

Lake Champlain Basin Program
Aquatic Nuisance Species Subcommittee
Rapid Response Workgroup

Lake Champlain Basin
Rapid Response Action Plan
for
Aquatic Invasive Species

May, 2009



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Lake Champlain Basin Rapid Response Action Plan: Addressing Aquatic Invasive Species in the Basin

A partnership plan developed by the Lake Champlain Basin Program Aquatic Nuisance Species Subcommittee and Rapid Response Workgroup

Introduction

The Lake Champlain Basin Rapid Response Action Plan is intended to ensure and facilitate the availability of appropriate protocols, trained personnel, equipment, permits, and other resources to contain and potentially eradicate newly detected nonnative aquatic invasive plant, animal, and pathogen introductions as they are reported or discovered in the basin. The plan is an administrative blueprint for appropriate State, Federal and Provincial agencies to work in partnership, with respect of their priorities and the resources available, to facilitate rapid response actions against invasive species.

The plan envisions an inter-jurisdictional Lake Champlain Basin **Rapid Response Task Force** (RR Task Force) that would help implement and oversee rapid response actions. The role of the RR Task Force is to facilitate and promote cooperation among jurisdictions responding to newly formed or newly found infestations of aquatic nonnative invasive species and pathogens in the Lake Champlain Basin. The Lake Champlain RR Task Force is comprised of resource managers and technical experts from Vermont, New York, and Quebec. **Lead agencies** from each jurisdiction have been identified to facilitate clear communication and action for interstate and international management of invasive species. The lead agencies work closely with and are represented on the RR Task Force to report new introductions, share information, and work to most efficiently use resources to implement rapid response actions. The lead agency for aquatic invasive plants, animals and pathogens in Vermont is the Vermont Agency of Natural Resources (VTANR); the lead agency in New York is the New York State Department of Environmental Conservation (NYSDEC); and the lead agency in Québec is the *ministère du Développement durable, de l'Environnement et des Parcs* (MDDEP).

The RR Task Force and lead agencies will work in cooperation with a number of partner organizations including the Adirondack Park Agency (APA), U.S. Army Corps of Engineers (USACE), United States Coast Guard (USCG), state departments of transportation, conservation and fish and wildlife and Canadian federal and provincial agencies, regarding any relevant general use permits. The Nature Conservancy (TNC) and other non-governmental organizations may also be consulted for their expertise in invasive species issues.

Definition of Aquatic Invasive Species

Executive Order 13112 defines **invasive species** as “**an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.**” Aquatic invasive species are nonindigenous plants, animals, and pathogens that threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters.

Definition of Rapid Response

The Lake Champlain Basin Rapid Response Plan adopts the National Invasive Species Council definition of **rapid response**:

“a systematic effort to eradicate, contain, or control a potentially invasive non-native species introduced into an ecosystem while the infestation of that ecosystem is still localized.”

The Lake Champlain Basin RR Task Force provides the emergency response system capable of mobilizing resources from cooperating agencies in three different jurisdictions to work in partnership, accordance with their priorities and available resources, and execute rapid response actions as appropriate to most efficiently address aquatic invasive species infestation and spread. Lead agencies trigger the rapid response process by notifying the RR Task Force and recommending a course of action.

Rapid response may encompass both totally new introductions into the Lake Champlain Basin or satellite infestations of previously established species. The RR Task Force is designed to respond to new introductions within or from outside the Lake Champlain Basin. For example, control measures taken to combat Eurasian watermilfoil where it is already widespread would not qualify for rapid response action. However, an effort to eradicate a new infestation in an area where the species has not been established previously may qualify.

Although timeliness is a key element in rapid response, there are differences as to what would be considered “rapid,” based on species-specific variables such as reproductive rates, ability of a vector to transmit the species, and likelihood and method of spread. In some instances, a species may become established after only a few days and require immediate action. With some plant species, however, longer response times may be acceptable.

The Lake Champlain Basin

The **Lake Champlain Basin** landscape supports a variety of developed areas, agricultural land, and natural communities including riparian floodplain forests, clayplain forests, emergent and scrub/shrub wetlands, lakes, ponds and tributaries. The lakes, ponds, rivers and streams of the Lake Champlain Basin are critical to the health of the ecosystem. The Lake Champlain Basin drains 8,234 square miles which can be divided into eight sub-basins with eleven major rivers. The Lake’s tributaries serve as the primary migratory routes for aquatic species and spawning/rearing habitats.

The aquatic habitats of the Champlain Basin have been altered by the construction of dams, transportation infrastructure, floodplain encroachment, and the loss of riparian habitat for the last three centuries. The disturbance, fragmentation, and alteration of in-stream aquatic and riparian habitat coupled with the introduction of non-native invasive species continues to negatively impact fish and wildlife resources and the economy and culture of Lake Champlain Basin communities.

Rapid Response Plan Development

The U.S. Environmental Protection Agency's Model Rapid Response Plan for Great Lakes Invasions states:

“Fundamental to establishing the organizational structure and communication for AIS (aquatic invasive species) rapid response planning is the establishment of a coordinative body with the capacity to function on a transboundary basis to effectively address AIS invasions. Ultimately, this body must operate to effectively eradicate and/or control a new AIS invasion within a reasonable timeframe to limit the extent of ecological and economic damages.”

The Lake Champlain Basin Program (LCBP) is a logical entity for developing a coordinative body for invasive species in the Lake Champlain Basin. Formed by the Lake Champlain Special Designation Act of 1990 and renewed by Congress in 2002, the Basin Program is an “umbrella” organization facilitating collaboration by Federal, State and provincial agencies and private organizations (LCBP Steering Committee Membership, Appendix A). The LCBP restoration and management plan for Lake Champlain, *Opportunities for Action*, describes a comprehensive program of pollution control and natural resources management in the lake and surrounding watershed. One of the plan's highest priorities is to control the introduction, spread, and impact of nonnative aquatic invasive species.

The U.S. portion of the Lake Champlain Basin has a basin-wide Aquatic Nuisance Species Management Plan that was approved by the National Aquatic Nuisance Species Task Force in 2000. Working with the States of Vermont and New York, the U.S. Fish and Wildlife Service and other partners, the LCBP revised the Lake Champlain Basin Aquatic Nuisance Species (ANS) Management Plan in 2005. Many high priority actions in the revised plan require coordination among multiple agencies and organizations. To further the goals of the ANS plan, the LCBP Technical Advisory Committee formed an Aquatic Nuisance Species (ANS) Subcommittee in 2005. The ANS Subcommittee's Rapid Response Workgroup developed this Rapid Response Plan.

To achieve rapid response, the agencies and organizations cooperating under the administrative blueprint provided by this Plan will follow the principles below.

Rapid response initiatives will:

- strive for eradication as the primary goal of all rapid response deployments;
- reflect sound biology and site-specific conditions;
- facilitate fast action and interagency decision-making at the lowest level possible;
- use personnel and resources efficiently;
- minimize restrictions on water use, public access, parks, and other facilities;
- be flexible, varying the protocol to accomplish steps concurrently or out of order as needed.

This Plan presents the process of rapid response action for invasive plants and animals. The Plan includes five steps, listed below. Each step is described in a flow chart followed by a narrative.

Step I. Aquatic Invasive Species Confirmation

Step II. Delineation, Isolation, and Preliminary Evaluation

Step III. Treatment Selection, Design, and Permitting Process

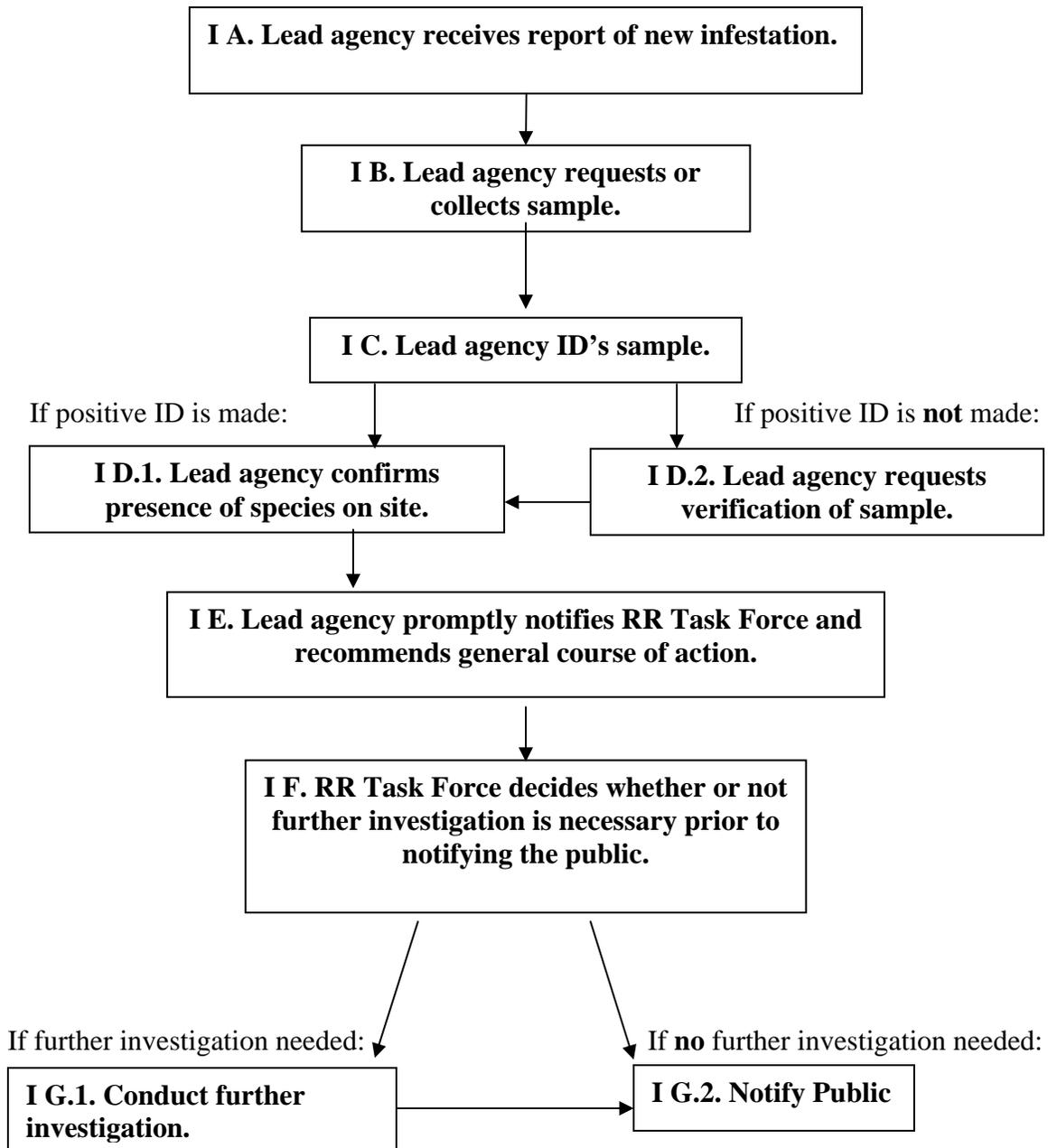
Step IV. Treatment Plan Implementation

Step V. Monitoring and Evaluation

Step I

AQUATIC INVASIVE SPECIES CONFIRMATION

Week 1



Narrative Explanation of Step I: Aquatic Invasive Species Confirmation

Introduction

Species confirmation should occur within the first week of a reported introduction. The lead agency, Rapid Response Task Force, and all partners need to be sure that any reports they receive are sent to the appropriate points of contact, which are designated in advance for State, Federal, and provincial agencies involved in the rapid response process. In the event of a legally authorized introduction, the rapid response process will not be initiated.

I A. Lead agency receives report of new infestation

The rapid response process is triggered by a report of a newly formed or newly found infestation, regardless of population size. Species listed on the Lake Champlain Basin Aquatic Invasive Priority Species List (Appendix B) will automatically trigger the rapid response process, though the list is not inclusive of all species that might trigger the process. The lead agency will coordinate with the cooperating agencies in the states of New York and Vermont and the province of Quebec if appropriate, to initiate an aquatic invasive species rapid response process.

I B. Lead agency requests or collects sample

Respective state/provincial agency collects a sample or receives sample from a citizen.

I C. Lead agency ID's sample

Respective state/provincial agency identifies the sample and communicates findings with the RR Task Force. If a species is not on the known list of invasive flora and fauna in the basin then the RR Task Force will be contacted immediately. The lead agency will also report any species whose criteria of invasiveness is questionable to the basin.

I D.1 Lead agency confirms presence of species on site

Appropriate agency confirms presence of aquatic invasive species on site. This step should allow for delineation and mapping of the infestation when feasible.

I D.2 Lead agency requests verification of sample

Appropriate agency requests verification of the sample. If needed, qualified individuals may be contacted for species identification. Invasive aquatic species taxonomic experts may be found for all New England states and Eastern provinces on the National Aquatic Nuisance Species Task Force web-site (www.anstaskforce.gov/experts/search.php) and/or state agency contact lists (to be defined in QC).

