

7 Targeted Implementation Schedule

The main goal of this plan is to guide projects in the watershed for the next ten years in a way to affect positive and meaningful change in water resource conditions. The implementation table spells out the what, who, when and where of these projects.

There are currently many effective programs being implemented in the Pine River Watershed by numerous agencies and organizations through other planning efforts including the Cass County Water Plan, Crow Wing County Water Plan, Landscape Stewardship Plan, and Watershed Restoration and Protection Strategy. In order to distinguish between current projects and future proposed projects, a level system was used in the implementation table (Table 7.1).

Table 7-1. Level system used to identify current and future actions in the implementation table.

Level 1	This level identifies implementation activities that we plan to undertake within the 10-year time frame of the 1W1P, funded by the Natural Resources Block Grant (NRBG), Local Capacity Grant, and/or in-house contributions.
Level 2	This level identifies implementation activities that we hope to accomplish if additional sources of funding, staff resources, or shared service opportunities become available over the 10-year time frame of the 1W1P. Additional funding can enhance a level 1 service or project to a level 2.
Level 3	This level contains additional implementation activities identified during the plan development process that are the responsibility of state and/or federal agencies better suited in the watershed.

In the implementation table there is also a column labeled “source”. Because One Watershed One Plan is designed to encompass and draw from existing plans, this column notes what plan the implementation action came from (Table 7-2). Where it notes “1W1P” it was developed during the current PRW1W1P planning effort.

Table 7-2. Plans that were used to draw implementation actions for the PRW1W1P.

Plan Acronym	Plan
WRAPS	MPCA Watershed Restoration and Protection Strategy
GRAPS	MDH Groundwater Restoration and Protection Strategy
LSP	Landscape Stewardship Plan
Water Plans	The existing Cass and Crow Wing County Water Plans
1W1P	This current One Watershed One Plan effort

When determining what type of project to implement, there are four main implementation programs to consider: Planned Landscape Management (Manage It), Protected Lands Maintenance (Keep It), Constructed Environmental Enhancements (Fix It), and Analysis and Information. These four categories encompass different types of projects and funding sources (Figure 7.1). For more detail on these programs see the Plan Implementation Programs Section of this plan. Consideration and compilation of numerous different types of projects to achieve similar goals enables the local agencies, organizations, and land owners to have flexibility in choosing what type of project will work best for them.

Implementation: A Balancing Act

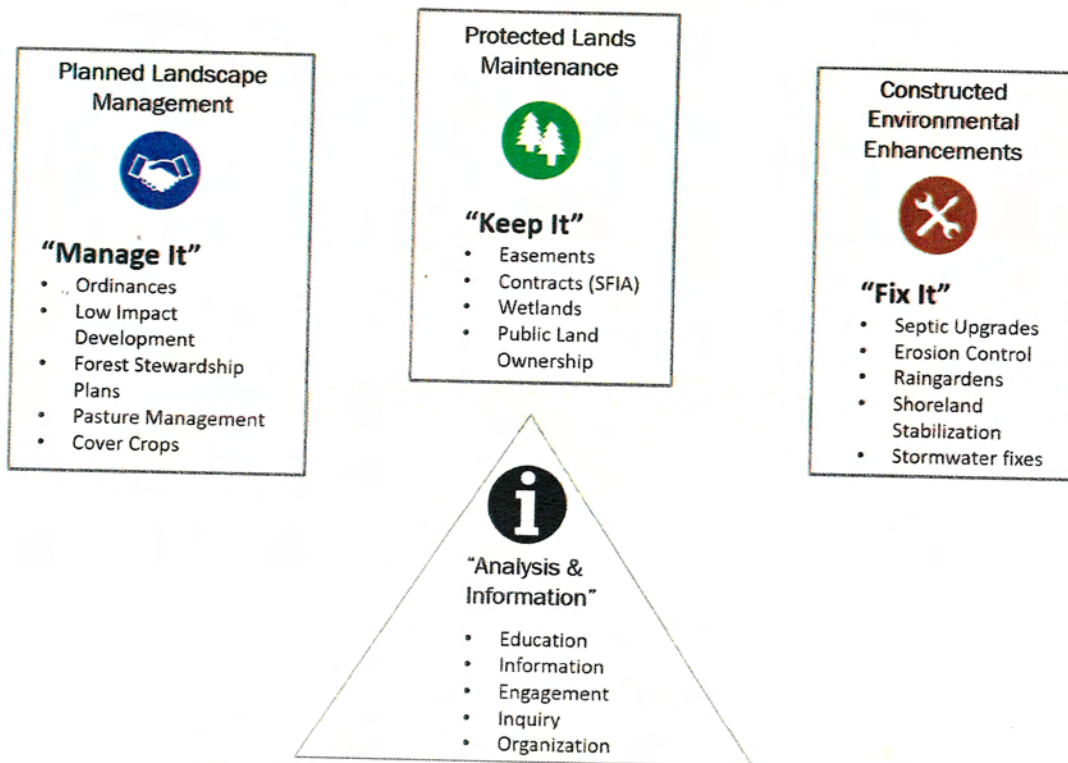


Figure 7-1. Implementation programs for achieving the plan's goals.

Table 7-3. Acronyms and explanation of organizations and funding sources listed in the PRW1W1P implementation table.

