

Tab Name	Tab Description	Abbreviations used for potential partners or funding sources:
Cat A	Shoreline/Streambank Issues	AES: Alliance for Economic Success Conservation Districts: Mason-Lake Conservation District; Osceola-Lake Conservation District; Manistee Conservation District CRA: Conservation Resource Alliance GTRLC: Grand Traverse Regional Land Conservancy ISN: Invasive Species Networks: Northwest Michigan Invasive Species Network; North Country Cooperative Invasive Species Area LMWCC: Little Manistee Watershed Conservation Council LRBOI: Little River Band of Ottawa Indians MDARD: Michigan Department of Agriculture and Rural Development MDEQ: Michigan Department of Environmental Quality MDNR: Michigan Department of Natural Resources MDoT: Michigan Department of Transportation MNSP: Michigan Natural Shoreline Partnership MSU: Michigan State University MSUE: Michigan State University extension MTA: Michigan Townships Association NNW: Networks Northwest
Cat B	Stormwater and Run-off	
Cat C	Planning, Zoning and Land Use	
Cat D	Road-Stream Issues	
Cat E	Land Protection and Management	
Cat F	Habitat for Fish and Wildlife	
Cat G	Recreation, Safety, Navigation and Human Health	
Cat H	Hydrology, Groundwater and Wetlands	
Cat I	Water Quality Monitoring	
Cat J	Invasive Species	
Cat K	Wastewater and Septic Systems	
Cat L	Information and Education	

	Addressed February 2019
	Addressed August 2019
	Addressed March 2020

Category A: Shoreline/Streambank Issues												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
A1	Restore severe and moderate streambank erosion sites identified in CRA inventory. Use whole-tree revetments where practicable to improve aquatic habitat while stabilizing streambanks.	H	\$120 per linear foot	\$300,000	12 sites restored	C	10 additional sites restored	USFS; MDNR, NFS	Private property owners; Fisheries Trust; Grants	2; 3c; 3e	Sites included by reference from inventory at www.northernmichiganstreams.com	All Severe and Moderate Sites from 2014/2015 survey (except NFS) Work with NFS to address their sites	New item as of 2/19 LMWCC is proceeding with identified sites to contact owners and arrange remediation.	Fall 2019	Tim Phillips/CRA
A2	Update streambank inventory on Little Manistee River and major tributaries on 10-year cycle.	M		\$18,000	X	Inventory updated	X	CRA; LMWCC; MDOT; road commissions, NFS	Trout Unlimited; G.L. Fisheries Trust	3c; 3e	Could be expanded to include streamside habitat (F5) and invasive species (F6) inventories.	Conduct New Survey Kings Highway to Weir	CRA has provided proposal for new survey to LMWCC. Ash Boring Project may take up funds this year if it proceeds.	Proposal due Winter/Spring 2019	Tim Phillips/CRA
A3	Work with conservation districts and MSU extension to demonstrate natural shoreline protection techniques on Cool, Harper and other developed lakes in the Watershed.	M	\$5,000 per site	\$15,000	One site demonstration complete	C	C	Lake Associations; property owners	Private Property owners; MSUE; Cons. Dists	3c	Work through Michigan Natural Shoreline Partnership and local certified contractors	Initiate contact with Conservation Districts, MSU, DEQ, Michigan Natural Shoreline Partnership and Lake Associations. Refer to Michigan Forestry Best Practices Manual Arrange Educational Outreach meeting with Julia Kirkwood MDEQ Lansing presenting. Select Demonstration Sites.	Initiated spring 2019 Mason/Lake Conservation is getting up to speed on the Lakeshore Program We are arranging meetings with all Conservations districtt in the watershed	Fall 2021	LMWCC/Steering Committee
A4	Complete removal of sand-berm dam at Syers Lake to restore natural lake configuration and perenneal flow to Syers Creek	H	\$120,000	\$120,000	Project complete	Creek monitored	C	CRA; LMWCC; private landowners	LMWCC; T.U.; Grants; Private landowner funds	2e	Funding committed for 2018/2019	Complete removal of sand-berm dam at Syers Lake to restore natural lake configuration and perenneal flow to Syers Creek	Funding, planning, design and scheduling complete for implementation. Awaiting Spring weather.	Summer 2019	Tim Phillips/CRA
A5								USFS; MDNR; LMWCC, NFS							

Category B: Stormwater and Run-off												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
B1	Update stormwater infrastructure and impervious surface maps. Identify problem sites and institute Green Infrastructure BMP's for all new construction.	L	unknown		X	Maps and BMP education in place	C	USFS; MDNR, NFS	Local foundations; in-kind funding	2d; 3c		Work with partners..	New item as of 2/19 Per Dani - There have been grants available in recent years through the National Fish and Wildlife Foundation's Sustain Our Great Lakes program, which could be a good fit for a funding source. Possibly uses National Fish and Wildlife Foundation for other projects and could maybe help with grants.	Summer 2019	Armas