I E. Lead agency promptly notifies RR Task Force and recommends general course of action

The lead agency will report all new infestations of confirmed aquatic invasive plants, animals, and pathogens to the RR Task Force immediately. The lead agency will recommend whether the RR Task Force should convene or not, based on inter-jurisdictional basin-wide implications of the invasion and the lead agency's ability to manage the infestation. Once contacted, the RR Task Force must initiate communications within 72 hours to deliberate a general course of action.

The RR Task Force is comprised of technical experts and resource managers who focus on risk assessment and other actions identified in this rapid response process. The Task Force will have

operating procedures and require a quorum to make decisions. The Task Force receives direct input from policy-level representatives of involved Federal, state, and provincial agencies and non-governmental organizations.

I F. RR Task Force decides whether or not further investigation is necessary prior to notifying the public

If further investigation is warranted the RR Task Force and lead agency will coordinate such investigations prior to notifying the public. If further investigation is not necessary then the lead agency will resume control action and the public will be notified, as appropriate.

I G.1 Conduct further investigation

Further investigation is conducted as directed by the RR Task Force and lead agency.

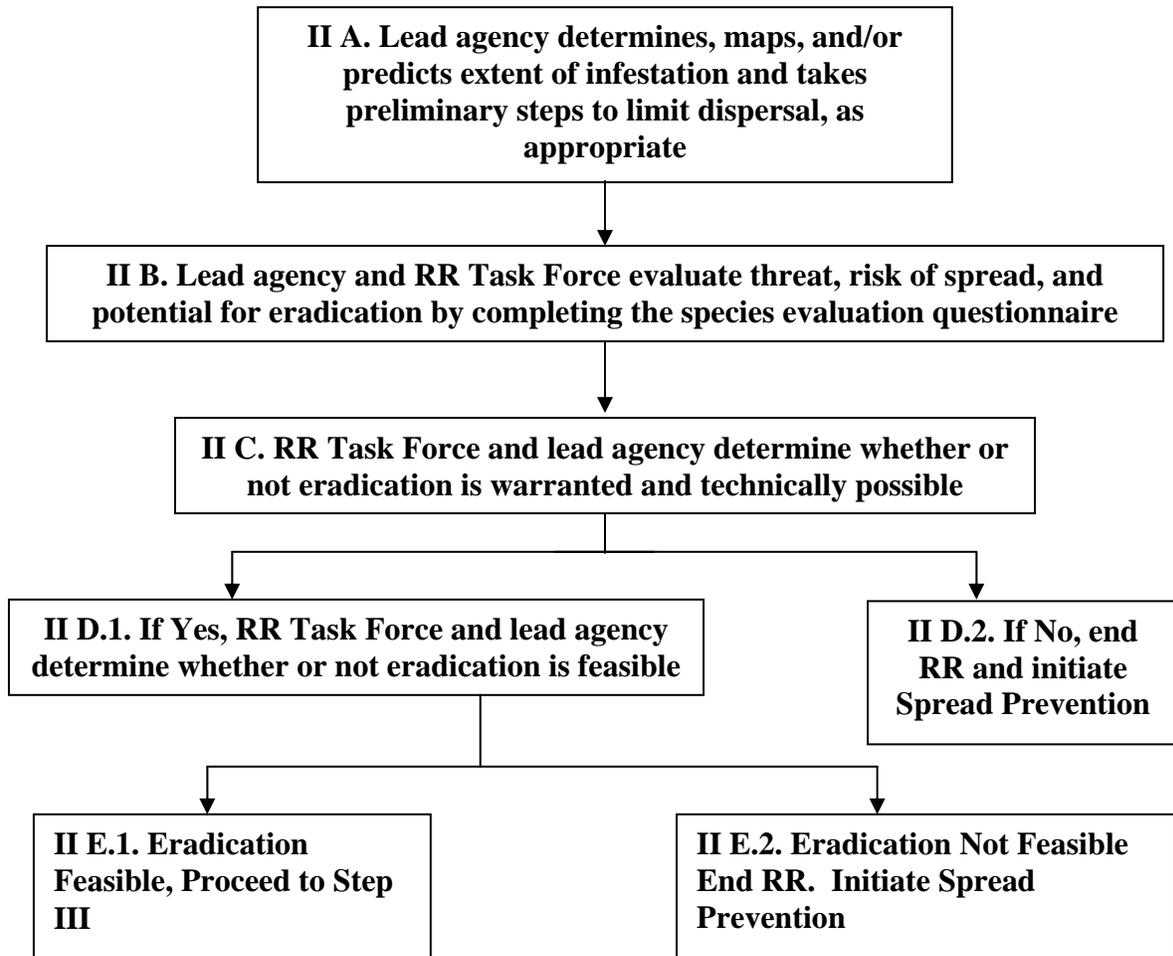
I G.2 Notify public

A coordinated process to notify the public and the media should be timed carefully and decided on a case-by-case basis. This decision is based, in part, on the turn-around time for on-site investigation and on the type of invasive species discovered. For example, for most aquatic invasive plants, the extent of the infestation should be known first. However, for most aquatic invasive animals and pathogens, notification will usually proceed prior to full knowledge of the extent of the infestation, because this information may be difficult to obtain.

Step II

**DELINEATION, ISOLATION, AND PRELIMINARY
EVALUATION of AQUATIC INVASIVE SPECIES**

Week 2



Narrative explanation of Step II: Delineation, Isolation and Preliminary Evaluation of Aquatic Invasive Species

II A. Lead agency determines, maps, and/or predicts extent of infestation and takes preliminary steps to limit dispersal, as appropriate

The lead agency maps the extent of the invasive species infestation and provides information to members of the RR Task Force. Preliminary steps to limit dispersal may include installation of temporary barriers to isolate the invasive species, screening outlets, and preventing access to the site by recreational users and others who may inadvertently cause aquatic invasive plants, animals, or pathogens to spread. Such steps will have different permitting requirements in the three jurisdictions of the Lake Champlain basin. Information about aquatic invasive species regulatory and containment authority in the basin can be found in Appendix C.

II B. Lead agency and RR Task Force evaluate threat, risk of spread, and potential for eradication by completing the species evaluation questionnaire

An evaluation of whether the invasion represents a public policy issue large enough to warrant a rapid response has to be done. The evaluation requires a determination of whether or not the invasion will have significant impacts to the environment, economy, or human health and whether the species can be managed successfully. The species evaluation questionnaire (Appendix D) will be used as guidance. The lead agency and RR Task Force determine who will complete the questionnaire and in what time frame.

II C. RR Task Force and lead agency determine whether or not eradication is warranted and technically possible

The results of the species evaluation questionnaire will inform the decision of whether or not eradication is warranted and technically possible. Determination of whether the eradication is possible should be made separately from considerations of the availability of funding and personnel and public acceptability. A clear distinction is made between eradication, which is the goal of rapid response, and ongoing maintenance for chronic infestations. Should eradication be warranted and technically possible, then a determination of eradication feasibility is required. If eradication is not possible, appropriate invasive species spread prevention measures are to be taken immediately.

II D.1. If Yes, RR Task Force and lead agency determine whether or not eradication is feasible

The RR Task Force and lead agency have determined that the eradication is technically possible at this stage in the process. However, eradication may be complicated by several factors. Overall, the RR Task Force will start with an assumption that eradication is feasible. Abandonment of rapid response at this step would require that the task force demonstrate that eradication is not feasible.

The feasibility determination entails technical/logistic evaluation, fiscal/economic evaluation, and stakeholder considerations. The technical/logistical evaluation and fiscal/economic evaluations are considered in the species evaluation questionnaire in Appendix D. Additional important stakeholder considerations are described below.

Stakeholder considerations: Tools for eradicating an aquatic invasive plant, animal, or pathogen may include controversial surface-use restrictions, physical disruption to the aquatic environment through hand-pulling, harvesting, dredging, and/or application of pesticides. The eradication feasibility determination may require the RR Task Force and lead agency to consider measures that may not be acceptable to some members of the public. Therefore, stakeholder considerations involve a variety of issues including:

- People, flora, and fauna that would be directly/indirectly affected by likely control measures
- Water uses impacted by control measures
- Stakeholder acceptance of control measures
- Permit obtain ability
- Relevant agency policies
- Agencies' authority, or lack there-of, to access invaded habitat
- Whether rapid response/redirection of agency staff may cause unacceptable delays in other programs/activities
- Safety concerns

Each of these issues is a factor in the final determination regarding whether eradication is feasible.

II D.2 If No, end RR and initiate Spread Prevention

The RR Task Force and lead agency determine that eradication is not possible and the rapid response ends. Spread prevention activities are initiated and ongoing maintenance for chronic infestations may continue, at the discretion of the lead agency. Spread prevention activities may require permits (See Step III).

II E.1 Eradication Feasible, Proceed to Step III

The RR Task Force and lead agency determine that rapid response eradication is feasible. After taking steps to contain the infestation and prevent the spread of the aquatic invasive species, the lead agency and the RR Task Force will prepare for Step III: Treatment Selection and Design.

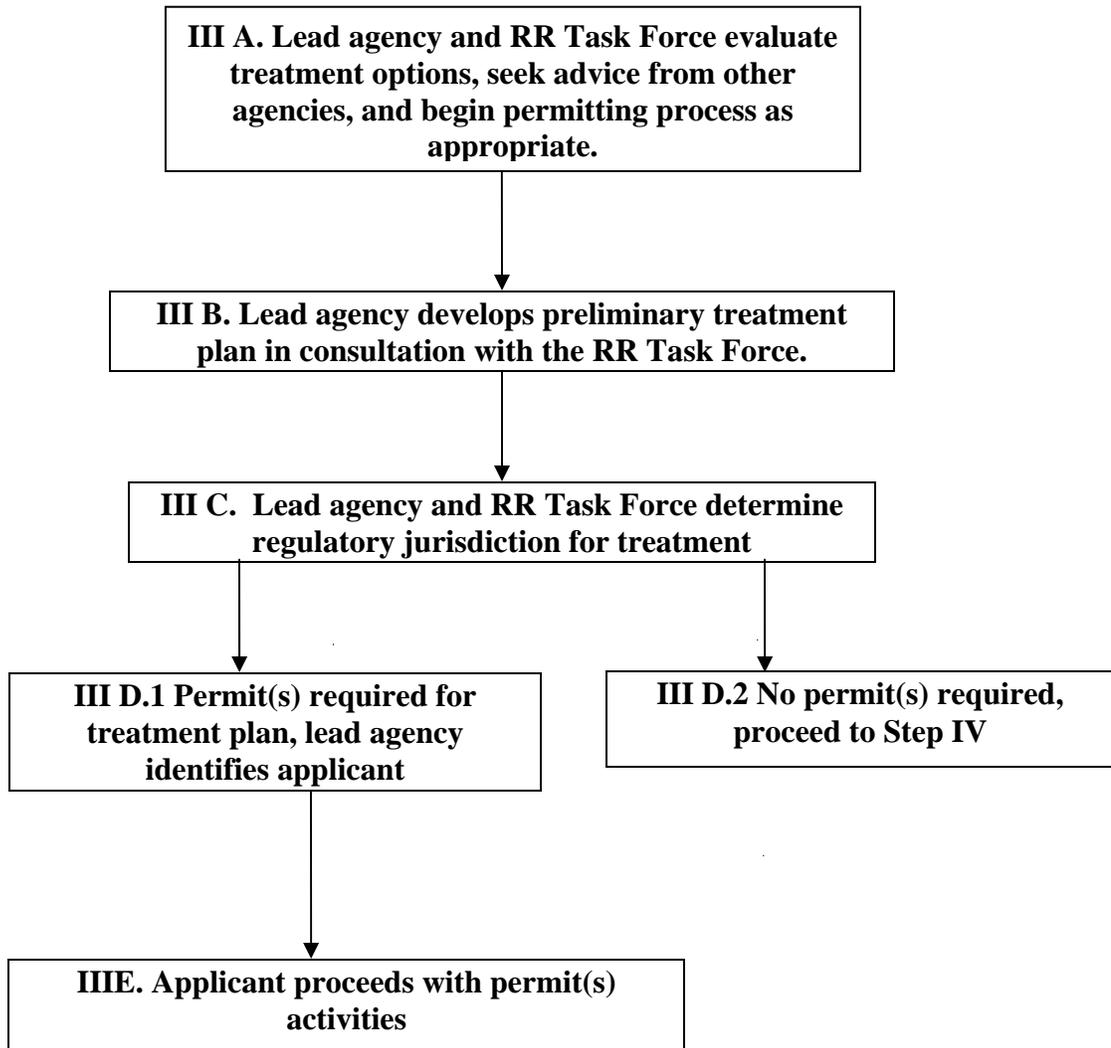
II E.2 Eradication Not Feasible. End RR. Initiate Spread Prevention

The lead agency and RR Task Force determine that eradication is not feasible and the rapid response process ends. The RR Task Force develops a list of findings and forwards them to appropriate agencies for further action. Spread prevention measures are initiated by lead or other Lake Champlain Basin agencies.

Step III

**TREATMENT SELECTION AND DESIGN
for AQUATIC INVASIVE SPECIES**

Week 3



Narrative explanation of Step III: Treatment Selection, Design, and Permitting Process for Aquatic Invasive Species

III A. Lead agency and RR Task Force evaluate treatment options, seek advice from other agencies, and begin permitting process as appropriate

The lead agency and RR Task Force will seek permitting advice from other agencies including USACE, Fisheries and Oceans Canada, NYSDEC, VTANR, APA, and other state and provincial agencies, as appropriate. Treatment options may include spread prevention measures that require permits.

