Massachusetts Final Agency Response to Comments Received on the Mass APM Guide

Submitted UTC	Step 1. MassGLM Document Chapters	Step 2. MassGLM Document Comment Type	Step 3. Original Line Numbers	Mass APM Guide New Line Number	Step 4. Comments Entered	Massachusetts Agency Final Comment Response
5/10/2025 11:07:08 PM	0. Foreword	Technical	74	21-28	There seems to be a distinct lack of proper citation of studies and reference throughout the document. In fact, the document itself does not clearly state who are the authors of the report other than a passing mention of photographs etc on page 74 to Ken Wagner. The public has a right to know who reviewed the science and wrote the summaries of the subject matter. The public has a right to know the qualifications of the author, who or whom they are, and hopefully, some confidence of the independence of the author from undue pressure from the agencies who funded the work. Furthermore, it is not clear and who is responsible for the response to comments and the views presented in the Final EIR. Is it the author(s) or is it the government officials?	The text has been revised to further clarify with an additional sentence "Dr. Ken Wagner and Dr. David Mitchell, both with decades of experience in lake management in MA, were hired to develop a new guide, with oversight from multiple environmental agencies of the Commonwealth. Each section was prepared by Drs. Wagner and Mitchell, reviewed by the agencies, then edited, with considerable discussion where disagreements arose. There is also a reference section that list where all of the reports, data, studies and outside information came from. A draft of the complete product was then put out for review by all interested parties, public or private, and further revision was performed. Finally, this guide will go through the MEPA process for adoption as official guidance."
5/3/2025 12:25:10 AM	0. Foreword	Technical	5-6	5-6	Provide references of the documents. And, if possible, a link to state library.	Once the new Mass APM Guide document is approved by MEPA, the old GEIR will be archived. Section 10 of the new document is References. The current Practical Guide can be found at www.mass.gov/lakesandponds. Each town's Conservation Commission will be notified of where the Guide is located. A reference (Wagner 2004) was added.
5/5/2025 1:29:44 AM	0. Table of Contents	General / Other	1	1	As a general comment on the entire document, Dr. Wagner is to be congratulated on this update of the GEIR. The Guide to Lake Management is an outstanding summary of a complex issue. It presents a balanced view of the science and practical experience of lake management. I hope that Secretary of EOEEA approves this update, when the final version is produced. Sincerely, Mark D. Mattson, PhD, former researcher at UMass Amherst, retired analyst at MassDEP and one of the authors of the 2004 GEIR.	The hard work of Dr. Wagner along with many other people in the state and nationally on the new Mass APM Guide, is a testament to the passion that is present in the preservation of our lakes within Massachusetts. We, along with Dr Wagner and others, will continue to hone these techniques and hopefully add new ones to this living document with the goal of long-term lake protection.
5/5/2025 1:32:25 AM	0. Table of Contents	General / Other	1	1	I submitted many dozens of individual comments and I apologize as many were answered or clarified later in the document.	The agency does not have a comment on this matter at this time.
5/14/2025 10:17:22 PM	0. Table of Contents	General / Other	1	1	The GLM is a massive undertaking, but worth the efforts. You all did an excellent job creating and updating this all encompassing guide for waterbody stakeholders in Massachusetts	The agency appreciates the acknowledgment.
5/14/2025 3:30:56 PM	0. Table of Contents	Technical	all	86-89	What is NOT said in the document is as relevant as what is said. First of all, this document presupposes that keeping unnatural lakes built by humans is preferable to allowing them to revert back to pre-manufacturing days when the flow of rivers were not impounded for the use by industrialists. What is not mentioned are exemplary approaches to waterbody management with very stringent standards and hoops to jump through in order to use of chemicals on waterbodies, as seen in Seattle, WA, and Portland, ME. These cities are far more restrictive about the use of chemicals in water bodies. ponds within our state that are being successfully managed ponds without the widespread use of chemicals. Adjuvants in herbicides, which are unregulated and unknown because they are listed by companies, such as SePRO as “secret,” “proprietary,” and “private.” Successes of places that have successfully managed the impact of invasive aquatic vegetation through non-chemical means, such as we see at Squam Lake in New Hampshire Complicated administrative hoops for governing bodies to jump through to apply chemicals to water bodies. Contingencies abounds for aeration and drawdowns (non-chemical controls), but not for chemicals (just follow the directions on the label). Longterm effects of chemicals on human health and to the environment, with the exception of mentioning herbivorous fish and PFAS Table 3 (line 3049) is striking in its lack of attention to the potential impact on humans and long-term impacts of ecosystems. The European Chemical Agency, for example, has indicated “probably harm to the unborn,” with the use of imazamox. This document notes work and observations done by the Lake George Park Commission; it does not make mention of the research being done by the Lake George Association.	Additional text was added to further clarify by adding "Recognize that this guide is about how to manage lakes and does not address questions of when management is or is not appropriate. There is discussion of establishing goals in the section on developing lake management plans, but this guide does assume that readers are looking for guidance on how to best manage for established goals."
5/15/2025 3:47:55 PM	0. Table of Contents	General / Other	NA	NA	The title "Guide to Lake Management" implies this is more comprehensive than it is. Would like to see more on public engagement, policy, and other topics outside direct algae and invasives removal.	The new name for this document is now Massachusetts Algae and Aquatic Plant Management Guide (Mass APM)
4/16/2025 7:39:38 PM	1. Essential Background Information	Grammatical / Editorial	129	141-142	Should be (Atlantic Coastal Pine Barrens)?	The text has been revised from Northeastern Highlands to Atlantic Coastal Pine Barrens.
5/15/2025 3:46:00 PM	1. Essential Background Information	Technical	195	209-211	As I understand, lake eutrophication and lake aging are not exactly the same thing. Eutrophication defines the lake's productivity which may result in lake aging and filling, but they should really be defined as separate processes.	Eutrophication is often used in the document as synonymous with aging but the term is really best defined as nutrient enrichment over time. The term "cultural eutrophication" is used to distinguish between the natural eutrophication process and the human induced acceleration. For simplicity, the term eutrophication in the comment is referring to cultural eutrophication throughout. A clarification was made in the document at the first instance where the term eutrophication is made.
5/15/2025 3:49:32 PM	1. Essential Background Information	Graphics / Image	247	266	This and other graphics in the document are hard to read; consider blowing them up, adding color, or producing originals	Best efforts have been made to update, clarify and colorize all graphics in this document

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4/25/2025 1:27:29 PM	1. Essential Background Information	Technical	254	270-274	Can you provide a reference?	An additional sentence has been added to provide examples and a reference.
4/25/2025 3:45:59 PM	1. Essential Background Information	Grammatical / Editorial	436	460	Delete during	The text has been revised to remove "during".
5/14/2025 3:10:47 PM	1. Essential Background Information	General / Other	558	584-592	Also lines 560, 12290 The document mentioned post-treatment monitoring for fish kills, but the problem with chemical treatments is not as much short-term effects, such as fish kills, but long-term effects, such as endocrine disruption: harm to the reproductive systems of wildlife — and human beings.	As part of the pesticide registration process at the federal level and the state level, product ingredients and product formulation are comprehensively reviewed and evaluated to ensure that the product, when used according to label instructions, is effective for the intended pest control while not posing unreasonable risks to human health, the environment and non-target species. For products that are labeled for use in and near aquatic systems, the evaluation includes specific assessments to address potential impacts to aquatic non-target species. Aquatic herbicides also undergo a special review by MDAR and MassDEP before these products are available for permitted use in Massachusetts lakes and ponds. No products were recommended in this document that have not been approved by both EPA an DAR.
4/25/2025 3:45:40 PM	1. Essential Background Information	Grammatical / Editorial	582	58	Put phosphorus before (P)	The text has been revised to define (P) as Phosphorus.
5/3/2025 12:16:10 AM	1. Essential Background Information	Grammatical / Editorial	746	734	Define PAH.	PAH is defined in line 734 of the document.
5/3/2025 12:29:12 AM	1. Essential Background Information	Technical	803	858-860	Can you add a description of size ranges of various bg and algae?	Most cyanobacterial cells are very small, <10 um in largest dimension, although most cyanobacterial cells are organized into filaments or colonies that tend to be quite large (>200 um in largest dimension). Dinoflagellates are among the largest algal cells, with the genus Ceratium often having cells in the 100 to 200 um range. Most algal cells fall into the 10 to 100 um size range, although colonies and filaments can be much larger and visible to the naked eye. Figure 6 has been updated with this description.
7/14/2025	1. Essential Background Information	Technical	806	883-835	The reason for including cyanobacteria with other algae is not adequately addressed here and had come up several times recently. Explain why cyanobacteria are algae.	Added a sentence after "unified classification": "Algae are defined as any organism without a vascular system that contains chlorophyll-*a* . As cyanobacteria contain chlorophyll-a as well as other photosynthetic pigments, they are algae."
5/3/2025 12:19:28 AM	1. Essential Background Information	Technical	810	846	probably add in toxicity as a factor.	The subsequent paragraphs after line 846 discuss toxicity for the benefit of the reader.
5/3/2025 12:49:49 AM	1. Essential Background Information	Technical	1050	1083-1087	Can you add a brief size range?	Protozoans are the smallest zooplankton, rarely exceeding 0.1 mm (100 um) for individual organisms, although colonial forms can be larger. Rotifers are slightly larger than most protozoans, tending to range from 0.1 to 0.4 mm. Copepods and cladocerans are larger, with small forms mostly in the 0.3 to 0.5 mm range and larger forms sometimes exceeding 3 mm. The text has been updated to include this information.
4/25/2025 3:44:34 PM	1. Essential Background Information	Grammatical / Editorial	1285	1309	specis should be species	The text has revised "specis" to "species".
5/3/2025 1:00:46 AM	1. Essential Background Information	Technical	1319	1342 - 1355	Precipitation itself is increasing in MA over the past decades.	The long-term trend (past 30+ years) shows that precipitation has increased. https://weather.gov/wrh/climate?wfo=box
4/25/2025 3:44:14 PM	1. Essential Background Information	Grammatical / Editorial	1346	1370	neare should be near	The text has been revised to update "neare" to "near".
5/14/2025 9:00:34 PM	1. Essential Background Information	Technical	1298-1299	1322-1324	Where there is not enough oxygen to support aerobic microbial activities, shifts occur that utilize alternative sources of oxygen and sediment chemistry is changed.' – Edit to 'Where there is not enough oxygen to support aerobic microbial activities, shifts occur that utilize alternative electron acceptors, and sediment chemistry is changed.'	The statement has been updated to: "Where there is not enough oxygen to support aerobic microbial activities, shifts occur that utilize alternative sources of oxygenelectron acceptors, and sediment chemistry is changed. "
5/15/2025 3:52:11 PM	1. Essential Background Information	Technical	1316-1318	1340	Language could be stronger here to affirm that climate change IS affecting lakes. I wouldn't reference "debate" as it implies legitimate uncertainty.	True. Change in climate for a multitude of reasons is a factor in changes in Nature