B2	Inventory & monitor all streams for nutrients, E. coli, and other pollutants, including thermal stressors. Institute BMP's as appropriate.	H	See task I2	See task I2	Existing program continues	Program expanded to additional sites	C	CRA; LMWCC; MDoT; road commissions, NFS	LMWCC funds; volunteers	3a; 3b; 3e	This is a continuation and expansion of existing LMWCC program. For costs, see I2	Continue to Monitor river Develp Program to Monitor Residential Wells. Discuss with Conservatoin Districts and public health departments. Consider PFOS monitoring..	Continuing existing river program other items are new for 2019.	Develop Well monitoring program in 2019	Joyce Durdel
B3	Promote shoreline stewardship education through Michigan Natural Shoreline Partnership and local conservation districts	M	no new costs identified		X	Information available on Websites or through Township mailings	C	Conservation Districts; MNSP;		3c; 3e		Make part of general meetings with conservation districts	Work on national shoreline promotion		Armas
B4	Promote reforestation of public and private lands within the stream corridor to reduce storm runoff and thermal pollution.	H	\$5,000 per year	\$50,000	Sites identified	Reforestation activity on 5 sites	Reforestation activity on 10 sites	<u>Conservation districts</u> : Private land owners; U.S. Forest Service; MDNR	Private funds; grants	2a; 2c; 2d	This task is important due to loss of ash, oak and beech trees to insects and disease.	Initiate contact with Conservation Districts (Josh Shields) and put in LMWCC news letter.	New item as of 2/19 Disburse Educational materials on private land stewardship	2019	Jim Squire/David Pruance
B5	Encourage voluntary private land stewardship practices such as native plantings, rain gardens, conservation easements, and preservation of wildlife habitat.	H	\$2,000 per rain garden	\$24,000	2 rain gardens installed	5 rain gardens installed	12 (total) rain gardens installed	USFS; MDNR; LMWCC, NFS	<u>MSUE</u> : Conservation districts	Goal 2; 3a		Make part of Education Program. Put Josh's contact in LMWCC newsletter.	Disburse Educational materials on private land stewardship Put Josh Shields Contact info in LMWCC NewsLetter.		

Category C: Planning, Zoning and Land Use												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
C1	Work with township and county planners to develop cooperative land-use practices that extend across government boundaries to protect the entire watershed.	H	\$5,000 per township	\$80,000	Create multi-jurisdictional task force	Funding secured	Program in place	USFS; MDNR, NFS	Will require outside grant assistance. Tribal 2 pct. Funding	Goal 1; Goal 5	See task L7. This task must be coordinated with I/E component	Natural Rivers Presentation and advisory vote took place at July 2019 annual meeting of LMWCC. About 2/3 voted for. Official mailed ballot is in process.	New item as of 2/19 Some of these ordinances exist in other places and we could help gather examples through our Mason Lake Condistrict District and the CISMA	Jul-19	Armas with Mark Tonello,Brian Bury
C2	Identify locally important viewsheds, incorporate protection into master plans and local zoning ordinances to maintain the natural and rustic character of the watershed.	M	Included in C1		X	Sites identified for protection	C	CRA; LMWCC; MDOT; road commissions, NFS	N/A	Goal 4	Maintaining rustic, natural character was an objective of both the 2000 WMP and the present document				
C3	Develop and adopt ordinances to prevent introduction of terrestrial and aquatic invasive species, and permit treatment of existing infestations	M	No new costs identified		Provide model ordinances to townships	C	C	MTA; ISN; township govts	N/A	1d; 3f	Model ordinances available through ISN's. May require state legislation				
C4	Investigate the possibility of a multi-jurisdictional zoning ordinance or overlay district to establish uniform, locally based rules for development within the Little Manistee Watershed and River Corridor. Work with township governments to establish such protections when public support exists.	H	See C1		See C1	C	C	Townships; MSUE; LMWCC; AES	N/A	Goal 1; Goal 5	This is a specific task included in the more general activities of C1				
C5	Promote 'green infrastructure' principles including cluster development for rural residential, and low impact stormwater design requirements as part of local planning and zoning process for new developments.	L	No costs identified		See C1	C	C	USFS; MDNR; LMWCC, NFS	N/A	5a	This is a specific task included in the more general activities of C1				
C6	Begin public education regarding the pros and cons of Michigan Natural River designation; promote such designation if local support exists.	H	Variable		X	River forums conducted	C	LMWCC; MDNR; TU.	N/A	1f	This requires coordination with I/E program as well as local planners. Natural river designation is not under consideration at this time.				
