

Lake County Planning

From: Rose, Sharon [shrose@mt.gov]
Sent: Monday, August 29, 2011 12:43 PM
To: Lake County Planning
Cc: Vore, John
Subject: Lk Mary Ronan Zoning District

Hi Planning Dept.,

I received the invitation to the public meeting (attached) regarding updating the zoning regs for this district, and I'm forwarding the info to John Vore (phone 751-4584; jvore@mt.gov). He's the wildlife biologist in Region 1 FWP (based in Kalispell) for this area. I'll let him share it with other FWP folks up there who may also be interested.

Thank you,
Sharon

Sharon Rose
Comments Coordinator
Region 2--Montana Fish, Wildlife & Parks
3201 Spurgin Rd, Missoula, MT 59804-3101
Phone 406-542-5540; Fax 406-542-5529
Email shrose@mt.gov



MORRISON, MOTL & SHERWOOD PLLP

Attorneys at Law

401 North Last Chance Gulch

Helena, Montana 59601

www.mmslawgroup.com

Brenda Lindlief Hall

Andrée Larose

Brian J. Miller

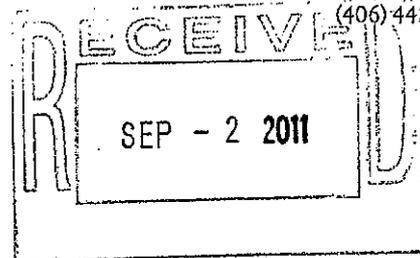
Linda M. Deola
John M. Morrison
Jonathan R. Motl
Frederick F. Sherwood
David K. W. Wilson, Jr.

kwilson@mmslawgroup.com

(406) 442-3261

(406) 443-7294 FAX

September 1, 2011



Mr. Joel Nelson
Lake County Planning Department
106 4th Ave. East
Polson, MT 59860
jnelson@lakemt.gov

Re: Lake Mary Ronan Zoning District Regulations

Dear Mr. Nelson:

I am writing on behalf of the Friends of Lake Mary Ronan, an organization of Lake Mary Ronan area landowners concerned about sound planning and growth in the northwest part of Lake County. This letter is prompted by the March 29, 2011 application for a zoning change on the west and south shore of Lake Mary Ronan by Mike and Marlo Maddy. The letter is also prompted by the requirement in the Lake Mary Ronan Zoning District Regulations that the zoning be reviewed by the Planning Board "in the first and sixth year of each decade." Section XVI.

By way of background, the Lake Mary Ronan Zoning District was created in 1997 (Resolution 97-23). Its purpose was to:

guide growth and development in the area, to maintain the rural character of the area, and to allow for development that is consistent and compatible with the existing patter of growth, to protect and enhance property values and amenities, and to protect and enhance the natural environment and water quality.

Consistent with this purpose, the zoning regulations divided the zoning district into two sub-districts. Although the Eastside sub-district only consisted of timber in 1997, it was surrounded by an area of existing homes and cottages, and provided for a density not to exceed one dwelling unit per 2 acres. It also required that development on the lakeshore "shall provide for an average of 125 of actual lake frontage." Away from the lake, development could not exceed one dwelling unit per five acres. The Westside sub-district, on the still undeveloped west and south sides of the lake, allowed development of not more than one dwelling unit per five acres along the lakeshore, and not more than one dwelling unit per ten acres away from the lake. Lakeshore lots "shall provide for an average of 200 feet of actual lake frontage." Also consistent with the purposes of the zoning district, the zoning prohibits structures on slopes that are greater than 25%.

The thinking behind having the two sub-districts -- the one closer to existing roads and services where greater density is allowed than in the more remote district -- was also consistent with the Lake County Growth Policy. Further, there was a precedent for allowing smaller parcels and denser development in the East Sub-district. In the 1960's three separate sub-divisions were created on the east shore of the lake: Eastman Villa and Goodwin Estates on the north end of the East Sub-district, and the Bitney Tracts of Sahinen Lane on the south end. The shoreline lots of the older sub-divisions have water frontage ranging from 75' to 80', with approximately parallel side boundary lines going back to the then existing road. The physical constraints (lake and road) resulted in lot sizes of 0.3 to 0.4 acres. However, by the time the LMR Zoning District was created, the road through the East Sub-district had been relocated. Before the road was paved, the dusty, rocky, rural back-country road came down the hill from what is now the State Park, passed Mountain Meadows, and then closely followed the shoreline (about 50' away) until it reached what is still the beginning of the LMR Lodge & Resort. The new road was re-routed to follow a serpentine path away from the lake and Mountain Meadows for about a half mile until finally making a sharp cut-back toward the lake and the entrance to the LMR Lodge property. With shoreline frontage of 125' and new side boundaries of 200'-300' back to the new road, the Planning Board determined that lot sizes would be about 2 acres. From the lake and from the road these lots would look consistent with the older existing lots with shorter side boundaries but approximately the same width at the lake.