Acronym	Organization or Funding Source
ACOE	Army Corps of Engineers
BMP	Best Management Practice
BWSR	Board of Soil and Water Resources
CRP	Conservation Reserve Program
CCo	Cass County Environmental Services
CSWCD	Cass Soil and Water Conservation District
CWCo	Crow Wing County
CWSWCD	Crow Wing Soil and Water Conservation District
CWF	Clean Water Fund
DNR	Department of Natural Resources
DWSMA	Drinking Water Supply Management Areas
LAs	Lake Associations
LCCMR	Legislative Citizen Commission for Minnesota Resources
LSOHC	Lessard Sams Outdoor Heritage Council
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MLT	Minnesota Land Trust
MPCA	Minnesota Pollution Control Agency
NWLT	Northern Waters Land Trust (formerly Leech Lake Area Watershed Foundation)
RIM	Reinvest in Minnesota
SFIA	Sustainable Forest Initiative Act
SSTS	Subsurface Sewage Treatment System (septic systems)
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
USDA	US Department of Agriculture
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey

Goal 1. Protection

Surface Ground Forestry

GOAL: Protect and enhance forest cover, outstanding lake water quality, habitat, surficial sand aquifers, and downstream drinking water by promoting 75% land protection in targeted minor watersheds.






Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead & Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Promote private forestry stewardship planning using the Private Forest Landowner Implementation Toolbox (Figure 4-2).	LSP		2	Whitfish, Lower Pine, Headwaters	Tier 1 Lakes: Ossie, Lower Hay, Upper Hay Tier 2 Lakes: Ada, Bertha, O'Brien, Pelican, Roosevelt, Rush-Hen, Ruth (Table 7-4). Use RAQ maps from the LSP for targeting priority parcels.	10 plans per year	CWSWCD, CWSWCD, DNR	CWSWCD, CWSWCD, DNR	2020-2030 \$20,000 each year	\$200,000
Promote the Sustainable Forest Initiative Act to provide annual incentive payments to encourage private landowners to keep their wooded areas undeveloped.	LSP		2	Same as above	Same as above	75% minor watershed protection (Table 7-4 on next page)	CWSWCD, CWSWCD, DNR	SFIA	2020-2030 \$92,312.70/yr*	\$923,127* <small>*Not included in total below because it is already allocated from the general fund</small>
Permanently protect undeveloped land with conservation easements.	LSP		1,2	Same as above	Same as above	Same as above	CWSWCD, CWSWCD, DNR, MLT, NWLT	NWLT, TNC, MLT, LCCMR, CWF, LSOHCC, DNR	2020-2030 \$670,104/yr	\$6,701,042 (Table 7-4)
Permanently protect undeveloped land with acquisitions.	1W1P		3	Same as above	Same as above	Same as above	DNR, Trust for public lands	DNR, LCCMR, LSOHCC	2020-2030	Combined with easements above
Maintain and align forestry roads to minimize forest fragmentation.	WRAPS		1	Same as above	Same as above	Same as above	CWCo, CCco	CWCo, CCco - current funding	2020-2030	\$1,000
Goal Total									\$690,204/yr	\$6,902,042

Table 7-4. Prioritized lakes in the Pine River IWTP and the acres and costs needed to meet the 75% protection goal.

Lake	County	Management Focus	% minor wshd protected (incl. SFIA)	Protection Goal	Needed for 75% protection (acres)	Potential to protect (acres)	*Cost Easements	*Cost SFIA	Notes
Big Trout	Crow Wing	Enhance-Protection	59%	75%	1,351	1,863	\$1,473,731	\$85,410	
Whitefish	Crow Wing	Enhance-Protection	66%	75%	1,498	1,507	\$481,858	\$94,702	
Clamshell	Crow Wing	Enhance-Protection	x	x	x	x	x	x	combined with Whitefish
Island-Loon	Crow Wing	Enhance-Protection	x	x	x	x	x	x	combined with Whitefish
Pig	Crow Wing	Enhance-Protection	x	x	x	x	x	x	combined with Whitefish
Subtotal:							\$1,955,589	\$180,112	
Ada	Cass	Protection	63%	75%	585	1,184	\$208,837	\$36,942	
Roosevelt	Cass	Protection	66%	75%	1,187	1,917	\$285,369	\$74,998	
Bertha	Crow Wing	Protection	x	x	x	x	x	x	combined with Whitefish
Rush-Hen	Crow Wing	Protection	x	x	x	x	x	x	combined with Whitefish
Pelican	Crow Wing	Protection	64%	75%	2,040	1,712	\$696,815	\$128,938	
Ruth	Crow Wing	Protection	62%	75%	985	1,379	\$196,314	\$62,278	
O'Brien	Crow Wing	Protection	50%	75%	2,102	2,230	\$927,428	\$132,867	
Ossawinnamakee	Crow Wing	Protection	36%	63%**	3,475	3,638	\$1,622,374	\$219,609	**Modified goal due to potential
Lower Hay	Crow Wing	Protection	34%	50%**	1,383	1,725	\$808,316	\$87,383	**Modified goal due to potential
Upper Hay	Crow Wing	Protection	34%						
Subtotal:							\$4,745,453	\$743,015	
West Fox	Crow Wing	Vigilance	85%		0	669	\$0	\$0	
Washburn	Cass	Vigilance	82%		0	797	\$0	\$0	
Horseshoe (CW)	Crow Wing	Vigilance	78%		0	422	\$0	\$0	
Pine Mountain	Cass	Vigilance	75%		0	600	\$0	\$0	

Total cost to protect priority lake minor watersheds in this plan: \$6,701,042

SFIA funding (already allocated): \$923,127










*Costs: From Landscape Stewardship Plan. Assumes 50/50 split of acres needed between Easement (@60% of land value) and SFIA (cost for 10 years).

