

6B.0 Boat Management - Boating Activity

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6B**6B.1 INTRODUCTION**

The Town of Lake Lure has evaluated options for keeping boating density at a safe level, so that overall enjoyment of the lake will not be diminished by the ever increasing pressure of recreational pursuits on the lake relative to the region's current and projected growth. The intent of this process was to explore the range of possible management options, reduce that range to those approaches that are applicable and feasible in Lake Lure, and to seek a combination of controls that can be applied as equitably as possible to maximize lake use without compromising user safety. A very inclusive and public process has been conducted, with decisions made based on the best possible combination of science, economics, and social acceptability. All of this was discussed in the Lake Lure Boating Management Plan, which is part of the appendix of this document.

Lake Lure was formed in 1925 when the Rocky Broad River was dammed. The Town of Lake Lure was incorporated in 1927 and the associated community has been growing ever since, most notably in very recent years. Lake Lure covers 720 acres with several major arms and numerous smaller coves. Topography is steep, both around the lake and within the lake itself; water depth is substantial within 50 feet of shore except near inlets and in coves. The dam controls outflow and generates electricity. Full pool elevation is maintained in Lake Lure as much as possible. The vast majority of residences around the lake are tied into a sanitary sewer for wastewater management. The watershed of Lake Lure covers approximately 96 square miles of fairly hilly terrain. Erosion and sediment loading are issues, but many areas are outside of the control of the Town. Water quality in the Rocky Broad River, other tributaries, and in Lake Lure is not ideal, but supports the intended uses of the lake. Lake Lure undergoes thermal stratification during the growing season, and waters deeper than about 20 ft are devoid of oxygen during much of the summer. Lake Lure hosts minimal aquatic plant growths, owing to steep underwater sediment slopes and limited light penetration. Fish and other wildlife abound in and around Lake Lure.

Recreational facilities on the lake consist of a Town Beach complex, with swimming area, park and boat launch, as well as an accompanying marina. Most land around the lake is privately held. There are a number of additional beaches and several boat ramps, as well as private community marinas. The majority of boating activity comes from shorefront residences. Many lakefront homes have multiple boats and there are over 300 boat slips associated with private developments that abut the lake. Off-lake residents and even residents of other towns can purchase boat permits for Lake Lure.



Lake Lure from the air.



Lake Lure topography.

Table 6B.1: Portion of respondents engaging in boating activities on Lake Lure

Frequency of Activities Enjoyed on Lake Lure				
Activity	% Much	% Little	% Never	% No answer
Motorized Towing	22%	26%	27%	26%
Motorized Pleasure	55%	19%	9%	18%
Motorized Fishing	14%	28%	34%	25%
Non-motorized Paddling	14%	24%	36%	26%
Non-motorized Sailing	2%	5%	60%	33%
Non-motorized Fishing	5%	19%	47%	29%

6B.2 Inventory & Existing Conditions

Control of Boating Use on the Lake

The Town enacted a number of rules to moderate use of the lake and set boundaries on how some uses impact others. These rules have served the users fairly well, but have not decreased the desire to boat on the lake. A boat permit system has been in place for over 40 years, but has evolved to address issues of fairness and limited resource availability over time. Yet overall boat density on hot summer days is perceived as a rising threat and is not implicitly controlled by the permit system. Town liability for boating accidents is a very real concern. To approach management scientifically, we need to understand use patterns and carrying capacity at Lake Lure.

There are multiple ways to estimate carrying capacity, or the number of boats that can be on the lake without unacceptable impacts. The key factors in estimating carrying capacity for boats from a safety perspective include useable area for each type of boat, the use pattern for boats of different types, the feasible hours of operation for each boat type, and the available space. For commercial boats, where activities and schedules are more predictable, a reasonably complete estimate of carrying capacity can be developed. Members of the Lake Lure Marine Commission have done this using a proprietary model developed by those members. As a result, commercial permits have accounted for 5% of the boats on Lake Lure over the past four years (2003-2006, Table 2).

