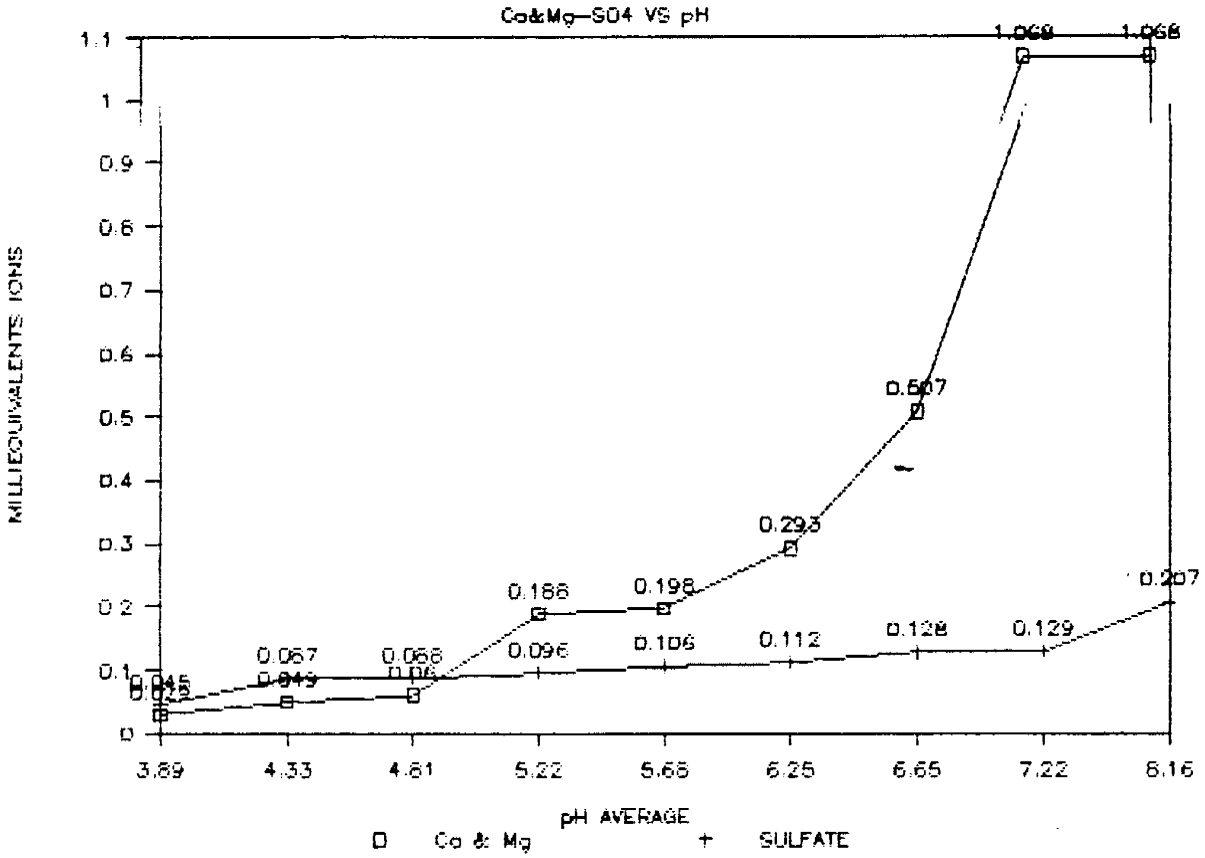
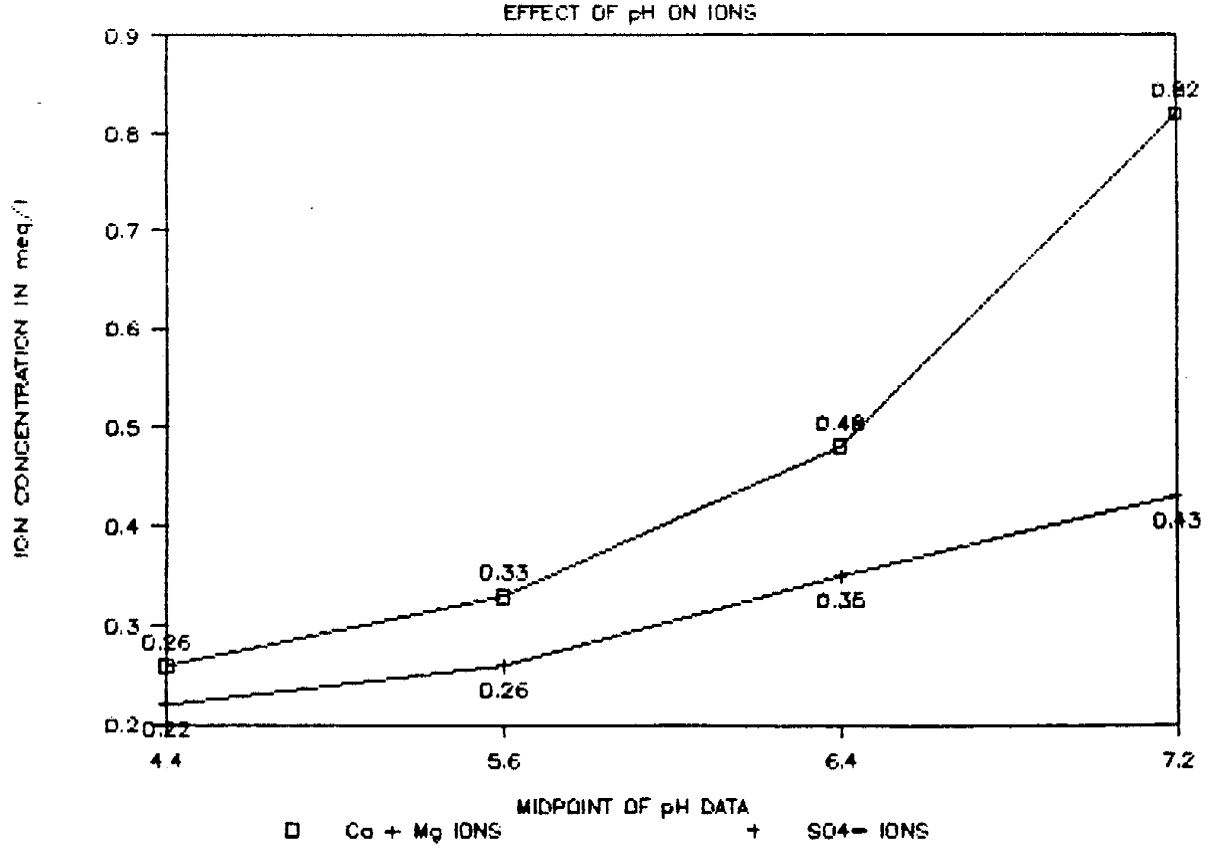
ANDIRONDACK LAKE SURVEY GRAPH H



