FINAL
Environmental Impact Statement
and
Unit Management Plan

Proposed Great Sacandaga Lake Boat Launch Facility Development

Town of Broadalbin, Fulton County

LEAD AGENCY:
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FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR BROADALBIN BOAT LAUNCH FACILITY

Department of Environmental Conservation
response to issues and concerns raised
at the October 13, 1989 public
hearing and subsequent written
comment period which extended
through November 13, 1989.

Prepared by: DEC Central Office
and Region 5 staff
October 1, 1991

Introduction

On Friday, October 13, 1989, at 7:30 p.m., the Department held a public hearing at the Broadalbin-Perth High School to receive public comments on the Department's proposal to develop a boat launch facility on Department owned lands in the Town of Broadalbin. The hearing was held pursuant to regulations of the State Environmental Quality Review Act, and the hearing record remained open until November 13, 1989 for the receipt of additional written comments.

During the course of the hearing and subsequent comment period, the Department recognizes the support for the proposal from the Empire State Marine Trades Association, the Great Sacandaga Chamber of Commerce, the Fulton County Planning Department, the Fulton County Regional Chamber of Commerce, the 1,800 member Saratoga Council of Fish and Game Clubs, as well as numerous local businessmen and residents of the Town of Broadalbin. However, other local residents expressed concern over the proposed facility and have raised a variety of issues which are addressed herein. Additionally, the Adirondack Park Agency has raised a series of more complex issues which are considered and addressed separately from those raised by the general public.

In order to facilitate response to the issues raised at the Public Hearing, the Department has compiled all issues raised into

a comprehensive list of sixteen individual issues. The purpose for doing this is to address each issue only once. Issues are not listed in order of priority, but rather in the order in which they were received. Issues raised by the Adirondack Park Agency are separately identified and answered.

Subsequent to the completion of the DEIS/UMP in October 1989, the Department of Environmental Conservation undertook a statewide survey of public use of the state's boating access facilities. Crucially important, and heretofore unknown, information was generated from this study which bears on the discussion of carrying capacity in the Broadalbin DEIS/UMP. The new information involves two very important aspects of the original carrying capacity discussion as follows:

1.) Installed public boating capacity at Great Sacandaga Reservoir is substantially less than originally assumed.

2.) Instantaneous boat usage is also substantially less than the 25% figure utilized in the original calculations.

- Detailed Discussion -

1. Installed public boating capacity at Great Sacandaga Reservoir is substantially less than originally assumed.

The DEIS/UMP relied on the joint DEC/OPRHP brochure "New York State Boat Launching Sites: A directory of state access and launching areas" published in 1988. This publication lists the following capacities for the three DEC facilities on Great Sacandaga Lake:

Northville boat launch	60 Car/Trailer
Saratoga boat launch	44 Car/Trailer
Northampton campground	700 Car/Trailer
Total	804 Car/Trailer

All calculations of the potentials for public boating use on Great Sacandaga Lake in the DEIS/UMP relied upon the published public capacity of DEC's three facilities at 804 car/trailer units.

While boat launch and fishing access sites generally have well defined and often demarcated parking slots, thus providing reliable and accurate parking capacity calculations, most DEC campgrounds do not have clearly defined parking spaces associated with their boat launching facilities, which may be part of a larger day-use and beach section of the campground. Furthermore, campground waterway access facilities accommodate both day-users and campers; campers may elect to park their vehicles and trailers at their site rather than in the boat launch area, further complicating calculation of reliable and accurate parking capacities associated with the boat

launch facility. During the course of analyzing data for the 1990 Statewide Survey of Boating Use at Public Waterway Access Sites in New York (final report in preparation), it became clear that the parking capacities published for many campgrounds were neither accurate nor consistent with those published for other waterway access sites. In fact, the published capacity for the Northampton Beach Campground was the most suspect of all, and grossly over represents the boating capacity and use for this facility.

Department staff reviewed all campgrounds with boat launching facilities, and consulted with field staff, plot plans, and data obtained from the 1990 Statewide Survey in an effort to more consistently and accurately determine revised parking capacities that reliably reflect the ability of these facilities to accommodate day use boaters. This review resulted in a determination of 100 car/trailer units as a more accurate portrayal of parking capacity for Northampton Beach. In addition, the 224 camping sites provide additional parking capacity for campers with either cartop or trailerable boats.

As part of the 1990 Statewide Survey, counts of all day users and campers entering the Northampton Beach campground with either a cartop or trailered boat were recorded on all weekends and holidays, and approximately one-half of the weekdays during the operating season. These counts showed that the maximum number of day-use boaters on any single day (July 4) was 89, which included

75 trailered boats and 14 cartop boats. The maximum number of campers with boats was 33 in a single day (May 24). However, since camping trips last for several days, the data was examined to determine the maximum cumulative number of campers with boats entering during any Wednesday-Sunday period as an estimate of the maximum total number of campers with boats present at one time. During the Memorial Day Weekend in 1990, campers brought 68 boats (62 trailered and 6 cartop), which was the highest recorded during any comparable period in the study. Based on these data, we believe that a total public boating capacity (day use and camping combined) of 175 for the Northampton Beach Campground accurately represents the maximum potential contribution of this facility.

While the Northville and Saratoga Boat Launching sites were not included in the 1990 Statewide Survey, data from other sites leads us to believe that these sites could be expected to fill to capacity during peak use periods. The expected contribution from the Northampton Campground is more complicated, because our data do not account for boaters leaving while others are still arriving, nor do we have data on the proportion of campers' boats likely to be in use at a given time. It is almost certainly less than the 100% assumed for day-use boaters, but very likely higher than the 11% observed for riparian boats statewide. Furthermore, the number of campers' boats recorded did not reach their maximum on the same day as peak boating day use. In our opinion, a realistic maximum contribution to instantaneous boating activity from the campground

is approximately 100 boats.

Use of these figures results in the following modifications (underlined) of the calculations presented in Section V of the DEIS/UMP:

1.) p. 17, para 1. "The Broadalbin site would add 25% to the current total public boating capacity afforded by the Department's other three boat launches. (279 currently, 349 with the addition of the new site). With all public facilities occupied to capacity, the maximum boat density on the reservoirs' surface attributable to these facilities would amount to 1 boat for each 76 acres of the reservoir's surface."

2.) p. 17, para 3. "Utilizing maximum boating potentials from the three categories of sources; public facilities (279), private commercial and special permittees (1,668) and private individual permittees (8,448), the addition of 70 boats to the existing maximum potential represents a virtually imperceptible increase of 0.7% (0.0067). Utilizing reasonable estimates of actual numbers of boats from the three categories of sources; public facilities (204), private commercial and special permittees (1,668) and private individual permittees (4,224), the addition of 70 boats to the existing (estimated) actual numbers of boats still represents a minuscule increase of only 1.15% (0.0115)."

3.) p. 18 para 2. "range from 37 to 170 acres per boat"

4.) p 18 table. Great Sacandaga L. 26,656 acres, 204 public boating capacity, 131 acres per boat [revised acreage/boat would place Great Sacandaga between Raquette Lake and Cayuga Lake]

2. Instantaneous boat usage is also substantially less than the 25% figure utilized in the original calculations.

A critical aspect of assessing carrying capacity, and the degree to which it is filled on a moment-to-moment basis, involves the proportion of all boats present that are likely to be in instantaneous use. Prior to 1990, the Department had no figures for New York State waters to rely upon. Hence, a literature search was undertaken to find an appropriate number for use in calculation. That search resulted in the discovery of material produced in the state of Ohio, citing a figure of 25% instantaneous boat use rate which was used in the DEIS/UMP carrying capacity analysis.

During the course of the 1990 Statewide Survey, aerial overflights of 21 lakes (Great Sacandaga Reservoir was not one of the lakes included in the sample) were conducted in an effort to fix a number relevant to boating activity in New York. Considering only the 17 lakes which conformed with the study protocol requiring flights to be between the hours of 10 am and 4 pm, we determined that 11% (range 6-15% for individual lakes) of all boats present on

and around a lake are in use at any given time on summer weekends and holidays, the period of peak use for most waters. We conclude, therefore, that compared with even the maximum observed instantaneous use for any of the sampled lakes (15%), the figure used in the DEIS/UMP grossly over-represents the likely proportion of boats in use.