III B. Lead agency develops preliminary treatment plan in consultation with the RR Task Force

A preliminary treatment plan is developed by the lead agency in consultation with the RR Task Force. If the treatment plan requires a permit, one or more regulatory jurisdictions could be involved. To determine regulatory jurisdiction proceed to Step IIIC. If no permit is required for treatment proceed to Step IIID to implement the treatment plan.

Aquatic invasive species rapid response permit requirements for VTDEC, APA, VTFWD, NYSDEC, QC and Canada, and the USACE are listed in Appendices E through K. Flow charts for each of these regulatory authorities encompass different possible control methods, permit requirements, permit processing times, and public notice requirements.

Some rapid response actions, such as hand-pulling aquatic invasive plants or electro fishing to determine the occurrence of invasive fish, may not require permits. However, in some circumstances, such rapid response actions may involve incidental take that is not specifically authorized in state or provincial statutes. For example, electro fishing activities may result in incidental take of non-target species. In these circumstances, special authorization may be required. See Appendix C.

III C. Lead agency and RR Task Force determine regulatory jurisdiction for treatment

The lead agency will work with the RR Task Force to determine the regulatory jurisdiction for treatment. Primary jurisdiction will reside with state and provincial agencies. However, some waterways may require multiple permits to satisfy multiple jurisdictions. For example, the United States Army Corps of Engineers and the United States Coast Guard share jurisdiction with Vermont and New York in Lake Champlain (See Appendix C).

III D.1 Permit(s) required for treatment plan; lead agency identifies applicant

Agency permit processes information is included in Appendices E through K. The RR Task Force will include representatives of state agencies with expertise and experience to recommend who the permit applicant should be. Since state agencies and departments may be the most appropriate applicants in many cases, a state agency will often serve as the permit applicant. To avoid conflicts of interest, States may designate separate entities as applicants and permit reviewers within their agencies and, if necessary, technical staff working on the application would be physically and procedurally separated from technical staff and administrators ruling on the application.

The National Environmental Policy Act (NEPA) may apply to treatments for aquatic invasive species rapid response actions that occur on U.S. Federal lands or that require Federal action. All U.S. Federal agencies that conduct actions that may significantly affect “the quality of the human environment” must submit an environmental impact statement (EIS). An EIS is required based on the significance of a proposed project’s geographical context and the intensity of impacts on interests such as public health, unique geographical characteristics and cultural resources.

III D.2 No permit(s) required, proceed to Step IV

If the treatment plan does not require a permit, proceed to Step IV.

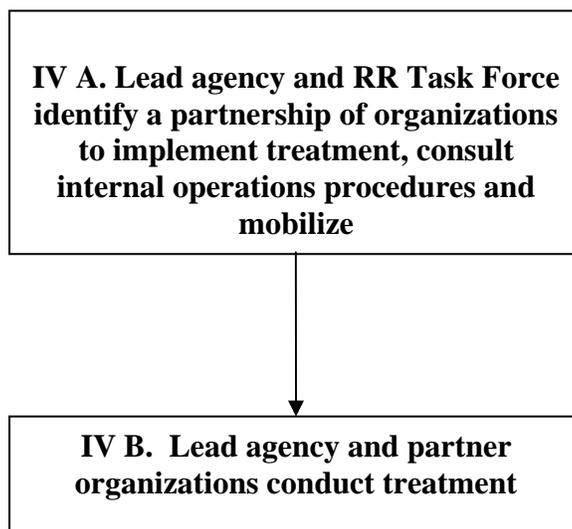
III E. Applicant proceeds with permit(s) activities

Applicant initiates permit process(es) with all required permitting agencies and works to facilitate most rapid action possible.

Step IV

**TREATMENT PLAN IMPLEMENTATION
for AQUATIC INVASIVE SPECIES**

Before Week 12



Narrative Explanation of Step IV: Treatment Plan Implementation for Aquatic Invasive Species

IVA. Lead agency and RR Task Force identify a partnership of organizations to implement treatment, consult internal operations procedures and mobilize

As necessary and appropriate, the lead agency will:

- implement Incident Command System procedures (<http://www.uscg.mil/hq/g-m/nmc/response/>),
- secure any access agreements required,
- solicit and coordinate volunteers and consultants,
- prepare the staging site, materials, and equipment,
- arrange for a biomass disposal site and procedures,
- establish safety and communication protocols,
- select water quality monitoring sites,
- establish a schedule for treatment,
- activate a public information strategy

The lead agency will give priority to control treatments so that any restrictions may be lifted, and any prohibited public boating or other water uses may resume.

IVB. Lead agency and partner organizations conduct treatment

The lead agency and partner organizations conduct the treatment plan.

Step V

**MONITORING AND EVALUATION of
AQUATIC INVASIVE SPECIES**

Within one year of treatment

**V A. Lead agency monitors effectiveness of
rapid response treatment**



**V B. Lead agency reports results to RR
Task Force and public stakeholders and
develops recommendations for future action**



**V C. If infestation persists, lead agency and
RR Task Force develop a long-term
management and spread prevention plan**

Narrative explanation of Step V: Monitoring and Evaluation of Aquatic Invasive Species

V A. Lead agency monitors effectiveness of rapid response treatment

The lead agency will monitor treatments used to control aquatic invasive species. The lead agency will survey the population survival, evaluate effectiveness of the treatment, determine whether eradication was successful, and assess if additional or other techniques should be used. This information will be reported to the RR Task Force.

The lead agency with the support of the RR Task Force and its cooperators will evaluate the operational aspects of the process and make future improvements. The lead agency will gather information from treatment personnel as soon as possible after the rapid response initiative to ascertain which aspects worked well and what could be improved upon. Recommendations will be used in future treatments.

When using pesticides, the lead agency will follow the stipulations of all applicable permits using appropriate and accepted monitoring methods to sample for chemical residues in the water, air or biota, as stipulated in applicable permits.

V B. Lead agency reports results to RR Task Force and public stakeholders and develops recommendations for future action

The lead agency will report all results of treatments to the RR Task Force, other lead agencies, and public stakeholders. The results of treatment will be incorporated into recommendations for future monitoring, treatment, or other action.

V C. If infestation persists, lead agency and RR Task Force develop a long-term management and spread prevention plan

Should an infestation persist after treatment, the lead agency will develop a long-term management and spread prevention plan with the guidance of the RR Task Force to share with other lead agencies.

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Appendix B: Lake Champlain Basin Aquatic Invasive Priority Species

The *Lake Champlain Basin Rapid Response Action Plan for Aquatic Invasive Species* provides resource managers from VT, NY, and QC with a process to act quickly when a new, potentially harmful aquatic invasive species enters the basin. Working together, the three jurisdictions can take action effectively to prevent an invasive species from becoming an expensive long-term management objective for natural resource managers.

Aquatic invasive species are nonindigenous plants, animals, and pathogens that threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquaculture, or recreational activities dependent on such waters. The species listed on the priority list have been identified by Lake Champlain basin experts as those alien species “**whose introduction does or is likely to cause economic or environmental harm or harm to human health**”, as defined in Executive Order 13112.

Unfortunately, several aquatic invasive species, notably water chestnut, zebra mussel, and alewife, will be long-term costly resource management issues in the basin. The purpose of this plan is to have a process in place to react to a new invasion, or to the spread of an invasive species already in the basin. Through the pooled resources of VT, NY, and QC, perhaps we can control or eradicate the next invasion to prevent it from becoming a long-term resource management issue. Spread prevention and control of invasive species before or when they first enter the basin is much more cost effective and serves to protect our water resources better than management of established populations of invasive species.

Of the many potential nonnative aquatic invasive species that may be recorded in the area covered by this action plan, there are some that would almost certainly trigger the rapid response action plan with minimal or no preliminary discussion. These are species that have not as yet been recorded in one or more of the jurisdictions and have been shown to be, or have potential to be, highly invasive in other systems and have had environmental, economic or human health impacts. Most of the species on this list have been recorded in the northeast US and many have established populations. The primary threat of spread is through unauthorized intentional or unintentional, often illegal, introduction by humans. A few of these priority species could immigrate into the jurisdictions on their own.

It should be understood that initiation of the RR response review is *not* limited to the species included in the priority list. For nonnative aquatic species not on the list, the potential lead agency would contact the RR Task Force after discovering a new infestation in the basin. The RR Task Force would then determine if the new nonnative species appearance warrants a rapid response review.

The list is not comprehensive. Rather, it serves to streamline the initial step in deciding if the rapid response process should be invoked by *a priori* listing species that would automatically initiate the process. It also gives examples of species the RR Task Force intends to address in the plan.

Aquatic Plants

Parrotfeather - *Myriophyllum aquaticum*

Fanwort - *Cabomba caroliniana*

Starry stonewort - *Nitellopsis obtusa*

Brazilian Elodea - *Egeria densa*

Hydrilla - *Hydrilla verticillata*

East Indian Hygrophila - *Hygrophila polysperma*

Giant Salvinia - *Salvinia auriculata* complex - 4 species of *Salvinia* (*Salvinia auriculata*, *Salvinia molesta*, *Salvinia biloba*, *Salvinia herzogii*) comprise this group.

Aquatic Animals

Crustaceans

Spiny waterflea - *Bythotrephes longimanus*

Fishhook waterflea - *Cercopagis pengoi*.

Bloody-red shrimp - *Hemimysis anomala*

Mollusca

Corbicula - *Corbicula flumica*

Quagga mussel – *Dreissenia rostriformis bugensis*

New Zealand mudsnail- *Potamopyrgus antipodarum*

Fish

Snakehead- *Channa*

Grass carp, white amur - *Ctenopharyngodon idella*

Black carp- *Mylopharyngodon piceus*

Mosquitofish - *Gambusia spp.*

Ruffe - *Gymnocephalus cernuus*

Largescale silver carp – *Hypophthalmichthys harmandi*

Silver carp - *Hypophthalmichthys molitrix*

Bighead carp - *Hypophthalmichthys nobilis*

Bitterling - *Rhodeus sericeus*

Oriental weather loach - *Misgurnus anguillicaudatus*

Round goby - *Neogobius melanostomus*

Tubenose goby - *Proterorhinus marmoratus*

Other organisms

Didymo- *Didymosphenia geminata*

VHS- Viral Hemorrhagic Septicemia

Appendix C: Rapid Response Containment Authority and Incidental Take Regulation in the Lake Champlain Basin

Rapid response measures may require containment of the invasive species, which in turn may require restricting access to the infested site. Rapid response measures may also require actions that result in incidental take of non-target organisms. Containment authority and incidental take regulations vary among jurisdictions.

United States Coast Guard:

The Northern New England Sector of the United States Coast Guard (USCG) covers Maine, New Hampshire, Vermont, and a small section of New York. The USCG conducts boating safety checks and addresses environmental issues and hazards in the navigable waters of the Northern New England Sector. USCG jurisdiction includes Lake Champlain and navigable waters up the tributaries to the first barrier and the Champlain Canal.

Should an invasive aquatic species enter the Lake Champlain Basin, the USCG could become involved in the containment process. The USCG priorities include safety hazards, environmental contamination, and commercial traffic in federally navigable waterways. Closing off or limiting access to any waters under USCG jurisdiction would require a “Captain of the Port Order,” which would identify safety zones, isolate areas, and limit/restrict access to commerce and the public.

United States Army Corps of Engineers

The USACE has jurisdiction over all work and structures in Section 10 waterways under the Rivers and Harbors Act and the discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. Practices that would require a permit in USACE jurisdiction waters include the use of fill, dams, dredging, or any work that could affect navigability or inhibits the passage of aquatic organisms. The USACE jurisdiction for aquatic invasive species rapid response permit information can be found in Appendix J.

Vermont:

The Secretary of the Agency of Natural Resources has the authority to temporarily close sections of Vermont lakes, ponds and reservoirs to boating for the purposes of controlling, preventing, or containing the spread of aquatic invasive species (subsection (g) of Section 4.1 of Section 4 of the Vermont Use of Public Water Rules adopted by the Water Resources Board May 14, 1998). The following requirements must be met: the total area closed can be no more than 10% of the surface area or 50 acres, whichever is less, of the waterbody; and the shoreline adjacent to the area can be no more than 10% of the total shoreline of the waterbody. Other requirements also apply.

The Commissioner of the Vermont Department of Fish and Wildlife has the authority to limit access to restrict hunting and fishing activities that would threaten Vermont’s resources. However, this would not be applicable to boat traffic. Appendix G. describes the Department’s incidental take permit process.

New York:

New York state agencies have not established authority for restricting access to infested sites.

Applications for incidental take are submitted to the New York Department of Environmental Conservation on a standard form, including information of the purpose of the activity, species to be collected, location and timeframe of the activity, methods, and final disposition of species taken. The review time and issuance of the necessary permit typically takes less than one month.

The New York collection permit requires that the licensee file with the Department on or before February 1 a report of activities conducted under the license. For fish collections, this report lists, by collection date and gear, the number of specimens of each species collected and the disposition of such species after collection.