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4/25/2025 3:44:57 PM	1. Essential Background Information	Grammatical / Editorial	891 - 893	919-920	This sentence is not a sentence.	Sentence was clarified to: "When sediments that tend to be nutrient rich occur in shallow enough water where light penetrates to the bottom, algae can form blooms in the water column by initially growing at the sediment-water interface and then rise into the water column"
5/15/2025 3:55:06 PM	2. Lake Management Planning	Regulatory / Permitting	1401	1424	Would love to see guidance and more info on incorporating outreach and leveraging policy and regulations within a lake management plan. We get a lot of pushback with LM in our town... tips on how to weigh public opinion against ecological needs would be valuable.	Weighing public opinion against ecological needs is a social issue and varies with each person, town, state. State agencies follow the law that is put forward to ensure the protection of the resource. This guide was developed to outline the science and permitting needs of lake management in MA.
5/3/2025 1:07:24 AM	2. Lake Management Planning	General / Other	1438	1461	Maybe suggest emerging use of AI for evaluation of lakes and most likely techniques to reach reasonable goals.	All the state agencies are utilizing the new AI technology in the protection and monitoring of many environmental features including lakes. This new technology will develop over time and we will continue to utilize it.
5/3/2025 1:15:21 AM	2. Lake Management Planning	Regulatory / Permitting	1585	1607	If point sources including stormwater are involved the TMDL can and will be considered in the next permit cycle.	All information including TMDL's should be utilized in the protection of lakes. It is up to managing authority to compile and interpret these data.
4/25/2025 3:43:12 PM	2. Lake Management Planning	Technical	1737	1759	can you provide a reference for Carlson's TSI?	Carlson, R.E. (1977). A Trophic State Index for Lakes. Limnology and Oceanography, 22(2), 361-369.
5/14/2025 3:31:50 PM	2. Lake Management Planning	Technical	1876	1898	Why is there minimal need for post-implementation monitoring needs for algaecides but there is the highest priority need for post—implementation monitoring for drawdowns?	Data from algaecides is well researched.
4/25/2025 3:43:31 PM	2. Lake Management Planning	Grammatical / Editorial	1665 - 1667	1687-1689	Sentence is awkwardly worded; suggest parens around "unless it is expressly forbidden in MA"	The text has been revised to remove "expressly forbidden" with "not approved for application"
5/3/2025 1:24:50 AM	3. Regulatory Framework	Grammatical / Editorial	1982	1997-1998	define wpp	The definition of WPP was added.
5/3/2025 1:34:23 AM	3. Regulatory Framework	Regulatory / Permitting	2142	2148-2152	A 401 was never required in the past for weed harvesting and ACOE says it is not necessary. Why is MassDEP adding more regulations to a federal program? Leave 401 for dredging not weeds.	This text was updated to: "This is an area of potential difference between state and federal regulations. Vegetation removal *may* require a permit under 314 CMR 9.00 even where the USACE does not require a Clean Water Act Section 404 permit. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 314 CMR 9.00 is needed."
4/25/2025 3:42:04 PM	3. Regulatory Framework	Regulatory / Permitting	2272	2288-2293	somewhere in this section mention USF&WS IPaC.	The following text was added: "IPaC is the Information for Planning and Consultation tool provided by the United States Fish & Wildlife Service (USFWS) to identify species and their habitats protected and managed by federal agencies (USFWS, NOAA-NMFS, or others). Since all federal species are also protected pursuant to the MESA, when these species are identified for a project's habitat, the impacts must also be reviewed by the NHESP."
5/3/2025 1:42:48 AM	3. Regulatory Framework	Regulatory / Permitting	2324	2330	The MESA reviewers have too often interfered with needed lake treatments due to a possible 'take' of endangered species. A well know case was Mystic Lake where alum treatments to control bluegreen blooms and restore the lake were denied by MESA because reducing the nuisance algae would reduce the food supply of endangered mussels. As a consequence, the lake blooms and the toxic BG killed most of the mussels. There needs to be a balance and understanding of what is a natural condition and what is not.	While conflicts and different interpretations of situations arise, the overall goal of all state agency personnel is to protect the resource and work through conflicts as effectively as possible. Continuing data collection and analysis will hopefully help to mitigate many of these conflicts that may arise in the future.
5/3/2025 1:45:53 AM	3. Regulatory Framework	Regulatory / Permitting	2348	2354	The MESA conditions are often so restrictive that maintaining ecological balance with sensible lake management is impossible or financially unrealistic.	Noted. It is not the goal of this document to change the way MESA or any other agencies do their job. This document was intended to assist the lake manager in navigating **current** regulations for lake management.
4/25/2025 3:41:40 PM	3. Regulatory Framework	Grammatical / Editorial	2355	2361	Delete redundant "state-listed".	The text has been revised to remove the second "state-listed".
5/3/2025 1:49:40 AM	3. Regulatory Framework	Technical	2402	2410-2411	Mention again that the WPA specifically protects cold water fisheries.	Added additional text to further clarify the WPA includes special consideration for the protection of coldwater fish and their habitats.
4/25/2025 3:40:53 PM	3. Regulatory Framework	Regulatory / Permitting	2405	2412	Emphasize for inland Commissioners that Mass DMF has jurisdiction for alewife runs.	Mass Wildlife jurisdiction is further discussed in the next two paragraphs.
4/25/2025 3:40:18 PM	3. Regulatory Framework	Technical	2414	2420	Eels are catadromous.	Eels are diadromous, meaning they migrate between salt and fresh water. Eels are also catadromous, meaning they primarily live in rivers and estuaries, but migrate out to the ocean to spawn. Please refer to: https://www.fws.gov/species/american-eel-anguilla-rostrata

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5/3/2025 1:53:12 AM	3. Regulatory Framework	Regulatory / Permitting	2472	2476	Are ACECs under DCR jurisdiction? I think it's mostly WPA under DEP??	An Area of Critical Environmental Concern (ACEC) is a place in Massachusetts that receives special recognition because of the quality, uniqueness, and significance of its natural and cultural resources. Such an area is identified and nominated at the community level and is reviewed and designated by the state's Secretary of Energy and Environmental Affairs. The Department of Conservation and Recreation (DCR) administers the ACEC Program on behalf of the Secretary. Designation of an ACEC increases environmental oversight by increasing state permitting standards through elevated performance standards and lowering thresholds for review. ACECs are DCR jurisdictional. They are, however, referred to as part of the WPA regulations.
5/3/2025 1:56:46 AM	3. Regulatory Framework	Technical	2484	2486-2487	Mention that the authority to regulate approved herbicides should be restored to DAR, and not overridden by special laws exempting towns.	Massachusetts is a home rule state, meaning its cities and towns have been granted authority by the state constitution to manage their own local affairs, such as adopting local charters and ordinances. This power is not absolute, as it is limited by state laws and the state constitution, and local governments must often petition the state legislature for specific actions not covered by home rule
5/3/2025 2:00:23 AM	3. Regulatory Framework	Graphics / Image	2596	2601	Fig 13 Add cold water fishery to box with marine fishway etc. Also the figure title seems poorly formatted on my screen.	The targeted box already has CWF in it, defined as Cold Water Fishery in the legend. Best efforts have been made to reformat, clarify and colorize all illustrations in this document
5/15/2025 11:08:44 PM	3. Regulatory Framework	Graphics / Image	2596	2601	The clarity of the "Permitting Flow Chart for Lake Projects in Massachusetts" could be substantially improved by using different shading and/or shapes to identify starting and decision points.	Best efforts have been made to update, clarify and colorize all graphics in this document
4/25/2025 3:36:16 PM	3. Regulatory Framework	Grammatical / Editorial	2600	2601	Perhaps more of a graphic issue than grammar or editorial, but the caption on this figure is compressed, as is the footer for the page. This relates to the layout of the graphic, and I was unable to fix this in the assembly process. Someone will need to fix this in the final form, just for appearance.	Best efforts have been made to update, clarify and colorize all graphics in this document
5/14/2025 2:46:11 PM	3. Regulatory Framework	Document Functionality	2740	2740-2741	Link not working	Link was updated.
4/25/2025 3:35:25 PM	3. Regulatory Framework	Technical	1957-1963	1977-1982	There was originally considerable discussion of how differences in types of lakes affects management and permitting in this document, but agency review resulted in the removal of nearly all of it. All that remains is a description of constructed lakes at lines 150-168. Constructed lakes are not treated any differently than natural lakes in Massachusetts under the WPA, yet constructed lakes are very often more susceptible to algae or vascular aquatic plant nuisances by virtue of shallow depth, sediment features, and watershed size and land use. The WPA allows for actions that address human-induced eutrophication of lakes, but the language is ambiguous with regard to what constitutes sufficient human influence to overcome certain restrictions on management activities. Greater consideration of the link between constructed lakes and human-induced eutrophication is needed, and a definition of ecological restoration within the context of constructed lakes is needed. This could be added after line 1963. There is room for interpretation of the current WPA regulations with regard to how much latitude a project proponent may have with regard to a constructed lake. The DEP should evaluate this, but this manual could provide some guidance to users that is currently missing.	This guide was intended to help lake managers use current regulations and techniques to manage their waterbody. While there is always a "gray area" in some of these techniques, this guide tried to remove as much ambiguity as possible and inform the lake manager on a clear path to protecting their lake. Long term discussion including reports, studies and experiences are needed to help show the difference between the lakes and human effects.
4/25/2025 1:35:22 PM	3. Regulatory Framework	Technical	1960-1962	1979-1982	1.No process has yet been approved under MEPA for adding additional techniques that would not require MEPA review if applied in accordance with developed guidelines. Approaches such as new phosphorus inactivators, algae collection systems, floating islands, sonication, and bacterial products have no approval process but have been applied in Massachusetts, some without review under MEPA. Some have been denied permits because they are not covered by the GEIR and have been in limbo for years. A process has been under development for some time but was not ready for inclusion in this document and had serious flaws. Key elements in such a process would include setting up a panel of appropriate people, both from agencies and interest groups, public notice of any new technique or product approval process getting underway, solicitation of experts without financial interest in the product or technique to provide input, a public input process, and a decision that provides written back up suitable for inclusion in the online version of this manual. No one agency should have veto power over approval.	An approval process for new NON-chemical techniques is being developed. Members from all the environmental agencies will be working on this in the coming months. We recognize that there are always new technologies that are coming out and being updated. We want to make sure that all aspects of the new technology and its effects are reviewed.
4/25/2025 3:42:24 PM	3. Regulatory Framework	Technical	2106-2110	2117-2121	I would mention cold water fisheries here.	ORWs are designated as including Class A Public Water Supplies (314 CMR 4.06(1)(d)1.) and their tributaries, certain wetlands as specified in 314 CMR 4.06(2) and other waters as determined by the Department based on their outstanding socio-economic, recreational, ecological and/or aesthetic values. While an important cold water fishery could be a qualifier, it is not a given. The text in the Mass APM Guide was left as is as there is a discussion of the Cold Water Resource mapping tool later. It would be easy enough to see if there is overlap with an ORW. While CFR's are included in the MA Surface Water Quality Standards and some may be ORW's, most CFR's are not ORW's.