Substituting these numbers results in the following revised calculations on page 19:

1. Contribution from current public (DEC) facilities

60 (Northville) + 44 (Saratoga) + 100 (Northampton)=204 boats

2. Contribution from private commercial and special permit facilities:

1,668 boats x .15= 250 boats

3. Contribution from private residents:

4,224 boats x .15= 634 boats

4. Total contribution to instantaneous carrying capacity:

204 + 250 + 634 = 1088 boats

5. Instantaneous boat-use potential

26,656 acres/1088 boats = 24.5 acres per boat

Extending the rationale developed above, the additional 70 boats that could be expected from development of the new public access site in Broadalbin would represent a 6.4% increase in the instantaneous boat-use potential. The resulting density of 23 acres per boat with the new facility is still well below any thresholds of social tolerance identified in the literature for recreational or fishery resources.

The effect of this new information is to document substantially greater need for developing additional public access while demonstrating that boating densities both currently and with the development of the new site at Broadalbin are much lower than previously calculated in the DEIS/UMP.

Issues Raised at Hearing

1) Presence of Eurasian water milfoil in Great Sacandaga Lake.

The presence of Eurasian water milfoil is being documented in numerous New York State waters, and individual plants have been identified from Great Sacandaga Lake. The potential for the introduction of exotic plant species to Great Sacandaga has existed since the lake was created and, in fact, attempts have been made to artificially introduce nonnative plant species to bolster the lake's fertility and productivity for fishery habitat. The present low fertility of the lake bottom sediments, combined with widely

fluctuating water levels which expose extensive areas of littoral zone to freezing, will help minimize the growth of extensive milfoil populations. Minor populations of milfoil which do not reach the nuisance level may benefit the overall fishery resource of the lake by providing much needed spawning and nursery habitat.

Development of the Broadalbin Boat Launch Site will not increase the potential for the spread of milfoil for the following reasons:

1) All dredging activities related to construction of the site will be done either in the dry or behind a properly installed cofferdam/silt screen barrier, eliminating any danger of plant fragment spread.

2) Ingress and egress by boats to and from the lake will be through a marked navigation channel located over the deepest water in the area. Deep water combined with rock bottom substrate is not conducive to milfoil growth.

3) Signs will be posted at the site warning boaters to check their boats before launching and upon retrieval to remove any foreign plant fragments.

2) Wetlands impacts.

The minor impacts to adjacent wetlands which will result from construction of this site have already been addressed in the DEIS on pages 26 and 29. As noted in the DEIS, the Department has made every effort to coordinate planning of this site with the Adirondack Park Agency, which has authority over wetlands within the Adirondack Park. Agency staff have made on-site inspections of the property and the project was redesigned to address their initial concerns over wetland intrusion. In addition, all of their recommendations for mitigation were included in the planning process and would be included in any construction contract let for the project.

3) Pollution (oil, gas, litter, sewage) and vandalism.

Numerous studies have been conducted to assess the effects of marine engine pollution on the aquatic environment. The basic conclusion of these studies is that marine outboard or inboard engines do not, of themselves, pose a threat of pollution to the aquatic environment. The small amounts of fuel residue expelled in engine exhaust is quickly attacked by bacteria and broken down into harmless elements. Even the most congested waterways, such as the south basin of Lake George, do not experience degradation related to pollution caused by the operation of marine engines. Major pollution does occur primarily due to spills associated with the fueling of boats. However, no fueling facilities are proposed for this site, eliminating that threat of potential pollution.

A report entitled, "Effects of Exhaust from Two-Cycle Outboard Engines" is included as Appendix I to this Addendum. This report was prepared to specifically address a growing concern for the pollution of Lake George by motor propelled watercraft. The results of this study are self-explanatory, indicating that marine engines are not polluters of any major significance. In addition, modern marine engines have been continuously refined to make them more fuel efficient, quieter and reliable.

Litter, sewage disposal and general maintenance of the proposed facility will be dealt with through a maintenance agreement which the Town of Broadalbin has already agreed to embrace. A copy of the proposed agreement is included as Appendix L of the DEIS. Any necessary law enforcement activities will be coordinated between the Town of Broadalbin, Fulton County Sheriffs Department, Environmental Conservation officers and the New York State Police.

4) Contaminants.

The services of the Environmental Monitoring Section and DEC Bureau of Environmental Protection were employed to address the question of toxic substance contamination at the Broadalbin site. The following information is extracted from their analysis.

In 1970, 1978, and again in 1982, the Department of

Environmental Conservation obtained fish samples from Great Sacandaga Lake for testing of chemical contaminants. PCB levels in 1982 ranged from 0.03 to 0.11 ppm and mercury levels ranged over the years from 0.7 to 1.29 ppm. PCB concentrations were among some of the lower values recorded in New York State. Mercury levels are comparable to those observed in fish from other Adirondack waters. Currently there are no special fish consumption health advisories in place for Great Sacandaga Lake.

In 1988 and 1989, a brown bullhead, a rock bass and a snapping turtle were provided to the Department's wildlife pathology unit from the vicinity of the proposed construction site. The two fish were analyzed for a spectrum of twenty organochlorine pesticides, PCB and mercury. The results from these samples were generally comparable to "background" conditions for environmental contaminants. Analysis of the snapping turtle was more complex, involving separate analysis of flesh, fat, kidney and liver tissues. Results from the flesh analysis were similar to the results obtained from the two fish. Fat, liver and kidney tissues revealed higher levels of mercury, and several of the organochlorines including PCB. These tissues can and do bioaccumulate contaminants well in excess of background levels. Also, snapping turtles, being long-lived and at a high trophic level, are generally known to accumulate high concentrations of contaminants.

In a further effort to examine potential presence of toxic substances at the project site, the Department's wildlife pathology staff obtained five sediment samples from the site in November 1989. Heavy metals analysis indicated elevated cadmium levels slightly in excedance of sediment criteria for the protection of aquatic life. Cadmium, however, does not accumulate readily in edible fish flesh. Other metals were generally in the range of background concentrations for soils, although arsenic was on the high side of background. Generally, the twenty metals analyzed in the sediments are not expected to exert any detectable adverse toxic impacts on benthic organisms. Mercury levels may be at or slightly above concentrations which would result in bioaccummulation and represents a situation which occurs in many New York State Waters.

It is evident, however, that the limited dredging of 2,200 cubic yards of sediment and other soil disturbance involved in the construction of the Broadalbin boat launch, will not result in a significant contaminant loading to the Great Sacandaga Lake ecosystem.

In conclusion, the data collected to date in and around the proposed Broadalbin boat launch indicate that neither the construction of the project, nor its subsequent operation and use will cause the disturbance, redistribution, or alteration in biotic uptake of contaminants in Great Sacandaga lake including the

Broadalbin area. There is a statewide health advisory for the consumption of all fish from all waters of New York State, including the Great Sacandaga Lake, and all fish consumption by the public (including those who would utilize the new Broadalbin boat launch to gain access to the Great Sacandaga Lake fishery) should continue to be guided by this advisory.

5) Inadequate roadways to and from site.

Lakeview Road already experiences some minor increase in traffic flow during the summer months as a result of the long existing town beach. No studies have been presented which would demonstrate that the access routes are inadequate to accommodate the slight increase in traffic anticipated as a result of the boat launch facility. As long as existing speed limits continue to be enforced and roadways are maintained in their present condition, the road system should easily absorb any minor increase in traffic flow.

The boat launch and swimming beach parking areas will have fixed capacities by design. Overflow parking, which is not allowed, is readily enforceable within existing authority. The Town of Broadalbin will be encouraged to place "No Parking" signs along Lakeview Road and the presence of an on-site superintendent will also discourage parking in excess of the site's design capacity. This Department's experience with similar facilities

indicates that, with the exception of a few prime summertime weekends, parking capacities are rarely exceeded. Law enforcement can readily be targeted to known peak use weekends such as Memorial Day, Fourth of July, and Labor Day.

6) Safety: boater/swimmer interaction, vandalism, etc.

These issues are fully addressed in the DEIS on pages 25 and 26. The Department has employed every conceivable design feature into the Broadalbin Boat Launch Plan including a marked navigation channel, posted navigation speed limits, and signs posting the area against swimming. Law enforcement will be provided at the local, county and state levels. However, no amount of design innovation, operational precautions, establishment of rules and regulations or effective law enforcement can completely compensate for a lack of common sense or common courtesy by the general public.