Quebec:

In QC waters, the Canadian Coast Guard of the Department of Fisheries and Oceans Canada has the authority to close or limit access to an infested area.

Any collection of wild animals (vertebrates) for scientific, educational or management purposes requires a specific permit. The only exception would be the use of a regular permit such as a sport fishing permit or commercial fishery permit to gather biological information. The permit is attached to specific persons and includes conditions for the sampling period, methods, devices used and specimen manipulation exigencies. Following the sampling, a report has to be produced, recording species caught, numbers of specimens and measurements. *Ministère de Ressources naturelles et de la Faune* (MRNF) personnel are not submitted to this process. Once the application is completed to the satisfaction of MRNF, a period of two weeks is usually needed to get the permit.

Appendix D: Species Evaluation Questionnaire: Instructions for preparing a species-specific risk screening (to be adapted by the partners)

1. All risk screenings will be prepared by one assessor and reviewed by two experts before being accepted by the RR Task Force.
2. The risk screening values are relative and do not express a specific rapid response strategy; rather they are to be considered by the Rapid Response Task Force when making recommendations for a rapid response action.
3. The impact criteria and the management criteria values will be kept separate and will be considered separately when making recommendations.
4. The species name, name of assessor, and date of assessment should be recorded at the top of the first page.
5. For each criterion, the assessor will assign a score between 1 and 5. There are 7 impact criteria and 7 management criteria. For the impact criteria, a score of 1 represents the greatest amount of risk associated with that criterion; a score of 5 represents the least risk. For the management criteria, a score of 1 represents a low likelihood of management while a score of 5 represents a high likelihood of management. See Table 1 below for a more thorough description of each criterion.
6. For each criterion, the assessor should write a brief paragraph justifying the given score. Significant information includes biology, life-history characteristics, invasion history, existing control technologies and legislation related to the species. Relevant references should be included in the justification.
7. The spreadsheet will automatically add up scores to give a subtotal for the ecological and management sections and a total score for the risk assessment.
8. The assessor should write a final recommendation with comments on the bottom of the second page of the questionnaire. A summary of the recommendation should also be written on the first page under the completion date.
9. A certainty code should be assigned to each criterion to allow reviewers to consider the assessors confidence in assigning the value. The certainty codes are based on the Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process uncertainty codes:

Certainty code	Symbol	Description
Very Certain	VC	As certain as I am going to get
Reasonably Certain	RC	Reasonably certain
Moderately Certain	MC	More certain than not
Reasonably Uncertain	RU	Reasonably uncertain
Very Uncertain	VU	A guess

Table 1: Description of Criterion

Criteria	Description
Distribution	The occurrence of the species relative to Lake Champlain; invasion history.
Invasion	The likelihood that the species will be invasive, based on its past invasion history and/or the invasiveness potential of closely related species.
Establishment	The likelihood that the species will be able to survive and become established based on all biological and ecological attributes of the species, e.g., temperature tolerance, salinity tolerance, fecundity, and reproductive mechanisms.
Likelihood of spread	The probability of spread widely in Lake Champlain from the colonized area based on known pathways of introduction to new sites (environmental and human mechanisms). This criterion must take into consideration all possible vectors for transport and spread and the probability of transport by these vectors (e.g., Are these vectors regulated? Are these vectors frequent or rare?)
Environmental impacts	The potential for environmental degradation given the biological characteristics, invasion potential of the species, and given the habitat quality and parameters of the invaded habitat. Special consideration must be given to critical habitats and threatened species that may be further endangered by the presence of the introduced species.
Economic impacts	The potential for economic damage given the biological characteristics/invasion potential of the species and given the economic activities in the invaded area. Special consideration must be given to invaded areas where crucial or sensitive economic activities may occur.
Human health impacts	The potential for the organism to act as a public health threat or to host a parasite that may cause harm to human health.

Control: population characteristics	Feasibility to control/eradicate the species based on the characteristics of the current population.
Control: habitat characteristics	Feasibility to control/eradicate the species based on the characteristics of the habitat it has colonized.
Technologies for control & eradication	Efficacy of known control technologies for the species.
Secondary impacts of control methods	Applicability of control technologies given negative secondary impacts. Must consider the short-term and long-term effects of applying the control technology.
Cost effectiveness, funding and staff requirements for control methodology	Status of current funding and manpower/staffing required to prevent or control the species. Must consider not just the actual cost of control, but the cost-benefit ratio.
Legal/regulatory requirements for control methodology	The feasibility of applying control technologies based on legal or regulatory restrictions.
Preventing reintroduction	Feasibility to prevent the occurrence or reintroduction of an introduced species once the species is controlled/eradicated (through legislation, education and outreach, etc...)

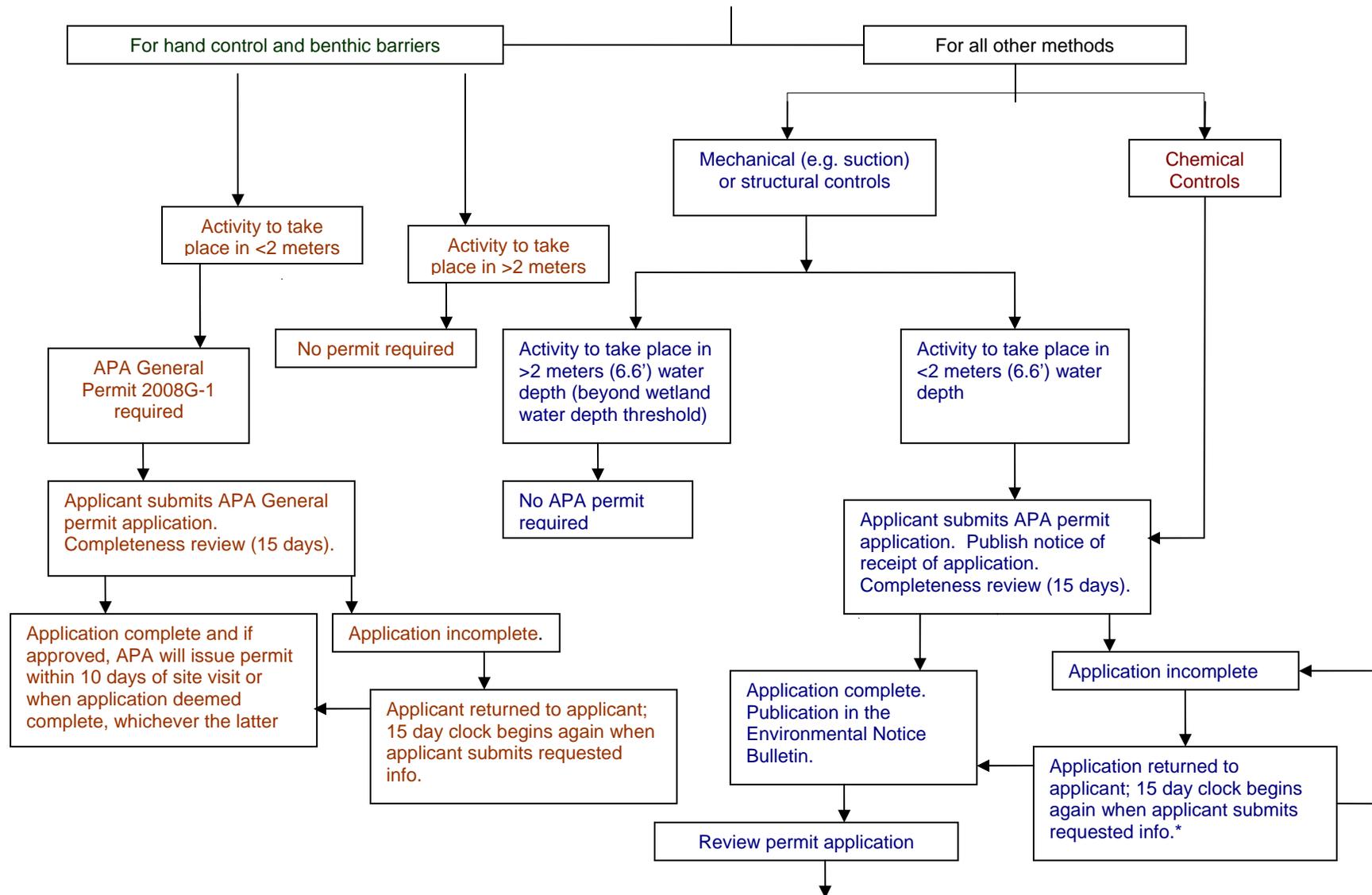
Appendix D: Species Evaluation Questionnaire: Adapted to Lake Champlain Basin						
Species:				Date completed:		
Assessor:			Lake Champlain Basin ANS Task Force	Recommendation:		
All risk assessments should include a text file with justification and literature review (see protocol)						
SCORE	CERT.	IMPACT CRITERIA				Deciding Factors or Facts (cited)
		Current distribution				
			1. Widespread in LCB; established in the watershed/waterbody			Notes:
			2. Widespread in LCB; rare in the watershed/waterbody			
			3. Rare in LCB; established in watershed/waterbody			
			4. Rare in LCB; rare in watershed/waterbody			
			5. First occurrence in LCB or future threat			
		Invasion potential				
			1. Species (or other closely related species) not considered invasive any where in world			Notes:
			2. Species (or other closely related species) has been introduced but invasiveness is limited/unknown			
			3. Other closely related species are considered invasive, but the invasiveness of this species is unknown			
			4. Species considered somewhat invasive			
			5. Species considered highly invasive			
		Establishment Potential: Biological & ecological characteristics				
			1. Characteristics make it unlikely to establish itself in the Northeast region			Notes:
			2. Characteristics indicate low survivorship/spread if introduced to LCB			
			3. Characteristics indicate medium survivorship but low invasion potential			
			4. Characteristics indicate high survivorship but medium invasion potential			
			5. Characteristics indicate high survivorship and high invasion potential			

		Likelihood of spreading beyond the point of invasion			
			1. Introduced to isolated environments, inefficient human and ecological dispersal mechanisms		Notes:
			2. Introduced to semi-isolated environments, efficient human and ecological dispersal mechanisms		
			3. Scope of introductions and human and ecological dispersal mechanisms unknown		
			4. Introduced to unconfined environment, inefficient-slow human and ecological dispersal		
			5. Introduced, efficient human and ecological dispersal		
		Potential environmental impacts			
			1. Unlikely to cause harm to environment		Notes:
			2. Low probability of environmental impact in the Northeast		
			3. Medium probability of environmental impact in the Northeast		
			4. High probability of environmental impact in the Northeast		
			5. High impact, particularly to a threatened species and/or a sensitive habitat		
		Potential economic impacts			
			1. Unlikely to cause any economic impacts		Notes:
			2. Low probability of economic impact		
			3. Medium probability of economic impact		
			4. High probability of impact		
			5. High probability, particularly to crucial/sensitive economic activities		
		Potential for human health impact			
			1. Unlikely to cause any human health impact		Notes:
			2. Low probability of carrying non-serious human health hazard		
			3. High probability of carrying non-serious human health hazard		
			4. Low probability of carrying serious human health hazard		
			5. High probability of carrying serious human health hazard		
		TOTAL FOR IMPACT CRITERIA (OUT OF 35)			

SCORE	CERT.	MANAGEMENT CRITERIA	Deciding Factors or Facts (cited)
		Feasibility of control: Population characteristics	
		1. Well established at site and in LCB; control unlikely	Notes:
		2. High densities at site; control unlikely	
		3. Medium densities at site; control possible	
		4. Low densities at site; control likely	
		5. Very few individuals; eradication likely	
		Feasibility of control: Habitat characteristics	
		1. Well established in multiple habitats; control unlikely	Notes:
		2. Unconfined habitat (open ocean or rivers); control unlikely	
		3. Interconnected habitat (stream fed lakes or tributaries); control possible	
		4. Isolated habitat or limited distribution (ponds or small bays); eradication likely	
		5. Species is not yet established; eradication likely	
		Known technologies for control and/or eradication	
		1. No methods to control or eradicate species	Notes:
		2. Ineffective methods to control or eradicate	
		3. Technologies effective for temporary, local control of invasion	
		4. Technologies effective for widespread control with active management	
		5. Effective methods for eradication of invasion in LCB	
		Secondary impacts of control methods	
		1. No known control methods or methods cannot currently be applied	Notes:
		2. Methods have serious long-term secondary impacts	
		3. Methods have minor long-term or serious short-term secondary impacts	
		4. Methods have minor and short-term secondary impacts relative to the invasion	
		5. Methods are known to be very safe to human health and the environment	
		Cost effectiveness, funding and staff requirements for applicable control methodology	
		1. No known control methods	Notes:

			2. Costs <i>will</i> outweigh benefits				
			3. Methods are <i>not</i> cost-effective				
			4. Methods are cost-effective				
			5. Benefits will outweigh the costs				
		Legal/regulatory requirements for applicable control methodology					
			1. No known control methods			Notes:	
			2. Methods cannot be applied because of regulatory requirements				
			3. Methods will require permits that may not allow for rapid response				
			4. Methods require permits that have already been obtained or can be expedited				
			5. Control methods require no special legal/regulatory requirements				
		Preventing reintroduction					
			1. Not possible to slow or prevent (re)introduction in LCB			Notes:	
			2. Unlikely to slow (re)introduction to Northeast region and/or LCB				
			3. Possible to slow (re)introduction to Northeast region and/or LCB				
			4. Possibility of preventing (re)introduction to the Northeast region and/or LCB				
			5. Existing prevention mechanisms in the Northeast region and/or LCB				
		TOTAL FOR MANAGEMENT CRITERIA (OUT OF 35)					
Recommendation with comments:							
Citations:							

Appendix E: Adirondack Park Agency Jurisdiction for Aquatic Invasive Species Rapid Response Permit Requirements



Once the application is complete and review has begun:

- The Agency has 90 days from the date of completion to issue a permit or direct the project to public hearing either to garner additional information or to deny the permit.
- The Agency must notify the project sponsor of the intent to go to public hearing on or before 60 days of the receipt of a complete application.*
- The hearing must be commenced within 90 days but can extend for a longer time.*
- The Agency must issue a decision on the permit within 60 days of the receipt of a complete record of the hearing.*

* Maximum time periods are established by Adirondack Park Agency Act, Environmental Conservation Law, and 9NYCRR Part 572

Adirondack Park Agency Permitting

Jurisdiction

Rapid response controls for aquatic invasive species initiated within the boundaries of New York State's Adirondack Park including powered mechanical devices, structural controls, benthic barriers and pesticides fall under the jurisdiction of the New York State Adirondack Park Agency (Agency). The Agency is charged with administering Adirondack Park Agency Act (Executive Law Article 27) and the New York State Freshwater Wetlands Act (Environmental Conservation Law Article 24). Both Acts are implemented through the Adirondack Park Agency's Rules and Regulations (9NYCRR).