SWEDISH LAKE DATA (85 LAKES)



Graph shows the concentration of NO3- and NH4 ion in the lakes grouped by the pH value (measure of acidity). These are given in meq. (milli-equivalents). In all the lakes the amounts were low enough to be of little significance

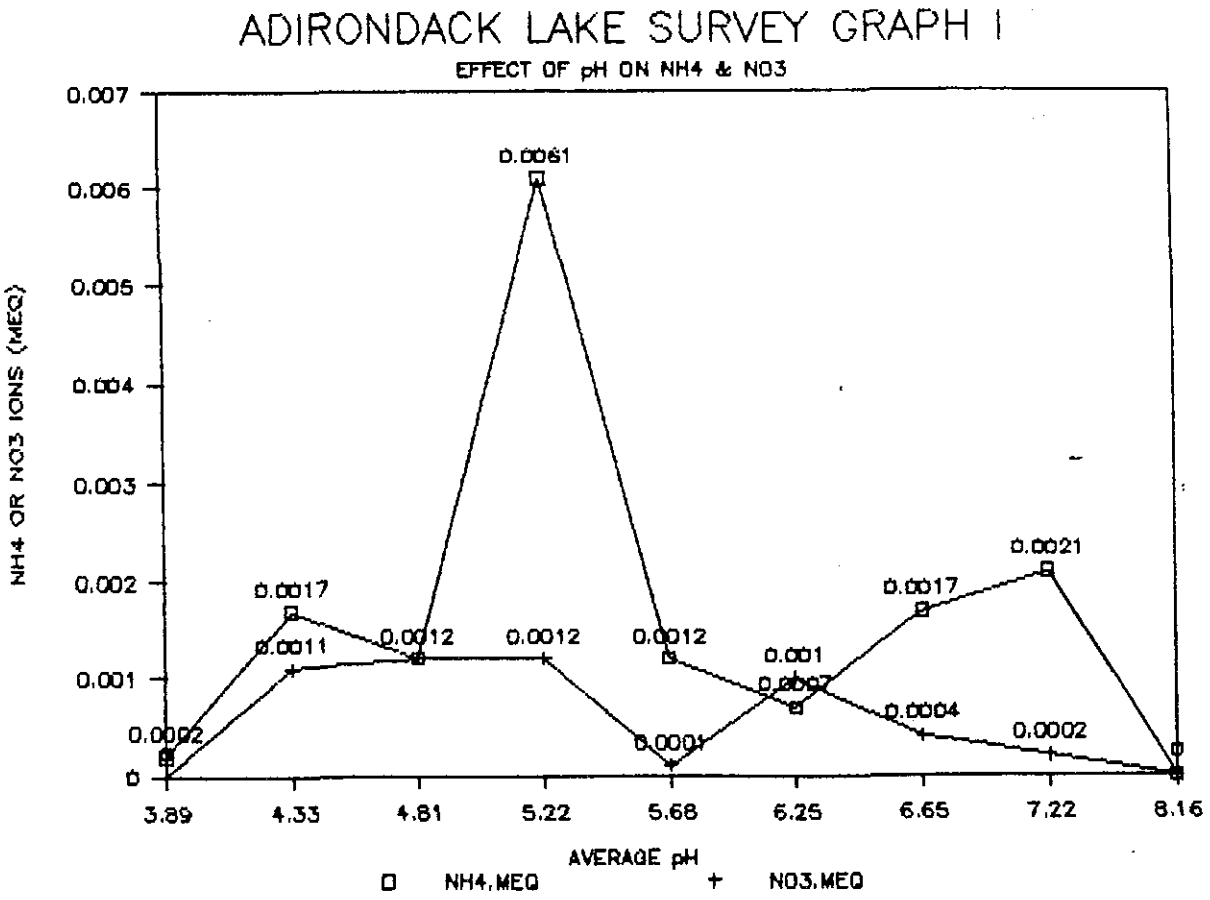


TABLE 11.11 INORGANIC COMPOSITION OF LAKES ON THE WEST COAST OF SWEDEN[a]