7) Winter use.

This matter was not fully addressed in the DEIS. It is the intention of the Department that the boat launch parking area be available for winter recreational uses, particularly ice fishing, provided the town is in concurrence with such a plan and is capable of maintaining the site in an open condition during the winter. Strict interpretation of the HRBRRD regulations regarding boat launch sites would prohibit vehicle access onto the ice but would

allow foot and snowmobile access. The Department will continue to negotiate with the Town and Regulating District to resolve the issue of wintertime use of the site.

8) Overuse of the lake.

This matter is fully addressed in the DEIS on pages 16 through 20. Recent studies by the Department have generated data which have lead to significant modifications of these pages (see Introduction). This new information results in much lower estimates of boating densities both currently and with the proposed development of the Broadalbin site. An error in the published capacity for the Northampton Beach Campground resulted in a gross under-calculation of the acres available for each boat. Instead of Great Sacandaga ranking as the lake with the least water available per public access parking space (table on page 18 in the DEIS/UMP), the corrected values yield 126 acres per parking space, which is the next to most water per boat of the lakes listed in the table. Also, the acreage figure for Great Sacandaga Lake represents the total acreage and does not segregate the south basin from the northern arms. The three established public launch facilities are all in the northern arms of the lake, and a major purpose behind development of the Broadalbin site is to spread usage over the entire lake.

If we assume that all boaters currently using the lake

continue to launch from existing facilities and the users of the Broadalbin site constitute "new" users, the increase in boat activity is estimated at approximately 6% (based on the number of boats in use at a given time). This would create an almost imperceptible change in the use density figure for the lake as a whole.

9) Cost of maintenance of the site.

The Town of Broadalbin has discussed this issue during their board meetings and have already agreed to a maintenance agreement with this Department. Site maintenance will be conducted along with the maintenance of the Town Beach facility eliminating duplication of effort. Generally within Region 5, boat launch site maintenance costs are figured at $2,500 per year per site. As previously stated, the town is willing to accept this cost, and has demonstrated its willingness to do so by having signed a proposed maintenance agreement which is included as Appendix II to this Addendum.

10) Question of historical support for the project.

This question is addressed on page 15 of the DEIS. Inclusion of various resolutions and letters of support would serve no useful purpose other than to "pad" this document. However, any of the individuals or organizations listed on page 15 of the DEIS may be

contacted to determine the level of intensity of their support over the last dozen years.

11) Put site to a vote in the town.

New York State does not have a referendum process for placing a question such as this on the ballot, but relies on elected officials to represent the best interests of their constituents. The Department's involvement in waterway access site development is in partial fulfillment of its mandate under the Environmental Conservation Law to provide public access to fish and wildlife resources. The proposed development at Broadalbin has long had the support of Town of Broadalbin and Fulton County officials as expressed in resolutions and correspondence with the Department. The project has also had the strong support of Assemblyman Glenn Harris and Senator Hugh Farley, and funding for the project has been given the approval of the state legislature.

12) Fishing is poor. Access won't make it better.

The quality of the fishery resource in Great Sacandaga lake is discussed in detail in the DEIS on pages 10, 11 and 12 as are the Department efforts to improve the fishery. One of the purposes of the launch facility is to provide access to the fishery. Efforts will continue to improve that fishery over the coming years.

13) No consideration of alternate sites.

This concern will be addressed in the following section responding to Adirondack Park Agency comments.

14) Cost/benefit ratio.

A benefit/cost ratio for this project has been developed using the following assumptions:

Cost of development.....$300,000.00
Life of Project = 20 years
Maintenance cost assuming the $2,500
per year remains constant..... 50,000.00

Total project costs.....$350,000.00

102 boating days from Memorial Day to Labor Day.
Assume a 50% daily use figure = 35 users.
Use the latest value of angler trips from 1988
Statewide Angler Survey - $24.
Assume this figure remains constant.
102 days x 35 users x $24 per trip x 20 years.

equals - $1,713,600.00

Benefit/cost ratio equals 4.8 to 1

It should be noted that the figures used to develop this benefit/cost ratio represent minimum levels of usage and trip values. Much higher ratios could have been developed using less conservative figures. However, use of minimal values still creates a very favorable ratio for justifying development of the site.

15) Sacandaga Reservoir not intended for recreation

While the primary purpose behind construction of the reservoir was flood control and downstream flow augmentation, recreation has played an important part in the reservoir's history. Recreational use of the reservoir is specifically identified in the HRBRRD rules and regulations included as Appendix G to the DEIS. The regulating district has made considerable changes to its operating regimes in order to complement recreational use of the resources. Indeed, if it were not for the high degree of recreational usage of the reservoir, as permitted by the controlling agency, this Department would not be considering the Broadalbin site for development.

16) Need for a more comprehensive plan for the Adirondacks

A comprehensive plan regulating all development on State-owned lands in the Adirondack already exists, entitled the "State Land Master Plan." This plan is administered by the Adirondack Park Agency and specifically regulates access site development on all waters within the Park. As outlined in the opening statements of the DEIS, the Broadalbin Boat Launch facility fully complies with all of the mandates of the plan.

Issues Raised by Adirondack Park Agency

APA Question #1

While the Description of the Action (page 2) states that the existing public access points (DEC facilities) are insufficient and unsafe, the body of the document does not identify or discuss any such problems with the existing facilities. Obviously, we feel it should do so.

DEC Response

As outlined in the DEIS, existing public facilities are insufficient and unsafe for providing boat access to the main southern basin of the lake. Insufficiency is based on a number of facts which have been observed by and reported to the Department over the span of many years. Notable among these facts are:

1) Periodic overcrowding of the three public launching facilities, all located in the northern arms of the lake. On busy weekends during the summer recreational season all three sites are filled to capacity and users are forced to park vehicles along adjacent roadways where they are subject to traffic tickets and subsequent fines. Overcrowding leads to excessive waiting periods for the opportunity to launch or retrieve a boat, all of which can result in a stressful and ill-tempered environment.

2) For over fifteen years the boating public has encouraged any and every effort by this Department to develop a boat access facility on the southern basin of the lake. All three sites in the northern portions of the lake require extensive travel times, in

terms of both vehicle mileage and boating mileage, to access the southern basin. The proposed site will provide direct access to the main basin for those boaters wishing to use it and, for many users, eliminate considerable driving and boating time. The potential redistribution of up to seventy car/trailer units from the northern three sites will help relieve the overcrowding that is currently being experienced at those sites.

Unsafe conditions at the northern three facilities are primarily due to the overcrowded conditions. As parking lots fill up and vehicles are forced to spill out onto the highway, the potential for serious accidents increases dramatically. While state and local law enforcement agencies try to address the problem, frustrated boaters will chance paying fines and subjecting themselves to a dangerous situation in order to gain access to the lake.

Another safety related factor which has been continually brought to the attention of the Department in the lack of safe harbor refuge facilities in the south basin. In the event of a rapidly occurring storm, boaters from any of the three existing sites have only two main alternatives: 1) try to race the storm back to one of the northern sites or 2) try to put into an overcrowded commercial marina or boat club. The establishment of the Broadalbin facility will, along with its many other benefits, provide a much needed safe harbor for those boaters choosing to use

the lakes southern basin.

APA Question #2

The plan does not identify a need for the proposed facility. In addition to the three DEC facilities (804 boats), the field report in Appendix H indicates nearly 60 launch facilities have been permitted by the Regulating District. However, the text and Appendix N only identify one commercial launch facility (the Edinburg Marina) and without explanation state the rest are open only to patrons and not the general public.

This document should describe (and locate on a map) all launch sites and marinas, describe their facilities and capacity, and indicate why they are inadequate to meet public demand (For instance how many times are the three DEC facilities full to capacity?).

DEC Response

During initial review of the DEIS, an error was made interpreting data included in Appendix H, leading to the conclusion that approximately 60 launch ramps were available to use by the general public. In fact, only 30 commercial permits were issued with provisions for launch ramps and the majority of those are for marina patrons' use only and are not available to the general public, even on a fee basis. An informal telephone survey of commercial marinas substantiates comments in the DEIS that only Edinburg Marina actively advertises its launch facilities for public use, for a fee, and no free public access is available to users of the southern basin of the lake.