Regulated Activities

Both Acts seek to protect wetlands from "undue adverse impact". Permits are required for all "regulated activities". Regulated activities are defined as:

"(n)(1) Regulated activity means any of the following within the boundaries of a freshwater wetland: (i) land use and development or subdivision; (ii) any form of draining, dredging, excavation, removal of soil, peat, mud, sand, shells, gravel or other aggregate from any freshwater wetland, either directly or indirectly; (iii) any form of dumping, filling, or depositing of any soil, stones, sand, gravel, mud, rubbish or fill of any kind, either directly or indirectly; (iv) erecting any structures, constructing any roads, driving pilings, or placing of any other obstructions whether or not changing the pattern of flow or elevation of the water; (v) clearcutting of more than three acres.

(2) Regulated activities also include, whether or not within wetland boundaries: (i) any form of pollution, including installing a septic tank or sewer outfall, discharging sewage treatment effluent or other liquid wastes into or so as to drain into a freshwater wetland; or (ii) any other activity which substantially impairs the functions served by or the benefits derived from freshwater wetlands set forth in section 24-0105 of the Freshwater Wetlands Act, including any diversion of surface or subsurface drainage that adversely affects the natural hydrological regime of, or substantially increases erosion of or siltation or sedimentation into, the wetland." (9NYCRR Section 578.3(n)(1 & 2)

Wetland Value and Permit Findings

Wetlands are assigned a value rating of 1 through 4 generally based on their coverytype. "1" rated wetlands are the most valuable and "4" rated wetlands of relatively less value. The findings that must be made prior to issuance of a permit for a "regulated activity" vary depending on the value of the wetland in question. The findings are:

"(a) Unless the economic, social and other benefits to be derived from the activity proposed compel a departure from these guidelines, the agency shall not issue a permit for regulated activities in the following wetlands unless the findings set forth below are made.

(1) Wetlands rated 1. The proposed activity: (i) would be compatible with preservation of the entire wetland; and (ii) would not result in degradation or loss of any part of the wetland or its associated values.

(2) Wetlands rated 2. The proposed activity: (i) would result in minimal degradation or destruction of the wetland or its associated values; and (ii) is the only alternative which reasonably can accomplish the applicant's objectives; or (iii) alternatively to subparagraph (ii), is the only alternative which provides an essential public benefit.

(3) Wetlands rated 3. The proposed activity: (i) would result in the minimum possible degradation or destruction of any part of the wetland or its associated values; (ii) is the only alternative which reasonably can accomplish the applicant's objectives; and (iii) would, weighing the benefits of the activity against its cost and the wetland values lost, provide a net social and/or economic gain to the community.

(4) Wetlands rated 4. The proposed activity is the only alternative which reasonably can accomplish the applicant's objectives.” (9NYCRR Section 578.10)

Permit Process

The APA permit process first involves a determination whether a permit is required, referred to as a “jurisdictional determination”. If a hand pulling or non-mechanical cutting project is to take place in waters greater than two meters (6.6 feet) in depth, and does not involve the use of pesticides, the Agency has determined that no permit is required. If the proposed project involves hand harvesting or benthic barriers as part of a lake wide effort in waters less than two meters (6.6 feet) in depth, a general permit may be obtained for select species (see General Permit Process below).

If the proposed project involves mechanical (e.g. suction) or structural controls other than benthic barriers in waters less than two meters (6.6 feet) in depth or the use of biological controls or pesticides regardless of depth, a permit will be required. The applicant may obtain the appropriate application materials on line or by mail from the Agency. The review process begins when an applicant submits the appropriate APA permit application forms to the Agency. The Agency publishes a notice of receipt of application and the law provides the Agency 15 days to determine if the application is complete. If the application is incomplete the project sponsor is notified and requested to provide missing documentation and a new 15 day clock begins when that information is received by the Agency. If the application is complete, a notice of complete permit application is published in the Environmental Notice Bulletin.

Once the application is complete the Agency has 90 days from the date of completion to issue a permit or within 60 days may direct the project to public hearing. A public hearing must be conducted to deny any permit. The hearing must be commenced within 90 days of notice to an applicant, and continues until the record is complete. The Agency must issue a decision on the permit within 60 days of the receipt of a complete record of the hearing.

General Permit Process

The APA General Permit 2008G-1 Management of Aquatic Invasive Plants Using Benthic Barriers and Hand Harvesting Techniques is issued to, APIPP, local municipalities, and qualified lake associations to eradicate or control the spread of certain aquatic invasive plant species in wetlands throughout the Adirondack Park. All management attempts and methods are limited to five invasive species of concern: Eurasian watermilfoil, curlyleaf pondweed, water chestnut, yellow floating heart, European frog-bit, and those species identified by the Supervisor,

Resource Analysis and Scientific Services Division. The applicant may obtain the appropriate application materials on line or by mail from the Agency.

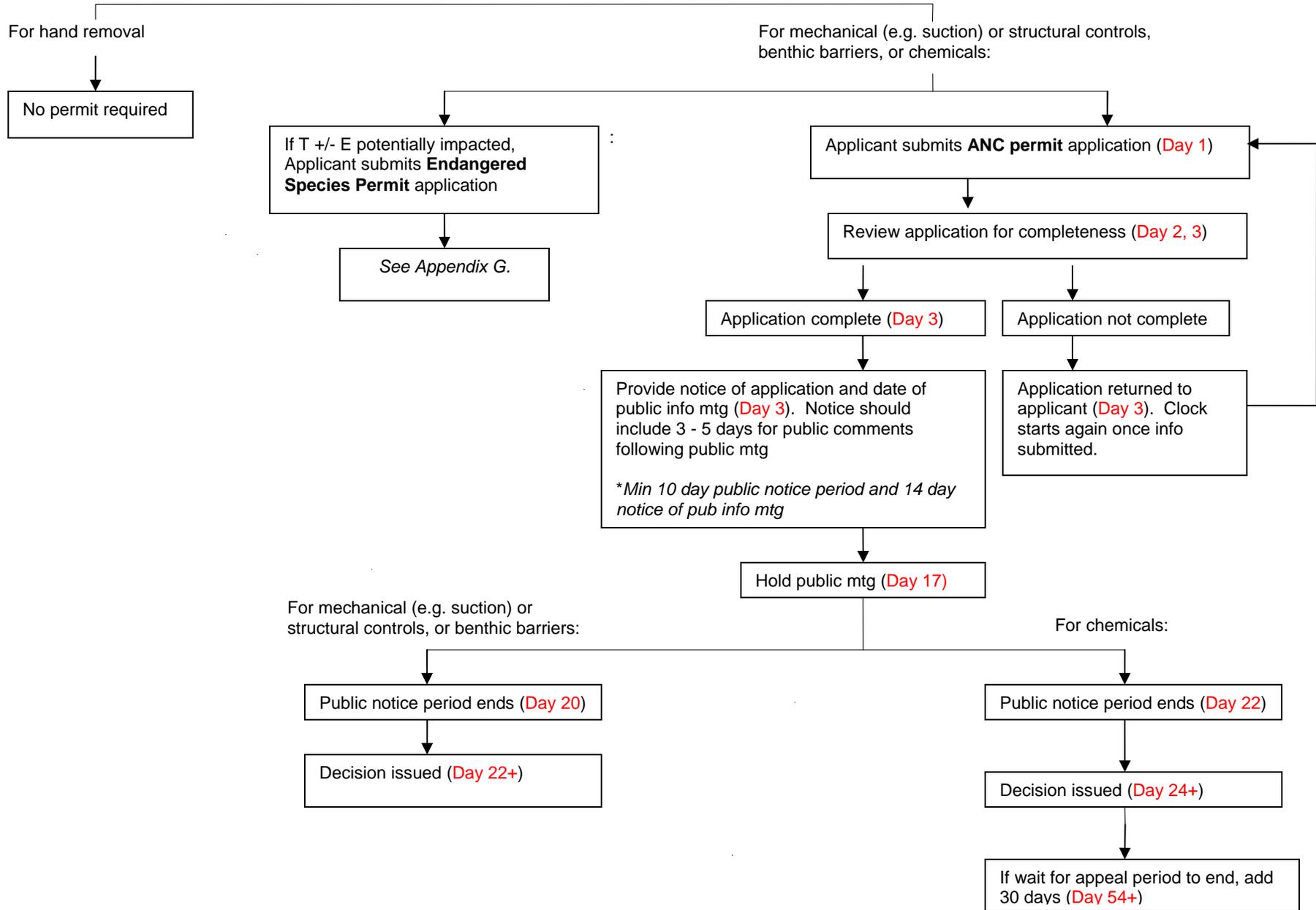
The review process begins when an applicant submits the appropriate APA permit application forms to the Agency. Within 15 calendar days of receipt of an application, the APA will review the application for completeness, confirm APA jurisdiction, determine whether the proposed activity meets the eligibility criteria and contact the applicant to arrange a meeting at the site of the proposed activity. The application may be used for individual sites or a program of aquatic invasive species management on multiple sites.

If the application is incomplete the project sponsor is notified and requested to provide missing documentation and a new 15 day clock begins when that information is received by the Agency. If the application is complete and approvable, within 10 calendar days of the site visit or when the application is deemed complete, whichever the latter, the Agency will issue the permit.

Emergencies

There is no provision in the NYS Freshwater Wetlands Act for “emergencies” such as discovery of aquatic nuisance species. The project review process is geared toward thoroughness, not expediency and as such provides no general exception for aquatic nuisance species rapid response. The Agency recognizes the severe threat that these species pose to our waterways, but the permit issuance process is set by law. The Agency has Board directed review of individual aquatic pesticide applications, which would preclude a general permit under current policy.

Appendix F: Vermont Jurisdiction for Aquatic Invasive Species Rapid Response Permit Requirements



Vermont Aquatic Nuisance Control (ANC) Permitting

Rapid response controls for aquatic invasive species initiated in Vermont waters – powered mechanical devices, structural controls, benthic barriers, pesticides - fall under the jurisdiction of Title 10 Chap 47 Subsection 1263a., Aquatic Nuisance Control (ANC) Permits. Statutory authority for ANC Permits is provided to the Secretary of the Agency of Natural Resources (VTANR). Currently the program is administered by the Department of Environmental Conservation, Water Quality Division (VTDEC).

The statute directs the Secretary to issue a permit for pesticide use when the Secretary can make the following five findings:

- 1) there is no reasonable non-chemical alternative available;
- 2) there is acceptable risk to the non-target environment;
- 3) there is negligible risk to public health;
- 4) a long-range management plan has been developed which incorporates a schedule of pesticide minimization; and
- 5) there is a public benefit to be achieved from the application of the pesticide, or in the case of a pond located entirely on a landowner's property, no undue adverse effect upon the public good.

For all other control methods, the statute directs the Secretary to issue a permit when the Secretary can make the following three findings:

- 1) there is acceptable risk to the non-target environment;
- 2) there is negligible risk to public health; and
- 3) there is either benefit to or no undue adverse effect on the public good.

No permit is required for hand pulling or non-mechanical cutting.

The ANC permit process is initiated when an applicant submits the appropriate ANC permit application form to the VTDEC (**Day 1**); the VTDEC reviews the application for completeness (**Day 2, 3**). If the application is complete, public notification is initiated (**Day 3**)¹ and the application is noticed for a minimum of 10 days.