Table 6B.2: Recent permit history for motorboats >10 hp on Lake Lure

Year	2003		2004		2005		2006		4-Yr Avg	
	# Permits	%	# Permits	%	# Permits	%	# Permits	%	# Permits	%
Annual Motorized Resident	1,148	89	1,052	91	921	85	937	86	1015	88
Annual Motorized Non-Resident	81	6	45	4	53	5	53	5	58	5
Commercial	52	4	56	5	70	6	64	6	61	5
Non-Resident Commercial	9	1	0	0	0	0	0	0	2	0
Complimentary	0	0	0	0	32	3	26	2	15	1
Municipal		0		0	4	0	13	1	4	0
Resident Rate for Non-Resident		0		0	1	0	1	0	1	0
Total	1,290	100	1,153	100	1,081	100	1,094	100	1155	100

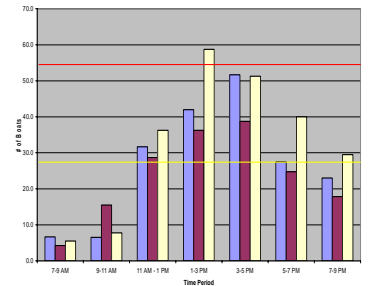
Non-commercial uses by residents of the Town of Lake Lure have not been limited beyond the constraints of permit pricing. An exercise conducted as part of this effort indicates that motorboats with engines >10 hp should be subject to some control to maximize safety on the lake. This has caused some controversy over the amount of resource area and time potentially allocated to commercial and non-commercial uses during public discussions. Interested parties should bear in mind that commercial uses include boats involved in tours, shoreline facility repairs, guided fishing, and ski training, all of which provide important functions to the community, add to the local economy, and offer opportunity to people who might otherwise not be able to enjoy the lake or might increase recreational pressure through the use of more private boats.

While variability can be high and the current permit system does not adequately control peak density, problems have been infrequent when fewer than 1000 permits are issued for motorboats >10 hp. Allowing more permits while maintaining a safe lake is possible with secondary controls, a variety of which have been evaluated in developing the management plan, but all of which were generally unacceptable to the lake user population through a questionnaire and meetings.

Boating Use Pattern

Quantitative data were collected for boat use patterns, both through a questionnaire and by direct observation during the summer of 2006. Carrying capacity estimates were generated and are sometimes exceeded on summer weekends and holidays with nice weather between the hours of 11 AM and 5 PM, mainly as a function of operation of boats >10 hp for high speed activities. There is some evidence of self regulation of larger boats, but peak densities do achieve possible danger levels, especially for untrained or inexperienced powerboat operators. Risks are low during most weekdays and any day with rainy weather.

Pattern of Use of Motor Boats > 10 hp on summer weekend days



Time Period during the day versus Number of Boats.

Table 3. General Features of Questionnaire Respondents			
Feature	Total	Average	
Total number of Surveys returned	844		
Years at Lake Lure		12.2	
Motorized Boat Permits > 10 hp	585	0.8	
Motorized Boat Permits < 10 hp	60	0.1	
Non-motorized Boat Permits	60	0.4	
	% Yes	% No	% No Answer
Year Round Resident	33	65	2
Registered Voter	30	66	4
Own a House	77	20	3
Live on Shorefront	36	61	2
Live in Defined Community	37	60	3
Boat Use a Factor in Home Purchase	67	26	7
Home Rented to Others	11	80	9
Boat Included in Rental	17	77	5
Trained Boat Operator	44	43	14
	Boats >10 hp	Boats < 10 hp	Non-motorized
Total Weeks of Use (All Boats of Type)	3878	453	1510
Weeks of Boating per Summer per Boat	6.6	1.2	3.3
Days of Boating per Week per Boat	2.3	0.5	1.2
Hours of Boating per Day per Boat	2.5	0.5	1.1

6B.3 Summary of Issues and Opportunities*

*The complete list of findings and recommendations are within the 2006 Boating Management Plan in the appendix of this document.

Management Options for Boating Use

There was a very wide range of potential management options that could be applied at Lake Lure. The key was to select options that represent the least intrusive and most equitable means to ensure safety to the greatest feasible degree. The objective was to maximize safety and enjoyment of the lake. Those goals may have seemed antagonistic at times, as some of the enjoyment comes from inherently risky activities, but the overall enjoyment of the lake by the greatest number of people did depend on facilitating a safe experience. Management options were divided into four major categories (Access Control, Time Zoning, Space Zoning, and Training and Behavioral Modification) plus an enforcement category that applied to all of the others. The associated options were reviewed in the 2006 report in some detail.