The 3 existing DEC facilities are insufficient to meet public

demand by several measures. As discussed in the revisions to pages 18-20 regarding "carrying capacity", the three facilities combined provide only 204 day-use parking spaces, plus up to an additional 75 campers with boats at Northampton Beach. None of these facilities are located in the main southern basin of the lake, and the ratio of public parking capacity to surface area of the lake is well below that considered adequate by many agencies responsible for boating access across the country (SOBA, 1989). In addition, the existing facility at Northampton Beach is not adequate to handle peak use periods with the current day-use parking available. The site lacks docks, and the double lane launch ramp is designed to be adequate for only about 50 launches per day. The inadequacy at Northampton is exacerbated by its proximity to the very popular Northville site, which reportedly fills to capacity nearly every summer weekend, the overflow traffic being directed to Northampton.

The Northampton Campground was one of the sites included in the 1990 Survey, which included counts of all vehicles (both day-use and campers) entering the campground with boats. The sampling design included all weekends and holidays and one-half of all weekdays during the operating season. The maximum observed number of day-use boaters was 89, which is less than the number of vehicles that could be accommodated. However, the functional capacity of the site to handle launches and retrievals is limited by the narrow double launch lane available. Under some conditions, vehicles are able to launch from the apron adjacent to the concrete

ramp, permitting multiple simultaneous launches and retrievals. From the perspective of the double concrete ramp, the number of boaters (day-users and campers on the first day of their stay) exceeded launch ramp capability (50) on 9% of summer weekends and holidays. Comments from boaters responding to the survey attest to the inadequacy of the existing facilities during peak periods. While the Northville and Day sites were not part of the survey, we believe that much of the day-use boating at Northampton is overflow from the Northville site and that Northville is filled to capacity at least as often as Northampton. Boaters would prefer to launch at Northville for several reasons: 1) Northampton lacks a dock, and Northville has a skid-dock which can be adjusted to water levels, 2) Northampton has a narrow double lane concrete ramp while Northville has twin double wide ramps, 3) Northampton charges a day-use entry fee while Northville is free. We have no use data for the site at Day, other than general comments from boaters citing the need for access to the southern basin and the inadequacy of existing facilities.

Yet another indication of the inadequacy of the existing public access to Great Sacandaga Reservoir is provided by its high ranking among all waters statewide from boater nominations of waters needing new or improved public access. Great Sacandaga ranked seventh out of 459 waters nominated by boaters. The 1990 Survey included 14 sites within a 40 mile radius of Broadalbin; of these, Great Sacandaga was named by boaters as needing new or improved public access at all except 1 site (Mohawk River at

Nelliston), which had a very small number of returns. This water ranked first among all waters nominated at 5 of these sites, and third at 3 of them. The bulk of nominations came from boaters residing south and east of Great Sacandaga Reservoir as shown in the following table:

County of Residence of Boaters Noting the Need for New or Improved Public Access to Great Sacandaga Reservoir (n=224) in the 1990 Survey

County	Percent	County	Percent
Albany	8.7	Rensselaer	2.3
Delaware	0.5	Saratoga	18.3
Franklin	0.5	Schenectady	28.3
Fulton	18.3	Schoharie	0.5
Greene	0.5	Warren	1.8
Montgomery	18.3	Massachusetts	0.5
Onondaga	0.5	New Jersey	0.5
Orange	0.5	Pennsylvania	0.5
		Total	100.5*

* total exceeds 100% due to rounding error

APA Question #3

The description of the resources and environmental setting is incomplete and should in our view include the following at a minimum:

a. A description of the water quality of the Great Sacandaga Lake.

b. A complete, accurate description of the current land use and potential development patterns around the lake on which the present use assumptions should be based. The only description in the document is: "The shorefront is primarily forested and dotted with private camps and docks." This hardly reflects the complex land use patterns on the lake (i.e., Northville, Broadalbin and Mayfield vs Day, Fishhouse and undeveloped shoreline).

c. A detailed description of the land uses in the vicinity of the site and in the bay including numbers of residences, amount of vacant land, existing undeveloped subdivisions, and any commercial uses. Also, a description of the land use patterns along the access roads to the site and a statement of the ability of the existing roads to accept additional traffic without congestion.

d. A description of site resources including the wetland, the 3.5 acres of wildlife habitat to be lost due to the project (page 22), and the amount of shoreline on the project site currently cleared and developed. The investigation or studies which led to the statement on page 6 to the effect that no significant habitat or nesting sites of threatened or endangered species have been identified on or near the site or the lake should be provided or summarized.

DEC Response

3a) The water quality of Great Sacandaga Lake is specifically discussed on Pages 9 and 10 of the DEIS. Indirectly, water quality is discussed at length under section IIIB, "Fishery Resources of Great Sacandaga Lake." Low nutrient values in the water column have been identified as the limiting factor controlling aquatic vegetation growth and the growth rates of fish species present. While the lack of nutrients is of concern to the sport fishing

program, it does indicate that development around the lake has taken place in a manner that does not contribute to serious pollution problems. Of particular note is the fact that Great Sacandaga does not experience the severe algae blooms that occur on many other highly developed New York State lakes during the summer season. Normally, such algae blooms can be traced to some form of pollution within the watershed and the fact that blooms are not a problem in Great Sacandaga is a tribute to those who are responsible for management of the lake.

3b) It should be noted that the DEIS does indeed discuss the present land use pattern around the lake with more than a one sentence statement. Section III C on pages 12 and 13 specifically reference the State Land Master Plan (SLMP) and the various mix of land classification categories which surround the lake. As expressed, the majority of the land immediately surrounding the shoreline of the lake is classified as Moderate Intensity Use with a minimum lot size of 1.3 acres.

As of 1990, the HRBRRD had issued a total of 4,334 non-commercial access permits. Discussions with District personnel indicate that these permits cover over ninety percent of the buildable shoreline available around the lake. While some shoreline lots have yet to be built upon, the land itself is already under permit and shoreline development is rapidly approaching maximum level.

During the last two years there has been a rapid increase in new construction on lakeshore lots spurred by the threat of tighter development restrictions called for in the report issued by the Commission on the Adirondacks in the Twenty-first Century. Landowners, fearing loss of development rights in the future, have initiated building programs now while permission is still obtainable. This minor building boom has served to push the buildout level even closer to the maximum permitted level.

In general, the land use pattern surrounding Great Sacandaga Lake is quite similar to the complex pattern surrounding another large Adirondack Lake, Lake George. Seasonal and year-round private residences, commercial operations, year-round and seasonal communities all co-exist. As stated, when viewed in overall context, "The shorefront is primarily forested and dotted with private camps and docks."

c) Land uses within a one mile radius of the proposed facility fall into two categories: Seasonal and year-round residences along the shoreline and open field/forested farm land on the interior. Comparison of 1968 and 1978 aerial photographs show the abandonment of some cultivated fields which have grown up to brush cover but little or no additional development occurred during that ten year span. While all of the farm land has the potential to be developed at some time in the future, such development would be controlled by governing agencies.

Approximately ten residences are located along the shoreline of the bay in which the facility would be located. No commercial uses exist in the immediate area of the facility. The access roads to the site traverse primarily agricultural lands and, as discussed previously, the roads will easily accommodate the minor increase in traffic level associated with use of the site.

d) The small wetland located on the subject property is discussed on Page 5 of the DEIS and in Appendix J, Application to the Adirondack Park Agency for a Freshwater Wetlands Permit. Page 29 of the DEIS discussed in detail, APA staff input to protect the wetland resources.

Of the 3.5 acres of wildlife habitat to be disturbed, 1.7 acres consist of trees and Appendix A of the DEIS lists all woody vegetation identified at the site and includes a tree tally for the area to be cleared. The remaining 1.8 acres consist of open field, existing roadway and the 10' x 60' wetland area. Appendix B of the DEIS lists a comprehensive inventory of wildlife species present in the vicinity of Great Sacandaga Lake which encompasses the project site.

