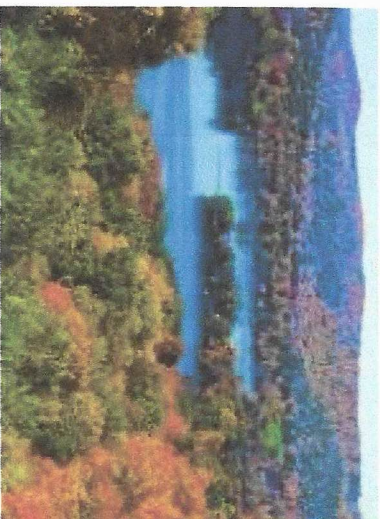


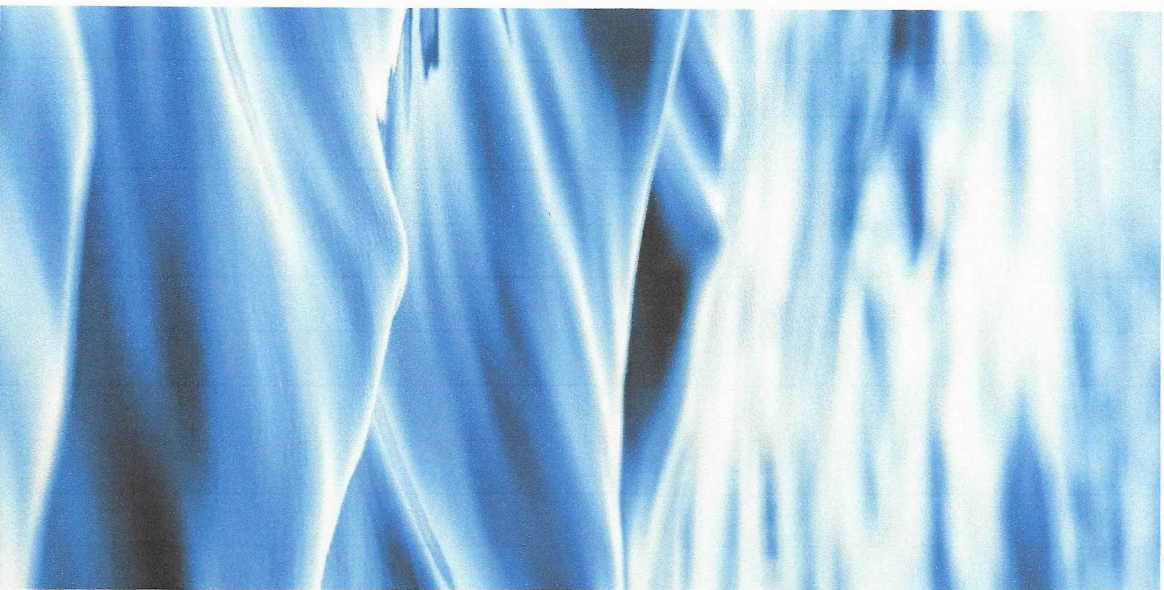


WAVE IMPACTS TO LAKE WARAMAUG

A Phased Study by

Terra Vigilis Environmental Services Group

December 9, 2024



INTRODUCTION

This presentation covers the principal findings associated with a three phased study that includes a survey of community attitudes concerning large wave impacts to Lake Waramaug as well as in-lake studies of both surface and subsurface wave impacts to the lake.

LAKE WARAMAU STUDY PHASES



Phase 1...Survey of lake resident attitudes regarding recreational use of the lake, safety concerns, awareness of wave enhancing vessel impacts, and regulatory options to manage and protect the lake.



Phase 2...In-lake study of wave propagation features and buffer distances.



Phase 3...In-lake study of propeller downwash impacts to lake bottom and sediment redistribution.