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5/2/2025 2:23:21 PM	3. Regulatory Framework	Technical	2138 - 2145	2148-2152	It makes no sense for the removal of vegetation to be considered dredging. Removing100 cu yds of wet plant biomass does not change the bathymetry of a body of water. If there's heavy vegetation, using herbicides and having excessive plant die off over a short period of time can cause low levels of O2. Removal of the plant biomass eliminates that problem. Having to file a 401 for mechanical harvesting will make that method cost/time prohibitive for a lot of waterbodies. It makes no sense, especially since the USACOE does not consider plant biomass dredged material.	This text was inserted: “This is an area of potential difference between state and federal regulations. Vegetation removal *may* require a permit under 314 CMR 9.00 even where the USACE does not require a Clean Water Act Section 404 permit. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 314 CMR 9.00 is needed.”
5/13/2025 8:03:56 PM	3. Regulatory Framework	Regulatory / Permitting	2138 - 2145	2146-2152	I am very concerned about the project management burden this section will add to harvesting projects. Is DASH considered hand pulling for this purpose? Is 100 cubic yards defined as the wet volume or dry volume of removed plants? How would one make an accurate estimate of the removal volume before implementation? Acres would be much easier to measure and plan for. Will MassDEP receive additional staffing to implement review of dredging permits for harvesting projects? DEP review times are very backed up as of May 2025, and I am concerned that requiring an additional permit to conduct these projects will make them impossible to accomplish. Volunteer water chestnut pulls are an effective management technique, but are often carried out by nonprofits and community groups which do not have the capacity to obtain a permit. Adding this requirement to water chestnut hand pulls will prevent many projects from being carried out and promote the growth of invasive species, particularly if it takes DEP several weeks to months to approve projects. Mechanical harvesting projects are already very difficult to fund. Additional permitting requirements will further drive up the cost, and will result in municipalities turning to herbicides more frequently, which will contribute to increased filling-in in many waterbodies. I am hoping to use budget overages this fiscal year to fund a mechanical harvesting project. Due to the nature of fiscal year planning, this would not be possible as a harvesting project if additional permitting were required, due to the timeline needed for approval from DEP.	MassDEP considers DASH to be a method that, when implemented properly, may not substantially disturb the sediment, similar to hand pulling. MassDEP is currently developing an “Ecological Restoration General Permit” review process under the Wetlands Protection Act for certain aquatic plant management methods such as hand pulling, mechanical cutting above the root, and diver assisted suction that do not substantially disturb the sediment to streamline permitting requirements. For waterbodies with polluted water of sediment, the plants are likely to be polluted as well due to their bioaccumulation function. If due diligence peer review reveals the area is likely to be contaminated, and or the project proposes to disturb, redeposit or remove 100cy or more of material, it could be subject to review by the department during the WPA Review process, to ensure proper disposal of removed materials.
4/23/2025 2:06:56 PM	3. Regulatory Framework	Regulatory / Permitting	2138-2145	2146-2152	I understand MassDEP ultimately decides if a project requires a 401 WQC, but it makes no sense that hand pulling or mechanical harvesting, especially if no sediment is disturbed, can trigger a 401 WQC. Could the MassGLM state that aquatic vegetation is not "dredged material" unless it's removed with significant sediment or soil? According to 40 CFR § 232.2 the EPA and US Army Corps of Engineers define "dredged material" as: Material that is excavated or dredged from waters of the United States." This clearly refers to soil, sand, silt, or other substrate, not plant matter alone. Aquatic vegetation is considered biological material, not fill material. I wish this could be clearly stated in the Mass APM Guide to remove confusion and inconsistencies between regulatory agencies. Plant material is not dredged material and should not should not contribute towards the 100 cy threshold. If removal of 100 cy of plant material constitutes dredging and requires a 401 WQC, it will make mechanical harvesting too cost- and labor-intensive and will no longer be a realistic pond management tool.	For waterbodies with polluted water or sediment, the plants are likely to be polluted as well due to their bioaccumulation function. If due diligence review reveals the area is likely to be contaminated, and/or the project proposes to disturb, redeposit or remove 100cy or more of material, it could be subject to review by the Department during the WPA review process, to ensure proper disposal of removed materials.
4/25/2025 1:37:05 PM	3. Regulatory Framework	Regulatory / Permitting	2138-2145	2146-2152	Section 401 of the federal Clean Water Act is administered by the Department of Environmental Protection, but its interpretation of how this law should be applied varies from that of the US Army Corps of Engineers. The controversy over whether or not mechanical harvesting of aquatic vegetation requires a permit under Section 401 has not been satisfactorily resolved and the current online permitting system used in Massachusetts is inadequate to facilitate permitting of harvesting under Section 401. Appropriate guidance to project proponents could not be offered in this document. This inconsistency and disagreement among the environmental agencies of Massachusetts should be rectified and appears to require action from near the top of the command chain, as agency staff has been unable to reach resolution after over 2 years of discussion. As most harvesting projects are conducted by towns, no revenue is accruing to the state as a function of permit fees. As the online permitting system is unable to properly handle these projects, applicants are left with no way to actually get a permit. I personally worked with David Wong to attempt to permit harvesting at Morses Pond under 401 and the conclusion was that the permit was not needed. As the largest harvesting program in MA of which I am aware, it is hard to conceive of where a 401 permit would apply to mechanical harvesting. Further, the former Ch 91 regulations specifically exempted mechanical harvesting from permitting under that program, but that language was removed in the most recent regulatory revision, leaving applicants uncertain of project status and Ch 91 applicability. It is essential that the regulations provide clear direction with minimal ambiguity. The inability of this manual to offer better guidance is a direct result of the failure of the DEP to provide clear direction.	MassDEP’s authority is established under 314 CMR 9.01(1) and includes Section 401 of the federal Clean Water Act, the Massachusetts Clean Waters Act, and other authority relative to upland reuse and disposal of dredged materials. This is an area of difference between state and federal regulations. Vegetation removal may require a permit under the authority of 314 CMR 9.00 even where the USACOE does not require a Clean Water Act Section 404 permit. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 314 CMR 9.00 is needed. This review is important to protect the water quality, as well as the public from unintended impacts resulting from activities in waters as well as disposal of plants or other material that has been removed from waters, particularly if the removed material is likely to have been impacted by a release of oils or hazardous materials (as defined in 310 CMR 40.0000). MassDEP also has authority under the MA WPA and is currently developing a clearer review process for certain aquatic plant management activities that do not substantially disturb the sediment, whereby the project may be fully permitted under the MA WPA provided that if the project proposes to remove more than 100cy of material demonstration is made that a waterbody is unlikely to be contaminated through a due diligence review.
5/15/2025 10:58:18 PM	3. Regulatory Framework	Regulatory / Permitting	2138-2145	2148-2152	The 2025 Guide would benefit from more clarity regarding the specific conditions that would trigger the requirement for a 401 WQC where physical control methods (e.g., harvesting and hydroraking) are used. Of particular concern is the statement that "...MassDEP maintains that vegetation removal may require a 401 permit even where the USACOE does not require a section 404 permit." This appears to be contrary to current guidance posted on the state's 401 WQC website (https://www.mass.gov/how-to/ww-07-08-09-water-quality-certifications-dredging-projects), which indicates, "If no federal permit is needed for an activity, then no 401 certification is required from MassDEP." The 401 WQC process could add substantial cost and delay - largely borne by municipalities, NGOs, and state agencies - if applied to aquatic plant removal projects that do not require federal licenses or permits. If the 2025 Guide is not clarified, the presumably unintended consequence would be to broadly discourage the use of physical control methods, even when those methods may be the best-suited or least impactful to aquatic ecosystems.	This text was inserted: “This is an area of potential difference between state and federal regulations. Vegetation removal may require a permit under 314 CMR 9.00 even where the USACE does not require a Clean Water Act Section 404 permit. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 314 CMR 9.00 is needed.”

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5/15/2025 8:40:18 PM	3. Regulatory Framework	Regulatory / Permitting	2138-2145	2148-2152	4th paragraph under 401 Water Quality Cert. Permits should not be required for hand pulling water chestnut weeds. Would add to DEP staff work load. Do they have the capacity to review requests in a timely manner? Hand Pulling of water chestnuts does not heavily disturb the soil, they lift out easily and this is the most cost effective way to reduce them. Less invasive than herbicide application. Would unnecessarily delay and complicate volunteer efforts to remove weeds. How is 100 cy determined before the weed pull event?	This text was inserted: “This is an area of potential difference between state and federal regulations. Vegetation removal may require a permit under 314 CMR 9.00 even where the USACE does not require a Clean Water Act Section 404 permit. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 314 CMR 9.00 is needed.”
4/23/2025 5:26:05 PM	3. Regulatory Framework	General / Other	2165-2167	2171-2173	2.The use of copper by water utilities on an emergency basis to reduce algal blooms is allowed without a permitting process, but peroxide, a more recent algaecide that is highly applicable to cyanobacteria blooms with less adverse environmental impact potential, has not been afforded the same status as copper. This forces water utilities to use copper products when peroxides might be a better choice. Peroxide products should be allowable under the same circumstances as copper products. This will require some sort of legislative or environmental agency action. Peroxide is approved for use in MA, just not afforded the same exemption from permitting for water supply use as copper as it was not available when the copper exemption was created.	This will need further testing to get the same amount of use as copper / MassDEP is considering whether to afford peroxide the same approved status as copper for exemption from the permitting requirement under M.G.L. c. 111, § 5E and BRP WM 04.
5/15/2025 11:01:41 PM	3. Regulatory Framework	Technical	2197-2205	2201-2209	The 2025 Guide should provide further clarification of what constitutes "plant matter" under Chapter 91 regulations. Plant matter that has senesced and deposited on the bottom of a waterbody as an organic sediment would seem to clearly qualify as "dredged, cleaned, or excavated" material when it is removed from that waterbody. However, live plant matter is not a sediment - much as live animal matter is not but decomposed animal matter is - and is removed by techniques that are substantially different from dredging or excavation. Furthermore, aquatic plant removal projects typically do not result in measurable water level or contour alteration of a Great Pond. Therefore, physical control methods that specifically target the removal of live aquatic plant matter would not seem to require Chapter 91 review. The requirement for Chapter 91 review of aquatic nuisance vegetation removal projects would add unnecessary regulatory delay and cost to lake restoration projects. The cost and delay will largely be borne by municipalities, NGOs, and state agencies, who tend to be the proponents of aquatic vegetation removal projects in waters subject to Chapter 91 jurisdiction. The presumably unintended consequence of this guidance would be to broadly discourage of the use of physical control methods in waters subject to Chapter 91 jurisdiction, even when those methods may be the best-suited or least impactful to aquatic ecosystems.	Note that the most recent Ch 91 regs do not exempt vegetation harvesting from needing a license as they did in the previous regulations. Applicants for vegetation removal projects should consult with MassDEP to determine if a permit under 310 CMR 9.00 is needed.
5/14/2025 2:24:57 PM	3. Regulatory Framework	Technical	2202 - 2205	2206-2209	It is not clear why 100 cy of removed vegetation would be subject to the 401 WQC if the regulation is designed around 100 cy of removed sediment. The text does not specify whether the dry or weight volume of removed vegetation should be considered. While vegetation root removal may disturb some sediment, one unit of removed vegetation would disturb much less than one unit of sediment. The amount of sediment disturbance will also vary according to target plant species, the presence of non-target species, and root composition of each. There are not enough details in the text to provide clear guidance on when this would or would not apply, and I am concerned that DEP does not have the staff capacity to support inquiries in a timely manner to enable project implementation.	MassDEP is currently (2025) developing an “Ecological Restoration General Permit” review process under the Wetlands Protection Act for certain aquatic plant management methods such as hand pulling, mechanical cutting above the root, and diver assisted suction that do not substantially disturb the sediment. These projects will be fully permittable under the Wetlands Protection Act, and will not require review under 314 CMR 9.00 provided certain procedures are followed that ensure proper disposal of materials, particularly if the waterbody or sediments have the likelihood of being contaminated. Projects such as hydroraking, or other techniques that substantially disturb or remove greater than 100 cubic yards of sediment will require a 401 Water Quality Certification.
4/16/2025 8:02:24 PM	3. Regulatory Framework	Regulatory / Permitting	2294-2295	2301-2302	This sentence correctly notes that MassWildlife regulates the release of vertebrates into waters of the Commonwealth. It leaves open the question of release of invertebrates, for which MassWildlife has no statutory authority unless a species listed under MESA is involved. MassWildlife avoids discussion of this regulatory gap, which pertains to some biological control methods (e.g., milfoil weevils, loosestrife beetles) and even stocking of crayfish as long as the species is not listed as invasive. While this lack of authority probably should be mentioned, it is important to convey the need to establish authority for approval of invertebrate introduction, most logically under MassWildlife. This is therefore less of an appeal for an edit than it is for legislative action to grant some agency authority over invertebrate introductions.	The agency has acknowledged the comment.
4/25/2025 1:36:15 PM	3. Regulatory Framework	Regulatory / Permitting	2396-2397	2402-2403	There are laws forbidding the import of species listed as invasive and therefore detrimental to the ecology and economy in Massachusetts and indeed many other states. However, there is no law or regulation that requires action against such species when it arrives. In some cases, action to eradicate or control invasive species conflicts with either the WPA or the MESA, resulting in a denial of permits for invasive species control. If it is accepted that these species are undesirable enough to have legal restriction on their import and distribution, there should be provisions to facilitate eradication and control. The conflicts between laws and regulations need to be addressed in a clear and definitive manner. This need was originally discussed in the regulatory section but was removed at agency request. It needs to be covered and applicants should know that there are conflicts among regulations that complicate lake management and need attention at the state level. The line numbers given are one possible place to put discussion, but some mention might also be provided following 2061-2072 under WPA considerations for ERLP.	The importation rules are aimed to keep species out of the state. These rules are complex and go beyond the scope of the Practical Guide effort of aquatic plant management. Currently, DCR is working with Regional and National Invasive Species Panels on developing laws that address this concern at the federal level. Future coordination among all state agencies will be needed to ensure Rapid Response is utilized while not causing greater harm to native species
5/15/2025 11:03:25 PM	3. Regulatory Framework	Regulatory / Permitting	2416-2423	2422-2428	Applicants filing an NOI for an ERLP in coastal waterbodies subject to Time of Year Restrictions are required to obtain a written determination from DMF to include in the NOI filing (see WPA Form 3 Appendix A). However, in practice, DMF typically only issues confirmation that the applicant has contacted them to initiate project consultation regarding proposed activities subject to Time of Year Restrictions in coastal waterbodies. DMF then provides written comments on the NOI after filing. This can be confusing to applicants, consultants, and conservation commissions. An acknowledgment of this could be added to the 2025 Guide to help avoid future confusion.	DMF written determinations for an ERLP are provided to applicants upon request. In some cases, project applicants initiate discussions with DMF staff prior to requesting a written determination. In all cases, projects are reviewed to identify species impacts and potential impediments to fish passage, and time of year (TOY) restrictions DMF would recommend toward avoiding / minimizing impacts. For projects seeking an ERLP determination, DMF provides TOY’s or other recommendations to the applicant via email, then formalizes our recommendations through comment letter submission during the NOI public comment process.
4/25/2025 3:39:48 PM	3. Regulatory Framework	Technical	2751 - 2753	2751-2755	Water rights could be an issue.	Text has been revised