The Significant Habitat Inventory Unit was consulted to determine if any significant habitats had been identified on or near the project site. No significant habitats have been identified on or near the project site and regional wildlife

biologists, employing their knowledge of wildlife behavioral characteristics in the face of habitat disturbance, reached the professional opinion of no significant impact. In his report, Alan Koechlien, Senior Wildlife Biologist, is quoted as follows:

> "The several impacts of the construction of the boat launch are judged not to be significant. There will be a loss of 3.2 acres of habitat that support resident and migrant songbirds, resident mammals, amphibians and reptiles. The habitats present on the site should support 93 species of birds, 22 species of mammals, and 15 species of amphibians and reptiles," and "The time of year construction occurs will be critical in helping to reduce the mortality of individual wildlife. Mortality will be higher during the nesting and/or young rearing periods. The mobile species such as deer, raccoon, striped skunk and birds can move to adjacent lands; however, they are seldom absorbed into a community already at carrying capacity. Mortality of individuals will still occur; however, the number of wildlife lost is insignificant when compared to the available undeveloped shoreline on Great Sacandaga Lake."

The extent of shoreline to be cleared as a result of project construction is addressed on pp 23 of the DEIS/UMP.

APA Question #4

The recreation carrying capacity analysis on page 19 utilizes assumptions that understate "instantaneous boat-use." It first assumes all private permits only have one boat, instead of two as assumed on page 17-18. It also assumes that only 1/4 of the potential boats from the private, commercial and special permit sources are in use at any given time and it somehow reduces the contribution rom DEC sources from 804 boats to 150 boats. As with the analysis on page 17-18 the document needs to present a peak use example and project the number of days on which boat use will approach that upper limit. The analysis, as in the Chazy Lake analysis for the facility proposed there, should take into account the potential development of presently undeveloped lands along the shore. Finally, the analysis should assess use in that part of the lake to be served by the launch, i.e., whether the current use and carrying capacity of the southern part of the lake different from the lake as a whole.

DEC Response

Contrary to APA staff perceptions, the "instantaneous boat-use" as presented in the DEIS/UMP was a gross overstatement, rather than 'understated.' APA staff also apparently failed to differentiate between the maximum potential use, which includes the public sites contributing their full capacity as well as all other boats present on and around Great Sacandaga from all sources. The "two boats" per permit are the maximum allowed under the HRBR permit, and this was the basis of the maximum potential calculations. For calculating "instantaneous boat-use" we used more realistic figures for the number of boats that would be in use, rather than the number that could be in use (i.e., the maximum potential). Thus the differences pointed out in staff comment: 1) public site contributions were based on launch lanes available, rather than parking spaces, 2) according to HRBR, permit holders

have an average of one boat per permit. As described elsewhere, reliance on a greatly inflated parking capacity published for Northampton Beach caused a calculation of maximum potential use that was greatly in error and could have lead one to believe that the potential for overcrowding was much closer to threshold values than it is in fact. APA staff also question the use of the factor 1/4 in calculating the number of boats in use at a given time. At the time the DEIS/UMP was written, this value was adopted as the best available in the literature. Within the past year, however, we were able to obtain data for 21 New York lakes which would indicate that 1/8 is more near the actual proportion of boats in use during peak periods. The re-calculated section uses the maximum observed proportion, 15%, to be as conservative as possible in our approach.

The previously referenced 1990 Survey documented seasonal and weekday patterns in whole-lake boating intensity, and confirmed the generally accepted observation that "summer weekends and holidays" are the period of greatest use. That study concluded that public access sites, with their fixed capacity, have a relatively minor impact on peak boating densities. The greatest number of boats on the water at such times results from boats from other sources being placed in service. Statewide, nearly three-quarters of the boats in use during peak periods came from other than public sources, and these boats reflected an increase in the proportion in use from 6% on summer weekdays to 11% on summer weekends and holidays. Further, the study documented a normal distribution in boating activity

throughout the hours of the day, with the maximum number of boaters present at about 1 pm. Therefore, "peak" boating densities can be expected on summer weekends and holidays with a daily peak at 1 pm. The insignificant increase in boating activity on Great Sacandaga expected from the Broadalbin site, a projected 6% increase in the number of boats in use, will have no impact on these peak boating densities.

"Carrying capacities" are based on boating densities calculated for the lake as a whole, and the resulting densities compared with studies in the literature that have related densities to social tolerance. As described previously, boating densities expected to occur even with the proposed Broadalbin development are considerably less than any threshold for crowding thus far established.

HRBR indicates that virtually all development permits have been filled, consequently little additional development is expected.

APA Question #5

The document must in our view discuss the following impacts:

a. noise impacts from cars and boats on adjacent land;
b. impacts to adjacent land from increased traffic from cars and boats;
c. impacts to the wetlands on the site;
d. wave action in adjacent lands;
e. impacts along the routes to the site resulting from increased traffic to the site; and
f. impact to existing recreational use of public land.

DEC Response

5a) and b) Currently there is a substantial amount of traffic entering and exiting the project area for access to the Broadalbin Town Beach and the proposed facility will cause only minor increases in overall traffic levels. Incorporated into the site design is a new access road with a properly designed entrance/exit to Lakeview Drive. This safer access will serve both the beach and launch facilities and will help to keep all traffic flowing smoothly. In addition, as described in the DEIS, substantial buffer zones of vegetation will surround the parking and launch areas to absorb whatever noise may be generated. A speed limit of 15 miles per hour will be imposed on all roadways within the facility. A five mile-per-hour speed limit will be in effect on the channel leading from the launch ramp out past the island to the main lake area. Boats will be well away from shore before throttles are opened to obtain cruising speeds.

5c) Impacts to the existing wetland on the site have already been identified in the DEIS and application for a Freshwater Wetlands Permit.

5d) Any increase in wave action on adjacent lands would be minimal due to the imposed five mile-per-hour boat speed limit extending out well off-shore. The entrance/exit channel will be located to the north end of the bay, away from the developed shoreline area.

Buoys marking the channel will be placed in a manner to direct boat traffic directly away from the shoreline creating minimal wave action from boat wakes.

5e) The issue of impacts from a minor increase in traffic along roads accessing the site has already been addressed in the previous section of this addendum as Item 5.

5f) While APA staff does not identify what public lands are of concern, it is assumed that the reference is with regard to the islands of the southern basin. These islands are classified as Wild Forest under the State Land Master Plan and are popular picnicking and swimming areas for boaters. One of the largest islands, Sand Island, lies approximately two miles north of the proposed facility, and levels of use it now receives was made an issue during the open public hearing on the DEIS/UMP.

Impacts to the island resources of Great Sacandaga Lake from additional uses generated by the proposed facility must be looked at in light of the following facts:

1) The addition of seventy "new" boats to the overall carrying capacity of the lake has already been described as minimal.

2) Many of the users of the Broadalbin site are anticipated to be current users who presently must use facilities located at the

northern end of the lake. These boaters probably already make extensive use of existing public islands in Great Sacandaga Lake and will continue such use. Density is currently the major factor controlling levels of use of the islands in Great Sacandaga Lake and especially Sand Island, as the photographs provided by Mr. Gary Veeder at the Public Hearing so aptly illustrate (Appendix III). When the islands fill to capacity, no additional use can be generated. Use of the islands has been, and will continue to be, controlled by density and that density of use will not be changed by development of the Broadalbin site.

APA Question #6

The document must in our view provide an analysis of the suitability of the dredge material to be used as fill from the project (i.e., its suitability as subbase for roads and parking lots).

DEC Response

The question of suitability of the dredged material for construction purposes was forwarded to the Department's Engineering Unit for their consideration. Attached as Appendix IV is an inter-office memo from Frank Reidy of the Engineering Unit which indicates that the dredged material will be suitable for use when used as planned. The question of contaminants locked up in the dredged material is fully addressed in item 4 of the Department's responses to concerns voiced by the general public.

APA Question #7

Page 25 says the town has agreed to maintain this site. If this is correct the UMP/EIS should contain a copy of the executed agreement and/or resolution of the Town Board.

DEC Response

The DEIS contains, as Appendix L, the proposed Maintenance Agreement between the Town of Broadalbin and the Department. Appendix II of this addendum contains a copy of this agreement signed by the Town; formal execution by the Department will occur at such time as the facility is constructed.