¹ *The Department gives written notice to the following persons (Public Review and Comment Procedures for ANC Permit Applications and General Permits, VTANR, VTDEC January 30, 2003):*

- a. *municipality(ies) in which the activity is proposed to occur;*
- b. *lake association(s) associated with the lake in which the activity is proposed, if known;*
- c. *abutting property owners to the proposed activity (if the proposed activity is of a lakewide nature, advertisement in a newspaper(s) of general circulation in the project area may be given in lieu of notice to all abutting property owners);*
- d. *VT Department of Environmental Conservation District Wetlands Ecologist;*
- e. *VT Department of Health;*
- f. *VT Department of Agriculture, Food and Markets if the proposed control activity is to use a pesticide or a chemical other than a pesticide;*
- g. *VT Department of Fish and Wildlife District Fisheries Biologist;*
- h. *VT Department of Fish and Wildlife District Wildlife Biologist;*
- i. *VT Department of Fish and Wildlife Nongame and Natural Heritage Program; and*

If the application is not complete, the application is returned to the applicant with a summary listing the items needed to deem the application complete. Review by VTDEC is again initiated once the requested information is submitted.

If there is the potential for an endangered or threatened species to be impacted by the control method proposed in the ANC permit application, the applicant must also submit an Endangered Species Permit application through Vermont Department of Fish and Wildlife, Nongame Natural Heritage Program (See Appendix G).

A public information meeting is scheduled and notice provided at the same time the ANC permit application is noticed. At least 14 days advance notice of the meeting must be provided; the public information meeting is held on **Day 17**.

For the use of pesticides, the public comment period remains open five days following the information meeting, closing on **Day 22**. For all other rapid response control methods, the public comment period remains open three days following the information meeting, closing on **Day 20**. Any comments received during the comment period or at the informational meeting are taken into consideration in the decision to issue or deny a permit.

A decision relating to the use of a pesticide is issued on **Day 24+** and for all other methods **Day 22+**. If a permit is issued, there is a 30 day appeal period.² An appeal does not stay a decision.

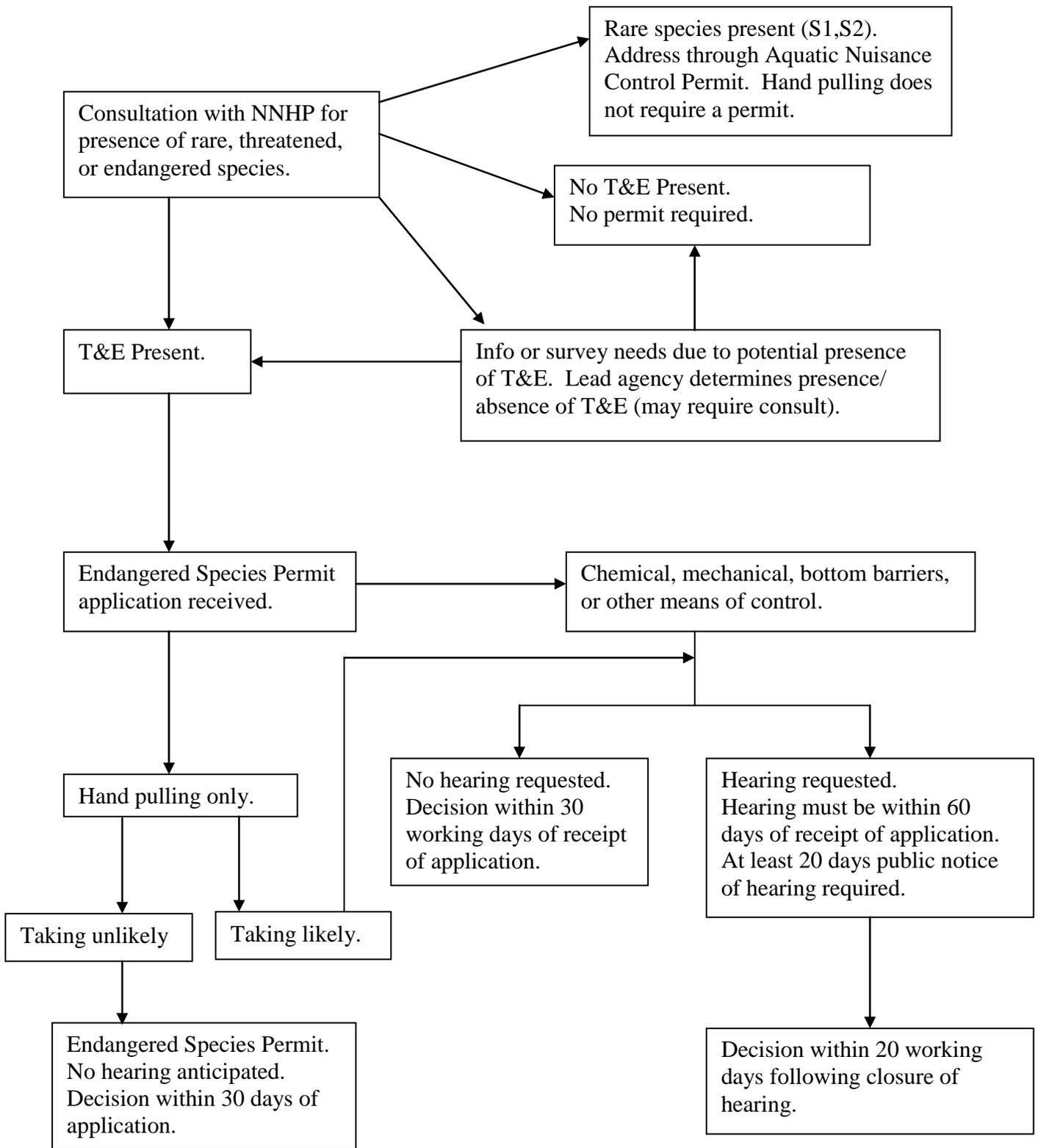
The ANC permit issuance process is estimated to take 24 or more days to complete for pesticides and 22 or more days for all other rapid response controls. Realistically, the process will take longer than the above estimates. The 30 day appeal period could also add to the timeframe if the permittee waits for the appeal period to end.

The current ANC Permit issuance process does not allow for a rapid response to an invasive species invasion due to: the requirement for public noticing which can extend beyond the 10 day notice period; the opportunity for a public information meeting; the appeal process; and the need to gain private property access (that right is not granted in the statute). The VTANR should seek an alternative emergency permitting process for rapid response scenarios identified in this Plan.

j. other persons as appropriate.

² Pursuant to 10 V.S.A. Chapter 220, any appeal of an ANC permit decision must be filed with the Clerk of the Environmental Court within 30 days of the date of the decision. The appellant must attach to the Notice of Appeal the entry fee of \$225.00, payable to the State of Vermont.

Appendix G: Vermont Department of Fish and Wildlife Jurisdiction for Aquatic Invasive Species Rapid Response Permit Requirements



Vermont Department of Fish and Wildlife Non-game Natural Heritage Program Threatened and Endangered Species Permit Process

The Vermont Department of Fish and Wildlife Non-game and Natural Heritage Program requires permits for invasive species rapid response actions at locations where rare, threatened, or endangered species are present. Federally listed species found in a response location must be reported to USFWS.

The lead agency will consult with the Non-game and Natural Heritage Program to determine if there is a presence of rare, threatened, or endangered species at a rapid response control site. A survey may be necessary. The lead agency may determine the presence/absence of a T&E species (may require a consult). If no rare, threatened, or endangered species are present then a permit is not required.

Hand pulling of invasive aquatic plants does not require a permit if rare species (not endangered or threatened) are in the vicinity. However, NNHP should be contacted for specific information on how to avoid impact to the rare species.

If threatened and endangered species are present an Endangered Species Permit Application is required.

The Endangered Species Committee has 30 days to reach a decision once the application has been received if there is no hearing. If additional information is requested the applicant has 30 days to submit.

Once the Vermont Department of Fish and Wildlife receives a permit application, a copy of the application or a notice of a proposed activity is distributed to the Endangered Species Committee and scientific advisory groups. The Endangered Species Committee advises the Secretary on a decision; the authority to issue decisions has not been delegated to the department.

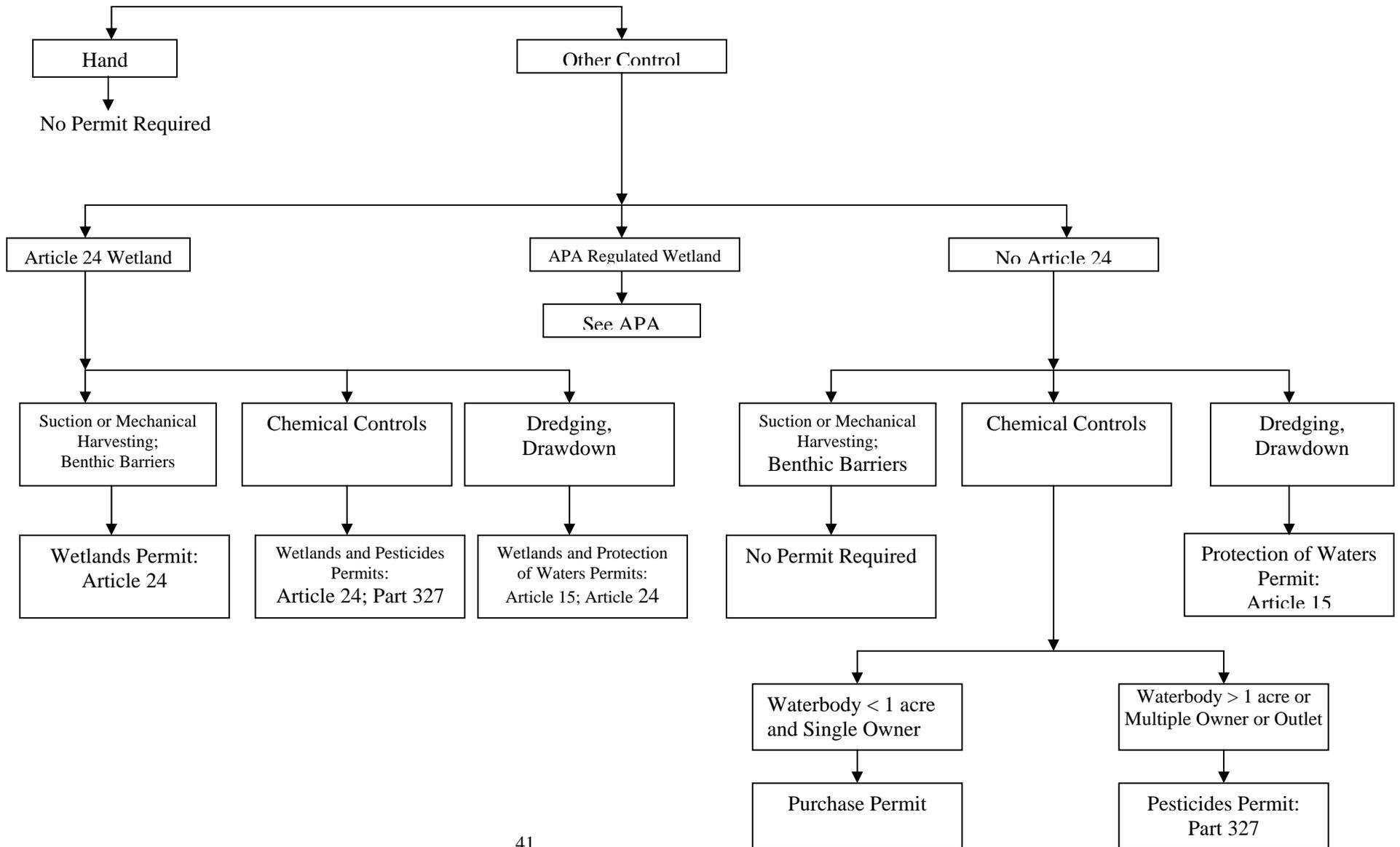
For hand pulling controls a taking is likely and no hearing is anticipated. A decision is anticipated within 30 days of application submission.

Chemical, mechanical, bottom barriers, or other means of control may require a hearing. Controversial projects or projects where concerns are raised require a public hearing within 60 days of the application submission. The Chair of the ES Committee determines if a hearing is warranted. Public notice of the hearing must be issued 20 days before the hearing. After the hearing, the Agency has 20 working days to make a decision.

If no hearing is requested, a decision will be made within 30 days of application submission.

The maximum timeframe to obtain a Vermont Threatened and Endangered Species Permit is 80 days with a hearing and 30 days without a hearing.

Appendix H: New York State Department of Environmental Conservation Jurisdiction for Aquatic Invasive Plants Rapid Response Permit Requirements



NYSDEC Permit Process for Aquatic Invasive Species Rapid Response Actions

The New York State Department of Environmental Conservation requires permits for aquatic invasive species control measures under their state Uniform Procedures Act. Procedures for administering NYSDEC's key regulatory permits are standardized in the Uniform Procedures Act, Article 70 of the Environmental Conservation Law (ECL).

NYSDEC encourages all grant applicants to request a preapplication conference with DEC staff to clarify project objectives, DEC requirements, and to discuss alternative approaches.

Aquatic invasive species rapid response management involving only hand pulling methods does not require a NYSDEC permit.

Management actions other than hand pulling, such as chemical control, mechanical control, or otherwise in an Adirondack Park Agency (APA) regulated wetland requires an APA permit.