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5/14/2025 3:42:47 PM	4. Management Techniques	Technical	0	0	bio char is not mentioned in this document and is a potential management technique	Lanthanum based products are still under review in MA and are not currently approved for use in MA. Biochar is a charcoal-like material made from heating biomass, this product is not approved for use in MA currently. There is a potential risk to the environment from the placement of substances in a waterbody where the chemical make-up of the material is not well understood and can vary greatly depending upon the source of the material. The placement of such fill in a waterbody, if allowed, may also require approval by MassDEP through the 401 WQC process. The use of biochar bags or logs placed in streams as filter forms create an impoundment that could pose a risk to fish migration and thus Mass Wildlife review may eventually be necessary.
5/3/2025 2:04:29 AM	4. Management Techniques	Technical	2839	2837	Perhaps this should be submitted to the Secretary for official approval.	This document will be reviewed and approved by the Secretary of EOEEA through the MEPA process.
5/4/2025 12:05:42 PM	4. Management Techniques	Technical	2889	2886	Might add a sentence to say that rare, very deep lakes oxygen depletion and phosphorus release are less of a problem. They tend to be more oligotrophic.	While this is true, lakes like this are not believed to exist in Massachusetts.
5/4/2025 12:08:06 PM	4. Management Techniques	Technical	2910	2907	Perhaps emphasize the conflict by adding: In fact, increased water clarity...	The text has been revised to emphasize the conflict with changing the sentence to "In fact, increased water clarity".
4/17/2025 7:09:11 PM	4. Management Techniques	General / Other	3041	3036	Somewhere in this document the point needs to be made that it is not our objective to kill the plant life and, in so doing, kill the animal life. It is not only the endangered species that need to be considered, but also those that will be endangered by the treatment.	The overall management of the aquatic environment in Massachusetts focuses on the protection and enhancement of all native aquatic organisms. This goal is supported by a comprehensive framework of laws, regulations, and statutes designed to preserve the state's natural ecosystems. Alongside this document, various state agencies work collaboratively to ensure ongoing monitoring, conservation, and improvement of aquatic habitats across the Commonwealth.
5/14/2025 9:04:04 PM	4. Management Techniques	Technical	3049	3050	11b. Peroxides. Disadvantages - peroxides can also lead to possible rupture of cells	The text has been revised to "Possible cell rupture with release of toxins".
5/4/2025 12:11:12 PM	4. Management Techniques	Grammatical / Editorial	3050	3047	1b). Suggest saying Partial reduction of sources of nutrients. .... After all this is rarely effective.	The text has been revised to update the sentence to "Partial reduction of sources of nutrients"
5/4/2025 12:14:41 PM	4. Management Techniques	Technical	3051	3050	13). Not restricted to cyanobacteria, increased N would benefit all algae.	The text has been revised from "Possible source of nitrogen for cyanobacteria" to "Possible source of nitrogen for algae".
4/25/2025 3:37:56 PM	4. Management Techniques	Technical	3052	3047	RE: OSWTS: Our reliance on soil simply kicks the can down the road; P will always be with us ("matter is neither created nor destroyed"), and it will eventually move to the lake. time is the key variable.	True. The Massachusetts EPA and DEP continue to collaborate with other state agencies, municipalities, and federal regulatory bodies to reduce phosphorus (P) in the environment. Best Management Practices (BMPs) for lawn care, land development, and road maintenance—along with other programs—are key components of the long-term strategy to reduce nutrient pollution.
5/14/2025 9:07:40 PM	4. Management Techniques	Technical	3052	3050	Table 3, Row 12, Phosphorus Inactivation - Separate Lanthanum as its own row (12b), many of the disadvantages listed in row 12 are specific Alum oPossible toxicity to fish and invertebrates (Alum) oPossible release of phosphorous (Alum) oResuspension of floc in shallow areas (Alum) oMay cause fluctuations in water chemistry (Alum)	The text has been revised on multiple lines to clarify the Phosphorus Inactivation.
4/25/2025 3:38:58 PM	4. Management Techniques	Graphics / Image	3059	3063	The flow chart needs to be full page.	Best efforts have been made to update, clarify and colorize all graphics in this document
4/25/2025 3:38:34 PM	4. Management Techniques	Graphics / Image	3180	3063	The diagram needs to be full page.	Best efforts have been made to update, clarify and colorize all graphics in this document
4/25/2025 1:29:44 PM	4. Management Techniques	Technical	3264	5220	e.g. TryMarine?	TryMarine is just one of a number of products, and the newest. Calcium nitrate is the original sediment oxidizer, pioneered in the early 1980s. Others have been tried, but there have been enough adverse impacts to warrant MEPA approval before use in MA.
4/25/2025 1:28:54 PM	4. Management Techniques	Technical	3052 "IN-LAKE"	6452	ANY MENTION OF COPPER SHOULD INCLUDE THE CAVEAT THAT IT IS TOXIC TO FISH.	Copper is toxic to multiple forms of aquatic life, so noted as the first bullet under disadvantages. Not necessary to call out fish, especially since DFW review of fishkills over many years did not find cases of copper-induced kills in MA. Certainly such a kill is possible, just not the norm with copper treatments in MA, which are usually at a very low dose compared to what the label allows. No change needed here and key considerations are discussed under the copper section, starting on line 6452.

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4/25/2025 1:29:17 PM	4. Management Techniques	Technical	3052 IN-LAKE	3050	12) P inactivation: Typically, alum is prescribed. The jury is out on the toxicity of Al to fish, so repeated applications (e.g. as in the failure to control P inputs) risks harm to fish. Also, mussels rely on these fish to reproduce and so are also at risk.	Inclusion of details in the comment go beyond what this table offers. Alum is only one compound used. The potential toxicity of aluminum during treatment is noted under disadvantages. Repetitive treatments are done in a few MA cases and no toxicity has been documented. There is more discussion of these issues in the section on P inactivation, starting on line 5033. Repeated treatments of Alum are not recommended. Watershed improvements should be looked at also to reduce the amount of P/Nutrients coming in Line 11a) Forms of copper was updated to include "fish and mussels".
5/4/2025 12:25:59 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3538	3535	A large source of P is deliberately added to some public water supplies to inhibit corrosion of lead and copper. This should be addressed by using other means of corrosion inhibition.	P is added after treatment while Water goes through pipes. P is NOT added to water supplies
5/4/2025 12:21:03 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3551	3548	I think the SWPP should focus more on zoning changes rather than end of pipe solutions. Zoning could require infiltration performance requirements for all new construction as well as reconstruction and maintenance of facilities, roof drainage, impervious surfaces, repaving etc. While this would take years, it would be more effective and transfer costs to the developers.	This long term suggestion would be one that could benefit the waters of Massachusetts. Unfortunately it is beyond the direct scope of this document and would need to be addressed by a larger audience.
5/4/2025 12:29:52 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3727	3721	In the NPS control section agriculture sources are not highlighted. I have seen many of the worst eutrophication problems from crops such as cranberries and dairy-cattle farms with manure runoff or oversaturation of manure to fields.	There are many publications and methodologies for the control of NPS through agriculture source. MDAR, DEP along with Mass Ag all are resources for further information. It should be an area that lake managers look at to ensure all BMP are being followed in their watershed.
4/25/2025 1:32:05 PM	5. Reduced Nutrient Inputs to Lakes Section	Grammatical / Editorial	3809	3803	"lead" should be "led".	The text has been revised from "lead" to "led".
5/4/2025 12:35:28 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3828	3822	While leaf collection is effective, I would suggest adding that on-site leaf composting by using mulching blades on mower and pulverizing the leaves in place would reduce P in street runoff, add organics and fertilizer back to soil.	It is always recommended that local lake associations, towns and other public groups work together to reduce the amount of nutrients, sediments and other inputs into their local waterbodies. Much of the nutrient loads are done on a small local scale that accumulate over time.
5/4/2025 12:41:23 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3907	3899	Suggest adding a sentence or two that many dairy farms with limited acres of pasture import much P in the form of gain supplements, but the large amounts of manure overwhelm the small acres of pasture soil nutrient binding capacity and it runs off. Suggest they cooperate with neighbors to spread manure more widely.	There are many publications and methodologies for the control of NPS through agriculture source. MDAR, DEP along with Mass Ag all are resources for further information.
5/4/2025 4:48:32 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	4190	4185	I suggest wet swales along roadsides are by themselves less efficient but could be improved it they repeatedly divert water into the downslope forested areas for complete infiltration. Sadly, MassDOT and local roads often over-use curbing to keep water on the road until a storm drain or simply use the swale as aa green ditch running quickly down to dump into a stream.	DEP along with DOT often work together to address water quality issues that are present around public roadways. Swales, culverts, detention basins and other structures that slow water run off and allow for retention, are key. Improvements are made when possible.
4/25/2025 1:32:49 PM	5. Reduced Nutrient Inputs to Lakes Section	Grammatical / Editorial	4278	4273	Is "reducing" the right word?	Reducing was removed and replaced with intercepting.
4/25/2025 1:33:27 PM	5. Reduced Nutrient Inputs to Lakes Section	Grammatical / Editorial	4477	4473	"until" should be "unit".	The text has been revised from "until" to "unit".
5/4/2025 4:52:19 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	4579	4576	I suggest trying to add iron rich sand to infiltration areas.	While in the lab and on paper this looks promising, there is still a lack of real-world data that shows this would work without impacting other aspects of nature. All the agencies continue to stay informed on new and innovative techniques that would benefits our state's water quality. Only previously approved techniques that are vetted by MA DEP,DAR and DPH are utilized.
4/25/2025 1:34:09 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	4593	4907-4915	This might be a good place to mention "mounding". A reference for this is: Poeter E., J. McCray, G. Thyne, and R. Siegrist. 2005. Guidance for Evaluation of Potential Groundwater Mounding Associated with Cluster and High-Density Wastewater Soil Absorption Systems. Project No. WU-HT-02-45. Prepared for the National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO, by the International Groundwater Modeling Center, Colorado School of Mines, Golden, CO.	See paragraph added that describes the issue of mounding that is caused when the groundwater table is artificially raised in the disposal area by the volume of wastewater (Poeter et al. 2005), by the raising of the groundwater table.
5/4/2025 4:54:21 PM	5. Reduced Nutrient Inputs to Lakes Section	Grammatical / Editorial	4659	4662	Nice examples of projects but I would like to see more references included.	The document has been updated to include an addition reference.
5/4/2025 4:58:01 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	4885	4880	Again suggest adding iron rich sand to leach fields in sandy areas or soil low in P absorption.	While in the lab and on paper this looks promising, there is still a lack of real-world data that shows this would work without impacting other aspects of nature. All the agencies continue to stay informed on new and innovative techniques that would benefits our state's water quality. Only previously approved techniques that are vetted by MA DEP,DAR and DPH are utilized