APA Question #8

The discussion of alternatives indicates that the Department's investigative efforts did not identify any other suitable sites. We feel the document should describe this investigative effort, indicate what sites were considered, and why they were eliminated. Further, it is stated that the alternative of reducing the size of the facility was rejected, in part because the facility was already downsized from the current "standard" due to site limitations. Agency staff strongly disagrees with the "standard," which is so far as we know only proposed in the draft "Administrative Policies and Construction Standards for Waterway Access Facilities," which has not been finalized. Further, it is certainly likely that site impacts may be eliminated or further reduced if the proposal is downsized further. This question must in our view be discussed to support the conclusions reached. Finally, the discussion of the "no action" alternative makes assumptions about public safety, need, and carrying capacity that are not supported by information presented in the document. The document must contain the facts to support those assumptions before they can be used to support the rejection of the "no action" alternative.

DEC Response

This item of comment by APA has three principal thrusts

which DEC interprets as follows:

1.) A need to more fully describe efforts made to identify alternative sites to the Broadalbin site.

2.) A need to rationalize and defend the applicability and employment of access site standards posed in DEC's "Draft Administrative Policies and Construction Standards for Waterway Access Facilities," as pertains to the Broadalbin site.

3.) A need to further defend the rejection of the "No Action" alternative.

In response to these areas of concern DEC offers the following additional information, discussion, rationalization and defense of its statements presented in the DEIS/UMP on these matters;

1.) The Department of Environmental Conservation and its predecessor agencies, have been involved in land acquisition programs for nearly 100 years. The acquisition process itself is a fluid one, fraught with uncertainties and pitfalls which continue up to the moment that a finalized transaction between the Agency and seller is consummated. DEC may investigate

hundreds of potential properties for acquisition for every one that is actually purchased. Investigation by DEC staff of potential acquisition opportunities that lead to dead ends are often not documented in any way. For example, a staff member may read in the real estate listings in the newspaper, of a parcel of potential interest -- drive to the site to inspect the parcel -- and reach an on-the-spot conclusion that the parcel is unsuitable for the purpose intended. Such investigations are rarely, if ever, "written up". There are hundreds of such investigations done every year by DEC staff that result in no written record.

Such has been the case with respect to DEC's efforts to identify a suitable parcel of land for boat access facility development on the main southern basin of Great Sacandaga Lake. The Department has had a documentable interest in securing such a parcel since the 1950's. There is little doubt that Department staff may have conducted many undocumented inspections of properties which proved unsuitable upon visitation in an effort to identify a suitable parcel commencing circa 1960. Prior to being made aware of the opportunity at Broadalbin, the Department conducted one documented inspection of a parcel which was ultimately rejected. An account of that inspection follows.

In 1962 a parcel of land in North Broadalbin along County Route 110 and under the control of the HRBRRD was inspected for suitability as a boat launch by DEC (then Conservation Department) staff. The property was rejected ultimately because the permittee at the time, (Broadalbin School District) desired not to relinquish its permit. Coincidentally during the course of inspection of this specific site, the following additional notation was made:

> "The whole southern portion of the reservoir was looked over in the company of a Hudson Regulatory Board employee who knew the reservoir well. There is not a great deal of unoccupied land to choose from. This seems to be the only possible site. In relation to our other launching sites, this area is located ideally." (Gordon N. Noreau, Dec. 4, 1962).

The Department was first made aware of the Broadalbin parcel in 1970. From that time on, having finally found a suitable parcel, the Department's active efforts at turning up another parcel or an alternative parcel essentially ceased. Had such a parcel been brought to the attention of the Department

in the 21 years that have passed since the opportunity at Broadalbin presented itself, the Department would have investigated same, at the very least. However, such has not been the case despite the fact that the Department's interest and intentions at the Broadalbin location have been common knowledge amongst the local populace for more than 20 years.

Discussion in the DEIS under XV. Alternatives (pp 32-35) remains valid, in the Department's view, with the foregoing discussion provided as additional background.

2.) The Adirondack Park Agency has steadfastly maintained its opposition to the "Draft Administrative Policies and Construction Standards for Waterway Access Facilities" developed by the Department in 1986 and subsequently made a part of the Department's "Draft Strategic Plan for Modernization of Department of Environmental Conservation Waterway Access Facilities in New York State" (hereafter the Modernization Plan), prepared in September 1987. The Modernization Plan was developed following inspection of all the Department's boat access facilities in 1986 and 1987 during which various deficiencies in more than half of the sites inspected were noted. These inspections were statewide

in scope (ie not limited to the Adirondack Park) and consequently the "standards" for modernizing these facilities were written from the general statewide perspective and did not necessarily take into account the constraints of the State Land Master Plan. It is inappropriate to focus on issues present over intended development at the Broadalbin site in mounting a general challenge to the construction standards contained in the Modernization Plan, vis-a-vis the constraints in the State Land Master Plan. The two are not related. In the case of the Broadalbin project, or any other individual project, the Draft Construction Standards serve only as a guide, not a rule, with respect to scope of facilities to be developed. In the specific case of the Broadalbin project, we are dealing with a single site on a 26,656 acre lake, and the scope of facilities planned is in full compliance with the State Land Master Plan and the Draft Construction Standards.

A segment of the "Construction Standards" that were developed attempted to categorize New York's lakes by size classes and then to assign a reasonable and appropriate sized facility by these lake-size classes. This was done on the presumption that as lakes increase in size, larger facilities are needed to efficiently

serve boaters' access needs. This is a generally practiced approach nationwide -- the scaling of access facility size to waterbody size. (SOBA, 1989).

Great Sacandaga Lake is 26,656 acres in surface area at full pool elevation. It is one of only seven lakes in the entire State of 25,000 acres and larger. Such waters were categorized as "Class 1A" in the Draft Construction Guidelines. Such waters were recommended for boating facilities of "...typically 100 or more car and trailer units per site." This parking capacity is consistent with (or more conservative than) many other States' guidelines for sites on waters of 25,000 acres or more. (SOBA, 1989).

The Department operates three other boat access facilities on Great Sacandaga Lake. Their capacities are 44, 60 and 100 c/t units. The original proposal for the Broadalbin site was 100 c/t. The site was subsequently redesigned to avoid impacting wetlands on the property, resulting in a reduced capacity of 70 c/t. Further reductions in site capacity are unwarranted and unnecessary, in the Department's view, because:

1) Further reductions in capacity do not make optimal

use of the existing property.

2) On a lake the size of Great Sacandaga there are operational and maintenance cost efficiencies associated with single-location larger facilities as opposed to multi-location smaller facilities.

3) Original calculations of public boating access capacity were grossly in error and in fact current public capacity is far less than originally thought. (See response comment #3 and 4 for more detail). There is now a compelling justification for a larger rather than smaller facility at Broadalbin, as a result.

3.) The basis for rejection of the "no action" alternative, as presented at pp 32-33 of the DEIS/UMP is, in the Department's view, sound as written. With regard to safety, for boaters to reach the Broadalbin area from one of the existing boat launches on Great Sacandaga requires a boat trip of four to twelve miles. If a storm comes up, a trip of the same length must be made, under storm conditions to return to the boat launch of origin. A site on the main southern basin would dramatically reduce over-water running time and distance under such conditions. Discussion of need and carrying capacity has been treated previously in response to APA questions 2 and 4.

APPENDIX I.

"Effects of Exhaust from Two-Cycle Outboard Engines"

PB-233 567

EFFECTS OF EXHAUST FROM TWO-CYCLE OUTBOARD ENGINES

RENSSELAER POLYTECHNIC INSTITUTE

PREPARED FOR
NATIONAL ENVIRONMENTAL RESEARCH CENTER

JULY 1974

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

A combined laboratory and field study has been made to determine the extent of pollution arising from the operation of two-cycle outboard engines in an oligotrophi mesotrophic lake. The fate of the exhaust products discharged to a lake environment has been studied. Three bays having different boat usage were compared.

Attempts have been made to examine the quantities of exhaust products found in the water column, the water surface, and in the bottom sediments. The role of such mechanisms as microbial decomposition, evaporation, and adsorption has been studied. Results of these studies have shown very low levels of hydrocarbons, other than from natural sources, in sediments and the water column. Somewhat greater quantities were found in surface films. The microbiological studies and evaporative studies indicate that these mechanisms play a significant role in the dispersion of engine exhaust products.

