

APPENDIX I

Criteria for Selection of Candidate Liming Waters

DIVISION PROJECTS

Lakes and ponds must meet all of the following criteria to qualify for liming:

- (1) Summer surface pH must be 5.5 or less.
- (2) Size must be less than 100 acres.
- (3) Flushing rate must be less than one time a year.

Priority consideration will be given to liming those waters which also meet one or more of the following additional criteria:

- (4) Waters in which excellent sportfisheries have shown a serious decline as a result of acidification and particularly where preservation and maintenance of unique fisheries is important.
- (5) Broodstock waters which contain heritage strains of fish species considered valuable to Division's fishery management programs such as recognized New York State heritage strains of wild brook trout.
- (6) Waters which have historically supported heavy angling pressure due to their location such as ponds in State campsite areas.
- (7) Waters where liming is required to maintain threatened or endangered fishes.
- (8) Carefully selected experimental waters which meet criteria (4) or (6) and which lend themselves to the testing of new mitigation products.

Waters larger than 100 acres in size or with flushing rates exceeding one time a year will be considered for liming under this limited mitigation policy on a special case basis requiring strong justification for approval.

Initial application rates of one ton of agricultural limestone per surface acre will be used until additional research suggests a modification is in order. Retreatment of previously limed waters will occur when summer surface pH drops to or below 5.5.

VOLUNTEER LIMING PROJECTS:

Most of the preceding criteria governing State neutralization projects also apply to volunteer projects with the following exceptions and/or additions:

- (1) Candidate waters for volunteer liming projects will receive preliminary review according to standard operating procedures previously presented to the Adirondack Conservation Council Volunteer Liming Task Force.

- (2) Volunteer liming operations will not be encouraged for waters located within restricted land use areas in the Adirondack Preserve designated as primitive, wilderness or canoe area.
- (3) Volunteer liming programs will not presently be considered for waters in excess of 20 surface acres.
- (4) Volunteer liming operations on State lands will not be considered for waters located more than two miles from an access road unless aircraft delivery is contemplated.

PRIVATE LANDOWNER PROJECTS

Division's role will be to provide advice and guidance to private landowners on a request basis to guide them in conducting efficient neutralization operations. It will be emphasized that, once initiated, a mitigation project must be monitored and repeated at intervals to maintain pH at desirable levels. Some of the preceding criteria governing State neutralization programs can also be used to guide private landowner programs.

VOLUNTEER LAKE LINING PROGRAM

INTRODUCTION

At the present time, the phenomenon of acid ion deposition, popularly known as "acid rain," represents the single greatest threat to the Adirondack environment in general and to its fisheries resource in particular. Sulfur and nitrogen oxides represent the major acidic precursors and in the northeast, are primarily discharged from fossil fuel burning, the smelting of sulfide ores and automotive emissions. These pollutants are transported long distances in the atmosphere and converted to mineral acids, sulfuric and nitric, which either fall to earth in precipitation or in dry form. The Adirondack region is one of the largest sensitive lake districts in the eastern United States, and it is also the most heavily impacted by acidic deposition. A recent update of Adirondack ponded water acidity status reveals that some 178 lakes, representing 19.0 percent of a 937 study lake sub-sample, have demonstrated "critical" summer surface pH readings below 5.0. In all of these waters there has either been a complete elimination or a marked reduction in fish communities. Similar studies in small Adirondack streams indicate even greater losses since none of the streams registering a pH below 5.0 were found to contain any fish life.

The application of calcium-based alkaline materials to ponds employed in extensive fish culture has represented a long-standing practice for fertilization purposes. In more modern times this technique has also been used to help mitigate acidity in both naturally acid bog-type ponds and those impacted by acid ion pollution. The New York State Department of Environmental Conservation Bureau of Fisheries has been engaged in this practice since 1959 and, in the recent past, has treated an average of about six to seven waters annually. Due to current fiscal and manpower limitations this State sponsored effort has been greatly curtailed and, as a result, a well coordinated volunteer liming

program would represent a welcome addition.

Recently, the Adirondack Conservation Council formed a volunteer lake liming task force to spearhead volunteer lake liming projects within the Adirondack area. This task force was developed to work with the Department of Environmental Conservation to establish procedures and policies necessary to carry out volunteer lake liming projects. Based on recent survey efforts, the number of reasonably accessible ponds that have liming potential are few but do exist. Volunteer liming operations will require close coordination between the Department of Environmental Conservation and the Adirondack Conservation Council lake liming task force.

PROCEDURES

Selection Criteria:

The selection of candidate waters is the most critical phase of the liming program and the success of a specific liming project is dependent on the water selected. DEC can provide listings of prime candidate waters which meet the specific criteria which have been established for selection. These criteria include:

pH - Waters to be considered must have been or will be in "critical" or "endangered" state of acidification with a summer surface pH of less than 5.5.