Management of aquatic invasive plant species in a NYSDEC Article 24 wetland require specific permits. Suction or mechanical harvesting and benthic barrier control methods require an Article 24 Wetlands Permit. Chemical controls require an Article 24 Wetlands and Pesticides Part 327 permits. Dredging and drawdown control methods require and Article 24 Wetlands and Article 15 Protection of Waters permits.

Management of aquatic invasive plant species that do not occur in NYSDEC Article 24 wetlands have different regulations. Suction or mechanical harvesting and benthic barriers do not require permits. Chemical controls in a waterbody less than one acre in size belonging to a single owner must obtain a permit. Chemical controls in a waterbody greater than one acre in size that has multiple owners or multiple outlets requires a Part 327 Pesticides Permit. Dredging and drawdown control methods require an Article 15 Protection of Waters Permit.

The first step in the application process is to submit the application to the Regional Permit Administrator. NYSDEC will determine application completeness and must respond to the applicant within 15 days of receipt. If additional information is required, the NYSDEC will have an additional 15 days to respond to the revised application's completeness.

The Uniform Procedures Act will divide applications into two categories, minor and major. Minor projects do not require public review. DEC must make a permit decision on minor projects within 45 days of determining the application is complete.

Major projects are subject to public review. A Notice of Complete Application must be published in the Environmental Notice Bulletin and in a local paper. The public must submit comments before the deadline in the Notice, which is often 15 days after the date the Notice is published. DEC will then decide whether to hold a public hearing, in which case, the applicant will be asked to provide DEC with responses to public comments. If no hearing is held for a major project, the DEC will make a permit decision within 90 days after the application is determined to be complete. If a hearing is held for a major project, DEC will notify the applicant and the public of a hearing within 60 days after the application is determined to be complete. The hearing must begin within 90 days after the application is determined to be complete. The

DEC will then issue a final decision on the application within 60 days after receiving the final hearing record.

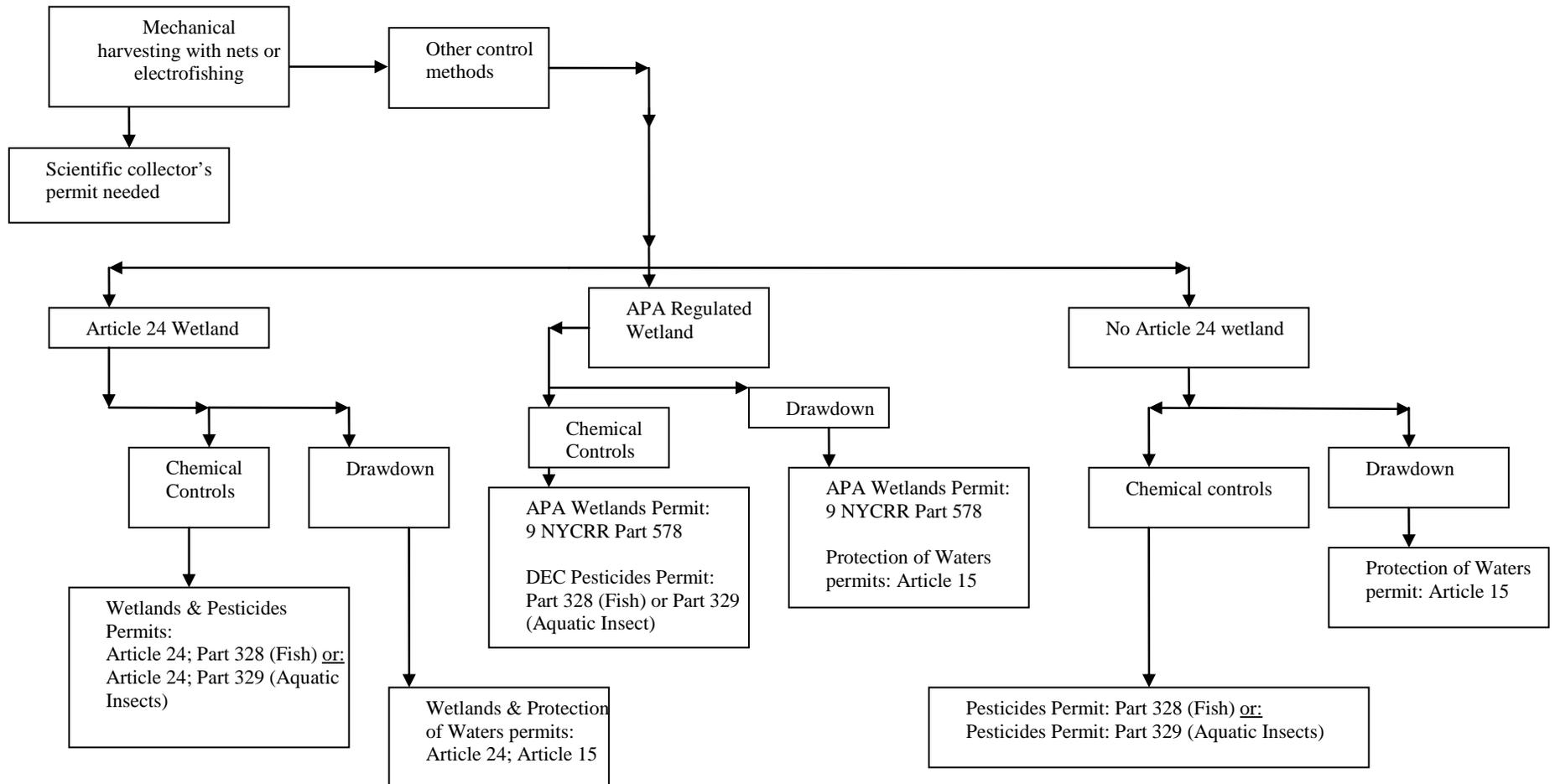
The current NYSDEC permit requirements do not allow for rapid response actions to address aquatic invasive animal species. The New York Pesticide Regulations contain a number of potential challenges that could inhibit an aquatic invasive fish species rapid response.

Should an invasive fish species become established in a NY waterbody, the use of chemical pesticides may be the best option for immediate response and elimination. Currently, there are four piscicides registered with USEPA and only three of those, Lampricide, Bayluscide, and rotenone, are registered in NY. Lampricide and bayluscide are used for sea lamprey control, leaving rotenone available as a broad-spectrum piscicide in NY.

NY's Codes Rules and Regulations Part 328 and 328.6 specifically deals with use of rotenone for extermination of undesirable fish. Unless the invasive fish species is susceptible to Lampricide or Bayluscide (which seems unlikely), the only piscicide available for use in NY is rotenone.

However, rotenone-specific pesticide regulations regarding purpose, treatment timing, treatment concentration, partial treatment and prohibition in river systems would likely prevent an effective rapid response in many foreseeable circumstances in NY.

Appendix I: New York State Department of Environmental Conservation Jurisdiction for Aquatic Invasive Animals Permit Requirements



NYSDEC Permit Process for Aquatic Invasive Animals Rapid Response Actions

The New York State Department of Environmental Conservation requires permits for aquatic invasive species control measures under their state Uniform Procedures Act. Procedures for administering NYSDEC's key regulatory permits are standardized in the Uniform Procedures Act, Article 70 of the Environmental Conservation Law (ECL).

NYSDEC encourages all grant applicants to request a preapplication conference with DEC staff to clarify project objectives, DEC requirements, and to discuss alternative approaches.

Aquatic invasive animal species rapid response management involving mechanical harvesting with nets or electrofishing methods requires a scientific collector's permit.

Management actions other than mechanical harvesting with nets or electrofishing all require NYSDEC permits that are determined based on the type of water body they occur in.

Management of aquatic invasive animal species in a NYSDEC Article 24 Wetland requires specific permits. Chemical controls require a Part 328 (Fish) or Part 329 (Aquatic Insect) Article 24 Wetlands and Pesticides Permits. Dredging and drawdown control methods require an Article 15 Wetlands and Protection of Waters permits.

Aquatic invasive animal species management actions that occur in Adirondack Park Agency regulated wetlands require specific permits. Chemical controls in APA regulated wetlands require an APA Wetlands Permit: 9 NYCRR Part 578 permit and Part 328 (Fish) or Part 329 (Aquatic Insect) NYSDEC Pesticides Permit. Dredging and drawdowns in an APA regulated wetland require an APA Wetlands Permit: 9 NYCRR Part 578 and an Article 15 NYSDEC Protection of Waters Permits.

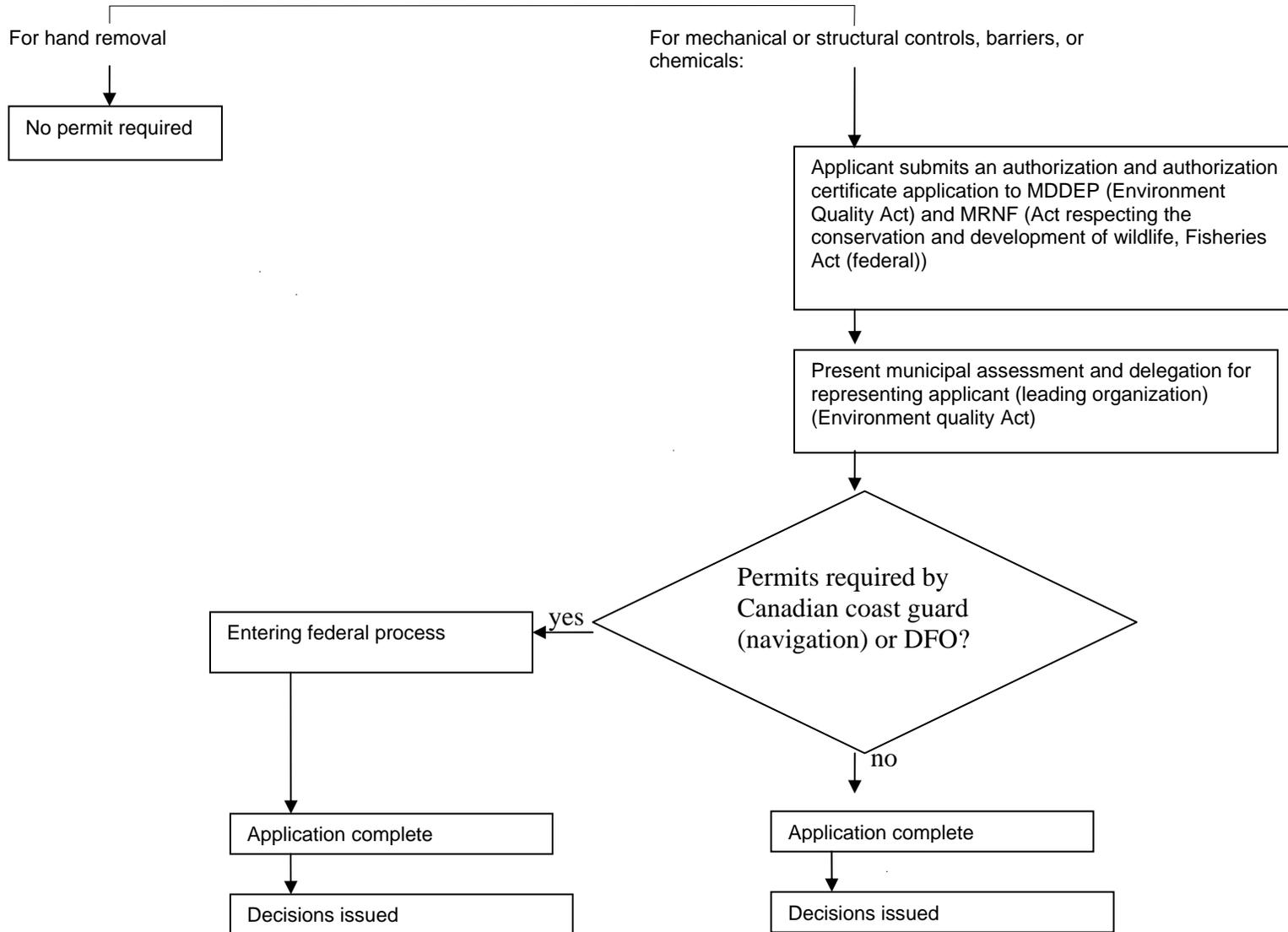
Management of aquatic invasive animal species that do not occur in NYSDEC Article 24 wetlands require specific permits. Chemical controls require a Part 328 (Fish) or Part 329 (Aquatic Insects) Pesticides Permit. Dredging and drawdown control methods require an Article 15 Protection of Waters Permit.

The first step in the application process is to submit the application to the Regional Permit Administrator. NYSDEC will determine application completeness and must respond to the applicant within 15 days of receipt. If additional information is required, the NYSDEC will have an additional 15 days to respond to the revised application's completeness.

The Uniform Procedures Act will divide applications into two categories, minor and major. Minor projects do not require public review. DEC must make a permit decision on minor projects within 45 days of determining the application is complete. Major projects are subject to public review. A Notice of Complete Application must be published in the Environmental Notice Bulletin and in a local paper. The public must submit comments before the deadline in the Notice, which is often 15 days after the date the Notice is published. DEC will then decide whether to hold a public hearing, in which case, the applicant will be asked to provide DEC with responses to public comments. If no hearing is held for a

major project, the DEC will make a permit decision within 90 days after the application is determined to be complete. If a hearing is held for a major project, DEC will notify the applicant and the public of a hearing within 60 days after the application is determined to be complete. The hearing must begin within 90 days after the application is determined to be complete. The DEC will then issue a final decision on the application within 60 days after receiving the final hearing record.