C7	Seek grant funding and fiduciary partners to hire or contract with a person for work on implementation of the WMP	H	\$25,000 annually	\$250,000	Implementation staff person in place	C	C	LMWCC, Conservation Districts; CRA	Tribal Grants, Local foundations	All Goals	Employee may be full- or part-time. If no funding is received, LMWCC volunteers will continue to lead implementation.	Establish where to seek qualified candidates, estimate costs, seek funding. Talk to Conservation Districts	New in 2019 Dani suggested the Mason Lake Conservation District Board might work with us at some level.	Have a plan end of 2019	Armas

Category D: Road-Stream Issues												Current Tasks			
Task	Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes		Task Description	Status	Target Date	Leader
D1Update existing stream crossing inventory every 10 years to reflect changes & document improvements	H	\$15,000	\$15,000	X	New Inventory Complete	C	USFS; MDNR, NFS	Tribal 2 pct. Funding; Great Lakes Fisheries Trust	2e; 3e	Current inventory completed in 2004		Update road survey at 10 year intervals.	New item as of 2/19 New pricing for inventory is in hand from CRA.		Tim Phillips
D2Restore and protect 74 road-stream crossings identified in the inventory as sites of severe or moderate concern, using appropriate BMP's. Restore and protect additional sites on road-stream crossing inventory as conditions require and funding becomes available.	H	varies	\$4,280,000	5 sites addressed	15 sites addressed	All severe and moderate sites improved	CRA; LMWCC; MDOT; road commissions, NFS	Grant funding required; Road commissions; MDOT; MDEQ	2e; 3e	Cost cited is for 74 sites, per 2014 inventory. Estimates may change as new needs are identified		Try to drive work on Work on crossings as opportunities arise.	Focus on Cool Creek/Stonach crossings initially. This is primarily county work, expense is generally beyond LMWCC reach without grant funding.		LMWCC
D3Identify sites where private roads may have an impact on surface water quality. Work with property owners to minimize movement of sediments, nutrients, salts, etc. into adjacent water	M	varies		X	Sites Identified	C	<u>Private land owners</u> : CRA	Private funds	3e			See if private roads are part of the new survey			Tim Phillips
D4Develop & institute policies regarding use of dust control agents on unpaved roads near surface waters. Institute BMPs to prevent dust-control agents from entering surface waters.	L	unknown		X	Policies developed	C	Road Commissions; MDOT; MDEQ, USFS; MDNR; LMWCC, NFS	N/A	3e				They use brine.		

Category E: Land Protection and Management											Current Tasks			
Task	Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
E1Work with Land Conservancies and/or other agencies to develop a systematic priority parcel analysis for significant lands in Mason County and Lake County segments of the Watershed. Update the existing analysis for the Manistee County segment.	M		\$10,000	Manistee analysis cmplete	Analysis complete for Lake and Mason	C	USFS; MDNR, NFS	Grants; private donations	4b; 4f; Goal 5		Contact relevant Land Conservancies to develop a plan to do an anlysis.. Grand Traverse Land Conservancy, Cadillac Area Land Conservancy, determine if there others. Also Michigan Natural Features Inventory, MSU.	Cadillac Area Land Conservancy has signed partnership agreement.	Manistee 2022	LMWCC, Armas
E2Assist and support USFS, MDNR and/or local government acquisition of property for protection of water quality, threatened or endangered species, wildlife habitat and other sensitive ecological features	M		\$500,000	X	2 sites protected	C	CRA; LMWCC; MDot; road commissions, NFS	Nat. Res. Trust Fund. USFS funds	Goal 5	Acquisition from willing sellers only.	Coordinate with E1, Support their activities.			LMWCC
E3Support land-protection and land purchase activities on high-priority sites throughout watershed, including conservation easements and transfer/purchase of development rights where appropriate.	H		\$500,000	X	2 sites protected	C	Land Conservancies; private land owners	Nat. Res. Trust Funds; Private donations	Goal 5	Conservation Easements are generally favored, since the watershed already has significant acreage in public ownership	Coordinate with E1, Support their activities.			LMWCC
