

Table 39 cont. Implementation Tasks and Actions

Objectives	Tasks	Priority (L,M,H)	Milestone	Notes	Potential Partners	Estimate Total Cost	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
<b>GOAL 1 - Public Health:</b> Ensure that participants in water-based recreation are not exposed to pathogens or toxic chemicals, and are not consuming water, wild fish or wildlife with contaminants in excess of advisories.																	
1.D. Protect groundwater from contamination sources to protect public drinking water supplies.	1.D.9. Work with the Planning Commission to develop a septic system ordinance requiring routine inspection and pumping.	H	Develop draft ordinance by year ten.		PLWF, Village, Onekama Twp., Planning Commissions, Health Dept.	\$10,000										Draft complete	
	1.D.10. Advocate for and implement groundwater pollution prevention best management practices in the Watershed.	H	Develop list of suggested BMPs by year five; Begin implementation by year ten.		PLWF, Health Dept., MCD, MSU Ext., LRBOI	\$23,250					List Developed					Implementation	
<b>GOAL 2 - Aquatic Ecosystem:</b> Protect the quality of water resources in the Portage Lake Watershed, as well as other essential habitats, to maintain the integrity and functions of the aquatic ecosystem.																	
2.A. Monitor Portage Lake to assure that future loadings of nutrients, specifically phosphorus, do not exceed levels that would change the current mesotrophic status of Portage Lake.	2.A.1. Monitor total phosphorus, transparency, and chlorophyll <i>a</i> .	H	Monitor sites annually.	Refer to Monitoring Plan	PLWF, Onekama Twp., Village, EGLE, MDNR, LRBOI, Health Dept.	\$38,500	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
	2.A.2. Determine what additional actions, if any, are needed to control phosphorus loading based on inspections, surveys, and monitoring.	H	Review results every two years beginning in year two.		PLWF, EGLE, MDNR, MCD, MSU Ext., USDA-NRCS, Health Dept.	\$7,500		Review		Review		Review		Review		Review	
	2.A.3. Inventory existing stormwater point-source discharges from the Village of Onekama and other areas with direct discharges to Portage Lake and tributary streams.	H	Inventory completed by 2020. Update every ten years.	Refer to Monitoring Plan		PLWF, Village, Onekama Twp., EGLE, Health Dept., MSU Ext.	\$10,000	Complete									
	2.A.4. Inventory existing significant nonpoint sources of stormwater that discharge to discharges to Portage Lake and tributary streams.	H	Inventory completed by year five.			PLWF	\$2,500				Complete						
	2.A.5. Perform wet weather sampling of stormwater for phosphorus and other water quality parameters.	H	Sample annually.	Refer to Monitoring Plan		PLWF	\$10,000	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
	2.A.6. Monitor streams and storm drains annually and document accordingly.	H	Monitor annually.	Refer to Monitoring Plan		PLWF	\$39,000	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