Note: These are the costs to protect just the immediate minor watershed around each lake, not minor watersheds upstream.

Goal 2. Phosphorus Reduction










GOAL: Reduce phosphorus loading into declining lakes by 5% by implementing best management practices in residential and road areas.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Implement near-shore stormwater infiltration BMPs on developed lots.	1W1P, Water Plans		2	Headwaters, Whitefish, Little Pine, Daggett Br.	Declining Lakes: Whitefish, Big Trout, Island-Loon, Clamshell, Pig	5% Phosphorus reduction from current loading (Table 7-5)	CWSWCD, CWSWCD, CCo, CCo	CWF	2020-2030 \$315,420/yr	\$3,154,200 (Tables 7.5 & 7.6)
Alum treatment on Arrowhead Lake to reduce phosphorus loading to Upper Whitefish Lake.	1W1P		2	Whitefish	Arrowhead Lake	5% Phosphorus reduction from current loading (Table 7-5)	CWSWCD, WAPOA, PRWA	CWF	2020-2021 \$100,000	\$100,000 (Table 7.6)
Inventory stormwater inputs draining into the Whitefish Chain.	1W1P		2	Whitefish	Lakes: Whitefish Chain	Map, # of catchments	CWCo, Cities, townships, MNDOT, TSA8	CWF	2020-2021 \$30,000	\$30,000
Continue to monitor Secchi depth annually on major lakes to track trends.	WRAPS		3	All	Lakes: 95 lakes with trends (Appendix 4)	Continued trend analysis	LAs, ACCL, WAPOA, PRWA, LARA, MPCA	None needed	2020-2030	\$0
Expand the availability of information and network of resources for promoting stormwater management to lake residents.	Water Plans		2	Whitefish, Little Pine	Declining Lakes: Whitefish, Big Trout, Island-Loon, Clamshell, Pig	One workshop per year	CWSWCD, ACCL, WAPOA, LAs, contractors, Freshwater	BWSR	2020-2030 \$1,000/yr	\$10,000
Conduct a phosphorus sediment study of Upper Whitefish Lake for options on how to reduce in-lake loads.	1W1P		3	Whitefish	Upper Whitefish Lake	pre-settlement phosphorus concentration vs present day.	WAPOA, PRWA, MPCA, St. Croix Research Center, Consultant	MPCA, CWF	2020-2021 \$50,000	\$50,000
Work with MNDOT to ensure proper stormwater treatment for new road improvements.	1W1P		1	Whitefish, Lower Pine	Hwy 371 corridor	Proper stormwater treatment on all new projects	MNDOT, SWCDs	Current funding	2020-2030 Staff time	\$10,000
Work with townships to ensure proper stormwater treatment.	1W1P		1	Whitefish, Lower Pine	NA	Proper stormwater treatment	Townships, SWCDs	Current funding	2020-2030 Staff time	\$10,000
Complete a TMDL study on Lake Emily to determine phosphorus reduction options.	1W1P		3	Little Pine River	Lake Emily	TMDL Report (Phosphorus load allocation and reduction options)	MPCA, CWSWCD, City of Emily	MPCA	2025-2026	\$10,000
Goal Total									\$337,420/yr	\$3,374,200

Goal 3. Pasture Management



GOAL: Reduce agricultural runoff to downstream lakes by 5% and improve stream habitat in impaired streams to meet the IBI standard in the South Fork and Whitefish Subwatersheds by promoting pasture management.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Possible Funding Sources	Timeframe	Total 10-year Cost
Inventory of pasture land in the South Fork sub-watershed and determination of whether it is intensive or rotational grazing. Identify high phosphorus areas and how to manage them.	1W1P		2	South Fork	Lakes: Whitefish Impaired Streams: Arvig Creek, Willow Creek, Wilson Creek, South Fork Pine River	GIS database and map of pasture land and whether it is intensive or rotational grazing.	CWSWCD, NRCS, PRWA	NRCS, CWF	2020-2021 \$30,000	\$30,000
Implement a grazing management system (includes all structural needs such as fencing and water sources, silva pasturing) on 10% of agricultural acres in the South Fork subwatershed.	1W1P		2	South Fork, Whitefish	South Fork Pine River and tributaries	Rotational grazing on 10% of agricultural land (678 acres)	CSWCD, NRCS, PRWA, private landowners	NRCS, CWF	2022-2030 \$25,410/yr	\$203,280
Prevent feedlot runoff using manure storage, water diversions, reduced lot sizes, and vegetative filter strips to reduce open lot phosphorus losses.	WRAPS		3	South Fork, Whitefish	South Fork Pine River and tributaries	2 nutrient management plans	MPCA Feedlot Officer, NRCS	MPCA	2020-2030 \$4,000/yr	\$40,000
Work with livestock owners to exclude cattle from stream riparian corridor with fencing.	WRAPS		2	South Fork, Whitefish	Impaired Streams: Arvig Creek, Willow Ck, Wilson Ck, S. Fork Pine River	Meet or exceed Macroinvertebrate IBI	NRCS, CWSWCD, CSWCD, landowners, PRWA	NRCS, CWF	2022-2030 \$10,125/yr	\$81,000
Restore in-stream habitat in impaired streams to improve biological health.	WRAPS		3	South Fork, Whitefish	Impaired Streams: Arvig Creek, Willow Ck, Wilson Ck, S. Fork Pine River	Meet or exceed Macroinvertebrate IBI	DNR, PRWA	LSHO, CPL, DNR	2026-2030 \$100,000/yr	\$400,000
Install EQUIP general water quality practices and CSP water quality enhancements on agricultural lands.	NRCS		3	South Fork, Whitefish	South Fork Pine River and tributaries	Enroll 2 participants per year	NRCS	USDA - NRCS Farm Bill	2020-2030 \$8,000/yr	\$80,000
Implement the Minnesota Agricultural Water Quality Certification Program.	MDA		3	South Fork, Whitefish		Enroll 1 participant per year	MDA, CSWCD, CWSWCD	MDA	2020-2030 \$1,000/yr	\$10,000
Goal Total									\$84,428/yr	\$844,280