E4Promote participation in NRCS programs and Michigan Agriculture Environmental Assurance Program (MAEAP) to encourage BMP's in agricultural operations and MEAP forest and wetlands habital assesment (2014).	L		No costs identified	X	1 farm certified	C	Farm owners; MDARD	N/A	3e		Link Dani with Landowners for Cost Assistance Work with Josh Shields and Jamie VanderZanen. Talk with Josh to set up later meeting to get details on this. Put Flyers in Homeowners guide. Get personally enrolled in some programs as demo. Perhaps get notice into tax bills about the program, get on Township Web	The MAEAP program for our area is based out of Mason-Lake Conservation District and covers Lake, Mason and Manistee Counties. They are happy to work directly with landowners to support best management practices as outlined in the MAEAP program. Landowners need written plan for Forest wetlands program. If appoly for NRCS docs for cost share can be a plan ot hire plan to be written.No min acres. There is federal cost share money. Jamie and Josh can help with navigating the process.	Meeti with Josh summer 2020	LMWCC - Armas
E5Use expertise of MSU Extension and Osceola-Lake Conservation District to educate farmers and riparian residents on use of buffer strips and cover crops to improve soil and manage storm runoff.	M		Unknown	Education programs offered and publicized	C	C	USFS; MDNR; LMWCC, NFS	N/A	Goal 1; 2a; 3c; 3e		Work with Jake then Jerry Kass at Mason Lake Conservation District. Continue work with Shorty Jensen.There is also some erosion associated with Shorty's property adjacent to Goucker's property. Also talk about buffers along rivers.	Expand Mason-Lake Conservation District soil management/erosion program. They currently have a technician in place working with landowners in the Sable and Lincoln watersheds to promote the use of cover crops and filter strips. Hopefully we can expand to LM watershed.	Meet with Conservation Districts Summer 2020	LMWCC - Armas

Category F: Habitat for Fish and Wildlife												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
F1	Maintain multiple-use management policies on public lands. Preserve upland habitat and wildlife corridors. Discourage new roads in state forest and wetland areas	H		No new costs	Continuation of current practice	C	C	USFS; MDNR, NFS	N/A	4a; 4b; 4c	This is a continuation of current policies	Continue/Monitor current policies	Ongoing		LMWCC
													Contacted Jamie 4/5/19, she will look into it.		
F2	Conduct fishery surveys on the Little Manistee River on a minimum 10 year cycle to monitor changes & evaluate stocking & management programs.	H		\$30,000	X	New survey complete	C	<u>CRA: LMWCC;</u> <u>MDOT; road commissions.</u> <u>NFS</u>	MDNR funds	4a; 4e		1) Updated Fish Cover/Erosion Control Survey (Last in 2014) 2) Inventory from Carrieville Road to Manistee Lake (Last in 2015)	Continue on 10 year updates with CRA and TU doing surveys.	2024	LMWCC
F3	Maintain current fish stocking & management strategies unless changes are warranted by scientific studies such as in F2	M		No New costs	C	C	C	MDNR; Trout unlimited; LRBOI	N/A	4a	Continuation of current policies	Shock at Johnsons Bridge - 3 yrs on 3 yrs off. Start On cycle in 2020	Now in off cycle. Only Chinook are stocked at Weir.	2020 restart On cycle	MDNR - Tonello
F4	Install and maintain fish habitat improvement structures as appropriate. Consider instream habitat and fish passage implications of all road crossing and bank stabilization projects.	M	\$10,000 per site	\$120,000	Woody debris installed, per plan	C	C	LMWCC; MDNR; CRA; Trout unlimited	Private donations; volunteer in-kind	Goal 2	Funds committed for woody debris work in 2018/2019	CRA looking for locations funding for Section 3 (Johnson's Bridge to Old M63)			Tim Phillips
F5	Evaluate & document stream and streamside habitat, including shade and forest cover for the Little Manistee River and major tributaries.	M		Not identified (See A2)	X	Evaluation complete	X	USFS; MDNR; LMWCC, NFS	N/A	Goal 2	This can be included in an enhanced bank erosion survey (A2)	Do with bank survey?	2024/2025		Tim Phillips
F6	Restudy & document habitat and fishery potential in each of small lakes and streams in watershed, many of which have not been evaluated in more than 50 yrs.	L		\$50,000	X	Inventory complete	X	MDNR; private land owners	Grants; MDNR funds; lake associations	4a			MDNR (Tonello) monitored all small streams in watershed in 2001 and 2002.		