Size - Due to prohibitive costs, it is generally not reasonable to lime waters exceeding 100 acres in size. It is recommended that initial waters should be restricted to 20 acres or less in size to minimize expense and logistical problems, unless there are exceptional circumstances.

Accessibility - Selection of candidate liming waters will be limited by motorized vehicular access constraints imposed by the state land

be given to waters with easy access.

Flushing Rate - Flushing rate is the number of times that a pond exchanges its entire contents in a year's time. Candidate liming waters shall not have a flushing rate exceeding 2.0 times per year as an absolute maximum. Ideally, waters with no outlet and near zero flushing rate are considered prime candidates for retention of lime.

Public Access - Volunteer candidate liming waters are not restricted to public waters only. However, for the purposes of this program, the Department encourages initial liming projects to be on public waters.

Economic Feasibility - Costs have been and continue to be a limiting factor in the implementation and expansion of the Department of Environmental Conservation liming projects to date. Costs for the volunteer liming program will be borne by the volunteer group undertaking the operation. The initial application rate using agricultural lime is one ton per surface acre. Subsequent repeat applications may allow for lighter application rates, depending on individual circumstances.

To insure success of a volunteer lake liming program a set of procedures has been developed that details the tasks and responsibilities of participants. Following the list of procedures is a flow chart.

PROJECT INITIATION

1. Those interested in initiating a volunteer liming program must obtain a lake liming application form and a water sample bottle from the appropriate County Sportsmen's Federation.
2. Completed application forms will be returned to the County Federation for initial screening and approval. (Consult the attached standard operating procedures for water sample collection and transport.)
3. Initial approval of a candidate water for liming will be based on the

selection criteria previously discussed.

4. The approved Federation application and water sample will be forwarded to the Task Force chairman for further screening. This screening will be based on the latest DEC Fisheries and water chemistry survey information and APA land use classification provided. Based on available data, the application will be approved or disapproved by the Task Force chairman. All disapproved applications will be returned to the appropriate County Federation for return to the interested party.

5. The Department of Environmental Conservation will review the project concurrently with the Task Force chairman.

6. Candidate liming waters located within the Adirondack State Park on state lands will require the issuance of a temporary revocable permit (TRP) by the Department of Environmental Conservation. This permit will cover only the period in which the liming takes place. Candidate waters within State Land Master Plan land use classifications of Wilderness, Primitive or Cance Areas will require additional screening and approval of the Adirondack Park Agency on an individual basis.

7. Notification of project approval or disapproval will be forwarded to the originator through the Council's Task Force.

IMPLEMENTATION

Staging Area Selection

The Task Force and DEC working with the volunteer group will establish a staging area (stockpiling and distribution point) for the liming operation.

The logistics involved in the transport of lime from the staging area to the site will be coordinated by the Task Force and the volunteer group.

Application

As a matter of policy a DEC representative will be present during the liming operation to coordinate liming activities.

EVALUATIONWater Chemistry

The volunteer group will be responsible for collection of post-liming water samples at ice-out and during mid-summer on an annual basis.

Stocking and Surveys

The Department of Environmental Conservation shall provide adequate fish stocks and follow-up biological surveys where required on waters open to public fishing. Chemical analysis of water samples and a historical data file for the project will be provided by the Department.

POST-LIMING

Annual analysis of water samples provided by the volunteer group to DEC will provide a means of monitoring the water quality status of the treated water. As deterioration becomes evident and the pH begins to fall towards its original status, DEC will alert the Task Force in order to begin planning for a re-liming operation.

VOLUNTEER LIMING PROGRAM

APPLICATION AND PROJECT DATA FORM

Section I - Application - To be filled out by Volunteer Group

Name of Volunteer Group: _____

Contact Person: _____

Address: _____

Tel.: () _____

Date application submitted: / /

Liming candidate water - Name: _____

USGS Quadrangle - Name: _____

Estimated size: / / Acres

Location description: _____

Action (County Sportsman Federation): Approved Disapproved

Reason(s): _____

Section II - Project Review and Technical Data - To be filled out by Liming Task Force and DEC Staff

Watershed: / / _____

p#: / / / / Name: _____

Surface area: / / / Acres

Access: Road Paved Dirt

Public Private

Maintained in winter: Yes No

Hiking Trail Designated Snowmobile Trail No Trail

Approximate distance from nearest maintained road: / / / miles
(nearest 1/4 mile)

State Land Master Plan (APA Land Classification)

Primitive Wilderness Canoe Wild Forest
Intensive Use Private
Other Explain: _____

pH Date of pH

Action (Liming Task Force) : Approved Disapproved

Reason(s) : _____

If approved, completed VLP-2 form should be attached before submission to DEC.