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7/20/2025	5. Reduced Nutrient Inputs to Lakes Section	Technical	4911	4907	Insert paragraph to address mounding issue raised at 4593 by F. Schellenger	Added the following paragraph "Community or shared disposal systems offer the opportunity to create better treatment conditions for a group of dwellings in one larger system. Better siting and more advanced engineering are attractive options. The discharge is still to the ground and soil processes remain an important part of contaminant removal, but poor soil conditions, seasonal high water, and other problems can be avoided. One possible issue with such a larger system is mounding, whereby the groundwater table is artificially raised in the disposal area by the volume of wastewater (Poeter et al. 2005), and this must be taken into consideration when siting larger systems. Mounding may affect the quality of treatment and direct wastewater into areas not intended to receive the effluent, including break out into surface waters." Then add the Poerter et al. 2005 reference (see cell i25) to the reference list.
4/25/2025 1:30:57 PM	5. Reduced Nutrient Inputs to Lakes Section	Technical	3560 - 3567	3577	The draft MS-4 revisions may upgrade these MCMs to include actual improvements to the infrastructure.	The 2024 Draft MS4 Permit, as it reads now, builds off the requirements mandated in the current 2016 MS4 Permit. The EPA is proposing revisions to the six MCMs as reflected under Section 2.3 (Requirements to Reduce Pollutants to the Maximum Extent Practicable) of the Draft Permit. Proposed revisions that may relate to “improvements to infrastructure” could include, but are not limited to: the development of an asset management program to track attributes, maintenance schedules, and pollutant reductions for critical assets; increases in street sweeping; the installation of three Stormwater Control Measure retrofits (identified in 2016 inventory); and the implementation of a catch basin upgrade and replacement program to replace catch basins that are not designed in compliance with the Massachusetts Stormwater Handbook. Accompanying the Draft Permit is a Fact Sheet which EPA developed to provide a background of all the proposed revisions. The current 2024 Draft MS4 Permit, Appendices, and Fact Sheet can be viewed online at EPA’s weblink provided below. Permit Background In April 2016, the United States Environmental Protection Agency (EPA) and MassDEP issued a renewal of the Small MS4 General Permit (i.e., 2003 MS4 Permit) for Massachusetts, which became effective on July 1, 2018. EPA initially proposed modifications to the 2016 MA MS4 General Permit (2016 MS4 Permit) on April 23, 2020, and finalized those modifications on December 7, 2020. The modifications became effective on January 6, 2021. Central to the 2016 MS4 Permit is the requirement for permittees to implement a variety of activities under six Minimum Control Measures to reduce all pollutants to the maximum extent practicable. These MCMs include: Public Education and Outreach; Public Involvement and Participation; Illicit Discharge Detection and Elimination Program; Construction Site Stormwater Runoff Control; Stormwater Management in New Development and Redevelopment; and Good House Keeping and Pollution Prevention for Permittee Owned Operations. The 2016 MS4 Permit has been administratively continued and remains in full force and effect until EPA issues a new MS4 Permit (i.e., renewal). On November 22, 2024 EPA released a 2024 Draft MS4 General Permit and held a public comment period through May 21, 2025 to allow for interested parties to comment on the Draft Permit. EPA is currently reviewing the public comments received during the public comment period on the Draft Permit and has not provided a timetable to the MassDEP for issuance of a Final 2024 MS4 Permit. Massachusetts Small MS4 General Permit | US EPA
5/16/2025 2:01:03 AM	5. Reduced Nutrient Inputs to Lakes Section	Technical	4848-4918	4844 - 4922	(from a leader of a lake association): I find the section on NPS Controls -- Onsite Wastewater Disposal alarmingly sanguine and not in line with the root cause of so much eutrophication. Line 4878 states that "removal rates >90% are expected through soil adsorption (typo btw) in most cases." And, on line 4887: "Experience suggests that non-failing septic systems are usually not a major P source to most lakes..." Yikes! I guess a lot depends on what "non-failing" means. Perhaps it's intended to refer to a Title 5 compliant system in perfect site conditions with plenty of perfect, unsaturated soil for an ample leach field and post-field absorption. On the other hand, I wager in most communities the term "non-failing" means a system that may be suboptimal but is not failing a BOH inspection. On many highly-populated lakes, soil is rocky or wet and lot sizes are cramped; in these circumstances, communities need guidance on how to mitigate the external P load from under-performing (but "non-failing") systems. We need guidance on two aspects: (1) how to realistically assess the impact of septic systems (including the long-term 'legacy load' mentioned) and (2) what possible septic system improvements/technologies are possible today or on the horizon to reduce P load from septic systems where they are the leading or a major cause of eutrophication. Without this additional guidance, a reader could easily get the impression "nothing to see here on septic systems." I doubt that is the authors' intent. Thank you!	It is the assumption of this guide that non point source management activities within the watershed of the waterbody are ongoing. Lawn fertilizing, farming practices, and other property management activities have not been addressed here. This guide was developed for lake management techniques. The Department of Environmental Protection has a “Watershed Management Guide” that looks at this and other sources of nutrients.
5/4/2025 5:16:17 PM	6. Reduced Nutrient Availability in Lakes	Technical	5030	5043-5046	It should be stated that reducing excess nutrients to reduce algae should not be considered a 'take' of mussels, endangered or otherwise. It should be viewed as a necessary restoration of the ecological balance of algae in a lake, taken to protect mussels and the entire ecosystem.	The text has been revised by clarifying with an additional sentence "High P in lakes is not, generally, toxic to native biota; however, the effects of high P can lead to degraded habitat conditions.".
5/14/2025 3:32:59 PM	6. Reduced Nutrient Availability in Lakes	Technical	5064	5069	And line 5337 The document explains internal phosphorus loading, which supports algae blooms, and lowering phosphorus levels and thus algae blooms through phosphorus inactivation by aluminum. What I don’t see mentioned, and I could be missing something — (it is a 414-p document that was literally years in the making that the public only had about a month to comment on — is the role of environmentally relevant levels of herbicides in the formation of harmful algal blooms. Brêda-Alves, F., de Oliveira Fernandes, V. & Chia, M.A. Understanding the environmental roles of herbicides on cyanobacteria, cyanotoxins, and cyanoHABs. Aquat Ecol 55, 347–361 (2021). https://doi.org/10.1007/s10452-021-09849-2	The cited reference is about agricultural herbicides that may leach into water resources. The article does not address herbicides applied directly to lakes for control of plants, but some of the mechanisms may apply. However, the article is full of caveats and qualifiers that do not amount to a definitive conclusion that use of herbicides increases cyanobacteria blooms. The killing of aquatic plants or algae, by leached agrochemicals or direct, intentional treatment, has the potential to affect many biotic aspects of the receiving water. Making it sound like this is a recipe for cyanobacteria blooms based on this one paper, which concludes that a lot more remains to be learned, is inappropriate.

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5/5/2025 1:18:15 AM	6. Reduced Nutrient Availability in Lakes	Technical	5176	5181-5183	Seem we should mention the ratio of alum to aluminate approx. 2:1 as a typical mix to maintain neutral pH	The general guidance is 2:1. Text has been updated accordingly to be "After the aluminum product has reacted it is nearly inert but there is some risk during treatment if applications are not properly buffered with sodium aluminate (typically in a ratio of 2:1) to prevent large pH swings or if the instantaneous aluminum concentration is too high." Each application of Alum is carefully evaluated to get the correct ratio for that particular system. Years of study go into one application.
5/4/2025 5:27:54 PM	6. Reduced Nutrient Availability in Lakes	Technical	5194	5199	Even if some minor toxicity were predicted or observed, the treatment benefits may outweigh the impacts and the impacts can be further mitigated by spreading out the doses or perhaps adding some calcium with the aluminum.	The fundamental role of regulatory agencies is to prevent harm, not solve problems or get overall condition improvement. Note that MA now provides the EPA aluminum limit calculator online through DEP but does not require use. In that case, the highest Al concentration allowable is 4.8 mg/L and the lowest could be <1 mg/L, which may make some treatments very difficult.
5/4/2025 5:11:01 PM	6. Reduced Nutrient Availability in Lakes	Technical	5220	5225	I think DEP would object to adding nitrates as some could reach nitrogen sensitive marine areas such as long island sound and cause anoxia there.	Further research on this subject would be needed prior to utilizing this as a management option
5/4/2025 5:22:29 PM	6. Reduced Nutrient Availability in Lakes	Technical	5255	5260	Sediment testing for P may be unnecessary and result in lakes not being treated due to the cost of the studies involved. Reviews have shown that a typical dose of 50g/m2 provides relief in most lakes and even in lakes that require more the proper way to apply is to spread out the dose over a couple years of lower doses such as 50g/m2, and it that is done the applicator can see what the results are first hand. Get rid of this testing.	The text is consistent within the Lake Management Plan approach monitoring.
5/4/2025 5:31:23 PM	6. Reduced Nutrient Availability in Lakes	Technical	5388	5394	Give reference for Monponsett study.	(MassDEP. 2022) reference was added to clarify the Monponsett study.
5/4/2025 7:02:29 PM	6. Reduced Nutrient Availability in Lakes	Technical	5601	5603	Are additions of iron advised to increase binding in circulation systems?	Iron can bind P in the presence of oxygen, but its approach is not discussed in detail in this document. Iron has been added in some cases outside MA, but not in MA that we are aware of.
5/4/2025 7:10:55 PM	6. Reduced Nutrient Availability in Lakes	Technical	5667	5669	Do you recommend a combined alum or iron injection via shoreline hoses with air circulators hoses? I think this would enable a 'dial a Secchi' daily adjustment of clarity. I suggested it for Monponsett but it was not to be.	Injection of a P binder with the air or oxygen flow can enhance effectiveness where P binders are not abundant. It has been done in multiple places outside MA.
5/4/2025 7:06:57 PM	6. Reduced Nutrient Availability in Lakes	Technical	5681	5683	I suspect that circulation would be less effective in shallow lakes (<10 ft) for pumps as well as air injection. Shallow lakes are probably more mixed simply from the wind and additional mixing is less effective. I see failures in lakes where Solarbee mixers were added in shallow lakes.	MA agrees with this comment, the text was not revised.
5/4/2025 7:32:16 PM	6. Reduced Nutrient Availability in Lakes	Technical	5714	5716	In both circulation and HO systems there seems to be a recurring problem with pump failures of one type or another.	As with any other type of equipment, circulation systems need regular, routine maintenance that will add to the overall cost of operation. Long term planning for this cost should be included
5/4/2025 7:26:11 PM	6. Reduced Nutrient Availability in Lakes	Technical	5724	5726	Studies on Solarbee's effectiveness were nto	Studies on Solarbee's effectiveness where not analyzed for this document.
5/14/2025 3:22:22 PM	6. Reduced Nutrient Availability in Lakes	Technical	6071	6071	This section discusses our limited understanding/research of this alternative technique for the use of HO. But the same could be said of the use of chemical treatment. The document should include long-term impacts of chemical treatment to the environment , human health, and the economics of the towns doing the treatments. For example, what are the long-term effects of chemical treatments on non-target vegetation? What are the risks to wildlife? What are the potential human health effects? The only impact I could locate had to do with the impact on herbivorous fish, which are not used in Massachusetts anyway, but are used in other geographic regions (as this documents mentioned in line 9743). We cannot rely on EPA data, whose research is at least 10 years in arrears with regard to adverse impacts.	Continued monitoring of the lakes in Massachusetts that are being managed is a priority of all state agencies. Reviewing the results of multiple lake management programs over time is always being done and modifications are always being suggested.
5/14/2025 9:13:39 PM	6. Reduced Nutrient Availability in Lakes	Technical	5135-5136	5140	'Aluminum will hold P under a wide range of oxygen and pH levels and is readily available in multiple forms due to its use in water and wastewater…' – It would be helpful to be more specific about pH/oxygen ranges in this statement, clarify 'wide range'	The text has been revised from "wide range" to "over the MA range". MA has not observed problems with release after treatments.
5/14/2025 9:17:27 PM	6. Reduced Nutrient Availability in Lakes	Technical	5141-5142	5146	Lanthanum, a rare earth element, is combined with bentonite clay in a product called Phoslock and used for P inactivation in some other states and countries but has not been approved for use in MA as of 2024.' – It'd be more appropriate to avoid use of trade name here and substitute, Lanthanum Modified Bentonite (LMB)	The text has been revised remove Phoslock with Lanthanum Modified Bentonite (LMB) throughout the document.
5/14/2025 9:20:29 PM	6. Reduced Nutrient Availability in Lakes	General / Other	5212-5214	5217-5219	'Phoslock is not a coagulant like aluminum, so it will not remove particulate P from the water column. Application when algae or other particles are not abundant in the water will maximize Phoslock results.' - Suggest replacing trade name with Lanthanum Modified Bentonite (LMB), as written it promotes Phoslock over other brands such as EutroSORB G.	The text has been revised to remove "Phoslock" and replace with LMB as the comment provided suggested.
5/14/2025 3:24:48 PM	7. Direct Algae Removal	Technical	6461	6461-6462	Also lines 6517, 8295 Suggest that management decisions be made under the guidance of licensed applicators. People who are essentially retail distributors for chemical manufacturers should have no business making management decisions to apply poisons to our waterways. When the document suggests that licensed applicators make recommendations, it belies the obvious conflict of interest that is built right into the document.	The text has been revised to further clarify "consultation with a licensed applicator about the specific form and method of application of copper-based algacides is advised."