PHASE 1 SURVEY FINDINGS



SIGNIFICANT
COMMUNITY CONCERN
FOR LARGE
DISPLACEMENT WAVE
IMPACTS



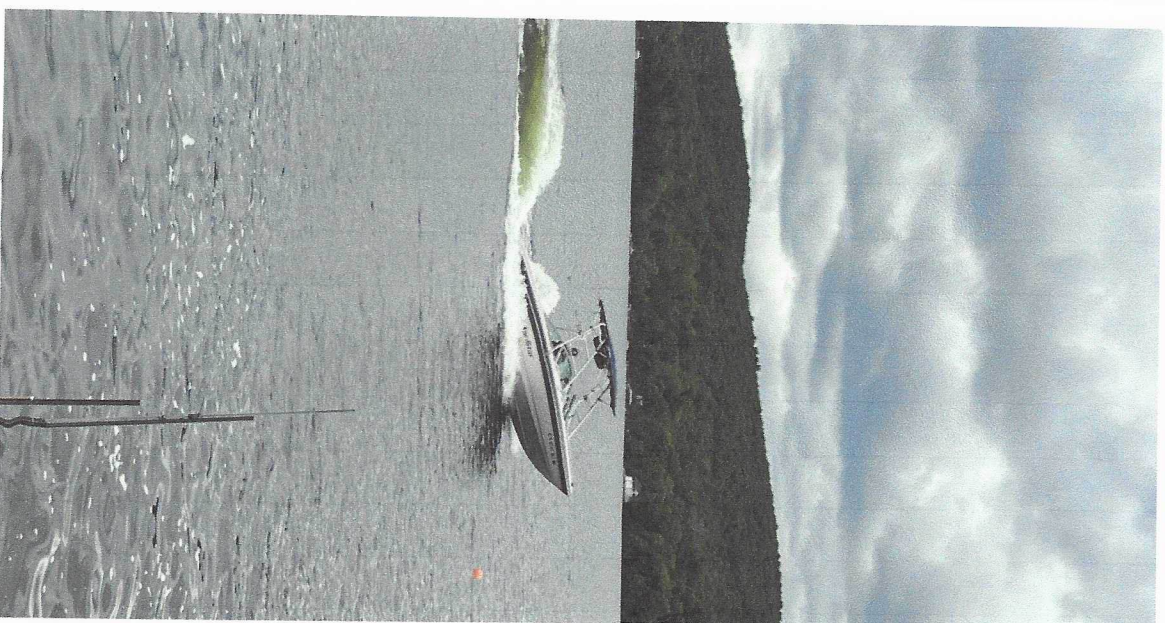
LARGE PERCENTAGE OF
RESIDENTS UNAWARE OF
SUBSURFACE IMPACTS OF
LARGE DISPLACEMENT
WAVES AND PROPELLER
DOWNWASH



LARGE PERCENTAGE OF
RESIDENTS UNAWARE OF
LOCAL, STATE AND
FEDERAL REGULATIONS
GOVERNING SAFE
BOATING PRACTICES



MAJORITY OF RESIDENTS
SUPPORT ENHANCED
STATUTORY
REGULATIONS TO
ENSURE ON THE WATER
SAFETY AND TO
PROTECT THE WATERS OF
LAKE WARMAUG.



PHASE 2 SURFACE WAVE IMPACTS

- Notable differences were found in wave characteristics between conventional water ski, cruising vessels and wake boats in “surf mode” on Lake Waramaug
- Wave heights for wake boats in surf mode were 200% higher compared to conventional water ski and cruising boats at the same distance.
- Comparative wave energy calculations will require a 500 foot buffer minimum for wake boats in surf mode from near shore, other vessels and sensitive areas of the lake.
- The buffer distances measured are consistent with similar studies nationwide

PHASE 3 SUBSURFACE PROPELLER DOWNWASH IMPACTS

- Study findings establish a 26-foot propeller downwash impact for wake boats in surf mode. This impact does not occur with conventional water ski or cruising boats.
- Deep water videography established bottom impacts include sediment re-deposition with nutrient release (Phosphorous) from wake boats in surf mode. This impact does not occur with conventional water ski or cruising boats.
- Study findings also established thermocline penetration from propeller downwash impacts from wake boats in surf mode. This impact does not occur with conventional water ski or cruising boats.
- Bottom penetration data are comparable with similar studies nationwide.

LAKE WARAMAUG ACTION ITEMS



Develop and establish management procedures for large displacement wave action impacts on Lake Waramaug.



Develop and establish management procedures to assure a 500-foot minimum distance from near shore, other vessels, shore structures and sensitive lake areas for wave enhancing boating activities.



Develop and establish designated lake sensitive and shallow areas to be protected from sediment redistribution events for wave enhancing boating activities.



Develop and establish educational programs to address public awareness of large wave impacts to the surface and subsurface of Lake Waramaug



Develop and establish management procedures for proper use of PWC operating on Lake Waramaug