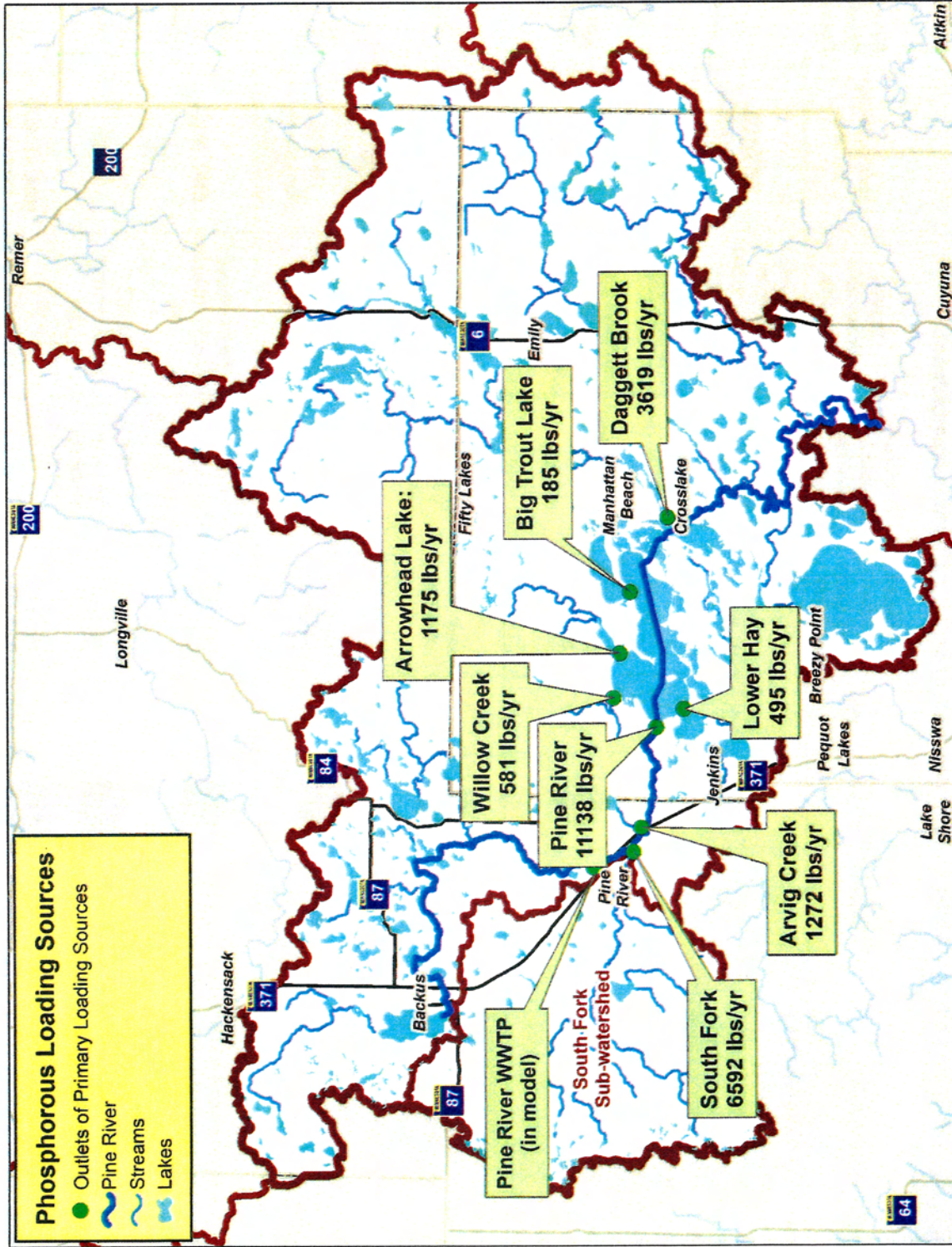


Figure 7-2. Map of phosphorus loading from the HSPP model of the Pine River Watershed.

Table 7-5. Phosphorus reduction goals for priority declining lakes in the Pine River Watershed (Goal 2).