Recommended adjustments

A considerable amount of public discussion was conducted and input was considered in developing a proposed management plan. A number of adjustments were feasible and appeared appropriate based on the work done in 2006. The following relatively simple, albeit possibly controversial,

There was a very wide range of potential management options that could be applied at Lake Lure.

adjustments were recommended for implementation in preparation for the 2007 boating season and in the future:

- Maintain all existing rules with regard to permitting and safety controls for boats on Lake Lure, most notably the no wake zone restrictions (areas and time).
- Maintain the commercial boat permitting system as it was administered, with minor adjustments as warranted. Allocating some portion of the commercial acre-hour allotment to a controlled rental operation and limiting rental property permits for boats >10 hp to weekday use only are options that may be useful in managing future demand and safety.
- Limit the number of permits issued for non-commercial motorboats >10 hp to be used during the peak season to 1000, including weekly peak-season permits (15 weekly permits = 1 annual permit). Grant permits on a priority system based on permit holders from 2006, followed by date of application by new permit holders, with an application deadline for past permit holders of May 15th, and only one permit for a boat >10 hp granted to all new applicants.
- When all permits for boats >10 hp have been assigned, provide up to 250 “weekday only” permits for this class of boats.
- Do not place a permit limit on boats <10 hp or fishing boats of any motor size during peak season for any boats during the non-peak season until such time as observation data indicate a need.
- Promote education of boaters through the permit system and require all permit holders to sign an acknowledgement form indicating that they understand the Lake Lure rules and will be responsible for the operation of their permitted boat(s).
- Require operators of motorboats >10 hp to complete a safety course, and require operators under the age of 16 to be supervised by an onboard person competent (by training) in boating safety.
- Provide a police boat patrol on the lake to enforce the rules, focusing on education and cooperation by boaters first, followed by penalties for violations as warranted.
- At a minimum, the patrol boat should be on the lake between 11 AM and 7 PM on all weekend days and holidays with suitable weather between Memorial Day weekend and Labor Day weekend, and on anticipated busy weekdays during summer. Wider coverage would be desirable, if affordable, but these represent the critical enforcement days and hours based on boat density.
- Hire a boating education and enforcement officer dedicated to Lake Lure. Ideally, a full-time lake operations director would be hired to oversee all areas of lake management including permit applications, education, training sessions, and coordination of on-lake activities. This person might

be the primary on-lake enforcement officer, or along with his/her other duties, may just coordinate police assignments and fill in as needed.

- A call number should be established for reporting boating safety problems or related issues to a dispatcher who can reach the patrol boat for a rapid response.
- Enforce a safe operating distance of 75 ft among boats (and among boats and people) when either boat is moving faster than no wake speed. This provides a density dependent mechanism to minimize safety risks as boat density increases. This safety buffer may eliminate high speed activities during some peak use periods in parts of the lake.

The primary benefits of this plan include:

- Promotion of physical and temporal separation of some uses to maximize safety.
- Encouragement of the distribution of lake use in its current pattern, known to present limited and predictable safety risks.
- Protection of the privilege of those now holding permits.
- Allows only educated and trained boat operators.
- Provides an appropriate level and focus of enforcement.
- Provides a density-dependent mechanism for controlling higher risk activities.

The negative aspects of this plan include:

- As the Town grows, not everyone can hold a permit for a boat >10 hp on Lake Lure.
- Requires capable boaters to take official training.
- Requires a different approach and more effort by the police force.
- May curtail high speed activities that many enjoy during busy periods.

More major adjustments may not be necessary, but would warrant considerably more public input if implementation was pursued. No secondary access limitations (e.g., boat flag system) were recommended, although it could be revisited in the future if safety problems related to crowding are perceived to persist.

It should be remembered that getting more big boats on the lake represents a diminishment of utility and quality for other uses as well as a safety risk. However, given that the focus of recreational boat use on Lake Lure involves boats >10 hp, recommendations for permit system changes emphasized greater use of off-peak resource hours by larger boats. This may warrant further discussion going forward.

In order to gain appropriate information, the Town should conduct periodic assessments of boat use patterns, much as performed in this analysis. Both questionnaire surveys and observational data are needed.

Additional options and alternatives were discussed, but the plan was believed to provide the necessary tools to protect lake users into the indefinite future. The suggested plan elements were believed to be sufficient to manage boat density and safety indefinitely, if implemented properly and monitored for any needed adjustments periodically.

6B.4 Goals, Objectives and Policies*

*The complete list of findings and recommendations are within the 2006 Boating Management Plan in the appendix of this document.

Goal 1: Keep boating density at a safe level, to prevent diminished enjoyment due to increased recreational pressure.

Objective LMBA 1: Prevent crowding beyond a safe density.

Policy LMBA 1: Use permitting system to control density as much as possible.