F7	Evaluate fishery potential in the Luther Millpond and sites upstream of the Luther Dam.	H	\$30,000	\$30,000	Develop plans for cooperative study with MDNR; Village and Township	Complete Study	Publicize study's results and recommendation	Ellsworth Twp.; Village of Luther; Trout Unlimited; MDNR; LMWCC	Grants; LRBOI; TU; MDNR	1a; 1f			MDNR (Tonello) monitored 10 to 12 streams in watershed in 2001 and 2002.		
F8	Closely monitor operation of Luther Dam and spillway. Recommend changes as appropriate. Specify which agency (Village or MDNR) is responsible for operation of the dam.	H	No new costs identified		Develop operation and monitoring plan	C	C	Village of Luther; Ellsworth Twp. MDNR; LMWCC	Village and township funds	2b; 2e	This item could be a short-term option or a long-term option, depending on action in F9	Monitor Inspections Every 5 Years	Luther Village is responsible. DEQ inspects Dam for Safety MDNR has no authority		Luther Village
F9	Develop long-term options for removal of the Luther Dam and restoration of the Millpond and park area and upstream tributaries. Recognize that the dam is the property of the village, and removal/restoration can occur only if village residents and officials determine it is in their best interests.	M		Variable: \$50,000 to \$2 million	Phase 1: create working group; identify long term costs and benefits of maintaining the dam/millpond	Phase 2: identify benefits and costs of fish passage, stream restoration; dam removal or operational changes	Phase 3: Act on appropriate phase 2 findings	Village of Luther; Ellsworth Twp. LMWCC; MDNR; MDEQ	State or federal grants required	1a; 2b; 2e	Changes in dam operation and/or fish passage may have modest costs; Dam removal and stream restoration would cost up to \$2 million	If/when Luther Village asks for help removing the dam we help them.	Economic factors will probably eventually result in removal of the dam.		

Category G: Recreation, Safety, Navigation and Human Health											Current Tasks			
Task	Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
G1Continue and expand volunteer monitoring for E. coli and other pothential pathogens	H	See task I2	See task I2	Monitoring in place	C	C	USFS; MDNR, NFS		3a; 3b	E. coli monitoring costs are incuded with general monitoring in task I2	Continue and Expand LMWCC monitoring work and investigate increasing number of sampling dates, the level of sophistication and cooperation with professionals. Tie in TU? Investigate working with Conservation Districts	LMWCC does water quality monitoring after July 4 weekend at 13 sites.. Investigate coordinating with Conservation Districts. We cooperate the Volunteer Stream Monitoring Program and CLMP.		LMWCC - Joyce Durdel
G2Work with State Forest and National Forest staff and ORV groups to ensure that motorized trails are designed and used in ways that do not negatively impact water quality.	H	No new costs identified		Trails inspected and site issues identifiend	Sites corrected	C	CRA; LMWCC; MDOT; road commissions, NFS	Trail program funds	4b; 4c; 4e		Monitor Trails for Problems Point out problems and drive solutions.			LMWCC
G3Initiate "adopt a stream" or similar volunteer program for ongoing river clean-up and tree management.	M	No new costs identified		Program in place	C	C	Conservation Districts;	N/A	1c; 1e		Get a coordinator in place for Rivers Stewards program at LMWCC. Work with Zack Prause @ Little River Band to contact Emma at MUCC for equipment and tarash	Transition in board members and non-resident volunteers make this difficult.		LMWCC
G4Monitor paddlecraft volume to ensure that such use does not exceed the river's carrying capacity.	L	No new costs identified		Monitoring dates/criteria identified	Program in place	C	LMRCC; Private Landowners		4b; 4d; 4e		Talk to Ranger at NFS about river traffic and landing condition..	Wier to lake is maybe a problem due to Manistee Paddlesports, some activity at 6 mile bridge.		LMWCC
G5Keep at least one campground open through October to accommodate late-season paddllers	M	Unknown		Campground operational costs and options assessed	C	C	USFS; MDNR; LMWCC, NFS	N/A	4b; 4d	Proposed by the public at informational session	Talk to Ranger at NFS.	See if we can open Bear Track April 1 to Late October for color tours an fishermen. Not being open for April 1 fishing opening pushes people onto other parts of the forest. Mountaion bikers use Bear Track as a base.		LMWCC - Jim Squier

Category H: Hydrology, Groundwater and Wetlands												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
H1	Install and monitor permanent gauges throughout watershed to evaluate & report stream flow, water temperature, and high-low water conditions. Investigate emerging technologies for automatic sensors, if USGS gauging is not available.	H	variable	\$10,000 - \$35,000	Permanent gauges in place	C	C	USFS; MDNR, NFS	USGS; Local donors	2a	\$35,000 is estimate for USGS gauging station	Work with NFS and TU to Implement 2 to 6 Mayfly Data Loggers on the Little Manistee.	TU is putting together a proposal for the station to get a grant to fund the stations. Armas and Joyce have attended training and are enlisting additional citizens to help monitor.	Fall/Winter 2019	Armas will report Status to the Team
	Study and Implement a system of local groundwater monitoring to assess both flow levels and quality of this vital resource. Actively support legislation to develop a statewide system of groundwater and surface water monitoring.	H	variable	\$50,000	Collect aquifer data and design monitoring strategy	Monitoring begins	C	CRA; LMWCC; MDOT; road commissions, NFS	N/A	2a; 2d; 5c; 5e	Costs may vary widely depending on study design. Funding for statewide program is preferred.	Tie into H1 as possible.			
