
**Waterbody/Watershed: Turtle Creek**

<b>Study</b>	Macroinvertebrate Assessment at Steele County Rd 60, St. Olaf, 1994-96
<b>Reason for Study / Goals</b>	
<b>Issues/ Problems</b>	The QHEI score at this site was 50 which tied for the lowest score with the Little Cannon at Sogn. Riparian zone quality, bank erosion, and instream cover all scored very low. This stream is extremely "flashy". Many of the fields have drain tiles which empty into Turtle Creek causing the water level to fluctuate rapidly. TSS and TVS levels were almost as high as they were on the Little Cannon indicating this stream has a high bed load. When water levels are high the water is very cloudy and has a high turbidity.
<b>Good Stuff</b>	The ICI and Diversity levels were in the slight impact range while Richness was in the moderate range and the Equitability Index was in the non impacted range.
<b>Goals Set / Actions Suggested</b>	