1 Limit number of permits for boats >10 hp. Based on experience and data for Lake Lure, 1000 peak season permits can be issued. It is unlikely that more than 1100 permits can be issued. 15 weekly permits count as 1 peak season permit. Permits issued in 2005 and 2006 were <1000, so no resident was denied a non-commercial permit for capacity reasons. Start with 1000 permits, perform boat surveys when limit is reached, determine if average boat density on nice weather, summer weekends and holidays has noticeably increased. If not, consider adding 25-50 permits. Repeat study until 10 ac/boat threshold is crossed at unacceptable level (measured in one 2-hr period over 3 days of observation in 2006; suggest threshold at one 2-hr period on all 3 days of observation going forward).

2 Boating operator training/licensing may limit the number of boats on the lake by virtue of need for trained operator at all times. Although there is no limit on how many operators become trained, this may limit access by transient potential boaters, allowing more permits to be offered with no increase in actual boat density, on average.

Prevent Crowding Beyond a Safe Density



3. Utilize a transferable permit that could be issued to all holders of multiple permits for boats >10 hp, ensuring that only one boat could be used on the lake during peak season weekends and holidays.

Goal 2: Enhance safety with operator training and age requirements.

Objective LMBA 2: Maximize boating safety on the lake at all times, independent of boat density.

Policy LMBA 2: Require education and training of all boat operators.

1. Education and training of boat operators. Require all operators to complete a boat operation and safety course, either a standard course like that offered by the Coast Guard or a specific course developed for Lake Lure. Provide information on local rules and courtesy policies, and require a signature on a form acknowledging that the operator understands these rules and policies. Provide trained operators with a Lake Lure Boating License.
2. Require a trained operator to be on any boat >10 hp whenever it is operated. Require anyone under the age of 16 (trained or not) to be accompanied by a trained operator 16 years of age or older.

Goal 3: Establish a safety cushion requirement that will address overcrowding without eliminating activities.

Objective LMBA 3: Maximize safety when crowding does occur, as some periods of elevated boat densities appear unavoidable.

Policy LMBA 3: Implement additional level of boating management controls.

1. Establish a rule that boats moving at more than “headway” speed (can be defined as no wake or a specified speed limit, typically 6 mph) must remain >75 ft from any other boat or person (swimmer, downed skier, etc.). Where boat density increases to a potentially unsafe level, this will restrict high speed activities, eliminating towing and faster cruising.

2. Avoid a ban on towing or establishment of a speed limit on summer weekends and holidays since this appears to be an unacceptable option, as it would restrict privileges unnecessarily much of the time.

Goal 4: Fine tune enforcement activities to address the dangers of an increased demand on the resource.

Objective LMBA 4: Maximize adherence to boating rules on Lake Lure.

Policy LMBA 4: Provide adequate enforcement and presence of town authorities on the lake.

- 1 Provide appropriate enforcement. Based on documented use pattern, a patrol boat should be on the lake at all times from 11 AM to 7 PM on nice weather, summer weekends or holidays. The patrol boat can be on the lake less continuously at other times and on other days. Enforcement should focus on education of boaters and record keeping for infractions, with fines or other actions directed against repeat offenders.

- 2 Provide a call in number for citizens to contact the enforcement agency or lake operations director to report observed violations. Respond to notification within 30 minutes. Keep records of calls to track both offense frequency and possible abuse of the system. Additionally, consider a “license plate” system (to replace stickers) that would provide more information to enforcement officers.

Goal 5: Develop and adjust a permitting matrix in alignment with the peak and off-peak use patterns.

Objective LMBA 5: Maximize opportunity for boaters on Lake Lure while recognizing necessary safety limits.

Policy LMBA 5: Adjust permit limits where possible to expand access during low use periods.

- 1 Offer weekday only permits during the peak season. There is unused capacity during the week (except on holidays); at

least a 25% increase in traffic by boats >10 hp could be sustained with minimal increase in risk. An initial limit of 250 weekday only permits is suggested.

2 Make “Weekly Permits” a weekday only permit. Also, if pressure to get more boats >10 hp on the lake increases beyond what the permit system can accommodate, it would be advantageous to establish a “yacht club” with community owned boats that could be signed out by members. This would come out of the commercial allocation of acre-hours (with possible expansion of that allocation), and would provide opportunity for those who can’t get or don’t want boat permits but would like to use the lake for higher speed activities. The community ownership concept allows much greater predictability and control with regard to boat density and operator safety.