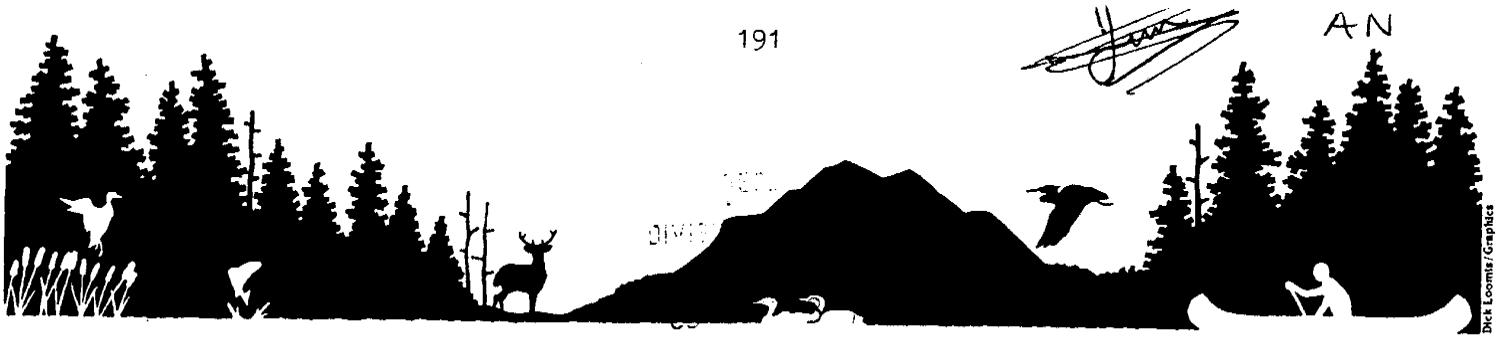
	pH	H	Na	K	Ca + Mg	Alk	Cl	SO_4	NO_3—N mg liter^{-1}	NH_3—N mg liter^{-1}
Precipitation at Plönninge, 1967–1969	4.6	0.024	0.096	0.016	0.122	−0.024	0.105	0.145	0.61	0.79
Precipitation at Plönninge, 1967–1969, concentrated 1.5 times	4.4	0.04	0.14	0.02	0.18	−0.04	0.16	0.22	0.91	1.19
85 lakes 1970 to 71, pH Interval	Mean Values									
<4.9	4.4	0.04	0.30	0.02	0.26	0	0.35	0.22	—	—
5.0–5.9	5.6	—	0.30	0.03	0.33	0.04	0.36	0.26	—	—
6.0–6.9	6.4	—	0.37	0.04	0.48	0.15	0.39	0.35	—	—
7.0	7.2	—	0.38	0.05	0.82	0.39	0.45	0.43	—	—

[a] From Almer et al. [88]. In this region the precipitation is concentrated about 1.5 times because of evaporation and the transpiration of plants before it reaches the lakes. Concentrations of ions and Alk are given as meq liter^{-1}.

Note: Table from "Aquatic Chemistry" by Werner Stumm and J. J. Morgan, Second Edition, (1981) by John Wiley and Sons

In the figures for acid rain, the values for NO_3-N and Nh4-N should be converted to meq/l or 0.61 = .0436 and .0564 respectively, instead of mg/l.

AN



October 29, 1988

Kenneth Wich, Director
Division of Fish and Wildlife
50 Wolf Road
Albany, NY 12233

Dear Mr. Wich,

Thank you for the opportunity to comment on the Draft Generic Environmental Impact Statement on the NYS DEC Program of Liming Selected Acidified Waters.

The draft is an excellent analysis of the criteria to be considered when liming a lake. Appropriately, it recognizes that liming is not the solution to the acidification problems. This policy will be of much use to those considering individual lakes in the Unit Management Planning Process.

There are two problems. Pages 36-37 should contain a statement that no liming can be done without a Unit Management Plan. That seems to be what the section implies, but it should be so stated. A

Page 98, section B does not describe an Unavoidable Adverse Impact as the heading on page 95 indicates. Rather these problems should be considered as part of the decision process in determining the advisability of liming a given pond. In other words, certain levels of such adverse impacts should mean that no liming is done. B

Finally, I personally believe that there should be no liming in Wilderness Areas except as a means of preserving endangered species and natural heritage strains, and that this should be a part of the policy. C

Sincerely yours,

Barbara McMartin

Chief, Bureau of
Envi[illegible]

NOV 4 1 3

☑ 80 NORDICA DRIVE, CROTON, NY 10520 • 914/271-5919 **Barbara McMartin** ☐ KASSON DRIVE, CANADA LAKE, NY 12032 • 518/835-8551

Oral Testimony of the Adirondack Council
on the
Draft Generic Environmental Impact Statement
On the New York State Department of Environmental Conservation
Program of Liming Selected Acidified Waters

November 1, 1988

The Adirondack Council has several comments and concerns associated with the liming issue and the Draft Generic Environmental Impact Statement of Liming Selected Acidified Waters. The Adirondack Council appreciates the opportunity to comment on the draft GEIS and will be submitting detailed comprehensive comments on it prior to the December 2, 1988 deadline.

Foremost among our concerns is that liming must only be considered as a stop-gap measure -- dealing only with a symptom of a far greater national and global environmental dilemma -- the scourge of acid rain. Despite the appropriate recognition of this by the Department (DEC) in the draft document, we must all recognize, and be prepared to fight the purposeful distortion of the value of lime mitigation with which the anti-clean air contingent, ever powerful in Congress, will promote as the answer to the acid rain problem.

There must be no mistake -- liming will never be an appropriate substitute for controlling acidic deposition at the source through strong, effective emission reductions.

In regard to the Draft GEIS, the Adirondack Council is concerned that the document is written more as a fisheries management document than as a comprehensive discussion of the complex issue of lime mitigation of acidified waters. This is blatantly apparent where key phrases in the document are underlined which serve only to emphasize the Department's fish management priorities and responsibilities. The act of liming directly impacts, either negatively or positively, numerous different resource values, uses and ecosystem components. To emphasize the environmental consideration of lime mitigation with primary regard to fisheries management alone is to inadequately consider the full issues involved with such a program. A

The document is particularly lacking, and often incorrect, with respect to the consideration of liming in wilderness areas. The Adirondack Council believes that the issues surrounding liming in designated wilderness, and also primitive and canoe areas, are of critical importance and were given grossly insufficient and often misleading consideration in the Draft GEIS. The State Land Master Plan, though not specific in regard to liming, is very clear in regard to perpetuating "natural" conditions and controlling or prohibiting the use of motorized vehicles, equipment and aircraft in wilderness areas. The Adirondack Council strongly urges the Department to include specific, more comprehensive and detailed sections on proposed liming in wilderness, primitive and canoe areas in compliance with the State Land Master Plan. B

