

**Lower Cannon Lobe
Local Government Priorities**

LGU	North Cannon WMO	Dakota County SWCD Strategic Plan 2011-2015	Goodhue County Water Plan Urban/Residential WQ 2010-2020	Goodhue County Water Plan Rural/Agricultural WQ 2010-2020	NRCS Rapid Watershed Assessment	Goodhue County - Minnesota County Biological Survey - 1990-92 (DNR)	Red Wing SWPPP (6 categories all MS4s must have)	Dakota County Parks Natural Resources Management Plan
	Natural Area Protection	Soil Loss	Erosion and Sediment Control	Erosion and Sediment Control	Soil Erosion and depositions	Lower Cannon River - Red Wing Backwaters - Vermillion Slough significant for rare animals. Minnesota Dwarf Trout Lily in Little Cannon River and Cannon River few sites	Public Education and Outreach	Surface Water: Prevent stormwater from running directly from parking lots and other impervious surface areas into lakes, rivers, and creeks.
	Wetlands	Stormwater Management	Septic System Compliance	Feedlot Water Quality Improvement	Animal waste management		Public Participation/Involvement	Fish: Maintain a healthy stream environment to support naturally producing brook trout at Miesville Ravine Park Reserve.
	Groundwater	Native Plant Communities	Groundwater Protection	Nutrient Management	Urban stormwater management		Illicit Discharge Detection and Elimination	Fish: Work with DNR to control alien fish species (especially carp) at Lake Bylesby
Priorities	Soil Erosion		Impaired Waters	Impaired Waters	Sediment and erosion control		Post-Construction Stormwater Management in New Development and ReDevelopment	Fish: With state permits, improve trout habitat on Trout Brook to a quality higher than existing levels.
	Surface Water and In-Stream Habitat Quality				Groundwater protection		Construction Site Stormwater Runoff Control	
	Surface Water Quantity				Nutrient Management		Pollution Prevention/Good Housekeeping	
	Development				Wetland management		For Cannon River: Develop ordinances which require sufficient BMPs designed to avoid new or expanded discharge.	
	Information and Education							

Lower Cannon Lobe
Waterbody/Watershed: Cannon River

Study	Report of the Investigation of the Pollution of the Straight and Cannon Rivers by the Minnesota State Board of Health & Commissioner of Game and Fish 1928-30	A Study of the State of Pollution of the Streams of the Cannon Valley Watershed - 1972, Cannon Valley Development Association	Cannon River Stream Survey, DNR Fisheries, 1977	Cannon River Resource Analysis 1979, DNR	A Management Proposal for the Cannon River, Draft April 1979	River Assessment, DNR, 1980	River Assessment, DNR, 1982	River Assessment, DNR, 1985	The Cannon River: Recreational Use of a Warmwater Stream. Dec 1987, DNR
Reason for Study / Goals	Samples above and below each municipality to determine causes of pollution and effects on rivers.	Study would be a starting point in a campaign to stem the pollution of the rivers and eventually develop recreational potentials.	Inventory and Fish management, preparation for planned drawdown on Byllesby	Determine if Cannon should be included as Wild & Scenic River	Required for Wild & Scenic designation	Fish assessment	Fish assessment	Fish assessment	document current recreation, economic value
Issues/ Problems	Owatonna, Faribault, Northfield, Cannon Falls have considerable effect on quality of the water. River sufficiently polluted to be menace to health and to fish live below Owatonna, Faribault, Northfield. Nuisances common sewer outlets. Bathing any section of river Owatonna to Welch is hazardous.	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.	Discharge MN Malting Co. Possible septic discharge Welch. Stream bank erosion severe on bends. Sheet erosion flat ag areas. Welch Dam fish barrier. Belle Creek no game fish value. Turbidity increase downstream Cannon Falls	WQ good to fair. Bacteria exceed standard. Dundas septs not work well. Fbo and Nfld WWTP not meet effluent discharges. Cfalls plant needs improve	NA	Winter 1977 drawdown Byllesby increased ammonia, SS, and decreased DO. Extensive fish kill. Sensitive populations (smallmouth bass) severely reduced.	Same 1977	Same 1977	Cannon River watershed affected by wetland drainage, headwater stream channelization, conversion of marginal/erodible land to crop and pasture.
Good Stuff	None	Juniper bluffs Cfalls to Red Wing, Clear water see bottom. Staight River Owatonna to Fbo exciting canoeing, Wilderness Park.	Trout Brook potential trout stream management. Smallmouth bass yearlings abundant.	Cannon River exhibits outstanding qualities - scenic, recreational, historical, scientific and natural	Ensure consistent minimum zoning standards. Prevent problems heavy recreational use. Easements protect land.	NA	Increase northern hog suckers. Some reports 7-8 inch bass.	Smallmouth bass and channel catfish were recovered during electrofishing - first time since 1977.	Tailwater fisheries most angling. Intensively fished resource, significant canoeing and tubing pressure. Anglers typically younger than 16. Tourism significant factor
Goals Set / Actions Suggested	Control sewage and industrial wastes		Any regulations or practices that will reduce siltation from the upper watershed should be encouraged.	meets criteri for W&Scenic river	Land use management, land acquisition for willing sellers and recreation management (apply only in Wild & Scenic Land Use district)	NA	NA	NA	Cannon River corridor primarily managed for recreation. RIM and CRP in riparian corridors. Maintain drainage ditches.