The relatively low levels of exhaust products found appear to be related to both purification mechanisms and to low levels of boating stress. Such indicators as surface film concentrations and threshold odor numbers follow boating usage patterns rather closely in the bays studied.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
*Exhaust emissions, *Hydrocarbons, Limnology, *Outboard engines, Evaporation, Adsorption	Surface films, Lake George	13B

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)
RELEASE TO PUBLIC	UNCLASSIFIED
	20. SECURITY CLASS (This page) UNCLASSIFIED

SECTION I - SUMMARY AND CONCLUSIONS

1. The infrared spectrometry method used for hydrocarbon measurement preferentially determines non-polar material, but cannot distinguish between outboard engine emissions and naturally occurring, non-polar extractables, all of which are reported as "hydrocarbons".

2. "Hydrocarbon" levels for Florisil treated surface samples ranged from 1.0-5.0 mg/m^2. Concentrations followed the levels of boat usage.

3. The "hydrocarbon" (CCl_4 extractables) levels found in water column samples in the test bays were uniformly low during the 1972 boating season, indicating the presence of very little soluble or dispersed products from exhaust. Levels were generally less than 0.1 ppm.

4. There is a significant difference in numbers of water column microorganisms between the bays throughout the year.

5. Growth of heterotrophic lake cultures and a pseudomonad isolated from Dunham Bay was usually less on petroleum agar than on nutrient agar.

6. Warburg respirometer studies show that the presence of oil does not significantly change the oxygen uptake rate of lake sediment.

7. Maximum endogenous oxygen uptake rate of the sediment from Dunham Bay Station 4 occurs during the spring growing season. High oxygen uptake capacity of the sediment from Dunham Bay Station 4 over the July 4th holiday is seen as a result of boating activity.

8. The metabolic activity (as heterotrophic potential) of the heterotrophic microflora from Dunham Bay Station 2, when normalized to unit microbial cell activity, appears significantly greater than that of any other station. In general, all Dunham Bay stations show more activity than Echo Bay stations.

9. Statistical analysis of the data indicates that 43% of the variation of the log value for column organisms can be explained by the other variables in the statistical model.

10. The study has provided information on the variation of major algae species present in the test bays. The data do not afford any significant correlation between kinds and number of algae present, and boat traffic.

11. $C^{14}O_2$ fixation by indigenous algae is enhanced in the presence of 1-3 ppm crankcase drainage or 1-5 ppm oil gas (1:50) mixture but is inhibited at higher concentrations.

12. At a concentration of 5 ppm of carbon from water soluble extract from crankcase drainage, the $C^{14}O_2$ rate of Mycrocystis aeruginosa is inhibited, whereas Anabaena flos-aquae and Selanastrum capricornutum are not materially affected.

13. The level of water soluble extract from crankcase drainage that produced a stimulation of specific growth rate was 1 ppm for Microcystis aeruginosa, 5 ppm for Anabaena flos-aquae, and 35 ppm for Selanastrum capricornutum.

14. The length of the log period in the algal growth curves reflected the levels of water soluble extract from crankcase drainage. Anabaena flos-aquae showed the greatest effect. Maximum standing crop, however, was not materially affected.

15. The benthic fauna of Dunham Bay did not appear to be essentially different from Smith or Echo Bays. Species variation, density, and distribution among the bays and specific stations, however, apparently can be attributed to natural factors (e.g. vegetation, bottom type) rather than exogenous materials, low dissolved oxygen or toxicity. The diversity index ($\bar{d}$) values and variation in species for Dunham Bay were somewhat greater than for the other bays studied. Although of higher density, the benthic fauna were characteristic of that described for the littoral and sublittoral zones of oligotrophic lakes.

16. The bioassays indicate that materials discharged from two-cycle marine engines are highly toxic and have a 24 hour TL_{50} of approximately 1.0 mg/l for certain benthic macroinvertebrates. The TL_{50} for more extended time periods is not significantly larger.

17. The results of threshold odor number tests seemed to relate closely with levels of boat usage. Results corresponded with chemical tests, but reacted more strongly and rapidly.

18. Adsorption tests indicated that the sediments from both Echo Bay and Dunham Bay are capable of adsorbing exhaust products and carrying them to the bottom. Sediments from Echo Bay had a greater tendency to adsorb exhaust products than did sediments from Dunham Bay. The presence of hydrocarbons in bottom sediments from sources other than natural sources was very low.

19. A considerable fraction of exhaust products can be expected to evaporate from the water surface to the air at temperatures normally encountered during periods of the year when boating is at a maximum level. For the exhaust products studied, it was found that approximately 65% was removed from the surface by this mechanism.

20. Statistical analysis of portions of the data has been made to elucidate variations in certain components of the lake system, and to identify factors having an influence on such components. Such identification does not necessarily imply any absolute cause and effect relationship. This work has led to the following conclusions:

a) Based on limited results, the level of phytoplankton depends upon temperature and dissolved oxygen, and decreases as these factors increase.

b) Analysis indicates that there may be correlations between phytoplankton and surface microorganism levels, surface temperature and surface dissolved oxygen. With the given data no conclusions could be reached regarding the association between hydrocarbon levels and phytoplankton levels.

c) Analysis of data related to water column microorganisms, hydrocarbon levels and column temperature indicates that there may be associations between the variables.

d) Examination of the relationship between surface microorganism levels, hydrocarbon levels, surface dissolved oxygen and surface temperature indicates that after the response variable (surface microorganism) has been adjusted for temperature, the contributions due to hydrocarbon and dissolved oxygen are negligible.

21. The studies have indicated that a normal boating concentration of about 20 boats per square mile may be expected on Lake George. The concentration may reach a value of 300 boats per square mile during holiday weekends. The resulting concentrations of exhaust products which result from an equilibrium of inputs and outputs from the lake system as indicated within the scope of this study appear to be low enough to cause no discernable effects of a permanent nature.

APPENDIX II.

Copy of Maintenance Agreement Signed by Town of Broadalbin

MAINTENANCE AGREEMENT

PURSUANT TO ECL S11-2101

For MAINTENANCE OF THE BROADALBIN BOAT LAUNCH SITE

This Agreement made this _____ day of _____, 19___, by and between the TOWN OF BROADALBIN, a municipal corporation with its principal office at UNION MILLS ROAD, RD 1, BROADALBIN, NEW YORK, hereinafter the ~~COUNTY~~/TOWN/~~VILLAGE~~, and the People of the State of New York acting through the New York State Department of Environmental Conservation, hereinafter the DEPARTMENT.

WHEREAS the DEPARTMENT, in fulfillment of its mandate to provide public access to the natural resources of the State, has acquired the right over certain property as described in Schedule A attached hereto and made a part hereof as if herein set forth at length, through purchase, lease or other instrument, to develop a public fishing access facility on GREAT SACANDAGA LAKE in the Town/~~Village~~ of BROADALBIN, FULTON County, New York, and

WHEREAS the DEPARTMENT has undertaken, or will undertake subject to the availability of funds, construction of a public fishing access facility on said property, and

WHEREAS the existence of said facility will be an asset and a service to the residents of the ~~COUNTY~~/TOWN/~~VILLAGE~~ and the surrounding vicinity.

NOW, THEREFORE, BE IT RESOLVED that the ~~COUNTY~~/TOWN/~~VILLAGE~~ will maintain said facility in accordance with Schedule B attached hereto and made a part hereof as if herein set forth at length, on the terms and conditions following:

(1) The term of the agreement runs with the duration of the instrument through which the DEPARTMENT acquired the property on which the facility is to be constructed; if in fee title - perpetual, if by lease or other instrument - for the stated term of that lease or instrument, and automatically renewed upon renewal(s) or extension(s) of that lease or instrument to the new term(s) thereof, and automatically terminated upon expiration or termination of that lease or instrument.

(2) Should the ~~COUNTY~~/TOWN/~~VILLAGE~~ default in meeting the maintenance requirements of this agreement as set forth in Schedule B, the DEPARTMENT may take all necessary action, at the expense of the ~~COUNTY~~/TOWN/~~VILLAGE~~, to reinstate the agreed upon maintenance requirements.

(3) This agreement merges all prior negotiations between the parties regarding the maintenance of said facility. There are no agreements, promises, covenants or representations except those herein set forth. This agreement may not be modified except in writing mutually subscribed by the parties thereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement the day and year first above written.