Lake	County	Management Focus	Loading Focus	Nearshore P Load (lbs/year)	Tributary P Load (lbs/year)	Total P Load (lbs/year)	5% Reduction Goal	Notes on costs
Big Trout	Crow Wing	Enhance-Protection	Nearshore	892	0	892	45	project in progress to remove 40 lbs P
Whitefish	Crow Wing	Enhance-Protection	Watershed	2,275	13,574	15,849	792	\$3,687,780 (see Whitefish Table 6-6)
Clamshell	Crow Wing	Enhance-Protection	Nearshore	166	0	166	8	\$166,000 - Stormwater fixes
Island-Loon	Crow Wing	Enhance-Protection	Nearshore	85	0	85	4	application in progress to remove 7 lbs P
Pig	Crow Wing	Enhance-Protection	Nearshore	80	0	80	4	\$79,700 - Stormwater fixes
Total phosphorus reduction:							853 lbs/yr	

Table 7-6. Phosphorus reduction goals broken down for Whitefish Lake (Goals 2 & 3) (Figure 7.2).

Tributary	Phosphorus Loading Source	HSPF Reach #	Total P output (lbs/year)	5% Reduction Goal	Cost	Solutions
Pine River	City of Pine River WWTP	-	-	-	\$0	Already subtracted out in the HSPF model
Pine River	South Fork Sub-Watershed	230	6,592	330	*	Ag BMPs
Pine River	Arvig Creek	201	1,272	64	*	Ag BMPs
Pine River	Pine River without above sources	250	3,274	164	*	Ag BMPs
Other Tributary	Arrowhead Lake	221	1,175	59	\$100,000	Alum Treatment
Other Tributary	Big Trout	224	185	9	\$0	Project in place to remove ~40 lbs in-lake
Other Tributary	Willow Creek	215	581	29	*	Ag BMPs
Other Tributary	Lower Hay	214	495	25	\$519,750	stormwater fixes
Nearshore	Nearshore	280	2,275	114	\$2,388,750	stormwater fixes
					*\$460,280	Ag BMPs: rotational grazing, culvert improvements, cattle fencing
*Total Agricultural BMPs (Goal 3) & Culverts (Goal 4)				15,849	792	\$3,687,780 Total

Total Cost for 5% phosphorus reduction in priority declining lakes (Goals 2 & 3)..... \$3,933,480 (\$4,611/lb)


Table 7-7. Cost references from Crow Wing SWCD past projects and Radomski, DNR.

BMP	Average Cost	References from Radomski and Crow Wing SWCD
Stormwater	\$21,000/lb	Hunt et al. 2012; Houle et al. 2013; CWSW Projects
Alum	\$1,500	2016 CW SWCD project

Goal 4. Culvert Management









GOAL: Implement an integrated approach to culvert management that includes inventories and cooperation between local units of government to understand drainage and restore proper function with future culvert replacements.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Complete watershed-wide culvert inventory and identify incorrectly sized culverts causing water quality issues. Training on the Collector App.	1W1P		2	South Fork, Whitefish	Whitefish Chain	Mapped inventory of culverts.	CWSWCD, DNR, Townships, Cities, MINDOT, TSA8	CWF, LCCMR	2020-2024 \$10,000/yr	\$40,000
Replace improperly installed culverts at 36th Ave	WRAPS		2	South Fork	South Fork Pine River	Meet or exceed Fish IBI	CWSWCD, CCo, Townships, DNR	SWCD, CWF, LCCMR	2024-2025 \$1,500/yr	\$3,000
Replace culverts along Long Farm Road to improve connectivity	WRAPS		2	Whitefish	Willow Creek	Meet or exceed Macroinvertebrate IBI	CWSWCD, CWCo, Ideal Township, DNR	SWCD, CWF, LCCMR	2024-2025 \$1,500/yr	\$3,000
Replace/improve priority culverts with more than 5 ditch crossings	1W1P		2	South Fork, Whitefish	Arvig Creek, Behler Creek, Bungo Creek, Hay Creek, Pine River South Fork/Ditch #4	Complete 10 culvert replacements in highest priority areas (Figure 6.5)	County Hwy Depts, Townships	SWCD, CWF, LCCMR	2026-2029 \$2,500/yr	\$10,000
Cost-share future culvert replacements and design assistance with townships to ensure proper function	1W1P		2	South Fork, Whitefish	Pine River, Whitefish Lake	Same as above	County Highway Depts, Townships	SWCD, CWF, LCCMR	2021-2029 \$1,000/yr	\$8,000
Abandon ditches that are causing water quality problems and not needed.	WRAPS, Water Plans		2	South Fork, Whitefish	Pine River, Whitefish Lake	Ditch abandoned	Ditch Authority, SWCDs	SWCD, CWF, LCCMR	2028-2029 \$2,500/yr	\$5,000
Implement and monitor Minnesota Buffer and Soil Loss Law through monitoring, education, and buffer installation assistance to attain County water quality buffer compliance.	BWSR		1	South Fork, Whitefish	Ditch map	Maintain 100% compliance over 10 years	SWCDs, BWSR, counties	BWSR	2020-2030 \$10,000/yr	\$100,000
Goal Total									\$16,900/yr	\$169,000

Goal 5. Wetlands









GOAL: Maintain current coverage of wetlands as currently administrated under federal, state and local regulations and identify potential restoration areas where past disturbance occurred.

