

February 18, 2009

Special Meeting

5:00 p.m., Land Use Meeting Room

MEMBERS PRESENT: Mr. Bedini, Mrs. D. Hill, Mr. LaMuniere, Mr. Wadeldon

ALTERNATE PRESENT: Mr. Bohan

STAFF PRESENT: Mr. Ajello, Mrs. J. Hill

ALSO PRESENT: Dr. Kortmann, Mr. McGowan, Mr./Mrs. Frank, Mrs. Payne, Mr. Markert, Mr. Neff, Mr. Wilson, Mr. Szymanski, Ms. Baldwin, Mr. Wellings, Mrs. Sutter, Mr. Nelson, Atty. Kelly, Mr. Lasar, Ms. Purnell, Residents

Mr. McGowan, Director of the Lake Waramaug Task Force, gave a brief introduction. He noted that the Task Force has been very concerned about shoreline treatments on Lake Waramaug and so recommended consultation with Dr. Kortmann.

Dr. Kortmann, limnologist, gave his Power Point presentation, "Lake Waramaug, Ct., An Examination of Shoreline Stabilization Approaches." This addressed what happens at the land/water interface and how to deal with it from a community perspective.

He first defined the shoreline types around Lake Waramaug and explained the most effective stabilization method for each would vary depending on each type and the wave activity in the area. He discussed the prevailing winds in the area and said most locations around the lake are moderate to high energy sites.

Dr. Kortmann cited the reasons shoreline retaining walls fail. 1) Solid walls tend more to fail and are more difficult to repair than rip rap or dry walls when they do fail. 2) Inadequate design, such as too short walls or walls that don't have a foundation base, can fail. 3) Freezing and thawing can undermine walls. 4) Hydrostatic pressure; the build up of water behind a wall, can have an adverse impact. 5) Use of non porous materials to construct the wall can contribute to its failure. 6) Eroding and scouring at the base of a wall can cause undermining. 7) Ice can damage walls. 8) Extreme temperatures and exposure to the elements can cause damage.

He then listed the environmental impacts, which can be caused by a shoreline retaining wall. 1) The near shore shallow habitat, which is a spawning area and food source, can be destructed. 2) The walls may create barriers between the water and the near water upland, which many species depend upon for reproduction and food. 3) The movement of both groundwater and surface water may be disturbed. 4) Erosion problems may increase elsewhere due to the redirection of the energy dissipation of the waves. 5) There may be a degradation of the natural shoreline aesthetics.

Alternative shoreline stabilization methods were discussed. Dr. Kortmann stated that fairly sizable rip rap or stone tended to be a good treatment for shoreline erosion. He cautioned, however, that the first question that should be asked when considering such stabilization methods is: Is there an erosion or instability problem that really needs to be addressed? The second question to answer when considering the construction of a shoreline wall is: Are there other conventional measures such as grading or rip rap that will be a better long term solution?

Wave action was explained. Dr. Kortmann noted that variables were involved such as the slope of the bottom of the lake and the slope of the land the wave runs up on. He reviewed the different types of shoreline stabilization suitable to use for different wave types. Stabilization in low energy wave areas might be accomplished with biological erosion controls such as a brush mattress, in moderate energy

wave areas with vegetation, vegetative armoring, or traditional rip rap, and in high energy wave areas by any of the above listed methods or with a sea wall. He cautioned that flat sea walls will refocus the waves in other areas, which could result in the creation of additional erosion problems elsewhere. He recommended sloping sea walls, which would dissipate some of the wave action.

He listed the questions that when faced with an application for shoreline stabilization the Commission should ask to help it to determine whether the proposal is prudent:

1. What is the severity of the existing shoreline erosion?
2. What type of access to the lake is needed?
3. What kind of access to the shoreline already exists?
4. What is the depth of the water at the shoreline and what is the slope of the shoreline and of the lake bottom?
5. What are the subsurface characteristics? Careful design is required for hardpan areas.
6. What is the orientation of the shoreline and how much exposure to the sun is there?
7. Is there an aesthetic criteria?
8. Are there budget constraints?
9. Must waterfowl be considered?
10. What will the impact to the lake and the neighboring properties be?