Technical Data (NYSDEC)

Morphometric:

File #
Volume (acre feet) Flushing Rate (times/year)
Maximum Depth ft. Average Depth
No. of Inlets No. of Outlets
Longitude Latitude

Fish Data:

Current Stocking Recommendation:	Species	Numbers
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

Date of Amsl Survey:

Species Captured:	Species	Rare	Common	Abundant
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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VOLUNTEER LIMING PROGRAM

PERSONNEL AND TECHNICAL INFORMATION

List of Volunteer Workers:

Name

Address

1. Contact Person:

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

Expected Liming Date / / / / / / / /

Alternate Liming Dates: 1. / / / / / / / /

2. / / / / / / / /

Type of motorized equipment required:

Vehicle

All Terrain Vehicle

Chain Saw

Fixed Wing Aircraft

Snowmobile

Helicopter

Outboard Motor Other (Specify) _____

Estimated equipment contact time or use: Hours

Days

Product Data: (Obtain from Vendor)

Name of product: _____

Sieve size CaCO₃ (%)

Effective Neutralizing Value (ENV) _____

Vendor Name: _____

Address: _____

Application:

Pounds/surface acre

Total pounds applied

Application method: Aircraft Snowmobile Boat

Other Explain: _____

Economics:

<u>Item</u>	<u>Cost</u>
Alkaline product	_____
Safety gear	_____
Fuel	_____
Rental	_____
Other	_____
Total	_____

Note: Submit completed form in duplicate to the Adirondack Conservation Council Task Force on liming.

Comments: _____

Chemistry Data (Standard Laboratory Procedures)

Data of Last Survey 11/18/11

	Surface	Mid-Depth (___ ft.)	Bottom (___ ft.)
pH	<u>8.1</u>	<u>8.1</u>	<u>8.1</u>
Alkalinity	<u>161</u>	<u>161</u>	<u>161</u>
Conductivity	<u>111</u>	<u>111</u>	<u>111</u>
Temperature °F	<u>11</u>	<u>11</u>	<u>11</u>

Comments: _____

Action: Approved Disapproved

Reason(s): _____

Section III - Post Treatment and Evaluation (NYSDEC)

Post Treatment Chemistry

pH	Alkalinity	Conductivity	Date
<u>8.1</u>	<u>161</u>	<u>111</u>	<u>11/18/11</u>
<u>8.1</u>	<u>161</u>	<u>111</u>	<u>11/18/11</u>
<u>8.1</u>	<u>161</u>	<u>111</u>	<u>11/18/11</u>
<u>8.1</u>	<u>161</u>	<u>111</u>	<u>11/18/11</u>
<u>8.1</u>	<u>161</u>	<u>111</u>	<u>11/18/11</u>

Other Chemistry: _____

Stocking Data

Stocking Recommendation Change: Yes No

Year Species

Recommendation for new treatment

Year

Recommendation for fish survey

Year

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Division of Fish and Wildlife's fish species and habitat management activities are discussed in programmatic environmental impact statements prepared by Shepherd et al. (1980) and Odell et al. (1979), respectively.

The evolution of fisheries management in New York State and the Adirondack zone has been discussed in Shepherd et al. (1980) and Pfeiffer (1979). Program goals, objectives, policies and management strategies for lake trout including guidelines for stocking, were developed by Plosila (1977). This strategic plan recognizes the importance of native Adirondack lake trout stocks and the considerable importance of these lake trout resources to the entire State. In 1979, a strategic plan for the management of wild and hybrid strains of brook trout was completed (Keller 1979). Preservation of native strains in the Adirondack and Catskill Mountains was a major component of that plan. Pfeiffer (1979) established goals, objectives and strategies for the management of broad classes of Adirondack fishery resources and significantly enunciated the importance of angling in wilderness, primitive and canoe areas and guidelines for fisheries management within these areas. The latter were consistent with those formulated earlier by Doig (1977). The philosophical and scientific underpinnings for trout stream management in New York with application to management of wilderness, primitive and canoe area, trout streams, was completed in 1979 (Engstrom-Heg 1979 a). A recent draft plan for intensification of management of brook trout in 47 Adirondack ponds has been developed by DEC Regions 5 and 6 (Miller, 1986).

Salmonid stocking by the Division of Fish and Wildlife is guided by policies and criteria presented in Engstrom-Heg (1979 b). The evolution of DEC's criteria for establishing salmonid stocking policies in New York has been reviewed by Pfeiffer (1979), while the general objectives of fish stocking are discussed in Shepherd et al. (1980) and Engstrom-Heg (1979).