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<b>GOAL 2 - Aquatic Ecosystem:</b> Protect the quality of water resources in the Portage Lake Watershed, as well as other essential habitats, to maintain the integrity and functions of the aquatic ecosystem.																	
<b>2.A.</b> Monitor Portage Lake to assure that future loadings of nutrients, specifically phosphorus, do not exceed levels that would change the current mesotrophic status of Portage Lake.	<b>2.A.7.</b> Monitor <i>Cladophora</i> algae during the middle of the summer as an index to detect nearshore nutrient sources.	M	Monitor every five years.	Refer to Monitoring Plan	PLWF, EGLE, MDNR, LRBOI, Onekama Twp.	\$1,500	Monitor				Monitor					Monitor	
	<b>2.A.8.</b> Determine algal composition and perform algal identification within Portage Lake.	M	Monitor annually.	Refer to Monitoring Plan	PLWF, Onekama Twp., Village	\$3,000	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
	<b>2.A.9.</b> Sample dissolved oxygen (DO) levels in the epilimnion of Portage Lake to determine whether DO levels meet state water quality standards.	M	Annual sampling.	Refer to Monitoring Plan	Refer to Monitoring Plan	PLWF, Onekama Twp., Village, EGLE, MDNR, LRBOI, Health Dept.	\$35,000	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
	<b>2.A.10.</b> Determine if additional DO sampling is needed to determine whether the severity, depth, and period of oxygen depletion below the thermocline has increased significantly.	M	Review annually.	Review annually.	During the Lake Manager's review of the annual report; Refer to Monitoring Plan	PLWF, EGLE, MDNR, LRBOI, Health Dept.	\$5,000	Review	Review	Review	Review	Review	Review	Review	Review	Review	Review
	<b>2.A.11.</b> Continue efforts to determine type, locations, potential discharges, and impact from any historical industrial uses on or adjacent to Portage Lake.	L	Identify areas by year five; Review status every five years.	Identify areas by year five; Review status every five years.		PLWF, Village, Onekama Twp., Historical Museum	\$2,500					Identify					Review
<b>2.B.</b> Protect wetland habitats contiguous to Portage Lake and tributary streams to assure that they continue to provide natural filtration and function as spawning, nursery, and refuge areas for resident fish and wildlife populations.	<b>2.B.1.</b> Update recently identified and mapped significant contiguous wetland areas associated with Portage Lake and tributary streams.	H	Update every five years.	Refer to Monitoring Plan	PLWF, EGLE, MDNR, LRBOI, USFWS, MSU Ext., MCD	\$12,500					Update					Update	
	<b>2.B.2.</b> Determine whether existing federal, state, and local regulations are adequate to protect these areas from injury should future development occur.	H	Determine by year two.		PLWF, EGLE, MDNR, USFWS	\$1,000	Research	Complete									
	<b>2.B.3.</b> Make recommendations for actions to local units of government, if needed, to assure that critical contiguous areas are protected.	L	Have process for review set by year three.	Have process for review set by year three.	Involve the Wetlands Committee to provide review and comment and make recommendations	PLWF, EGLE, MDNR, LRBOI, USFWS	\$2,250	Develop	Develop	Complete							
<b>2.C.</b> Protect the shallow (littoral) zone habitat from physical alteration and the spread of invasive plant species.	<b>2.C.1.</b> Survey the shoreline and land adjacent to Portage Lake, with particular attention to the presence of exotic, invasive species.	M	Survey every five years.	Refer to Monitoring Plan	PLWF, EGLE, MDNR, LRBOI, USFWS, Onekama Twp., Village, MSU Ext., School	\$21,000	Survey				Survey					Survey	

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<b>GOAL 2 - Aquatic Ecosystem:</b> Protect the quality of water resources in the Portage Lake Watershed, as well as other essential habitats, to maintain the integrity and functions of the aquatic ecosystem.																
<b>2.C.</b> Protect the shallow (littoral) zone habitat from physical alteration and the spread of invasive plant species.	<b>2.C.2.</b> Survey aquatic plants with attention to invasives using the latest surveying techniques.	M	Survey annually.	Refer to Monitoring Plan	PLWF, MISIN, EGLE, MDNR	\$47,000	Survey	Survey	Survey	Survey	Survey	Survey	Survey	Survey	Survey	Survey
	<b>2.C.3.</b> Advocate for meaningful federal requirements and support Michigan's efforts to control invasive species through ballast water discharge controls for ocean-going vessels entering the Great Lakes.	M	Initiate in year one.		PLWF, encourage other partners	\$10,000	Support	Support	Support	Support	Support	Support	Support	Support	Support	Support
	<b>2.C.4.</b> Review treatment options and make recommendations to the Onekama Township Board for management and treatment of invasive species.	M	Minimum of two treatment option recommendations to present annually.	Monthly reports are given to Onekama Township with updates and treatment options	PLWF, EGLE, MDNR, LRBOI, USFWS, MCD, MSU Ext., MISIN	\$11,000	Review	Review	Review	Review	Review	Review	Review	Review	Review	Review
	<b>2.C.5.</b> Treat and manage invasive species in and around Portage Lake.	M	Treat annually.	Refer to Monitoring Plan	PLWF, EGLE, MDNR, Onekama Twp., MISIN	\$ 686,000	Treat	Treat	Treat	Treat	Treat	Treat	Treat	Treat	Treat	Treat
	<b>2.C.6.</b> Develop and implement a program to identify and make recommendations for the application of best management practices to address significant soil erosion and sedimentation sources on lands riparian to Portage Lake and tributaries.	L	Develop and implement a program by year five.		PLWF, USDA-NRCS, MCD, MSU Ext., County, EGLE, MDNR, LRBOI	\$3,750	Develop	Develop	Develop	Develop	Implement					
	<b>2.C.7.</b> Identify possible threats to the shoreline and excessive sediment sources.	L	Identify threats by year five.	Example- Wave action of boats	PLWF	\$2,000					Identify					
	<b>2.C.8.</b> Identify and utilize technology to map the unimproved shoreline areas of Portage Lake.	L	Map by year five.	Use of drones, GIS, LiDAR, etc.	PLWF, County, Onekama Twp., Village	\$15,000					Map					
	<b>2.C.9.</b> Evaluate the effectiveness of existing federal, state, and local regulations to protect critical undisturbed areas from impairment and make recommendations to protect these areas.	L	Evaluate by year five.		PLWF, EGLE, MDNR	\$1,000	Evaluate	Evaluate	Evaluate	Evaluate	Complete					
	<b>2.C.10.</b> Work with partners to demonstrate natural shoreline protection techniques on Portage Lake.	L	Determine potential locations of implementation by year five; Complete one project by year ten.		PLWF, MCD, PLGC, MSU Ext.	\$1,250					Location List					Project Complete