Criteria for seawalls were discussed. Dr. Kortmann stressed that the Commission must make sure they are high enough and that both surface and groundwater flows are possible behind the wall. Also: 1) The lake side of the wall should be rough and sloped for wave dissipation. 2) The backfill should be permeable. 3) The wall should be erected on a firm footing or foundation. 4) The ends of the wall should be protected with wing walls, anchored rip rap, vegetation, etc. 5) The length of the wall should be limited to a fraction of the length of the total shoreline. 6) Landscaping should be incorporated in the design. These design criteria work to minimize reflection and refraction of the waves, which could cause erosion problems elsewhere.

A question and answer session followed the presentation.

Mrs. Frank asked what improvements could be made if there was not a gradual slope on the lake bottom below the wall. Dr. Kortmann would not recommend improvements without inspecting the site, but said a jetty or a baffle along a dock might be helpful.

Mr. Markert asked how close Lake Waramaug was to the optimal level of absorption of nutrients. Dr. Kortmann stated the lake used to be over the limit for phosphorous and that although it no longer was, it was close and so should continue to be monitored. He explained that nitrates in the lake are desirable because they attract beneficial organisms.

Dr. Kortmann discussed watershed management techniques such as setting a specific nutrient allocation per acre and requiring applicants to incorporate BMP's like infiltration systems when that limit is reached. Mr. Frank suggested that this type of technique could be incorporated in the local land use regulations.

Mr. Bedini asked, where is the property line at the edge of the lake? Dr. Kortmann said that was a question for attorneys, title searchers, and surveyors to resolve.

Mr. Bedini asked if a case could be made for prohibiting walls along the entire lake shore. Dr. Kortmann said the case could be made because if the majority of the perimeter of the lake was sea walls, there would be ecological impacts. He noted that in some cases improvements to the shoreline were necessary to allow reasonable use of the property. He suggested that sea walls be limited to 15 to 20 percent of the total length of the shoreline on each property. He advised the Commission to aim for complexity at the edge of the lake, noting that the existence of many different natural conditions there

helps to preserve habitats, water quality, and aesthetics.

Mr. Wilson asked about the amount of phosphorous present in sediment transfer. Dr. Kortmann noted that most accumulated nutrient particles are washed away in the first half inch of rain and that was the reason it was important to implement infiltration systems to manage the stormwater on site.

Mr. Wilson asked why dry walls were recommended over masonry walls. Dr. Kortmann said this was because they were easier to repair and maintain over time.

Someone asked if the salt and chemicals used on the road impacted the lake. Dr. Kortmann said there was some impact, but it was not critical for Lake Waramaug. He urged the Commission to beware of organic deicers and to require deep sumps with enough storage capacity for accumulated road sand. In addition, he stated that phosphorous was not needed to maintain healthy lawns.

Mr. Nelson asked if bubblers could have long term impacts. Dr. Kortmann said that would depend on how many were in use and said they attracted geese, which were not good for the lake.

Atty. Kelly asked Dr. Kortmann to speak on the facts that form the foundation of the wave measurements presented as he had never observed 2.5 ft. high waves on the lake. Dr. Kortmann noted he was measuring trough to crest and said craft induced waves would be greater than wind induced waves.

Atty. Kelly asked if plans for feasible and prudent alternatives should be based on the worst case scenario. Dr. Kortmann said, yes, or very close to it.

Mr. LaMunier asked if the shoreline drift pattern was known. He thought it would be helpful when considering improvements in areas with a lot of wave action. Dr. Kortmann said he did not know the pattern.

Mr. LaMunier asked what the composition of the bottom of the lake was. Dr. Kortmann said it varied and described areas with cobble that are within reach of ice during the winter and sandy areas like the one near Succor Brook.

Mr. McGowan thanked Dr. Kortmann and said copies of the slides would be available for anyone interested.

The meeting was adjourned at 6:40 p.m.

FILED SUBJECT TO APPROVAL

Respectfully submitted,

Janet M. Hill
Land Use Administrator