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5/14/2025 9:28:56 PM	7. Direct Algae Removal	Technical	6473	6474	'This is done out of concern for release of water-soluble toxins from cells when lysed by copper, as toxins are not usually excreted and are only liberated into the water upon cell death and membrane rupture.' - This doesn't flow with the next statement, I suggest clarification as many papers show toxins can leak and some types are mostly found in dissolved state, and even internal toxins can mostly be in dissolved state at certain life stages. A potential edit could be: 'This is done out of concern for release of water-soluble toxins from cells when lysed by copper, as the false premise was toxins are not excreted and are only liberated into the water upon cell death and membrane rupture.' This may be a good spot to add a statement such as, 'risks and state criteria are based on total toxin, and total toxin is likely to continue to increase without intervention.'	The text has been revised to remove "only" and replace with "mostly". The current wording was retained for it's clarity that not treating does not have a guarantee of toxins not being released.
5/14/2025 9:32:51 PM	7. Direct Algae Removal	Technical	6480	6481	'Tracking of algae and earlier action is advised, with treatment of cyanobacteria at cell counts between 10,000 and 20,000 cells/mL' - Why not say < 20,000 cells/mL…. why wait until 10,000 cells/mL? Many effective programs treat at lower densities or more proactively. Most studies show < 5,000 cells/mL is where toxin is not predicted at risk levels	The text has been revised to replace "between 10,000 and" to "no more than 20,000 cells/mL".
5/14/2025 9:30:10 PM	7. Direct Algae Removal	Technical	6489	6490	'Some algae are resistant to copper' – 'Innately more tolerant' may be more appropriate vs 'resistant', unless that is specifically defined and supported.	The text has been revised to replace "resistant" with "more tolerant".
5/14/2025 9:35:32 PM	7. Direct Algae Removal	Technical	6493	6493	'Controlling green algae mats, especially within the Spirogyra-Mougeotia-Zygnema group and the Cladophora-Rhizoclonium-Pithophora group, is very difficult at any concentration of copper.' - This sentence contradicts others. I suggest editing to, 'may be difficult to control if they are able to achieve dense mats or excessive biomass.' Also, Spirogyra has been shown to be much more sensitive than Pithophora (Lembi paper)… and those more sensitive than Oscillatoria. Too general to lump all together.	The text has been revised to add "Dense" after the word "Controlling" to emphasize already formed mats.
5/14/2025 9:37:04 PM	7. Direct Algae Removal	Technical	6533	6534-6536	'Some fish, notably species of trout, are sensitive to copper at concentrations less than the maximum allowable label limit (1 ppm) but the Mass Wildlife database for fishkills does not indicate any significant mortality in MA from copper treatments.' - I suggest clarifying to 'Some fish, notably species of trout, are sensitive to certain formulations of copper at concentrations less than the maximum allowable label limit (1 ppm) if a sufficient exposure duration is achieved, but…'	The text has been revised from 'Some fish, notably species of trout, are sensitive to copper at concentrations less than the maximum allowable label limit (1 ppm) but the Mass Wildlife database for fishkills does not indicate any significant mortality in MA from copper treatments.' to 'Some fish, notably species of trout, are sensitive to certain formulations of copper at concentrations less than the maximum allowable label limit (1 ppm) if a sufficient exposure duration is achieved, but…'
5/14/2025 9:38:23 PM	7. Direct Algae Removal	Grammatical / Editorial	6546	6547	'Willis (2022) did not find impacts on benthic invertebrates at application rates typically used in MA but did detect them at maximum allowable rates. Willis (2022) also found that bioavailability and toxicity were not reliably predictable from sediment copper concentration.' – This should be Willis 2012	The text has been revised to account for the updated reference: Willis 2012
5/14/2025 9:41:56 PM	7. Direct Algae Removal	Technical	6550	6552	'Should dredging be considered at any point, costs will greatly increase where copper concentrations exceed MA regulatory thresholds relating to sediment disposal.' - This statement needs more information, as it's misleading. What are the regulatory threshold sediment concentration in MA for copper? Many studies have found no significant increase in sediment copper concentrations over decades of treatments, (even in routinely treated catfish ponds) especially at the concentrations typically used as described and the max annual amounts allowed by EPA labels. Has there been any documented situation where algaecide use has caused a sediment copper disposal concern in MA or US?	If any of the monitored contaminates (401 WQ) in the sediments are exceeded during a dredge, additional costs will be required for disposal.
5/14/2025 9:48:54 PM	7. Direct Algae Removal	Technical	6563	6565	'0.2 to 1.0 ppm in MA, but the approved label allows application at up to 10 ppm.' - Labels on liquid formulations allow much higher than 10ppm H2O2	This statement indicates that practical experience with hydrogen peroxide products uses relatively low dosing rates, but the statement is correct that the label allows application rates that would result in dosing up to 10 ppm. The MDAR and MassDEP-ORS evaluation and recommendation for GreenClean Products provides more information related to the use of hydrogen peroxide-based products and it may be helpful provide a link to this product review in the final version of the guidance document. The document includes recommendations and restrictions for the use of GreenClean Pro products. The recommendation is that these products be applied according to label instructions with restrictions specified for situations where the higher application rates are use (see also copied sections below). The Appendix shows calculations of hydrogen peroxide concentrations (ppm) in water resulting from application of GreenClean products in a pond.
5/14/2025 9:51:00 PM	7. Direct Algae Removal	Technical	6664	6665	'Apply algaecides while algal growth is in its exponential phase; do not wait for a dense bloom to form' - Although it is ideal to catch algae early and less dense, the risks of allowing a dense bloom to go unabated is much greater than treating in most situations. "Do not" is too strong here. "Take more caution and weigh potential risks of treatment if treating a dense bloom", is more appropriate.	Text has been revised to "Apply algaecides while algal growth is in its exponential phase if at all possible"

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5/14/2025 9:54:59 PM	7. Direct Algae Removal	Technical	6671	6725-6726	'Where cyanobacteria or other algae with potential for toxicity are treated, monitor for toxin level in the water before and after treatment' - Is monitoring for toxin pre and post treatment of cyanobacteria required in MA? 'Monitoring Needs' in the section title suggests toxin monitoring is required. This would be too time consuming and costly to do on every application. Also, total toxin, where regulatory criteria are based on, decrease with effective treatment and some toxin may be oxidized as stated. Monitoring 'Considerations' is more appropriate than 'needs' here	If toxic algae treatment is done early in the bloom (<20,000 cells/ml for most cyanos) no such test is really required (per World Health Organization Guidelines). As toxicity levels can vary, testing should be done when excessive cyano blooms are treated. Caution is important in with these blooms. Massachusetts along with many other states are dealing with these blooms and continue to develop better monitoring and testing methods and requirements.
5/4/2025 7:48:01 PM	8. Aquatic Plant Control	Technical	6881	6885	I observed an accidental benthic barrier at I believe gate 41 at the Quabbin Reservoir where an old paved road going to Dana was flooded during the creation of the reservoir but the underwater road is plainly visible as a weed free lane and remains so after about 80+ years. Probably hard to permit.	Paving lake bottoms is not a likely successful path under MA law.
4/25/2025 5:58:19 PM	8. Aquatic Plant Control	Technical	7283	7288	Multiple benefits of drawdown were deleted at the request of Mass Wildlife with inadequate justification. These included the longer term reduction in plant abundance in a drawdown zone after years of drawdown and related sediment coarsening and the increase in habitat diversity by creating sandy to rocky zones in lakes with extensive organic deposits. While I feel that those benefit statements should be restored, I can live with their omission as long as my other comments relating to coarsening are properly addressed. But if those making the decision can see their was clear to restoring the list of benefits, I can provide it.	The primary purpose for drawdown as written in this chapter is exclusively for aquatic vegetation control. Other reasons for drawdown would undergo a separate permitting process than outlined in the Mass APM Guide. MEPA review for additional work / solution would be needed. Drawdown is used sporadically to freeze out the AIS and allow native, seed reproducing species to repopulate.
5/4/2025 7:55:12 PM	8. Aquatic Plant Control	Technical	7353	7357	Although 3 in per day is a nice target we are currently drawing down a dam prior to removal and find that the drawdown rate is highly variable function of rainfall. Try as we might sometimes a big storm comes and the impoundment refills then drops during a dry spell. Do the best you can.	The Mass APM Guide provides guidance that should be followed to the extent possible. If NOT possible due to noted structural deficiencies or watershed constraints, the proponent should attempt to work with state agencies to outline what levels are possible and practically obtainable.
5/4/2025 8:09:35 PM	8. Aquatic Plant Control	Technical	7452	7458	Why was the Carmignani 2019 thesis on drawdown impacts and related papers not cited in this report? What is the Department of Fish and Game hiding? The thesis shows little impact but F&G staff seem intent on censorship of the data? Is this even legal? The public demands a full review.	The Carmignani thesis and several papers published subsequently from that work are cited throughout the document and extensively in Appendix D.
5/10/2025 10:14:03 PM	8. Aquatic Plant Control	Technical	7452	7458	The fact that Mass Fish and Game refuses to allow free and transparent discussion of the case histories of drawdowns in Massachusetts is very concerning regarding our constitutional rights under the First Amendment. According to the MEPA website: The MEPA Office is part of the Executive Office of Energy and Environmental Affairs (EEA). We provide meaningful opportunities for public review of the potential environmental impacts of projects for which agency action is required. We serve the general public, state agencies, municipalities, and project proponents. If the process is to be transparent, how can Mass Fish and Game dictate to the independent authors of the report which studies shall be included and which shall be purposely excluded? Why was The Carmignani thesis and related papers on drawdown excluded? Simply because MFG did not like the published results? They claim each unique lake might be handled differently if the papers were discussed openly? Well, if they are unique then perhaps to some extent they should be handled a bit differently. And why would we trust MFG to respond and edit the document in this case? I ask that independent qualified lake managers such as Dr. Wagner to do an independent review of the subject and present it in the final document for the agencies and public to see.	The case histories for drawdown were removed for one or more of several reasons. They either: 1) also incorporate other methods of aquatic vegetation control (e.g. herbicide), making any outcome a result of multiple methods; 2) did not quantify the effectiveness of the application; or 3) did not conduct the drawdown in a manner that would be recommended by the Mass APM Guide. Future drawdowns will be analyzed for many factors and will hopefully help direct future drawdown requirements.
5/4/2025 8:02:29 PM	8. Aquatic Plant Control	Technical	7453	7458	state agency proponents of this document have chosen not to include case histories or7452 other summaries of past drawdown projects here??? A fair and full environmental review should be complete and transparent and not subject to censorship of State! I ask that the case histories and scientific reviews be allowed.	The case histories for drawdown were removed for one or more of several reasons. They either: 1) also incorporate other methods of aquatic vegetation control (e.g. herbicide), making any outcome a result of multiple methods; 2) did not quantify the effectiveness of the application; or 3) did not conduct the drawdown in a manner that would be recommended by the Mass APM Guide. Future drawdowns will be analyzed for many factors and will hopefully help direct future drawdown requirements.
5/4/2025 8:14:58 PM	8. Aquatic Plant Control	Technical	7524	7530	I recommend more cutting be allowed with limited collection. And if the lake is largely infested what difference does spreading make? In my opinion, we need more inexpensive control methods such as cutting to clear boat lanes and swimming areas.	The collection of cut aquatic plants benefits the lake two-fold. First the biomass of the plant is removed along with the nutrient load that is stored in the plant matter. This removes nutrients that algae or other aquatic plants would use to bloom. Second, the recreational impacts of floating plant matter are not a benefit to the lake user.
5/4/2025 8:22:35 PM	8. Aquatic Plant Control	Technical	7639	7645	Interpretation of harvested plants to be sediments and require a 401 is stupid. If ACOE says it is not required then don't add additional unneeded regulations.	MassDEP is currently developing (2025) an "Ecological Restoration General Permit" review process under the Wetlands Protection Act for certain aquatic plant management methods such as hand pulling, mechanical cutting above the root, and diver assisted suction that do not substantially disturb the sediment. These projects will be fully permittable under the Wetlands Protection Act, and will not require review under 314 CMR 9.00 provided certain procedures are followed that ensure proper disposal of materials, particularly if the waterbody or sediments have the likelihood of being contaminated. Projects such as hydroraking, or other techniques that substantially disturb or remove greater than 100 cubic yards of sediment will require a 401 Water Quality Certification.
5/14/2025 3:33:48 PM	8. Aquatic Plant Control	Technical	7709	7715	Regrowth is noted when hand-pulling invasive species, but the same is true of the use of herbicides. Weeds grow back in water bodies, just as they do in your vegetable garden. Regrowth should not be cited as a disadvantage of hand-pulling.	Hand harvesting is disadvantaged by re-growth based on the typical rates of removal per area.