It is the position of the Adirondack Council that liming is generally inappropriate in Wilderness, canoe and primitive areas and should only be used to preserve native, heritage strains of fish, or other species. The Adirondack Council also feels that the Department should consider using the least intrusive form of implementation for lime mitigation on those ponds where heritage species are threatened. In general, the Council will not support the use of motorized vehicles, aircraft or mechanized equipment in Wilderness, primitive or canoe areas other than in the protection of heritage native species. C

Furthermore, the Council feels that the document's cost/benefit analysis is flawed and should be redrafted. The cost/benefit analysis inappropriately assesses costs of liming based on a 695 acre model, while the benefits are evaluated from a 900 acre model. This, understandably and incorrectly correlates a lower cost with a higher benefit which is optimistic at best, and should be reevaluated. Additionally, long term costs associated with the program were not discussed in any significant detail, yet the Department asserts in the document that the DEC will establish a commitment once they begin liming specific waters. D

The document also leaves the discussion of metal toxicity of limed waters under-evaluated. There are significant data, principally from Sweden where the process of liming is extensive, that metal toxicity increases in limed waters after re-acidification. The spectre of mobilizing and precipitating greater quantities of dangerous heavy metals such as aluminum into Adirondack lakes and ponds deserves greater attention by the Department. E

The Draft GEIS is also deficient in its consideration of adverse impacts to wildlife and failed to address the impacts, adverse or otherwise, to present populations of fish in ponds and lakes to be limed. F

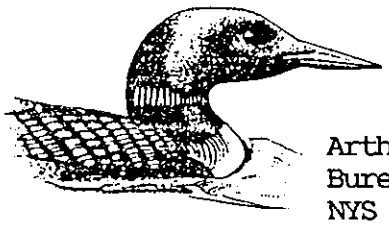
Finally, the Adirondack Council urges the Department to be very clear in the final GEIS that, according to current law and Department regulations, the Department is required to either provide a supplementary EIS for each area proposed for liming -- especially for Wilderness, or the specific ponds to be limed and the multitude of considerations must be evaluated within the Unit Management Planning process. The Adirondack Council is prepared to defend the State Land Master Plan preocess. We will not allow the Department to undergo liming in wilderness, primitive or canoe areas simply through the filing of an Environmental Assessment Form (EAF). G

It is because of these many deficiencies, and the inadequate consideration of the legal, State Land Master Plan and wilderness questions raised by the liming issue, that the Adirondack Council recommends the DEC provide strong consideration to these points in the Final Generic Environmental Impact Statement.

The Adirondack Council is a coalition of five environmental organizations and 8,500 individual members all dedicated to protecting, preserving and enhancing the natural, wild character of the Adirondack Park through education, policy review and where neccesary, lititgation.

THE ADIRONDACK COUNCIL

P.O. Box D-2
Elizabethtown, New York 12932
(518) 873-2240



November 30, 1988

Arthur J. Newell
Bureau of Environmental Protection
NYS Department of Environmental Conservation
50 Wolf Road Room 530
Albany, New York 12233

RE: Draft Generic EIS on Liming Acidified Waters

Dear Mr. Newell:

I have reviewed the Draft Generic Environmental Impact Statement on the DEC's Program of Liming Selected Acidified Waters and, on behalf of the Adirondack Council, offer the following comments.

As expressed at the public hearing held on November 1, 1988, the Adirondack Council has several concerns with the draft liming document. While the document does provide extensive background and information on the subject of liming acidified waters, it contains critical gaps and problem areas, as outlined below, which we feel must be addressed in the final version. We would welcome the opportunity to discuss these concerns in person with Department staff at any time.

To the Department's credit, the document appropriately cautions the public that the act of liming acidified waters in no way provides an answer to the tragic dilemma of acidic precipitation. There must be no mistake -- liming will never be an appropriate substitute for controlling acid rain at the source through strong, effective emission reductions.

Because our concerns with the document are extensive and varied, I have chosen to detail them under the following broad categories: Draft GEIS legal requirements, project scope, liming in wilderness, ecological concerns, and finally, other concerns.

Draft GEIS Legal Requirements

The liming document, while it appears comprehensive, actually raises more questions than it answers in regard to the conformance of the proposed action with current state laws. Both the Environmental Conservation Law (ECL) and the Adirondack Park State Land Master Plan (APSLMP) indicate clearly that a site-specific analysis must be undertaken prior to implementation of

H

any action which may involve site-specific impacts. The Adirondack Council believes that the State Environmental Quality Review Act (SEQR) requires the Department to perform Supplemental Environmental Impact Statements (SEIS) for site-specific actions not covered under the Generic EIS. Furthermore, the actions proposed in the GEIS must be incorporated into the Unit Management Planning process where state land is concerned. The Department is required to include specifically which ponds and lakes are under consideration for liming and discuss the site-specific impacts, alternative actions, etc. for each unit. The Adirondack Council does not agree with the Department's assertions that all current Unit Management Plans allow liming, or that the State Land Master Plan and the ECL establish the Department's "mandate" to carry out liming in these areas.

