DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AQUATIC NUISANCE CONTROL AND REMEDIAL ACTION UNIT

LAKE MANAGEMENT PLAN

Pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and Part 33, Aquatic Nuisance Control, of the NREPA, and the administrative rules promulgated thereunder, a lake management plan is required as part of the application for a whole-lake chemical treatment to the waters described below for the control of nuisance aquatic vegetation.

WATERBODY NAME	COUNTY(IES)	TOWN(S)	RANGE(S)	SECTION(S)

I. PHYSICAL CHARACTERISTICS OF THE WATERBODY:

LAKE SIZE (ACRES): _____

MAXIMUM DEPTH (FEET): _____

MEAN DEPTH (FEET): _____

LAKE VOLUME (ACRE-FEET) – Include volume calculations as an attachment:

WHOLE LAKE = _____

BASED ON 0-10 FEET DEPTH = _____

SIZE OF LITTORAL ZONE (ACRES): _____

SHORELINE LENGTH (FEET): _____

SHORELINE DEVELOPMENT FACTOR: _____

RETENTION TIME (DAYS): _____

OUTLET FLOW RATE (CFS): _____ SOURCE: _____

☐ Location Map – include a map showing the location of the waterbody within the county(ies).

☐ Bathymetric Map – include a map of the waterbody indicating the depth contours at five foot intervals. The following attributes must be identified on the map: tributaries, outlets, inlets, public and private access sites, public land, critical fish spawning areas, wetlands, special habitats, parks, and water control structures. See guidance for instructions.

☐ Land Use Map – include a map of the waterbody indicating the land use of the surrounding area. The following categories shall be used to describe the land use on the map: high density residential, low density residential, commercial/industry, agricultural, parks, and undeveloped areas.

II. WATER QUALITY INFORMATION:

Provide the water quality parameter measurements on the data sheet provided (Appendix). These parameters are required, at a minimum. If there are additional data available or additional space is required, please attach additional pages. See guidance for specific collection requirements.

☐ Water Quality Sampling Map – include a map of the waterbody indicating the sampling sites used to collect the water quality parameters.

III. BIOLOGICAL CHARACTERISTICS OF THE WATERBODY:

Total higher aquatic plant surface coverage (%) = _____

☐ Aquatic Vegetation Map(s) and Data Analysis – include the results of an aquatic vegetation survey of the waterbody performed in August or September of the year prior to the proposed treatment. The survey and data analysis shall be performed according to DEQ's "Procedures for Aquatic Vegetation Surveys."

☐ Description of the Fish Community – include the source of the information and copies of any correspondence with fisheries biologists, anglers, natural resource groups, etc. Please attach the original comments as a separate sheet of paper.

☐ Description of the Wildlife Community - include the source of the information and copies of any correspondence with wildlife or habitat biologists. Please attach the original comments as a separate sheet of paper.

☐ Description of the Plant Community - include copies of any correspondence with the appropriate agencies. Please attach the original comments as a separate sheet of paper.

☐ Description of Special Concern, Threatened, or Endangered Species - include copies of any correspondence with Michigan Natural Features Inventory. Please attach as a separate sheet of paper.

IV. NUISANCE CONDITIONS:

List the current aquatic nuisance condition(s) occurring in the waterbody:

_____
_____
_____
_____
_____
_____

Indicate the activities that are being impaired by the nuisance conditions:

☐ Swimming
☐ Boating
☐ Fishing
☐ Hunting
☐ Other: _____

☐ Target Species Map – include a map of the waterbody indicating the current location(s) of each targeted nuisance species.

V. MANAGEMENT GOALS:

Indicate the appropriate management goals that are the desired outcome(s) of this program.

- ☐ Create/Maintain Swimming Areas
- ☐ Create/Protect Fish/Wildlife Habitat
- ☐ Improve Native Plant Diversity
- ☐ Protect Endangered/Threatened Species
- ☐ Create Areas for Recreational Use (boating, water skiing, fishing, etc.)
- ☐ Remove Exotic Plant Species
- ☐ Other: _____

☐ Management Goal Maps – include map(s) indicating locations where each of the goals may be achieved through the proposed management activities.

VI. HISTORY OF WATERBODY MANAGEMENT:

☐ Provide a written description of the management activities performed on the waterbody within the past ten years. Include mechanical, chemical, or biological control efforts, lake level manipulation, dredging, and fish stocking activities (including species stocked and stocking schedule).

VII. MANAGEMENT OPTIONS:

List all management options considered to achieve the goals established for this waterbody:

_____

_____

_____

_____

_____

Why was the proposed management option chosen over other options?