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5/14/2025 9:56:33 PM	8. Aquatic Plant Control	Technical	8250	8254	Florpyrauxifen-benzyl Application and Water Use Restrictions, “Use of treated water or composted, treated plants for livestock not recommended.” – The last line is confusing, it should read, ‘Use of treated water for livestock watering, or treated plants for compost is not recommended.’	Use of treated water for livestock watering, or treated plants of compost is not recommended
5/4/2025 8:35:13 PM	8. Aquatic Plant Control	Technical	8328	8334	Would nutrients released during plant decay also contribute to algal blooms?	Decay of any organic matter releases nutrients into the water column. Algal uptake of excessive nutrients is part of what can cause bloom. Strategic planning and slow reduction of plant biomass is key in preventing blooms from occurring. This guide suggests timing and amounts of reductions to help prevent such blooms.
5/14/2025 3:29:30 PM	8. Aquatic Plant Control	Technical	8342	8348	Chemical treatment is likened to taking medicine, but chemically treating our lakes is more akin to taking addictive substances. Once it is used, it becomes a never-ending series of applications, with resulting chemical resistance, as we have seen in waterbodies in southeast United States, which are now dealing with fluriodone-resistant hydrilla, as this document mentions (line 8359). A better analogy is cocaine or tobacco — interestingly, they are all (cocaine, tobacco, and chemicals for ponds) marketed the same way. (e.g., first treatment free! Or nominally charged!)	All state agencies stress the PREVENTION factor of all lake management. Preventing the introduction of AIS into a lake and stopping them from spreading is key. Unfortunately, once an AIS is lake wide, there are very limited options for homeowners.
5/4/2025 11:59:18 AM	8. Aquatic Plant Control	Technical	8550	8553-8555	To say the exact mechanism of glyphosate is unknown suggests not enough is known, while the action on enzymes is known. It is reported that kills plants by inhibiting the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). This enzyme is crucial for the production of aromatic amino acids (phenylalanine, tyrosine, and tryptophan) in plants through the shikimate pathway. To suggest otherwise opens the door to unfounded objection to the use of this compound..	Text has been revised to "particularly the enzyme responsible for production of essential aromatic amino acids via what is termed the shikimate pathway." and "although the exact mechanism remains unknown" was removed.
5/14/2025 9:57:46 PM	8. Aquatic Plant Control	Technical	8554	8547	“it requires only a few days of contact time,” -Edit to ‘it requires only a few hours to a day of contact time,’	Text has been revised from "only a few days of contact time" to "only a few hours to a day of contact time".
5/4/2025 8:48:15 PM	8. Aquatic Plant Control	Technical	8565	8569-8573	The mode of action of glyphosate appears to be well known and reported in https://npic.orst.edu/factsheets/archive/glyphotech.html#references Saying that it is unknown only feed public fears. It disrupts the shikimic acid pathway in plants as animals do not have that pathway.	The text has been revised to clarify this was a review of glyphosate from MDAR and MassDEP-ORS and documented their review within the updated glyphosate fact sheet.
5/4/2025 8:51:38 PM	8. Aquatic Plant Control	Technical	8569	8573	I would further clarify that most of the toxic effects observed in roundup are due to the added surfactants and 'inert' ingredients and not due to glyphosate itself. As such, there are some commercial forms of glyphosate that are free of surfactants that can be used if there is a remaining toxicity concern.	As part of the pesticide registration process at the federal level and the state level, product ingredients and product formulation are comprehensively reviewed and evaluated to ensure that the product, when used according to label instructions, is effective for the intended pest control while not posing unreasonable risks to human health, the environment and non-target species. For products that are labeled for use in and near aquatic systems, the evaluation includes specific assessments to address potential impacts to aquatic non-target species. Aquatic herbicides also undergo a special review by MDAR and MassDEP before these products are available for permitted use in Massachusetts lakes and ponds.
4/25/2025 1:26:50 PM	8. Aquatic Plant Control	Regulatory / Permitting	7215-7453	7219-7459	WINTER DRAWDOWNS: LINE 7424. Continuation of Draw down. There have been drawdowns for over 20 years on our local lakes without any results showing impacts on littoral zone, target vegetation, or an established, quantitative management goal. MASSWILDLIFE -NESP review was not completed, making The Order of conditions Illegally obtained and awarded by the conservation commissions in Lanesboro and Pittsfield Mass for Onota Lake ,Pontoosuc Lake and Richmond Pond in Richmond	The state has reviewed the comment.
4/25/2025 5:34:25 PM	8. Aquatic Plant Control	Regulatory / Permitting	7239-7240	7341-7343	Reference to the coarsening process for sediment in areas exposed to drawdown and the reduction in overall plant abundance and shift in species composition was deleted at the request of MassWildlife. The deleted statement should be restored, as we are not giving people all the information they need to understand the effects of drawdown. This was debated for quite some time and MassWildlife simply refused to accept giving people this information. An employee of MassWildlife even published a paper on this topic, noting exactly what was stated and then deleted. The reasons given for this deletion were not valid and that deletion was done to appease an agency that has tried to set policy where they have no regulatory power and limit actions by withholding information. We compromised on many things in this chapter that I can live with, but this isn't one of them. I would simply alter the cited sentence to read "Drawdown is used most often in Massachusetts for the control of invasive Eurasian or variable leaf milfoil, but the coarsening effect of repeated drawdown on sediment tends to reduce the overall abundance of plants and shift the species composition to annual forms."	Coarsening is mentioned and is referred to as an ancillary outcome, not the primary use of a drawdown as stated . It is not the directive of this guide to coarsen sediment. Coarsening sediment has effects to many organisms outside the scope of AIS. Drawdown is used sporadically to freeze out the AIS and allow native, seed reproducing species to repopulate.
4/25/2025 5:45:09 PM	8. Aquatic Plant Control	Technical	7255-7258	7259-7262	This relates to the previous comment about sediment coarsening through drawdown. This paragraph was altered to allow the coarsening function of repeated drawdown to be mentioned but not any of its effects, and then had caveats added to reflect the long time frame for this process and that it was not going to be discussed in this chapter. It should be discussed in this chapter and the Carmignani and Roy reference is a great start, but all language relating to how drawdown changes exposed substrate was deleted. There are both benefits and detriments involved and a discussion of both is warranted. I can supply the deleted language or provide a concise review of pluses and minuses. At the core, drawdown will create more sandy to gravelly substrate in lakes with extensive organic sediment deposits, a significant increase in habitat diversity that leads to higher biotic richness. MassWildlife objects because the organic substrate is the most productive and its reduction in a drawdown zone could represent decreased resources for fish. However, the Carmignani research found no significant impact of drawdown on any fish species in MA and productivity should not be the only metric for assessing habitat value in a lake. A discussion of the coarsening function of drawdown could continue from the last paragraph in place of this paragraph, listing both positives and negatives but not taking the narrow view that only productivity matters.	Any ancillary benefits provided by prolonged drawdown do not fit under the scope of the Mass APM Guide as written. The primary purpose for drawdown as written in this chapter is exclusively for aquatic vegetation control. Other reasons for the drawdown would undergo a separate permitting process than outlined in the Mass APM Guide. Coarsening of sediment over time would in fact reduce the amount of aquatic vegetation. This is NOT selective towards native or non-native invasive plants. The Mass APM Guide focuses on the reduction and attempt to eliminate AIS.