Project Scope

The Liming document minimizes the scope of this project, in effect misrepresenting the extent of the proposed action. The document establishes the Department's intention to increase the liming program from it's current number of 32 waters to possibly 90 waters or more. In addition, the Department recognizes in the document that initiating the liming of acidified waters implies a long-term commitment to the maintenance of the pH in that watershed. If this is so, and if the Department intends to increase its liming program by as much as three-fold, then the program is definitely being expanded - not simply "refined." The Final GEIS should clearly establish the nature of the full scope of the program and the Department's commitment to future actions. I

Liming in Wilderness

The treatment of the issue of liming in wilderness is perhaps the most glaring weakness in the document and underscores the need to establish a liming policy which recognizes the unique challenge of fish and wildlife management in wilderness units. The document fails to define the term wilderness, except by using portions of the wilderness definition which serve only to support the Department's call for increasing fisheries populations. J

As stated in the Adirondack Park State Land Master Plan:

"A wilderness area, in contrast with those areas where man and his works dominate the landscape, is an area where the earth and its community of life are untrammeled by man - where man himself is a visitor who does not remain."

The concept of wilderness centers upon the interrelatedness of all components of the ecosystem. One can not simply reduce the wilderness concept to target single-species management.

The Adirondack Park State Land Master Plan notes the following:

"The Agency [APA] is responsible for long-range planning and the establishment of basic policy for state lands in the Park, in consultation with the Department of Environmental Conservation. Via the master plan, the Agency has the authority to establish general guidelines and criteria for the management of state lands..."

The Council believes that this clause clearly establishes the Agency's role in the development of guidelines and criteria for the liming of state lands in the Adirondack Park.

Ecological Concerns

The Adirondack Council is concerned that the Draft GEIS fails to adequately recognize several ecological considerations with respect to its proposed liming program, for example:

-What are the impacts of liming on present fish and wildlife populations in a watershed? Liming, beyond reducing the aquatic acidity, drastically alters the water chemistry of a water body in a very short time span. Research indicates that several life forms may be negatively impacted by this drastic change in chemistry, including insects. The liming document does not detail the possible loss of current populations of fish after liming has reduced prey food species. K

-Research indicates the increase in mobilization of heavy metals in ponded waters which have undergone liming programs and which are allowed to revert to their pre-limed, acidic state. L

-What rare, endangered or threatened species may be impacted by liming? This issue must be addressed on a site-specific basis and should be included in both a supplemental Environmental Impact Statement and the Unit Management Plans. M

Other Concerns

The Adirondack Council has several other questions and concerns regarding the Department's proposed liming program, including:

-The Department should utilize only the least intrusive method of carrying out a liming program on state lands within the Adirondack Park. The desire to limit motorized use on the Forest Preserve is clearly established in the State Land Master Plan and is of critical importance in wilderness, primitive and canoe areas. N

-The liming document states that the Department of Environmental Conservation has undertaken liming on Horn Lake in the West Canada Lakes Wilderness Area. What regulatory review procedure was performed prior to undertaking this liming project? Why was this liming project undertaken without consultation with the Adirondack Park Agency or within the Unit Management Planning process? O

-The criteria for inclusion of a particular water body in the liming program is not specific with regard to the dissolved oxygen and temperature components. The Final GEIS should include a more detailed analysis of how the lakes and ponds listed met these two important criteria. P

In summary, the Adirondack Council is concerned that the Department's Draft GEIS fails to adequately consider the issue of liming in the Adirondack Park. It does not consider the breadth of the liming issue, especially with respect to wilderness, and is insufficient in its treatment of ecological effects and possible impacts. The scope of the proposed program is also poorly defined.

The Adirondack Council appreciates the opportunity to provide comment on this document. The Adirondack Council is a coalition of five environmental organizations and 9,500 individual members dedicated to protecting the natural character and wildness of the Adirondack Park.

Sincerely,

Daniel R. Plumley
Park Specialist

cc: T. Jorling
T. Brown
T. Monroe
R. Glennon
H. Cole

Organized 1901
Incorporated 1902

THE ASSOCIATION
FOR THE
PROTECTION OF THE ADIRONDACKS

P.O. Box 951 • Schenectady, New York 12301

Arthur J. Newell
Bureau of Environmental Protection
NYS Dept. of Environmental Conservation
50 Wolf Road, Rm. 530
Albany, NY 12233

November 1, 1988

Re: Draft Generic EIS on Liming Acidified Waters

Dear Mr. Newell:

I would like to submit comments on behalf of The Association for the Protection of the Adirondacks on the Draft GEIS on Liming Selected Acidified Waters.

The Association is in the midst of preparing a policy statement with regard to lake liming in designated Wilderness Areas of the New York Forest Preserve. While our policy is not yet in place, we nonetheless wish to question several statements and assumptions in the Draft GEIS concerning liming in the Forest Preserve, particularly in designated Wilderness.

The overall rationale for liming selected acidified waters in a program which is not viewed as a solution to reductions of acid precipitation precursors is quite clear and commendable. However, the rationale for liming within certain State Land classifications seems muddled. On page 29, the Draft attempts to explain the program's relationship to Adirondack and Catskill State Land Master Plans. Parts of the Wilderness definition in the State Land Master Plan are quoted to say that Wilderness may be "managed so as to preserve, enhance and restore, where necessary, its natural conditions" and that fishing is compatible with wilderness. These sections are then used to imply that lake liming, fish stocking and other management techniques are acceptable in Wilderness areas. We question what in the State Land Master Plan directly sanctions these activities in Wilderness areas. Indeed, the Wilderness definition clearly implies that it is the entire ecosystem and its natural processes that must be considered in any action, direct or indirect. Therefore, is it not considered and wise judgement that determines the acceptability of these actions in Wilderness, not any broad sanction by the SLMP? A

Assuming that Wilderness is, in part, to be managed so as to "preserve, enhance and restore, where necessary, its natural conditions", we wonder why the DGEIS doesn't flatly state that activities such as liming and fish stocking in Wilderness are to be undertaken only where necessary for protecting or aiding in the recovery of endangered heritage strains, or endangered/threatened fish species? Should not the special qualities and objectives for restoration, where necessary, in Wilderness call for explicit inclusion of only these limited purposes for liming or stocking? Approximately 18 of 90 Adirondack waters listed in the Draft as having the minimum potential for a liming program are in Wilderness. Given other minimum criteria in the Draft, this number becomes even smaller. Limiting such techniques in Wilderness would minimally affect the overall objectives or scope of the liming program. We call attention to the U.S. Forest Service fish stocking policy in wilderness that places highest priority on federally listed threatened and endangered species, and which firmly prohibits stocking of exotic species. We ask if the DEC's liming policy should not include similarly explicit guidelines for Wilderness under its custody and control. B