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Waterbody/Watershed: Cannon River

Freshwater Mussels of the Cannon River Drainage in Southeastern Minnesota, Mike Davis (DNR), 1988	A Review of Water Quality and Aquatic Biology in the Cannon River Watershed - 1989, TNC	Lower Cannon Macroinvertebrate Assessment, Near Red Wing, St. Olaf, 1994-96	Habitat Rehabilitation and Enhancement Management Plan, Bonestroo, DRAFT 2004,	Cannon River Management Plan, Wild & Scenic, MN Administrative Rules (posted 6/2008)	Lower Cannon River (mouth to Byllesby Dam) Stream Management Plan, DNR, 2007	Lower Miss Basin Fecal Coliform TMDL Implementation Plan, 2007	Lower Cannon River Stream Assessment, DNR, 2009	Lower Cannon River Turbidity TMDL, 2007, MPCA	Lower Cannon River Turbidity TMDL Implementation Plan, 2009, MPCA
Baseline data freshwater mussels in Cannon watershed. Develop sampling methods.	Aid TNC in ecological evaluation of the Cannon River Watershed.	Assessment macroinvertebrates, near Hwy 61 Red Wing	For Red Wing Wildlife League to manage lands in floodplain area	Establishes rules regarding land use, classifications, recreation, structures, etc.	Fish assessment	Action plan reduce fecal coliform bacteria in Lower Miss Basin	Fish populations assessment	Turbidity TMDL for two reaches of Cannon River in Lower Cannon Watershed- Pine Creek to Belle Creek and Rice Lake/Vermillion Bottoms area.	Develop list of actions to meet TMDL load reductions. Guide implementation for next 10 years.
Long history human exploitation of mussels. Distribution varied by human induced boundaries - dams. Shells dead mussels indicate previously wider distribution.		Site changes (construction), P values somewhat lower other sites, TSS higher	Cannon River contribute sediment to Old Isensee Hole.	NA	1977 and 1987 drawdowns of Byllesby resulted in fish kills. Better land use within the immediate watershed is needed.	Fecal coliform impairments - Cannon River Pine Creek to Belle Creek Reach	Gamefish low % of overall catch	Nonpoint erosion main contributor - not ID specific locations. Some allocations to MS4 cities and NPDES permits but those are minimal.	See TMDL
15 species live mussels. Large mussel bed in Faribault and one species live hadn't seen before.	High BOD in SR, High TP in SR and CR. Turbidity high - bank erosion. *Limestone rich in P natural background may be higher than normal. Lake Tetonka high natural TP before ag began. Soil erosion and pasturing animals high TP. Fertilizer major source of N in river. In Cannon River above Tetonka livestock primary fecal source.	Overall Water chemistry not show significant problems. Siltation common for this type of delta area. Rich macroinvertebrate population	NA	Protection of land and water	Smallmouth bass, lots of fishing and canoe and tubing, economic value recreational use	NA	5 stations - fish population abundant and diverse at all stations. 4 Excellent and 1 Good IBI rating	NA	NA
Good baseline data used future decision making such as with dam repair, etc.	Top priority restrict livestock access all parts of river. Prtoect the banks - 100' corridor. Assess dams. Purchase and restoration of updnads in native habitat. Stream bank use greater impact on river than does watershed land use.		Restoration of Shallow Open Water Habitat, Water Level Management - Lower Coon Slough Dam Reinforcement. Vegetation Management, Access	NA	Preserve remaining natural integrity of riparian corridor through environmental reviews.	Septics, manure management, grazing, feedlot fixes, urban stormwater housekeeping, buffers - no geographic targets.	NA	44 mg/L TSS levels, reductions vary based on flow conditions. High flows 50-80% reductions, mid range flows 8 - 39% reductions, low flow little reductions. See Implementation plan for activities.	ID sediment sources. - project underway in 2011. Field Erosion Control, Grazing, Ravine Erosion Control, Stream Bank and Bluff Erosion Control, Ordinances, Urban Stormwater, Tracking and Monitoring, Education and Outreach, Evaluation