H3	Work with local government to regulate installation of new impervious surfaces in the stream corridor and mandate BMP's to control stormwater and mitigate impact of new and existing impervious surfaces.	M		No new costs	X	Impervious surface policies in effect	C	Twp planning comms.	Grants, in-kind labor	1a; 1f; 2d; 3c; 4e	This element of groundwater protection is also included in categories B and C, and in education component (Cat L)				
H4	Protect wetland areas from development; initiate programs to educate the public about the role of wetlands in water quality	M		\$5,000	X	Wetland program offered to schools and service groups	C	MDEQ; MDNR, Twp. Planning comms.; LMWCC	Conservation Districts; Inland Lake Groups; townships	1a; 2a; 2d	Wetland education costs also included in I/E program estimates (Category L)	See L7			
H5	Adopt state and local rules, protective of groundwater, to monitor and regulate the practices of horizontal drilling & hydraulic fracturing for oil & gas extraction, including associated infrastructure and disposal facilities	H		unknown	C	C	C	USFS; MDNR; LMWCC, NFS	N/A	2a; 2d; 4f					
H6	Monitor for nitrates in well water, especially at sites with light soils and historic agricultural use	M		unknown	C	C	C	Health departments	N/A	2d; 5d		Reach out to Conservation Districts to coordinate. Lake Mason Conservation does water testing every July, put in LMWCC Newsletter	Mason-Lake Conservation District existing MAEAP program focuses on groundwater protection, so please reach out when you are ready to tackle these action items and we will try to help. We have free nitrate screening days coming up next month if you want to spread the word. I'll send you the flyer.		Armas

Category I: Water Quality Monitoring												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
I1	Continue & expand volunteer stream monitoring program for biological markers.	M	\$500	\$5,000	Program continues in place	C	C	USFS; MDNR, NFS	Local funds	1a;3b; 3f	LMWCC has VSMP records back to 2007	Tie into Mayfly stations in H1 as possible.	Investigating possibly to tie in with NFS coldwater studies at USFS research center in St Paul Minnesota.		Armas to report.
I2	Continue regular phosphorus, DO and <i>E. coli</i> monitoring by Watershed Council. Expand this program to include all lakes in the watershed. Add monitoring of thermal conditions	H	\$5,000	\$50,000	Program continues in place	Neew sites added as appropriate	C	CRA; LMWCC; MDOT; road commissions, NFS	LMRCC funds; local donotations; volunteer in-kind	Goal 3	This funding includes monitoring in tasks B2 and G1	Continue and expand LMWCC monitoring program, expand cooperation with Conservation districts and educational groups.			Joyce
I3	Develop a database of water quality information to be maintained on publicly accessible website such as the Manistee Conservation District.	H	\$1,500	\$15,000	Database in place	C	C	LMWCC; Conservation Districts	local grant funds; LRBOI 2 pct. Funds; MCD funds for continuing operation	1c; Goal 3		This informatino is on the LMWCC web site.			Joyce
I4	Continue MDEQ monitoring program to track stream biology.	H	No New Costs identified		MDEQ monitoring scheduled	C	C	MDEQ	Exisiting MDEQ funding	3b	MDEQ monitoring scheduled for 2019 on a 5-year cycle	Support MDEQ where possible.as requested.			