Finally, on page 37, the Draft GEIS states that "a number of the Unit Management Plans which have been completed...have included liming as a possible management activity." If this is the pattern, and if liming is such an important management tool, we ask why the Draft does not go the next logical step to conclude that liming be undertaken only pursuant to a completed and approved Unit Management Plan? C

Thank you for this opportunity to comment. When we conclude our policy statement on liming, we will forward it to you prior to the December 2 comment closing date as an additional statement.

Sincerely,

David H. Gibson
Executive Director

cc: Trustees

Organized 1901
Incorporated 1902

THE ASSOCIATION
FOR THE
PROTECTION OF THE ADIRONDACKS

P.O. Box 951 • Schenectady, New York 12301

Arthur J. Newell
Bureau of Environmental Protection
NYS Dept. of Environmental Conservation
50 Wolf Road, Rm. 530
Albany, NY 12233

November 23, 1988

Re: Draft GEIS on Liming Acidified Waters

Dear Mr. Newell:

As I indicated at the November 1 public hearing in Albany, The Association for the Protection of the Adirondacks was in the midst of preparing a policy statement on liming and stocking of waterbodies in the New York State Forest Preserve. The Board of Trustees recently adopted such a statement which should be added to the comments I submitted at the hearing. The statement reads as follows:

> "In Wilderness areas, such activities as liming and stocking should be permitted and undertaken only where necessary for the perpetuation of endangered native heritage species or genetic strains of such species, or to aid in their recovery or reintroduction in areas of previous habitation."

D

The Association recommends that this statement become part of the Final GEIS on DEC's Program of Liming Selected Acidified Waters. We feel such a statement is reasonable given the limited funds likely to be available to DEC for liming and necessary monitoring of treated lakes and the relatively small number of lakes in Wilderness compared with the total number of Adirondack lakes that meet the minimum criteria for liming(about 100, as indicated in the DGEIS). The statement clearly does not prohibit future liming of lakes in Wilderness areas; it does however, more precisely define the criteria for neutralization of a candidate water within a designated Wilderness area. Justification for such a limiting statement centers on concerns about unnecessary intrusions which could affect wilderness character and the Adirondack State Land Master Plan which limits use of motorized aircraft in Wilderness areas in this instance to major research projects "for purposes essential to the preservation of wilderness values and resources", and further mandates that "such use is minimized" (Adirondack State Land Master Plan).

Thank you very much for conducting a very informational hearing on this important subject

Sincerely,

David H. Gibson
Executive Director

cc: Board of Trustees

Forest Preserve Advisory Committee

Mr. Arthur J. Newell
Bureau of Environmental Protection
50 Wolf Road, Room 530
Albany, New York 12233

Dear Sir:

The NYS-DEC Forest Preserve Advisory Committee met on October 28, 1988 in Kingston, New York and approved a resolution which we request be considered as a written statement on the Draft EIS on the NYS-DEC Program of Liming Selected Acidified Waters.

The Forest Preserve Advisory Committee resolved that the discussion on pages 36-37 of the DEIS about Unit Management Plans should be clarified to state clearly that the liming of acidic waters as a management activity in the Adirondack and Catskill State Parks shall only be undertaken when an approved unit management plan is in place and when the UMP specifically authorizes the management activity. A

Thank you very much for your consideration of this written statement.

Yours respectfully,

David L. Newhouse
Co-Chairman

cc: Commissioner Jorling
Robert Bathrick
Ken Wich
Woody Cole
Bob Glennon
Chuck Scrafford

THE CAMP FIRE CLUB OF AMERICA
Environmental Protection

THE COMMITTEE ON CONSERVATION
OF FORESTS AND WILDLIFE
230 CAMP FIRE ROAD, CHAPPAQUA, N.Y. 10514
TEL. (914) 941-0199

NOV 2 9 1988 NOV - 9 1988

November 27, 1988

Arthur J. Newell
Bureau of Environmental Protection, Room 530
N.Y. State Dept. of Environmental Conservation
50 Wolf Road
Albany, New York 12233-4756

Dear Sir:

The Conservation Committee of the Camp Fire Club of America endorses the New York State Department of Environmental Conservation's program of liming selected acidified waters. This committee believes that to maintain the ecosystem, the effect of acid deposition must be mitigated. Certainly if the waters can no longer support aquatic life, it may reasonably be assumed that other life forms dependant upon aquatic life will also suffer.

We note that of the thirty-two waters currently in the DEC liming program, two are in Wilderness areas - namely Horn Lake in Herkimer County and Tamarack Pond in St. Lawrence County. We would suggest in Wilderness areas such activities as liming and stocking should be permitted and undertaken only where necessary for the perpetuation of endangered native species or genetic strains of such species or to aid in their recovery or reintroduction in areas of previous habitation. A

Very truly yours,

Peter Roemer, Chairman
The Committee on Conservation of Forests and Wildlife

cc Kenneth Wich.

Adirondack

Mountain Club

174 Glen Street
Glens Falls,
New York 12801-3526
(518) 793-7737

November 30, 1988

Arthur J. Newell
Room 530
Bureau of Environmental Protection
50 Wolf Road
Albany, N.Y. 12233-4756

Dear Mr. Newell:

Attached is our written statement regarding the Draft Generic Environmental Impact Statement on the New York State DEC Program of Liming Selected Acidified Waters.

We appreciate the opportunity to comment.