Implementation Action:	Source	Program	Levels	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Assist landowners with wetland restoration in areas of filled wetlands	1W1P, Water Plans		1	South Fork, Whitefish, Little Pine	Little Pine River, Starry Lake, South Fork Pine River, Arvig Creek, Hay Creek, Behler Creek, Wilson Creek, Hoblin Creek, Bungo Creek, Island/Mitten Lakes, Mud/Goose Lakes	Work with 10 landowners in priority areas	CSWCD, CWSWCD	SWCD	2020-2030 \$5,000/yr	\$50,000
Provide technical and administrative assistance through site visits, project reviews, permit applications, and agency coordination.	1W1P, Water Plans		1	All	NA	Counties and SWCDs fulfill the Minnesota Rule 8420 requirement	CSWCD, CWSWCD, ACOE, BWSR	SWCD	2020-2030 \$5,000/yr	\$50,000
Follow and implement the wetland conservation act and the county wetland ordinances.	1W1P, Water Plans		1	All	NA	Counties and SWCDs fulfill the Minnesota Rule 8420 requirement	CSWCD, CWSWCD	SWCD	2020-2030 \$25,000/yr	\$250,000
Identify wetlands and soils that are producing high phosphorus for potential sites for wetland restoration.	1W1P		2, 3	South Fork	Bungo Creek	Identify 2 problem areas	CSWCD, CWSWCD, Consultant	SWCD	2026-2028 \$10,000/yr	\$20,000
Restore wetlands and soils that are producing high phosphorus concentrations.	1W1P		2, 3	South Fork	Bungo Creek	Restore 2 areas	CWSWCD, CWSWCD, Consultant	SWCD	2028-2030 \$10,000/yr	\$20,000
Use the new NWI to prioritize wetlands for protection (using Cass County model).	1W1P		2	All	NA	Priority list	CWSWCD, CSWCD, CCo, CWCo, BWSR, DNR, ACOE	SWCD	2021-2022 \$5,000/yr	\$10,000
Goal Total									\$40,000/yr	\$400,000

Goal 6. Septic Systems








GOAL: Maintain high quality drinking water in surficial sand aquifer areas by encouraging landowners to have their subsurface sewage treatment systems maintained every three years to achieve a 90% maintenance rate for the watershed.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Offer assistance for non-compliant systems for residents through low interest loans.	Water Plans		2, 3	Headwaters, Whitefish, Lower Pine	Table 6.7. Lakes with over 100 private wells in surficial sand aquifer areas.	10year	C ^S WCD, C ^W SWCD, Ag BMP Loan, Region 5, MPCA	MPCA, MDA	2020-2030 \$20,000/yr	\$200,000
Implement an educational program to increase knowledge of SSTS maintenance.	1W1P		1	Same as above	Same as above	One workshop per year for professionals and homeowners	S ^W CDs, MPCA, local installers and inspectors	SWCD	2020-2030 \$200/year	\$2,000
Implement voluntary lake sweeps for SSTS inspections.	Water Plans		2	Same as above	Same as above	100% compliance	C ^W Co, C ^{Co}	BWSR	2023-2024 \$1,000/yr	\$10,000
Provide incentives for people to maintain their septic systems and get them pumped every three years.	Water Plans		2	Same as above	Same as above	90% maintenance	C ^S WCD, C ^W SWCD	SWCD	2020-2030 \$1,000/yr	\$10,000
Conduct a records check to find developed lots that haven't had a recent inspection. Target those properties for incentives and assistance.	1W1P		2	All	Target developed properties that haven't had maintenance	Completed records check with priority list.	C ^W Co, C ^{Co}	SourceWell, CWF, MN Green Corps, UMIN Extension	2021-2022 \$1,000/yr	\$2,000
Ensure land application sites for septage are in compliance.	1W1P		3	All	Surficial sand aquifer	100% compliance	MPCA	MPCA	\$0	\$0
Goal Total									\$22,400/yr	\$224,000

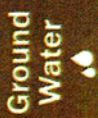
Goal 7. Chlorides

Ground Water






GOAL: Manage chlorides reaching surface and groundwater from road salts and water softener salts going into sewage treatment systems.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Work with cities to ensure they are applying chlorides to roads following best management practices. See Winter Maintenance Assessment Tool (WMAAT) at https://www.pca.state.mn.us/water/salt-and-water-quality	MPCA		3	Headwaters, South Fork, Whitefish, Lower Pine	See Figure 6.8 (Goals Section)	All cities comply with BMPs	CSSWCD, CWSWCD, Backus, Pine River, Breezy Point, Crosslake, county highway departments	MPCA	2020-2030 \$1,000/yr	\$10,000
Educate property owners and plumbers about the proper use of softener salt so as to not impact septic system or city water treatment.	1W1P		2	All	NA	One workshop per year	CSSWCD, CWSWCD	more capacity	2020-2030 \$1,000/year	\$10,000
Cost share regional upgrades to road salting equipment.	1W1P		2, 3	Headwaters, Whitefish, Lower Pine	Towns: Backus, Pine River, Breezy Point, Crosslake	New equipment for each town.	Townships, Backus, Pine River, Breezy Point, Crosslake, county highway departments	funding for upgrading equipment	2026-2029 \$25,000/yr	\$100,000
Implement brining in Cass County. Crow Wing County already uses brining.	1W1P		1,2	All	NA	Brining use in both counties	Townships, Backus, Pine River, Breezy Point, Crosslake, county highway departments	funding for brining	2022-2023 \$1,000/yr	\$2,000
Provide training to road authorities, private snow removal contractors, and dust control on chloride BMPs.	1W1P		2	Headwaters, Whitefish, Lower Pine	Towns: Backus, Pine River, Breezy Point, Crosslake, Gravel Pits	Three workshops per year	CSSWCD, CWSWCD	more capacity	2020-2030 \$1,000/year	\$10,000
Goal Total									\$13,200/yr	\$132,000