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<b>GOAL 2 - Aquatic Ecosystem:</b> Protect the quality of water resources in the Portage Lake Watershed, as well as other essential habitats, to maintain the integrity and functions of the aquatic ecosystem.																	
2.D. Implement site-specific best management practices to address stormwater runoff, soil erosion, shoreline protection, and pollutant source areas at identified problem areas.	2.D.1. Determine the most effective methods to address issues in the Watershed; implement as appropriate.	H	Plan in place by year five, list of potential projects by year ten.		PLWF, PLA, MDNR, EGLE, MSU Ext., MCD, PIW	\$8,125					Plan Complete					List Complete	
<b>GOAL 3 - Water-Based Recreation:</b> Protect and enhance the quality of and access to water-based recreational opportunities within the Portage Lake Watershed for people of all ages and abilities.																	
3.A. Maintain access to Portage Lake for boat-based recreation.	3.A.1. Support and participate in the efforts of the Portage Lake Harbor Commission to secure adequate, sustained funding for the dredging of Portage Lake Channel to depths required to accommodate recreational boating access.	H	Evaluate outside funding needs every five years.		PLWF, Harbor Commission, USACE, other partners as appropriate	\$ 30,000	Evaluate					Evaluate					
	3.A.2. Support improvements and maintain existing boating access, marina facilities, and current public access sites for launching of watercraft into Portage Lake.	H	Develop list of potential projects by year two; Complete five maintenance projects by year ten.	Maintain current signage at access sites	PLWF, Onekama Twp., Village	\$2,500		Develop List								Complete projects	
	3.A.3. Support efforts to acquire additional properties for boating and non-boating public access to Portage Lake.	H	Identify properties by year three; Support acquisition of two additional properties by year ten.	Also supports 3.C.3. below	PLWF, Onekama Twp., Village	\$ 2,500			Identify								Acquire
	3.A.4. Support maintenance of north and south piers of the Portage Lake Channel breakwall to reduce the frequency of maintenance dredging and at the same time accommodate larger vessels.	M	Ongoing.		PLWF, USACE, Onekama Twp., Harbor Commission, Village, Local Businesses	\$6,250	Support	Support	Support	Support	Support	Support	Support	Support	Support	Support	Support
	3.A.5. Monitor use to identify capacity and identify other concerns at public access sites for launching of watercraft into Portage Lake.	H	Monitor every two years.		PLWF, MDNR, Onekama Twp., Village, MCRC	\$2,500		Monitor		Monitor		Monitor		Monitor		Monitor	Monitor