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4/25/2025 6:11:47 PM	8. Aquatic Plant Control	Technical	7375-7379	7383-7385	The April 1 target date was insisted upon by MassWildlife and is not scientifically supported. Some caveats are given - it is after all a target date and is not to be used for compliance determination - but it is still held up as the legitimate target date when it is early in the Berkshires and late in SE Massachusetts. If, after a 3-5 year permit, it is found that refill is not complete by April 1, the refill start date should be reviewed as suggested, but may not need to be changed "to better meet the target refill date". Rather both the validity of the refill date and the practicality of the start date should be examined. The need for refill is a function of habitat availability, which in turn is triggered by temperature. If temperature data are not available to make a science based decision on target refill date, April 1 is a suitable default, but we call for such temperature data in the monitoring section and discuss how to use it in the Drawdown Appendix. Here we have a simplified date selection not based on the best available science and may mislead permit agencies as to what to do if the April 1 date is not achieved. It would be better to end the sentence on 7379 with ..." to better meet the target refill date or alter the target date to reflect the ecological need for full lake status."	The text was revised to reference biological monitoring within the document. The refill date and availability of habit is addressed within the document.
4/25/2025 6:24:10 PM	8. Aquatic Plant Control	Technical	7450-7453	7456-7459	This is the most egregious overstepping of scientific boundaries in the entire manual from my perspective. All "mainstream" techniques have a section on Experience in MA and Elsewhere" except drawdown. The highly edited version near the end of the process was data driven and fair to all viewpoints, yet MassWildlife insisted it be removed. No other agency made that demand, and the explanation in these lines that because drawdown might be done differently now, past experience is not valid or enlightening is completely wrong. We have changed how we use herbicides, how we approach dredging, how we inactivate phosphorus, and even how we approach many watershed management tools, yet no one suggested that the experience associated with each of those should be deleted. We have changed how drawdown is managed twice before this in my 40 years of work in MA, yet no one suggested ignoring experience in the original GEIR 20 years ago. This is a simple case of one agency trying to keep information from the public. The successes of drawdown are clearly documented for many cases. There have indeed been some problems and shedding light on them is appropriate. The research that resulted in the Carmignani Ph.D. thesis and multiple published papers listed many possible adverse impacts from drawdown yet found few, and all of those were known previously. There can be legitimate differences of opinion on where and how to apply drawdown; it is not for every lake and each case has enough uniqueness to call for scrutiny, but to simply delete the experience of the last 50 years is a travesty. The experience section should be restored and I can provide it if DCR can't find the most recent version.	It is true that past drawdowns have reduced aquatic plants in the drawdown zone. However, those efforts were conducted with little to no long-term monitoring or collection of the data now required. The new Mass APM Guide aims to include future drawdown projects that follow the guidelines outlined in this updated framework. Future drawdowns will be analyzed for data.
5/15/2025 11:05:38 PM	8. Aquatic Plant Control	Technical	7754-7830	7766-7768	The description of mechanical harvesting methods appears to be limited to cutting-type harvesters. However, so-called Eco Harvesters, which pull or tear macrophytes through use of a rotating drum, are not specifically described. These machines are used widely enough in Massachusetts and the mechanical action is distinct enough from cutting-type harvesters that they should be included in the 2025 Guide, either as a part of this section or under their own heading.	The text has been modified to include "Roller removal weed harvesters, AKA Eco Harvesters, are machines that operate on a similar method to traditional cutting harvesters."
5/16/2025 3:17:36 AM	8. Aquatic Plant Control	Technical	7754-7830	7817-7821	The section on mechanical harvesting only discusses systems that cut the plants, along with subsequent collection. Another mechanical harvesting system in wide use "traps" the plants between two sets of rollers and pulls the plants onto a conveyor belt and into a hopper on the harvesting boat. This system is sometimes called "Eco-Harvesting". For instance, see these websites: https://lakeweedharvester.com/eco-harvester/ and https://cdseaweed.com/eco-harvester-sales. In the best case, the system can pull plants from the lakebed with the roots attached. In many cases, the plant stalk breaks and the top part of the plant is removed. The former case, is obviously preferable, but breaking is likely more common. However, in either case, the plants are held by the rollers and placed directly on the conveyor belt system and carried into the boat's hopper. There is very little chance for the plant fragments to float loose and drift away from the operation. This is in contrast to the cutter systems, where the plants fragments are floating loose in the lake after they are cut, before they are collected by the conveyor belt system. With the cutter system, forward motion of the boat is needed for the fragments to be brought onto the conveyor, so when the boat is maneuvering around the site, there are many times when the forward motion is not maintained and fragments can drift away. Both systems have the same issues of regrowth, which can limit their effectiveness. Also, cutting or pulling the plants can in some cases stimulate the plant growth. But in our experience, the drifting plant fragments are quite limited with the Eco-Harvester. I think this type of system should be included in the Mechanical Harvesting discussion. FYI, our lake has had two seasons of limited Eco-Harvester treatments. Both treatments were not large enough for us to adequately determine their effectiveness. The first season's treatment was limited by our budget. The second season, we had a significant budget, and existing WPA approval without restrictions on the extent of harvesting, but DEP injected their opinion that they consider mechanical plant harvesting to be "dredging" and had to limited to 100 cu yd on our lake. This was a severe limitation on the treatment needed for our lake, and so we have yet to have had an adequate assessment of the effectiveness of the Eco-Harvesting treatments.	The text has been revised to include "A more recent harvester design includes a rotating drum intended to pull plants out by the roots, a potentially more thorough removal approach that also limits fragment escape. However, many plants break before the roots can be pulled from the sediment and if the whole plant is pulled out, the associated turbidity can be high. There is not enough experience yet with this mode of harvester to provide a more extensive review."

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5/6/2025 10:56:14 PM	8. Aquatic Plant Control	Regulatory / Permitting	8174-8757	8182	MassGLM, 8.Aquatic Plant Control, Herbicides 8174-8757, there is no reference to MDEP/EPA permitted aquatic herbicides Line 8451 Flumioxazin, 8504 Fluridone, 8530 Florpyrauxifen-benzyl as PFAS under the Massachusetts PFAS Task Force definition of the compound as one fully fluorinated carbon atom. 8548 Glyphosate, no mention of The EPA's own assessments, including a draft biological evaluation in 2020 and a final one in 2021, indicate that glyphosate is likely to harm a significant portion of endangered and threatened species. Specifically, the draft evaluation found that glyphosate is likely to harm 93% of the plants and animals protected under the Endangered Species Act. The final evaluation, released in November 2021, further confirmed this, according to the U.S. Environmental Protection Agency (.gov). 8457 Diquat dibromide, no mention diquat has been banned in the European Union (EU). The EU stopped approving diquat in 2019 due to concerns about its adverse effects on human health and aquatic life. This decision was driven by a finding from the European Food Safety Authority (EFSA) that diquat posed a high risk to residents, bystanders, and birds, as well as to farm workers. Lines 8174-8757 no mention of, The MDCR bans the use of MDEP permitted aquatic herbicides in the Quabbin and Wachusett Reservoirs.	The Department of Agricultural Resources makes determinations of whether or not to register a herbicide for use in MA. It is not the place of this manual to subvert that effort. The statements made by the commenter are factual but not complete. For example, the EPA's Biological Evaluation for Glyphosate does note that it is "Likely to Adversely Affect" most endangered species, but also points out that nearly all evidence is of "moderate" strength, not high strength, and also points out that a LAA designation does not mean that the exposure is sufficient to assume impact. In fact, the BE focuses on agricultural use, which is very different than aquatic use. Additionally, pesticides are not "banned" (a word that pesticide opposers love to use) but are simply not registered for use because of perceived risks The effect is the same but it doesn't sound as ominous. Diquat is registered for use in MA and any opposition should be taken up with DAR. Herbicides are not used in most drinking water reservoirs, even though some are approved for such use; it is not just Quabbin and Wachusett. The commenter seems to assume that since herbicide use is discussed, such use is being recommended, but that is not the case. We are merely explaining where and how to use any technique and try to be transparent and non-alarmist in the process. Although other approaches to herbicides may be preferred by many, and all techniques are covered in this manual. PFAS is typically defined as Per- and Polyfluoroalkyl Substances. More importantly, PFAS is usually referring to those long-lasting in the environment (i.e., forever chemicals). While Flumioxazin, Fluridone, and Florpyrauxifen-benzyl residuals only stay less than a few weeks. So, it is not part of the MassDEP regulations at this time when the fluorinated organic chemicals contain only one fluorinated carbon atom. MassDEP agrees that the Mass APM Guide should include further discussion of the use of Diquat dibromide and Glyphosate, including reference of the EPA assessments from 2020 and 2021. Comment #1 - Ask DEP/DAR re: PFAS task force; Comment 2 (glyphosate): there is a glyphosate working group multi-agency and under the Governor. I would as DAR for input on this before referring to only federal EPA here. Comment #3: A lot of products are further limited/excluded from the EU. If we include it for diquate, we should check all other products.
5/1/2025 6:18:30 PM	8. Aquatic Plant Control	Technical	8246-8251	8254-8256	Regarding the Aquatic Herbicides, common target species, and use restrictions table: "Argos" should be added under Common Aquatic Product Names for Copper. "2,4-D Amine" should be added under Common Aquatic Product Names for 2,4-D.	Aquatic herbicides table was updated according to suggestions.
5/14/2025 9:59:06 PM	9. Alternative Techniques	Technical	8958	8961	Phoslock and Other Products for P Inactivation' - Remove 'Phoslock' change to 'Lanthanum Modified Bentonite (LMB) and other Products for P Inactivation'	Phoslock was removed and replaced with LMB.
5/14/2025 10:02:28 PM	9. Alternative Techniques	Technical	8972	8975-8976	'The general rule is to apply 100 lbs. of Phoslock for each pound of P to be inactivated.' – Remove brand specific dosing, or add dosing for other trade names such as EutroSORB G (50 lbs to 1 lb P)	Text was modified to the following: "Application rates for LMB vary based on the current commercial products available. The general 9011 rule is to apply 100 lbs. of Phoslock or 50 lbs. of EutroSORB for each pound of P to be inactivated."
5/14/2025 10:07:06 PM	9. Alternative Techniques	Technical	8987	8987-8990	'Products marketed under the name EutroSORB® contain multiple P-binders and are also intended to remove P from inflows.' - Remove 'from inflows'	Removed "from inflows" from 'Products marketed under the name EutroSORB® contain multiple P-binders and are also intended to remove P from inflows.'
5/14/2025 10:09:43 PM	9. Alternative Techniques	Grammatical / Editorial	8989	8990-8993	Currently reads: 'Solid formulations of EutroSORB can be added to filtering "socks" placed in channels and a liquid formulation can be applied to inflows.' -Change to: 'EutroSORB F is granular media contained within a filter sock for removing P from inflows. EutroSORB G is 10% lanthanum modified bentonite that can be applied granular or as a slurry to target sediment P. EutroSORB WC is a liquid formulation for water column P stripping. EutroSORB SI is a liquid formulation of iron-coated lanthanum designed to target sediment P.'	The text has been revised from 'Solid formulations of EutroSORB can be added to filtering "socks" placed in channels and a liquid formulation can be applied to inflows.' to 'EutroSORB F is granular media contained within a filter sock for removing P from inflows. EutroSORB G is 10% lanthanum modified bentonite that can be applied granular or as a slurry to target sediment P. EutroSORB WC is a liquid formulation for water column P stripping. EutroSORB SI is a liquid formulation of iron-coated lanthanum designed to target sediment P.'
5/14/2025 10:10:47 PM	9. Alternative Techniques	Grammatical / Editorial	9002	9008	Change 'EutroSorb' to 'EutroSORB' and add a space between 'SePRO_could'	The text has been revised from 'EutroSorb' to 'EutroSORB' and added a space between 'SePRO_could'.
5/14/2025 3:23:47 PM	9. Alternative Techniques	Technical	9147	9152-9153	Again, there is discussion about potential adverse impacts of the alternative technique of a floating wetland, but it is acknowledged that they remove nutrients, and isn't a goal of lake management to manage excess nutrients? Also, a review of the literature has identified that the "main advantage of this potential, cost-effect technology is that they float on the water surface and can cope with fluctuating water depths during heavy and scanty rainfall events." (Sharma, R., Vymazal, J., Malaviya, P. (2021). Application of floating treatment wetlands for stormwater runoff: A critical review of the recent develops with emphasis on heavy metals and nutrient removal. Science of the Total Environment 777, 146044.	The text has been revised to "The potential for nutrient uptake by engineered floating islands is clear, and the have the advantage of self-adjusting on the surface to fluctuating water levels, but there…".
5/5/2025 12:51:48 AM	9. Alternative Techniques	Technical	9657	9663	I recall one bacteria additive proponent saying that nitrate was needed as an additive to digest organic sediments but DEP is unlikely to allow nitrate additions to lakes.	According to MDAR regulations, there are restrictions to nutrient applications to reduce eutrophication. The addition of nitrate to lake systems is currently not allowed.
5/14/2025 10:01:02 PM	9. Alternative Techniques	Technical	8959-8971	8962	- Replace 'Phoslock' with 'Lanthanum Modified Bentonite' or 'LMB'	'Phoslock' was replaced with 'Lanthanum Modified Bentonite' or 'LMB' throughout the document.

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5/5/2025 1:06:33 AM	Appendix C - Cost of Lake and Watershed Management	Technical	11271	11289	Why. is dredging so low cost per kg P in the. table, yet is among the most expensive per acre?	A lot of P gets removed by dredging, more than would normally be addressed by inactivation or oxygenation, but the dredging process is very expensive. More P than necessary to achieve internal loading goals is likely removed by dredging, along with a lot of other material (e.g., organic matter than demands oxygen), but at great cost. The cost per unit P is lower because so much P is removed, while the cost per acre is more expensive because a lot of material besides P gets removed. Analysis of sediments is required to ensure resuspension of toxic materials is not done.