I5	Per category H2: Actively support the portion of the Michigan Water Strategy that calls for a statewide system of groundwater and surface water monitoring. Coordinate letter of support campaign with watersheds in region.	M	No New Costs identified		Develop and distribute letter of support; coordinate communications	C	C	USFS; MDNR; LMWCC, NFS	N/A	2a;2d; 5b; 5e	This expands on a portion of item H2				
I6	Talk to health Departments about testing to identify human fecal matter in the Little Manistee River from Septic Systems											Check with health dept. about testing to detect human fecal matter.	New in 2019		Joyce

Category J: Invasive Species												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
J1	Develop terrestrial and aquatic invasive species monitoring program for entire watershed. Create Little Manistee River task force to coordinate among the various ISN agencies.	H		Unknown	Task Force created	C	C	USFS; MDNR, NFS	N/A	3f; 5e	The Watershed is split among service areas of two Invasive Species Networks; This task would ensure coordination through periodic meetings.	Work with Vicki Sawicki and Katie Grzesiak at Conservation Districts to develop a monitoring plan for the entire watershed and coordinate efforts. Kaysk River to identify problems.	Mason-Lake Conservation District - many invasive species management components are already underway through the CISMAs, but could expand within the Little Manistee Watershed	Summer 2020	LMWCC - Joyce
J2	Use information from the monitoring program (J1) and existing strategies to develop and implement a comprehensive invasive species strategy, which will include elements of prioritization, control, education, and habitat restoration.	H		\$20,000	Plan in Place	C	C	CRA; LMWCC; MDOT; road commissions, NFS	ISN funding; local volunteers	3f;		Work with Vicki Sawicki and Katie Grzesiak at Conservation Districts to develop a strategy for the entire watershed.			LMWCC - Joyce
J3	Develop and implement plans to control or eradicate invasive phragmites on public and private sites.	M	\$1,000	\$10,000	Plan in place	C	C	ISN's; townships; property owners; USFS	Private funds	3f		Work with Vicki Sawicki and Katie Grzesiak at Conservation Districts to develop a plan for the entire watershed.			LMWCC - Joyce
J4	Research boat-washing methods and promote boat washing throughout the watershed, in cooperation with Manistee County and the Benzie Conservation District.	H	No new costs identified		Demonstrations of boat-washing systems twice annually in watershed.	C	C	Benzie Conservation District; Manistee County	MDNR Invasive Species pathways grant	1a; 3d; 3f	Three mobile boat washing facilities are available regionally	Work with Vicki Sawicki and Katie Grzesiak at Conservation Districts to develop a plan for the entire watershed.			LMWCC - Joyce
J5	Develop educational and demonstration facilities for cleaning waders and other fishing gear at popular river entry sites	H	\$2,000	\$20,000	Wader cleaning facility in place at Bear Track Campground	3 stations in place	Stations in place at all popular fishing entry points	USFS; MDNR; LMWCC, NFS	Local donations and volunteer in-kind labor.	1a; 1e; 3f	May be co-located with kiosks in task L2	Work with Vicki and Katie, Lake groups to promote Clean Drain, Dry program. Promote using funds from boat stickers for public landing infestations.	LMWCC has been meeting with lake groups to understand needs and help coordinate work. Money is in SAD fund. Harper Lake has Starry Stone Wart.		LMWCC - Joyce
J6	Float navigable segments of mainstream with Invasive Species Network staff to inventory terrestrial and emergent invasives	M		\$15,000	X	Inventory complete	C	LMWCC, ISN's	LRBOI grant; in-kind labor	1a, 3f	Could be combined with streambank inventory (A2) for cost savings	Float the river with Vicki Sawicki to identify and locate infestations of aquatic and terrestrial invasives.	Scheduled with Vicki for summer 2020.	Summer 2020	LMWCC - Joyce

Category K: Wastewater and Septic Systems												Current Tasks			
Task		Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
K1	Work with local governments to establish and enforce uniform mandatory "inspection-on-sale" regulations for septic systems throughout watershed	H	\$300 per inspection	\$330,000	County boards asked to consider rule	Rule inplace in Lake and Masoin counties	C	USFS; MDNR, NFS	Private inspection fees.	1a; 1f; 3e5e	State legislation (See K3) is preferable. Cost estimate based on inspection of 25 percent of systems during 10 year period.	Check with County Board for inspection on sale viability.	Work with conservation districts to coordinate and promote these ideas.		Dale
K2	Consider rules to ease the creation of community systems or other alternatives where individual septic systems are problematic	L		Unknown	Proposal communicated to planning commsions	C	C	CRA; LMWCC; MDoT; road commissions, NFS	N/A	1a; 1f; 5e		Investigate alternative systems (i.e. Sludgehammer), Investigate possible USDA loans/.grants			Dale