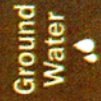
Goal 8. Nitrates







GOAL: Manage fertilizer application to keep nitrates in drinking water below the state standard of 10 mg/L.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Provide free nitrate testing or screening to residents with private wells.	Water Plans		1	South Fork, Whitefish	minor watersheds with center pivot agriculture	Twice a year	CWCo	CWCo	2020-2030 \$200/yr	\$2,000
Conduct a nitrate clinic for landowners with private wells to educate them about fertilizer application on lawns and the vulnerability of shallow groundwater.	1W1P		2, 3	South Fork, Whitefish	NA	One clinic per year. Could be at county fair.	CSWCD, CWSWCD	SWCD	2020-2030 \$1,000/yr	\$10,000
Inventory potential land holding company holdings for future agricultural development and subdivision.	1W1P		1	South Fork, Whitefish	Land holding company	Map of areas most at risk of conversion.	CSWCD, CWSWCD, TSA8	SWCD	2021 \$1,000/yr	\$1,000
Work to coordinate groundwater database management with the Counties, MDH and MDA.	1W1P		3	All	NA	Database	CCo, CWCo, MDH, MDA, TSA8	SWCD	2021 \$1,000/yr	\$1,000
Promote the Nutrient Management Initiative to assist farmers in evaluating nutrient practices on their fields and increase fertilizer efficiency.	MDA		3	South Fork, Whitefish	South Fork Pine River, Tamarack/Clam Lakes, Pine River/Norway Lake, Arvig Creek, Hay Creek, Behler Creek, Hoblin Creek, Bungo Creek, Big Portage Lake (Figure X)	Assist 1 landowner per year	MDA	MDA	2020-2030 \$2,000/yr	\$20,000
Goal Total									\$3,400/yr	\$34,000

Goal 9. Well Sealing and DWSMAS






GOAL: Protect Drinking Water Supply Management Areas (DWSMAS) and Locate and seal 30 unused residential wells per year to prevent groundwater contamination.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Seal 30 wells per year	Water Plans		1	Headwaters, Whitefish, Lower Pine	Lakes with over 100 private wells in surficial sand aquifer areas (Figure 6.7 & page 73)	20 wells/year	CWCo, CCo	CWF	2020-2030 \$5,000/year	\$50,000
Conduct a well inventory to produce a map of all wells in the watershed. Combine data from geologic atlas.	1W1P		1	All	NA	Map and database. Know how many wells and septic systems are in the watershed.	MDH, Geologic Atlas, TSA8	CWF	2027-2028 \$2,500/yr	\$5,000
Protect surface drinking water sources and water supply management areas in the watershed through outreach to DWSMAS and the public.	GRAPS		2, 3	All	See Figure 6.10 of DWSMAS	Individual contact with each DWSMA about how to protect and mark the area.	MDH, City of Pine River, City of Backus, City of Pequot Lakes, Breezy Point Resort, public	MDH Sourcewater Protection Grant	2020-2030 \$2,000/yr	\$20,000
Develop a program for individual wellhead protection, distribute educational information. Combine with septic system education.	1W1P		2	All	Rural landowners	Develop a program	Public	1W1P, MDH	2023-2024 \$2,500/yr	\$5,000
Goal Total									\$8,000/yr	\$80,000

Goal 10. Habitat Protection








GOAL: Protect two miles of undeveloped riparian lands, ice ridges and forested riparian corridors through outreach to private residents.

Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Implement conservation easements in areas with identified sensitive shoreline.	DNR, Water Plans		3	Headwaters, Whitefish, Daggett Brook, Little Pine, Lower Pine	Lake Focus = 18 minors Stream Focus = 12 minors Lake & River = 4 minors	25 acres protected, 2 miles of shoreline protected in 10 years (2 miles at 100 ft deep)	CWSWCD, CSWCD, NWLT, Miss Headwaters, DNR	LCCMR, LSOHC, USFWS, TNC	2020-2030 \$50,000/yr	\$500,000
Manage conservation easements to ensure compliance.	1W1P		1,2	All	NA	100% compliance	CWSWCD, CSWCD, TNC, MLT, NWLT, DNR	CWF, LSOHC, LCCMR, BWSR RIM	2020-2030 \$2,000	\$20,000
Promote acquisitions (AMAs, WMAs) in areas identified with sensitive shoreline	DNR		3	Headwaters, Whitefish, Daggett Brook, Little Pine, Lower Pine	Figure X. DNR Sensitive Shoreline Map	25 acres protected, 2 miles of shoreline protected in 10 years (2 miles at 100 ft deep)	DNR	DNR, MLT	2020-2030 \$50,000/yr	\$500,000
Goal Total									\$102,000/yr	\$1,020,000

Goal 11. Habitat Restoration



GOAL: Maintain and enhance/restore two miles of riparian vegetation on streams and lakes with over 10% impervious surface/disturbed area through outreach to private citizens.