TOWN OF BROADALBIN
County/Town/Village

Brenda Leslie
Brenda Leslie, Supervisor

THE PEOPLE OF THE STATE OF NEW YORK
acting by and through the Commissioner,
Department of Environmental Conservation

by _____
Commissioner
authorized designee

STATE OF NEW YORK)

COUNTY OF FULTON) ss.:

On this 10 day of MAY, 1990, before me the subscriber, personally came BRENDA B. LESLIE, to me known and known to me and who being by me duly sworn did depose and say that she resides at BROADALBIN N.Y. 12025 and is the SUPERVISOR of the TOWN OF BROADALBIN the municipal corporation that executed the foregoing instrument, that she signed ~~his~~ HER name thereto pursuant to the order of the TOWN BOARD of such municipal corporation.

Thomas D Bottisti
Notary

THOMAS D. BOTTISTI
Notary Public, State of New York
Qualified in Montgomery County
Commission Expires Dec. 31, 19..1

STATE OF NEW YORK)

COUNTY OF _____) ss.:

On this _____ day of _____, 19___, before me personally came _____, who, being by me duly sworn, did depose and say that he resides at _____ _____, State of New York, that he is acting for the Commissioner of Environmental Conservation of the State of New York, described in and which executed the foregoing instrument, that he signed his name by authority of law duly granted to him.

_____
Notary

SCHEDULE A

(1) If owned in fee, copy of final purchase record and deed.

(2) If lease or other instrument, copy of lease or instrument and deed.

SCHEDULE B

RECURRING ANNUAL MAINTENANCE REQUIREMENTS

(1) Immediately prior to seasonal opening of facility:

- Installation of identification and instructional signs as provided by the DEPARTMENT.
- Installation of temporary docks, if provided.
- Vehicular surface touch-up.
- Boundary repairs to posts, fences, etc.
- Reactivation of water, electricity, sewer services, if provided.
- Reactivation of permanent sanitary facilities or providing of seasonal sanitary facilities.

(2) During operational season, as necessary:

- Mowing grass areas.
- Trash pickup and removal to an approved disposal facility.
- Toilet facility servicing and removal of waste to an approved disposal facility, if provided.
- Dock adjustments as necessary, if provided.
- Minor maintenance of damage, vandalism.
- Periodic inspections by Law Enforcement personnel and enforcement of all laws and rules & regulations of the DEPARTMENT pertaining to the use of the facility.

(3) At closure of site operational season:

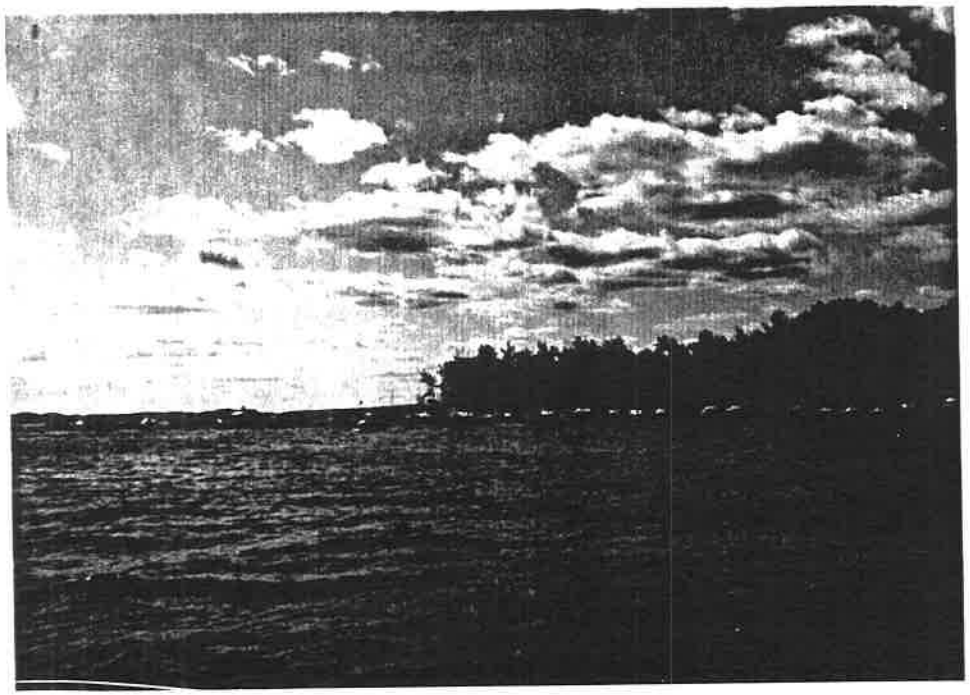
- Sign removal and storage.
- Temporary dock removal and storage, if provided.
- Deactivation of water, electric and sewer services, if provided.
- Deactivation and winterization or removal of sanitary facilities, if provided.

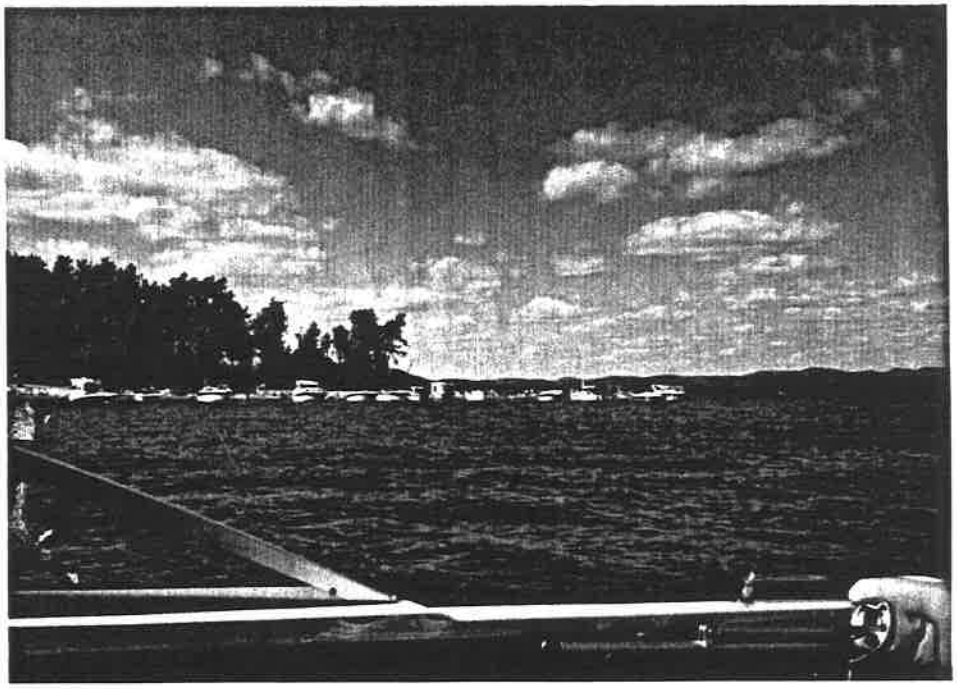
(4) At sites with winter use:

- Snow plowing.
- Continued trash pickup and removal.
- Continued periodic inspections by Law Enforcement.

APPENDIX III.

Copies of Photos Showing Boats Surrounding Sand Island





APPENDIX IV.

Memorandum Regarding Suitability of Dredged Material as Fill

15 (12-75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Mike Gann
FROM: Frank Riedy
SUBJECT: Broadalbin BLS

DATE: June 11, 1990

The existing material at the toe of the proposed ramp could be sampled for a gradation test. Particle gradation is determined by a sieve or gradation analysis of samples. A sieve analysis involves running the sample through a series of sieves, each of which has openings of a specific size. Course particles are trapped in the upper sieves; medium-sized particles pass through to the mid-level sieves; fines pass through to the lowest sieve.

The mix gradation considers the percentage (by weight) of the total sample that passes through each sieve. It is determined by weighing the contents of each sieve following the sieve analysis, then subtracting the weight of the contents of each sieve from the weight of the entire sample

Our project specifications detail the gravel mix gradation required for each application. Generally, existing fill material could be expected to substitute for embankment or non-structural fill, although it is the exception when this material meets our select gravel specification.

The use of geosynthetics to reinforce the subbase material (embankment) can be a cost-saving measure compared to traditional subbase design practice. The saving is realized by allowing the designer to use less imported subbase materials under the structure or by utilizing existing material wherever possible.

It appears that we will be able to use the dredged material as subbase supporting the roadway and parking areas. We will be using geosynthetics under the entire area. This design decision obviates the need for a gradation test at this time.

cc: M. Turley
J. Major