												Identify problem areas, possible solutions and develop educational materials			
K3	Support legislation to create statewide standards for installation, operation and inspection of on-site wastewater systems, including septic tank and drainfield systems. Coordinate with other watersheds in region.	H	Unknown	Unknown	Develop streategy and letters of support; share with regional watersheds	C	C	LMWCC and regional watershed groups; Legislature	N/A	1a; 3e; 5e	Michigan is only state without a statewide code. Costs would likely be borne by property owners, as in K1	Talk to State government to support reintroduction.			Dale
K4	Develop educational materials to inform landowners of the proper management and impact of septic systems and fertilizers. Distribute through local health departments, volunteer groups and septic pumping companies.	M	\$5,000 for materials and printing	\$5,000	X	Materials developed for distribution	materials shared through townships and health departments	LMWCC. Townships, health departments; pumping contractors	USFS; MDNR; LMWCC. NFS	1a;3e;5e		Develop, distribute Education Materials for landowners.			Dale

Category L: Information and Education											Current Tasks			
Task	Priority	Unit Cost	Estimated Total Cost	Milestone 2018-21	Milestone 2022-25	Milestone 2026-28	Potential Project Partners	Potential Funding Sources	Objectives Addressed	Notes	Task Description	Status	Target Date	Leader
L1 Preserve the distinctive character of the Watershed by promoting rustic and natural appearance of all structures, signage and facilities at access sites. Work with campgrounds and access sites to establish voluntary uniform designs	M	Unknown		Establiish working group to consider designs	C	C	USFS; MDNR, NFS		4b; 4e;5b					
L2 Install educational kiosks or signage at appropriate sites to inform users of Watershed concerns and stewardship opportunities.	M	\$1,000 per kiosk	\$3,000	one kiosk installed	C	Three kiosks in place	CRA; LMWCC; MDOT; road commissions, NFS	Local donations; in-kind volunteer labor	1a; 4b;4c	May include invasive species information and wader-cleaning station at fishing access sites				
L3 Develop a list of all riparian property owners for dissemination of edicational and informational materials.	H		\$2,000	List in place	List Updated semi-annually	C	County governments	In-kind volunteer labor	1b					
L4 Assign communications element (group or individual) within LMWCC to promote Watershed education through multiple pathways, including in-school programs, local media, public presentations and direct mail.	M	\$3,000 per year	\$30,000	Commuication group and strategy inentified	C	C	LMWCC; Schools; Libraries	Local foundations; LRBOI	1a; 5e					
L5 Establish a program of outreach to developers and real estate professionals to share research showing that clean water and land stewardship can positively impact property values, and to communicate the range of possible land protection strategies.	M		\$5,000	Contact list established; Outreach in place	C	C	USFS; MDNR; LMWCC, NFS	Local funds	1a; 1f					
L6 Maintain updated versions of the WMP on a publicly accessible website, and provide hard copies to libraries in and near the Watershed.	H		\$1,000	Plans available	C	C	LMWCC; Schools; Libraries		1a; 1b	Ideally, water quality database will be on same website	Load Current version of WMP to LMWCC web site	Current version is on web site.	Ongoing	Armas
L7 Create grant-supported project to inform/educate township governments and the public of the role of land use BMP's in maintaining water quality.	H	\$40,000	\$40,000	Project Planning	Funding secured; project begins	C	LMWCC	Foundation grants; LRBOI		This task creates additional funding to extend the work in task C1	FIND or Develop a document similar to the Traverse Bay or Lake Charlevoix pamphlets on land stewardship.			
L8 Include review of WMP implementation progress as an agenda itemfor annual membership meeting of LMWCC	M	No new costs	No new costs	Annual review in place	C	C	LMWCC; all partners invited to participate	None Needed	All Goals	Annual review will incude progress reports and opportunity to amend the plan	Annual Updates at LMWCC Annuall Meetings.	Presentations have been made in 2016, 2017, 2018 and 2019	All Annual Meetings	Armas
L9 Conduct an annual day long meeting of all interested stakeholders to review the status of the plan, update it and and set Goals and Objectives for the upcoming year(s).	H	No New Costs		Initial meeting scheduled for Feb.2 2018.	Annual Meetings	Annual Meetings	All interested Stakeholders	None Needed	All Goals	Annual review will incude progress reports and opportunity to amend the plan	Schedule Annual Watershed Meeting	Meeting held in Feb, 2019 and being scheduled for March 2010	First Quarter Each year	Armas