Liming of acidified waters by the Division of Fish and Wildlife is presently guided by the draft policy and criteria established by Wich (1987). A final generic environmental impact statement for DEC's liming program has prepared following extensive public review of the draft statement. It includes a revision of the Division of Fish and Wildlife's liming policy and criteria (Simonin 1990). Findings and the Commissioner's decision for the liming program remain to be formulated.

The history of pond reclamation in New York has been

discussed by Pfeiffer (1979). Reclamation goals are discussed in Shepherd et al. (1980), while general policy guidance and rules and regulations covering the use of piscicides including rotenone, are provided in Part 328 of 6NYCRR. Fish barrier dams, which are frequently associated with pond reclamation, are permitted when constructed or maintained in accordance with SLMP guidelines.

PURPOSE

The purpose of this memorandum is to state the Department's policies on fisheries management in wilderness, primitive and canoe areas within the Adirondack and Catskill Parks.

POLICY GUIDELINES

Legally established goals for the Forest Preserve recognize that fish and wildlife are integral to the values society places on the Preserve. Charges include management to "foster the wild Adirondack environment and all the flora and fauna historically associated therewith "and encouragement of "indigenous species presently restricted in numbers."

Fisheries management activities are essential to achieve these goals and to perpetuate unique opportunities for high quality wilderness, primitive and canoe area fishing experience provided within the Adirondack and Catskill Parks.

Specific guidelines for fisheries management activities are as follows:

1. The primary purpose of aquatic resource management in wilderness, primitive and canoe areas is to perpetuate natural aquatic ecosystems, including perpetuation of indigenous fish species on a self-sustaining basis.
2. Angling is recognized as a compatible recreational pursuit in wilderness, primitive and canoe areas. Aquatic resource management will emphasize the quality of the angling experience over quantity of use.
3. Aquatic resources in wilderness, primitive and canoe areas will be protected and managed so as to preserve, enhance and restore, where necessary, their natural conditions. Aquatic resource management, including stocking of game and nongame fishes and pond reclamation, may be necessary to achieve and perpetuate natural aquatic ecosystems.

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4. Brown trout, rainbow trout, splake and landlocked Atlantic salmon are coldwater fish species historically associated with the Adirondack Park. Smallmouth bass, largemouth bass, northern pike and walleye are warmwater species historically associated with the entire Adirondack and Catskill Parks and indigenous to some lowland areas. These species may be included in the management and stocking regime of specific waters in wilderness, primitive, and canoe areas in instances when indigenous fish communities cannot be protected, maintained, or restored in those waters. Fish species, other than indigenous species and species historically associated with the Adirondack and Catskill Parks, will not be stocked in the waters of wilderness, primitive and canoe areas.
5. Waters found to be naturally barren of fish species will not be stocked. Waters which are self-sustaining or which otherwise would be self-sustaining except that they have been compromised by human-caused disturbances may be stocked consistent with these guidelines.
6. Pond reclamation will be practiced as appropriate to prepare or maintain waters in wilderness, primitive and canoe areas but only for the restoration or perpetuation of indigenous fish communities.
7. The Unit Management Plan for each wilderness, primitive, or canoe area shall identify aquatic resource management actions on a water-body-specific basis through analysis of unit inventory data adequate to support the actions.
8. In those instances where a Unit Management Plan has not yet been approved for a given wilderness, primitive, or canoe area, aquatic resource management actions to stock waters may be continued in waters so managed before December 31, 1989, consistent with these guidelines, pending approval of the Plan. Waters reclaimed prior to December 31, 1989 may be reclaimed subject to case-by-case review by the Adirondack Park Agency for consistency with these guidelines, pending approval of the Plan. New waters may be stocked or reclaimed only to restore communities of indigenous fish species, subject to case-by-case review by the Adirondack Park Agency for consistency with these guidelines, pending approval of the Plan.
9. Maintenance liming to protect and maintain indigenous fish species may be continued as mitigation measure for

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acid rain in Horn Lake (PO5705),, Tamarack Pond (PO6171), Livingston Pond (PO5705) and Kitfox Pond (PO3142) so treated before December 31, 1989. Upon acceptance of the Final Generic Environmental Impact Statement on liming and the issuance of findings and a decision by the Department of Environmental Conservation, the scope of DEC's liming program in the waters of wilderness, primitive and canoe areas will be established and appropriate policy guidelines incorporated herein.

10. All aquatic resource management activities in wilderness, primitive, and canoe areas will be consistent with guidelines for use of motor vehicles, motorized equipment, and aircraft as stated in the State Land Master Plan.

LITERATURE CITED

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- DEC, 1985. Catskill Park state land master plan. DEC Administrative Report: 103 pp.
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- Simonin, H. 1990. Final generic environmental impact statement on the New York State Department of Environmental Conservation program of liming selected acidified waters. DEC Administrative Report: 231 pp.
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