Sincerely,

Neil F. Woodworth, Chairman
Conservation Committee

Robert O. Linck
Conservation Director

/rol

STATEMENT OF THE ADIRONDACK MOUNTAIN CLUB (ADK)
Regarding the "Draft Generic Environmental Impact Statement on the New York State Department of Environmental Conservation Program of Liming Selected Acidified Waters"
December 1, 1988

In 1983, the Adirondack Mountain Club (ADK) Board of Governors passed a resolution opposing liming in wilderness and primitive areas on the basis that the merits and possible adverse impacts of liming had not been adequately established and that its implementation could be damaging to those areas. Following a careful review of the DGEIS on the DEC's Program of Liming Selected Acidified Waters (September 1988), ADK reasserts its objection to artificial manipulations of the wilderness ecosystem, even for well-intentioned efforts such as the liming program. What follows is a summary of our primary concerns: A

(1) The State Land Master Plan defines a wilderness area as "an area where the earth and its community of life are untrammeled by man . . . which is protected and managed so as to preserve, enhance, and restore, where necessary, its natural conditions. . ." When considering the proposed liming program, this statement is clearly open to a variety of interpretations. In the DGEIS, the Department suggests that liming will indeed serve to "preserve, enhance, and restore" natural conditions. We disagree. Although the acidification process itself is an artificial human manipulation of the ecosystem, we believe that a second manipulation is not the answer. We agree with the eminent acid rain scientist, Eville Gorham, who states that "liming does not restore a lake to its prior state; it alters plant and animal communities. These changes would be unacceptable in preserves set aside as natural preserves." * Such alterations become even less acceptable when considering the risks associated with reacidification, an issue addressed below. In the wilderness of the Adirondacks, restoration should occur through natural processes once the source emissions are curtailed. Such restoration is now taking place in the lakes near Sudbury, Ontario. B

* See Eville Gorham, "What to do about acid rain", Technology Review, October 1982, pp. 59-72.

(2) It is acknowledged (page 98 of the DGEIS) that reacidification of a limed body of water may "result in an environment more toxic to aquatic life than was present before liming occurred." In our view, the risk that reevaluated priorities and budget constraints within the Department will result in a discontinuation of liming should disqualify lakes in wilderness and primitive areas as candidates for the program and raise serious questions about the advisability of liming any Adirondack lakes. C

(3) Lake liming (as noted on pages 30 and 97 of the DGEIS) may provide no protection for aquatic organisms from episodic acidification. Acid-sensitive species will continue to die from these events, and repeated attempts at restoration of "natural conditions" will then be necessary, with great fluctuations in water chemistry. The long-term effects of such fluctuations have not been documented, and short-term toxic conditions have not been adequately researched. D

(4) Lake liming requires repeated treatments via motorized transport, and frequent water quality monitoring to prevent reacidification. Lakes in wilderness and primitive areas are typically remote, making both tasks difficult and expensive. Should budget constraints force a reassessment of the liming program, the greatest savings could be made by eliminating liming in the most remote lakes. Thus, the lakes which should have the highest priority for continued liming are inadvertently at greatest risk of reacidification. E

(5) Repeated intrusions by aircraft are not in keeping with the intended character of wilderness and primitive areas. The State Land Master Plan permits motorized equipment and aircraft in wilderness and primitive areas "for a specific major research project". In the DGEIS, the Department thus deems lake liming in these areas to be "major research". Although this may be appropriate for lakes classified as wild forest, the Adirondack Mountain Club does not believe that the Department should be experimenting with the aquatic ecosystem of wilderness and primitive areas. F

(6) Although the Department states emphatically that the liming program will in no way supplant its own efforts to obtain legislative protection from the acid rain-causing emissions generated in the Midwest, such a G

program may encourage public complacency about the true source of the problem. Opponents of acid rain legislation will cite the apparent effectiveness of liming in maintaining fish populations and the fishing public will place less emphasis on the need for controlling emissions of sulfur dioxide and nitrogen oxides. The political base for enacting acid rain legislation will diminish - an outcome that we cannot afford after ten years of concerted but unsuccessful effort.

In closing, the Adirondack Mountain Club wishes to emphasize its continued opposition to the liming of lakes in wilderness and primitive areas of the Adirondack Forest Preserve. It is our belief that New York State should explore every possible avenue for forcing Congress, the Environmental Protection Agency, and major polluters to alleviate the acid rain damage suffered in the Adirondacks and other parts of the Northeast, without resorting to experiments in wilderness and primitive areas that may result in damaging reacidification, unknown long-term adverse impacts, and the erosion of political will to treat the real causes of acid deposition. H

Neil F. Woodworth, Chairman
Conservation Committee

Robert O. Linck
Conservation Director

Living Lakes

1000 Vermont Avenue, N.W., Suite 900, Washington, D.C. 20005
Phone (202) 842-2720

December 1, 1988

Howard A. Simonin
Rome Field Station
8314 Fish Hatchery Road
Rome, New York 13440

Dear Mr. Simonin:

On behalf of Living Lakes, Inc. (LLI), I wish to formally comment on the Draft Environmental Impact Statement related to aquatic liming prepared by the New York State Department of Environmental Conservation (DEC). The draft, in its present form, presents a comprehensive and reasonable approach to the use of aquatic liming in a continuing fisheries management program. DEC staff responsible for this document should be congratulated for their effort. Our intent with this formal response is to clarify the history of the relationship between LLI and the DEC and to provide the DEC with the benefit of technical knowledge we have compiled through the liming and regular monitoring of 28 lakes in seven states. We feel there are a few practical changes which, if included in your program, could refine and improve the generic EIS.