Appendix J: Québec and Canada Jurisdiction for Aquatic Invasive Species Rapid Response Permit Requirements (to be review by QC)



Quebec and Canada Jurisdiction for Aquatic Nuisance Species Rapid Response:

Hand removal management of aquatic plants in the province of Quebec, Canada, does not require a permit. Mechanical, structural controls, barriers, or chemical methods to control aquatic plants require a permit.

The applicant must obtain a letter from the municipality where the management control will take place. The letter must certify that the procedure does not violate any municipal rules. The permit application also requires resolution of the leading agency delegating representative who signs the application. The application must be submitted to the *ministère du Développement durable, de l'Environnement et des Parcs* (MDDEP) according to the provincial Environmental Quality Act and to the Ministry of Natural Resources and Wildlife (MRNF) according to the Act respecting the conservation and development of wildlife.

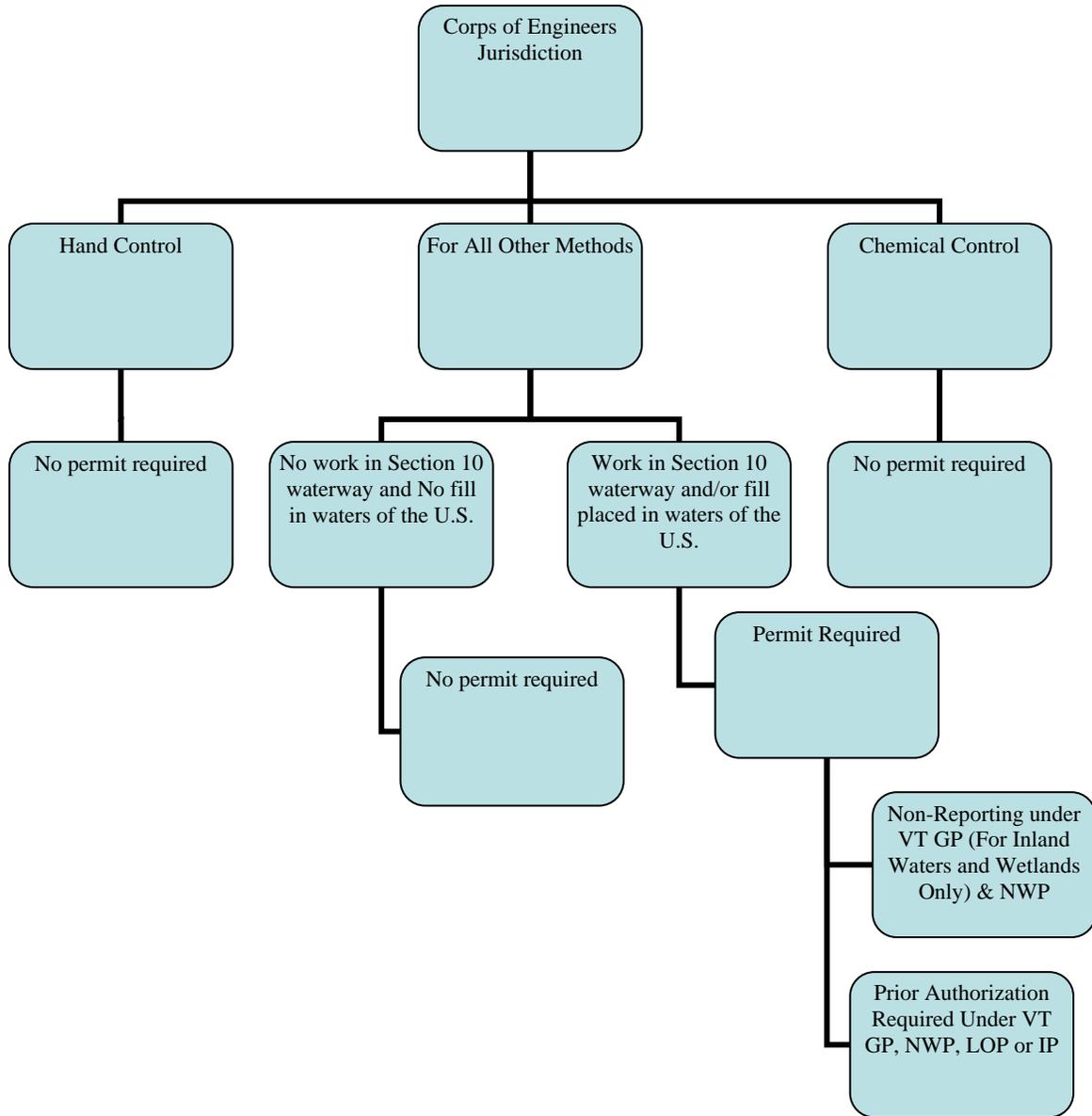
Permit applications that do not effect navigation are approved with a letter from the municipality and the MDDEP certificate of authorization. The MDDEP has sixty days to respond to an application and either accept or reject the application and request changes. Processing time may occur quickly, often in a few days.

Permit management actions that effect navigation require a letter from the Canadian Coast Guard under the Canadian Department of Fisheries and Oceans. The applicant must submit a letter to the Coast Guard. In most cases the Coast Guard will issue an announcement on the navigation system and will write a letter to the applicant to confirm that they are aware of the permit request for control action.

Any control action that involves a restriction to navigation or alteration of structures requires that the permit enter this Federal process.

The permit application processing time depends on the urgency of the issue. The Ministry of the Environment or the Ministry of Natural Resources and Wildlife are reputed to be allowed to take action in their field of competence, and therefore, no public review or comment period is allotted.

Appendix K. United States Army Corps of Engineers Jurisdiction for Aquatic Invasive Species Rapid Response permit requirements



Appendix L: Rapid Response case study examples

Rapid Response Case Study: Management of *Hydrilla verticillata* in Pickerel Pond, Maine

Hydrilla verticillata (hydrilla) was confirmed in 49-acre Pickerel Pond in southwestern Maine in October 2002. The infestation was well established at the time it was discovered, exceeding 60-70% cover in water up to three plus meters deep. A response of both external and in-lake controls were coordinated by the Maine Department of Environmental Conservation (MEDEP) in an effort to first control and now eradicate the plant from the pond. The Pickerel Pond hydrilla population is currently the state's lone documented population. Continued monitoring and follow-up controls to achieve eradication of hydrilla in Pickerel Pond, including additional use of herbicides, are expected thru 2012 or beyond.

Management Efforts 2002 - 2007:

- To catch hydrilla fragments, screens across the outlet stream were installed in December 2002 and within the lake near the outlet in April 2003; both screens were later removed (2005) due to problems with blocking outlet flow or screen rusting¹.
- In January 2003, the town of Limerick and MEDEP installed public informational signs at the one public boat access warning users of the confirmation of hydrilla in the pond and encouraging spread prevention measures be taken.
- In 2003, MEDEP obtained permission from Maine Department of Transportation to install a gate at the public boat access. The gate is open on an as-needed basis and **only** when the local boat inspector is available to staff the access.
- Following discovery, MEDEP contacted Pickerel Pond property owners directly by mail about the infestation, including sending a questionnaire about use patterns and the effects of potential access management and use restrictions. In addition, MEDEP held a public informational meeting in May 2003.
- MEDEP applied the herbicide fluridone over five consecutive years, 2003-2007. In-lake fluridone target concentrations of 6-10 parts per billion (ppb) in 2003 and 5-8 ppb in subsequent years were established. Other associated treatment efforts included public notification, water quality monitoring and analysis, and surface and in-lake aquatic plant monitoring.
- MEDEP communicates annually with property owners and town officials regarding the herbicide treatments, and the need to inspect boats entering and leaving Pickerel Pond.

Costs: To date, the cost of the 49-acre Pickerel Pond hydrilla management effort is estimated at \$112,000 with incurred annual costs ranging from \$20,000 - \$27,000.

Source

John McPhedran, MEDEP Invasives Program

¹ Replacing the fragment screens was not deemed critical due to effective in-lake suppression of hydrilla in subsequent years.

Rapid Response Case Study: Management of *Dreissena polymorpha* in Millbrook Quarry, Virginia

Dreissena polymorpha (Zebra mussels) were confirmed in the 12-acre, 93-foot-deep Millbrook Quarry in Prince William County, Virginia in August 2002. The quarry has been inactive since at least February 1963. The quarry has been used and leased by dive shops to train divers. The Virginia Department of Game and Inland Fisheries (VDGIF) formed an interagency Millbrook Quarry Workgroup to evaluate zebra mussels impacts and to evaluate eradication examples. VDGIF and its partners treated the quarry with potassium chloride and effectively eradicated the first known infestation of zebra mussels in the state of Virginia.

Management Efforts 2002-2006:

- Within days of the report the Virginia Department of Game and Inland Fisheries confirmed the species identification as the first infestation of zebra mussels in the state of Virginia.
- The Dive Shop in Fairfax, VA has used the quarry as a training site since the early 1970s, and has leased the quarry as a training site since 1978. The Dive Shop has arranged for more than a dozen other dive shops in the area to use the quarry through their lease.
- VDGIF worked with many federal, state, and local agencies and individuals to eradicate the zebra mussel population. An interagency Millbrook Quarry Workgroup was formed to evaluate the quarry's hydrologic, geochemical, and biological characteristics, survey for infestations in adjacent waters, evaluate eradication options, issue a request for proposals, and secure environmental review/permits.
- The Millbrook Quarry Workgroup determined if zebra mussels were not eradicated from the quarry and escaped into adjacent waters, Fairfax Water estimated an incurred initial cost of \$2-4 million dollars for chemical feed facilities and an additional \$500-\$850K for chemicals and system maintenance. Similar expenses would be likely for the City of Manassas treatment facility.
- Zebra mussels were eradicated through exposure to potassium. The quarry was injected with 174,000 gallons of potassium chloride over a three week period from January 31, 2005 to February 17, 2006. The target concentration was 100 milligrams of potassium per liter, which poses no threat to human health, wildlife, or other aquatic plants. Sampling at various depths revealed concentrations ranging from 98-115 part per million.
- Four methods were used to confirm eradication was successful: (1) over 1,000 mussels were scraped off rocks at numerous sites around the quarry and all were found dead, (2) VDGIF scuba divers conducted visual inspection of the quarry, (3) Aquatic Sciences L.P. conducted extensive video surveys through use of robotic camera, (4) 80 bioassays 100 live zebra mussels were placed throughout the quarry at varying depths during the treatment and after 31 days of exposure all were dead.
- Treatment has an expected and intentional long-term increase in potassium levels in the quarry which will make it uninhabitable to zebra mussels for 33 years.

Costs: \$365K for eradication and bioassays; \$54K for post project monitoring. All funds were provided by the Wildlife Habitat Incentive Program (WHIP) from the VA office of NRCS-USDA and from a state Wildlife Grant from USFWS. The local water authority, Prince William County, City of Manassas, and Dominion Virginia Power contributed the required matching funds.

Source: Virginia Department of Game and Inland Fisheries

Rapid Response Case Study: Management of *Channa argus* in Crofton Pond, Maryland

Channa argus (Northern snakehead) was confirmed in 4-acre Crofton Pond and adjacent smaller ponds in Crofton, Maryland in May 2002. The infestation was well established at the time it was discovered. The small pond is not more than 4-5 feet in depth. A response of in-lake controls was coordinated by the Maryland Department of Natural Resources (MDDNR) in an effort to eradicate the fish from the pond. The Crofton Pond Northern snakehead population was the state's lone documented population.

Management Efforts 2002:

- Northern snakeheads were discovered in Crofton Pond in May 2002 when two anglers reported their presence in angler reports.
- The Maryland Department of Natural Resources surveyed the pond and due to significant amount of vegetation in the pond, the DNR pursued and herbicide treatment, followed by a piscicide treatment.
- September, 2002 the MD DNR treated Crofton Pond and adjacent smaller ponds with an herbicide treatment using diquat dibromide to eliminate aquatic vegetation.
- September, 2002 MD DNR follows herbicide treatment with a glyphosate (Rodeo) treatment to eradicate the Northern snakehead population.
- MD DNR conducted a follow-up treatment of potassium permanganate to neutralize the rotenone applied earlier in September to eradicate Northern snakehead. Rotenone was expected to decompose quickly with warm water temperatures, but rain cloud cover lowered temperatures slowing decomposition and lead to the neutralizing treatment.
- Maryland experts believe it is likely that Northern snakehead area traded in live Asian markets and there have been documented released of Northern snakehead in MA, ME, RI.
- More than 1,000 dead juvenile and six adult Northern snakeheads were recovered following treatment. The application of rotenone was successful and killed all the fish in the pond.
- Law officials determined that the introduction of Northern snakehead was an intentional aquarium release.

Costs: The cost of the 4-acre Crofton Pond Northern snakehead management effort is estimated at \$150,000.

Source:

Steve Early, USFWS and Steve Minkkinen, MDDNR Invasives Program