Lower Cannon Lobe
Waterbody/Watershed: Little Cannon River

Study	A Review of Water Quality and Aquatic Biologdy in the Cannon River Watershed - 1989, TNC	Stream Management Plan, DNR, April 1994	Macroinvertebrate Assessment, St. Olaf, 1994-96	Macroinvertebrate Assessment, St. Olaf, 1994-96	Macroinvertebrate Assessment, St. Olaf, 1994-96	Cuttin' your loesses: How loaded is the Little Cannon?, Carleton students, 1996	Resources of the Little Cannon River Watershed, U of M, 1987
Reason for Study / Goals	Aid TNC in ecological evaluation of the Cannon River Watershed.	Assess fish especially trout, assess stocking Oxford Sportsman's Club pond	Macroinvertebrate Assessment Oxford Mill	Macroinvertebrate Assessment Hwy 56	Macroinvertebrate Assessment near Sogn	Are current rates of erosion natural - effects land use. Compared two similar subwatersheds	Student project Resource and Community Development
Issues/ Problems	Temperature regimen is marginal for sustained survival of trout. Nonpoint ag, silt, chem., waste, moderte to severe bank erosion	PCB contamination of trout in 1992 especially at Sportsman Pond. Nonpoint ag affects entire stream. Dam in Cannon Falls. High stream temps limit trout	Some development in area not sure affects, TSS high	Sediment high flows, diversity in slight impact range, Nitrogen high, high TSS	Severe bank erosion from cattle at sight. TSS loading greater problem. QHEI not so great indicate impact from human activities	Rapid sedimentation late 1800's - deforestation, cropping - washed sediment downslopes.	38 feedlots only 7 had "certificates of compliance", soil erosion impacts Little Cannon and beyond
Good Stuff	Brook Lamprey (fish species of special concern)	NA	Good QHEI, macro population increased over course of study, diverse population. Nutrient values low. Cool temps for trout	QHEI mid range, P values low, immediate area of site riparian area being restored	Nutrient values avg.		CRP and RIM began in 1985
Goals Set / Actions Suggested	Top priority restrict livestock access all parts of river. Prtoect the banks - 100' corridor. Assess dams. Purchase and restoration of updalnads in native habitat. Stream bank use greater impact on river than does watershed land use.	Remove Cannon Falls Dam to allow fish migrations between Little Cannon and Cannon River. Potential smallmouth bash fishery. Survey Butler Creek assess potential trout stream, implement wateshed management plan.	NA	High N, low P indicates source is fertilizer	Steep gradient, Stabilize banks and limit cattle	Control runoff levels - cropping practices, storm water ponds. Allow river maintain natural course - not straighten channels. Buffers along banks. Rotational grazing	Key area found in need of improvement is resource management: conserving land, water, and vegetational resources susceptible to damage and degradation by soil erosion.
							1. Establish LCRW District
							2. Est monitoring station
							3. Accelerate feedlot compliance effots.
							4. Increase participation in soil conservation programs and implementation of soil conservation mesaures on cropland.