The criteria the DEC has proposed for protection of a brook trout fishery in a lake which could be effectively managed are, to a large extent, the criteria LLI has used since 1986. Our higher pH criteriun ($pH \leq 6.0$ not $pH \leq 5.7$) was set for the protection of a broad spectrum of fish species. Our ANC criterium ($\leq$ 10 ueq/l) is comparable to the DEC limit (20 ueq/l), while flushing rate requirements are the same.

DEC has also proposed that each site must exhibit temperature and dissolved oxygen (DO) levels suitable to maintain a trout habitat throughout the year. LLI currently monitors the water column at least twice a year to document that adequate temperature levels and DO concentrations exist at each LLI site. Although LLI and DEC criteria are essentially the same, these criteria are, in some cases, applied to data generated from different procedures. Importantly, DEC recommends that summer surface air-equilibrated pH be used as

a measure of in-lake acidity while LLI uses closed pH during spring-melt or late summer, measured at the surface (1.0m) and in the mid-hypolimnion if the lake is sufficiently stratified.

A comparison of air-equilibrated pH and closed pH made on 58 samples collected from the epilimnion of 20 pre-limed lakes demonstrated only small differences (mean differences $\leq$ 0.11 pH units) exist between these pH determinations. This is expected for surface waters which, to a great degree, are equilibrated with the atmosphere regardless of the collection procedure. The possible problem with surface air equilibrated pH measurements could occur when late summer stratification produces a suitable habitat for brook trout in the colder, deeper water. In these waters actual (in situ) pH may be substantially different from surface equilibrated pH values. In some LLI sites, these differences have been observed to be > 0.5 pH units during late summer stratification. Large differences in mid-hypolimnetic closed pH and air equilibrated pH values are also observed. If suitable habitat does move lower in the water column, provisions should be made to monitor the acidity (pH) in these waters. A

A second criticism of the DEC draft recommendations involves the use of agricultural limestone. Although it is available locally and has a history of use in lake liming, agricultural limestone is not the material which will allow for a cost-effective and labor efficient treatment of most lakes. The recent research of Sverdrup, et al., and development of operational liming in Sweden has clearly demonstrated that commercially available finer grades of limestone should be the material of choice. In fact, the basic dissolution kinetics of these finer materials are the very basis upon which the DeAcid dosing model was created. Experience demonstrates that particle sizes > 0.2mm (ag-lime) exhibit poor dissolution efficiency (< 15%) and provide limestone to the sediment far in excess of what is needed to neutralize the sediment or could be recovered through time-dependent dissolution during reacidification. Experience with DeAcid, the results of 28 limings, and the results of the operational Swedish and Norwegian liming programs, indicate that mean particle sizes between 10 - 30um provides adequate buffering of the water column (> 100 ueq/l ANC), satisfies sediment neutralization requirements and allows for residual sediment dissolution depending on the flushing rate of the lake. Compared to past treatments using ag-lime, similar post-liming water quality and duration of treatment can be obtained using less than one-third that amount in finer grade limestone. Even taking into account the transportation of the finer limestone from an out-of-state vendor (Pfizer or White Pigments Corp.) and the labor to slurry and distribute B

this more expensive material, the use of finer material remains the cost and labor effective treatment method. Since you recommended that DeAcid be used to predict an appropriate dose for lakes in the DEC program, we suggest you perform DeAcid simulations using various grades of limestone from different locations. This should convince your staff that ag-lime (0.25 - 0.77mm particle diameter) is not an appropriate material for lake liming.

Also, we strongly recommend that the application of ag-lime or any limestone to the ice be discouraged. If you drop powdered limestone onto snow you will notice the material balls-up or agglomerates into less useful forms. As ice melts, these clumps fall to the lake bottom to yield little benefit to the lake. A case in point would be the liming of White Deer Lake, PA in 1985 and again in 1987. In 1985, 125 tons of ag-lime were spread across the ice of a lake with a retention of 0.7 years. Two years later, the system was relimed with 16 tons of finer limestone powder (4 and 18mm). Based on current data this lower dose is predicted to provide the same duration of circumneutrality. C

Finally, we wish to comment on the reference made to LLI, in the draft EIS. In 1987 LLI was invited to attend one meeting with DEC personnel to discuss possible mutual cooperative efforts. No agenda was distributed for this meeting. Approximately 80% of the time was spent discussing a possible watershed liming with Dr. Steven Gloss of Cornell University. Approximately ten minutes was dedicated to lake liming during which DEC provided a list of 27 liming candidates. At no time were the specifics related to lake liming discussed in detail. LLI did perform synoptic water quality monitoring on twelve of these sites and did identify five sites appropriate for treatment. At this point the NYSDEC notified LLI that LLI and DEC would not collaborate on any lake treatments. D

The primary reason for the DEC decision not to work with LLI was unrelated to that meeting. According to the draft EIS, LLI in its public information program, "suggests that liming is appropriate mitigation for acid deposition." This has never been the case. This statement cannot be documented and therefore, as such, should be removed from the generic EIS. We have always contended that aquatic liming is a temporary solution which may be used to maintain surface waters until such time as more permanent controls of acidity take effect. During its short lifetime, LLI is providing effective methods to maintain and manage affected lakes and streams. LLI has developed working agreements with other states (MI, MA, PA, MD) in which the states have clearly differentiated between the limited objective and goals of aquatic liming and the need for permanent solutions to acid deposition problems. We find it difficult to understand why your Department cannot

resolve these issues.

Nevertheless, LLI professional staff and contractors are available to assist you in the future development of your state aquatic liming program. We do intend to maintain and regularly monitor the eight LLI sites in your State. When your liming criteria become formally accepted at the State level, we will use these criteria and comply with protocols and regulations in the generic EIS. We are hopeful that the New York State and LLI aquatic liming programs will generate beneficial data, since the program goals and fisheries objectives of both organizations are in many ways the same. We hope a line of communication and regular exchange of information will be established in the future.

Sincerely,

Robert W. Brocksen, Ph.D.
Executive Director