_____

_____

_____

_____

VIII. VEGETATION MANAGEMENT PLAN:

Propose a three-year aquatic vegetation management plan that will be used to attain the management goals for this project by checking the appropriate box(es) below. Include a brief summary for each year of the plan that prioritizes and describes the management strategy. For example:

Year 2: _2006_

1. Eurasian watermilfoil control – control any offshore reoccurrences of EWM using granular 2,4-D, reoccurrences within well isolation distances will be controlled using Renovate 3 (if budget allows) or Reward…

Year 1: _____

	Fluridone	Algaecides	Harvesting	Biological Control	Other
Exotic Submerged Species	☐	☐	☐	☐	☐
Algae	☐	☐	☐	☐	☐

Prioritize and provide a detailed description of your proposed treatment strategy:

_____

_____

_____

_____

Year 2: _____

	Systemic herbicides	Contact herbicides	Algaecides	Harvesting	Biological Control	Other
Exotic Submerged Species	☐	☐	☐	☐	☐	☐
Native Submerged Species	☐	☐	☐	☐	☐	☐
Emergent Species	☐	☐	☐	☐	☐	☐
Algae	☐	☐	☐	☐	☐	☐

Prioritize and provide a detailed description of your proposed treatment strategy:

_____

_____

_____

_____

VEGETATION MANAGEMENT PLAN (CONTINUED)

Year 3: _____

	Systemic herbicides	Contact herbicides	Algaecides	Harvesting	Biological Control	Other
Exotic Submerged Species	☐	☐	☐	☐	☐	☐
Native Submerged Species	☐	☐	☐	☐	☐	☐
Emergent Species	☐	☐	☐	☐	☐	☐
Algae	☐	☐	☐	☐	☐	☐

Prioritize and provide a detailed description of your proposed treatment strategy:

_____

_____

_____

_____

_____

☐ Annual Vegetation Management Maps – include maps showing areas of management for each year. Be sure to compare the Management Goal Maps with the Annual Vegetation Management Maps to ensure that the proposed treatments are consistent with the management goals.

☐ Fluridone Distribution Map – include a map of the waterbody indicating the proposed path of fluridone distribution in the lake.

☐ Fluridone Calculations – include any calculations used to determine the amount of fluridone requested for use.

IX. MONITORING AND EVALUATION:

List the proposed monitoring activities to be performed on the waterbody during the 3 years of the management plan, include proposed date(s) of each activity. Be as specific as possible.

Proposed Activity:	Proposed Date(s)
☐ Aquatic vegetation survey	_____
☐ Fluridone residue sampling	_____
☐ EffecTEST™	_____
☐ PlanTEST™	_____
☐ Water quality sampling	_____
☐ Fish surveys	_____
☐ Other: _____	_____

Describe how the monitoring results will be used to evaluate the success of this program in achieving the stated management goals:

Management Goals (from Section V.)	How will you evaluate your success of this goal using the monitoring results?
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

☐ Fluridone Residue Sampling Map – include a map of the waterbody showing locations where residue samples will be collected. Number each sample site.

X. LAKE MANAGEMENT PLAN DEVELOPMENT:

Who has participated in developing the lake management plan for this project?

- ☐ Commercial Applicator
- ☐ Lake Consultant
- ☐ Lake Board
- ☐ Lake Association
- ☐ Township(s)/County(ies)
- ☐ State Agency(ies) (specify) _____
- ☐ Park Administrator/Board
- ☐ Group of Individual Riparians
- ☐ Back Lot Owner(s)
- ☐ Other (specify) _____

☐ Documentation of Lake Management Plan Development – provide documentation of participation in development of this Lake Management Plan by stakeholders and agencies responsible for managing public trust resources. Attach meeting minutes and other correspondence separately.

Lake Management Plan prepared by: _____ (signature)

_____ (print name)

Date: _____

DEQ

DEPARTMENT OF ENVIRONMENTAL QUALITY
INLAND LAKES AND REMEDIAL ACTION UNIT

LAKE MANAGEMENT PLAN APPENDIX

WATER QUALITY DATA

Waterbody Name:_____ **County:**_____

Temperature and Dissolved Oxygen: Date measured: _____

Depth measured (feet)	Temperature (°C)	Dissolved Oxygen (mg/L)

Transparency:

Date measured:	Secchi Disk Transparency (feet)

Total Phosphorus and Total Alkalinity:

	Date measured	Total phosphorus (µg/L)	Total alkalinity (mg $CaCO_3$/L)
Surface sample at spring turnover	_____	_____	_____
Deep sample	_____	_____	