Implementation Action:	Source	Program	Level	Targeted sub-watersheds (HUC10):	Prioritized Resources (lakes or watersheds):	10 year Measurable Outcome:	Lead/Supporting Entities:	Funding Source	Timeframe	Total 10-year Cost
Work with private landowners to install buffers along riparian lands.	WRAPS, Water Plans		1, 2	Whitefish, Daggett Brook	Lakes: Daggett, Loon, Island, Cross, Lower Whitefish, Rush, Little Pine, Bertha, Big Trout. Figure X.	25 acres protected, 2 miles of shoreline protected in 10 years (2 miles at 100 ft deep)	CWSWCD, CSWCD, WAPOA, ACCL	CWF	2020-2030 \$132,000/yr	\$1,320,000
Continue to administer Shoreland Management Ordinances. Coordinate land use ordinances in the watershed where possible.	County Water Plans		1, 2	All	NA	Meet once a year and agree to notify the other entity of ordinance changes.	CWCo, CCo, DNR	CCo, CWCo	2020-2021 \$5,000/yr Staff time	\$50,000
Provide education and/or conduct workshops on shoreland BMP's and restoration options including the need for proper permits/project reviews within shoreland areas.	1W1P		1	Whitefish	Priority lakes (Figure 6.12)	1 workshop each year for contractors	CWSWCD, CSWCD, WAPOA, ACCL, LARA	CWF	2020-2030 \$1,000/yr	\$10,000
Complete an impervious surface inventory for Cass County and update Crow Wing County inventory.	IWIP		2	Headwaters, Daggett Brook	Cass County large lakes	Inventory report and maps	CSWCD, CWCo, TSA8	SWCD, Source Well	2025-2026 \$10,000/yr	\$20,000
Native tree sale conducted each spring for landowners.	SWCD		1	All	NA	Sell 30,000 trees each year.	CWSWCD	SWCD - current funding	2020-2030 \$15,000/yr	\$150,000
Goal Total									\$155,000/yr	\$1,550,000

Total Plan Implementation Costs Per Goal

Goal	Description	Total
Goal 1	Protection	\$6,902,042 SFIA not included
Goal 2	Phosphorus Reduction	\$3,374,200
Goal 3	Pasture Management	\$844,280
Goal 4	Culverts	\$169,000
Goal 5	Wetlands	\$400,000
Goal 6	Septic Systems	\$224,000
Goal 7	Chlorides	\$132,000
Goal 8	Nitrates	\$34,000
Goal 9	Wells & DWSMAS	\$80,000
Goal 10	Habitat Protection	\$1,020,000
Goal 11	Habitat Restoration	\$1,550,000
Ten Year Plan Total		\$14,729,522
Annual Average		\$1,472,952

Priority Funding Projects for 2020-2021*

*These are level 2-3 projects above the current core programs and funding.

Implementation Action:	Source	Program	Level	Lead/Supporting Entities:	Funding Source	Total 2-year Cost
Alum treatment on Arrowhead Lake to reduce phosphorus loading to Upper Whitefish Lake.	1W1P		2	CWSWCD, WAPOA, PRWA	CWF	\$100,000
Inventory stormwater inputs draining into the Whitefish Chain.	1W1P		2	CWCo, Cities, townships, MNDOT, TSA8	CWF	\$30,000
Conduct a phosphorus sediment study of Upper Whitefish Lake Incorporate results into a report with options on how to reduce in-lake loads.	WRAPS		3	MPCA, St. Croix Research Center, Consultant, PRWA	MPCA, CWF	\$50,000
Promote private forestry stewardship planning using the Private Forest Landowner Implementation Toolbox (Figure 4-2).	LSP		1,2	CWSWCD, CSWCD	DNR, CSWSC, CWSWCD	\$20,000
Promote the Sustainable Forest Initiative Act to provide annual incentive payments to encourage private landowners to keep their wooded areas undeveloped.	LSP		3	CWSWCD, CSWCD	SFIA	\$184,625
Permanently protect undeveloped land with conservation easements.	LSP		1,2,3	CWSWCD, CSWCD, DNR, MLT, NWLT	NWLT, TNC, MLT, LCCMR, CWF, LSHO, DNR	\$1,240,208 \$100,000
Permanently protect undeveloped land with acquisitions.	1W1P		3	DNR	DNR	Combined with easements above
Inventory of pasture land in the South Fork sub-watershed and determination of whether it is intensive or rotational grazing. Identify high phosphorus areas and how to manage them.	1W1P		2	CWSWCD, CSWCD, NRCS, PRWA	NRCS, CWF	\$30,000
Complete watershed-wide culvert inventory and identify incorrectly sized culverts causing water quality issues. Training on the Collector App.	1W1P		2	CWSWCD, CSWCD, DNR, Townships, Cities, MNDOT, TSA8	CWF, LCCMR	\$30,000
Expand information on better land management choices to citizens including shoreline management, wellhead protection and septic system maintenance.	1W1P		2	CWSWCD, CSWCD	CWF	\$10,000
2020-2021 Total						\$2,207,463
Partner and already allocated funding (Level 3)						\$1,474,833
Plan Implementation Funding (Level 2)						\$320,000
Current Core Funding (Level 1)						\$412,630