Lower Cannon Lobe
Waterbody/Watershed: Belle Creek

Study	Macroinvertebrate Assessment, Near Red Wing, St. Olaf, 1994-96	A Review of Water Quality and Aquatic Biology in the Cannon River Watershed - 1989, TNC	Belle Creek Watershed District 1991
Reason for Study / Goals	Assessment macroinvertebrates, near Welch	Aid TNC in ecological evaluation of the Cannon River Watershed.	Control or alleviate damage by flood waters
Issues/ Problems	Rapid flow, steep gradient bank erosion major factor. High flows lots of bedload. Water chemistry middle range of sites tested.	Nonpoint ag, silt, chem., waste, moderate to severe bank erosion	Improve Stream Channels for drainage and other public purposes
Good Stuff	Second highest QHEI score of all watershed tribs. Wide riparian zone. Water temps cool	NA	Conserve and protect groundwater
Goals Set / Actions Suggested	NA	Top priority restrict livestock access all parts of river. Protect the banks - 100' corridor. Assess dams. Purchase and restoration of upland habitat. Stream bank use greater impact on river than does watershed land use.	Septic Systems
			Drainage Systems
			Erosion and sediment control
			Protect water quality by reducing N and P

Lower Cannon Lobe
Waterbody/Watershed: Pine Creek

Study	Macroinvertebrate Assessment, St. Olaf, 1994-96
Reason for Study / Goals	Macroinvertebrate Assessment near Cannon Falls
Issues/ Problems	<p>This site has some of the highest nitrogen concentrations of all the sites tested. Surface water is in the 8 mg/L range and pore water is slightly lower, in the 6-7 mg/L range. The most puzzling thing about this site is that during the last kick/pick, we were able to find very few insects. Why this abrupt change took place is not known and it was not investigated because of lack of time and resources.</p>
Good Stuff	<p>The QHEI was very consistent and water levels were not as flashy as they were in other tributaries. Because of the steep rocky slopes, there is very little human impact in the mid reach and the lack of suitable access leaves the mouth relatively unimpacted by human activity. Even during heavy flow periods, the stream is quite clear, which probably indicates good land use practices in the headwater agricultural region. Even though the N values are high, they do not appear to be a serious problem. Even though the N values are high, the P values are low compared to most other sites. Water temperatures are typically the lowest of all the sites tested.</p>
Goals Set / Actions Suggested	NA

Lower Cannon Lobe
Waterbody/Watershed: Spring Creek

Study	Stream Management Plan, DNR 1993
Reason for Study / Goals	
Issues/ Problems	Extensive agriculture and pasturing throughout the watershed has contributed to siltation problems. A gravel quarry is located near stream mile 7.1. A salvage yard near stream mile 5.0 may also be a potential source of pollution.
Good Stuff	
Long Range Goal	Similar reach 2: Maintain a semi-wild brown trout population averaging 250 fish/mile with 10% greater than 12 inches. Similar reach 3: Maintain a wild brook trout population averaging 200 fish/mile with 10% greater than 10 inches with few or no brown trout present.
Actions Suggested	1) Obtain angling easements on all parcels above mile 4.9, Bridge 6 (\$100,000-\$150,000). 2) Implement a creel census on similar reach 3 to determine whether harvest is limiting brook trout populations (\$10,000). 3) Evaluate the contribution of stocked brown trout to the population in similar reach 2 using clipped fish (\$500). 4) Implement a watershed management program.

Lower Cannon Lobe
Waterbody/Watershed: Trout Brook

Study	Miesville Ravine Park Master Plan
Priorities	<p>Vision: A pristine trout stream ecosystem with little sign of human intervention and sparse, primitive facilities for human use. Viewsheds and surrounding park landscape are protected from development and agricultural impacts, to preserve the quality of Trout Brook and convey the notion of wilderness.</p>
	<p>Convert croplands within the park reserve to perennial cover: such as grasses, to stop erosion to ravine ecosystems. Consider a 50-foot grassland buffers at the down slope edges of tilled fields and create grass waterways where water flow is concentrated. Croplands can be converted to perennial cover with native prairie establishment or grass cover.</p>
	<p>Coordinate a surface and groundwater hydrology study: to address impacts of surrounding land uses on Trout Brook.</p>