On the other hand, when it came time to determine the allowable size of the lots in the West Sub-district, there was no precedent. Except for the Church Camp located near Freeland Creek, the West Sub-district was and is forested. Plum Creek obviously wanted smaller units so there would be more buyers and bigger profits, whether to Plum Creek or the developer that bought large portions from Plum Creek. However, a significant number of the Planning Board members at the time were concerned about the negative impact on the lake caused by more people, runoff from land clearance for houses and other buildings, septic systems, etc. The Planning Board approved the existing provisions for 5-acre minimum lots on the shoreline, and 10-acre minimums off-shore. Nothing has changed since 1997 to demonstrate that greater density (smaller lots and more houses) in the West Sub-district will be less harmful to the lake now than it would have been in 1997. In fact, just the opposite is true.

One of the purposes behind the original zoning was to "protect and enhance the natural environment and water quality." The reason for that is clear: Lake Mary Ronan is a valuable source of clean water, but one that is at risk from development. Protection of the lake's high water quality is especially important given that the lake is the source of eggs for the statewide kokanee salmon stocking program for 26 lakes in Montana. As Montana Fish Wildlife and Parks noted in 2004, although the existing fishery continues to be healthy and productive, it is at risk due to degradation of lake water quality. Attached is a September 1, 2011, Memorandum from Barry Moore, Ph.D, which in part describes the baseline condition of the lake, its deterioration over the years, and the current threats to its water quality. This letter supplements a study Dr. Moore prepared in 2005 concerning the proposed Northridge Subdivision.

In 2004, the Lake County Commission approved the preliminary plat for the Northridge subdivision, a 26-lot subdivision on the northwest shore of Lake Mary Ronan. Several people, including Friends of Lake Mary Ronan, challenged the subdivision in Court, disputing the validity and completeness of the water quality information submitted as well as the Commissioners' calculation of density. On June 1, 2007, District Judge Douglas Harkin ruled in

favor of the Plaintiffs and against Lake County, finding that the preliminary plat approval was unlawful. In particular, he ruled that the County failed to follow its own regulations and the Subdivision Act in not adequately reviewing the subdivision's potential impact to water quality. He also ruled that the County did not comply with its own requirements in terms of the density of the subdivision. The County did not appeal this ruling.

With this background in mind, we turn to the matters currently before the Planning Staff. In March, 2011, the same developers, Mike and Marlo Maddy, submitted a proposed text amendment to the Lake Mary Ronan Zoning District regulations. The amendment would change three things. First, the amendment would eliminate the sub-district concept, and allow density throughout the district at the same density as is currently allowed in the East District. Second, the amendment would allow construction on slopes over 25%. Third, the amendment would annex an 80-acre parcel that has no economic value for construction purposes, but would be a "set-aside" to be used when calculating the "average" size of buildable lots to reduce the actual sizes far below the 5-/10-acres minimums (or 2-/5-acre minimums) for the West Sub-district lots.

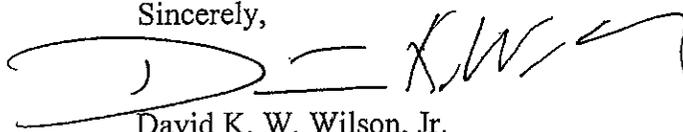
Friends of Lake Mary Ronan believes that these amendments would be detrimental to the area, and would lead to further harm to the already compromised water quality of Lake Mary Ronan. I would like to incorporate by reference into this letter the letters that were submitted by members of the public objecting to the Northridge subdivision, because they have obvious bearing, given the potentially much greater impacts the natural resources if zoning is changed to allow greater density on the west side. Indeed, as part of the Planning Board's required five-year review of the zoning, Friends of Lake Mary Ronan believe that the current regulations need to be clarified and fine-tuned to provide greater protection to the Lake's water quality. As you may be aware, in 2008 the Planning Department had begun a periodic review of the zoning, and Friends of Lake Mary Ronan members Jim and Ann Grant had submitted suggested changes. The changes proposed by the Grants included changes to density, density clustering, structures setbacks, and storm drainage. These changes were intended to minimize to the extent possible, within the existing zoning density, the introduction of any additional nutrients into the lake. More recently, the Grants' proposals have been incorporated, with additions, into a petition that will be submitted to the Planning Board at the September meeting. We believe these proposed changes to the regulations are even more necessary today than they were three years ago, and are fully justified given the Purpose of the regulations, and the situation on the ground.

If the Planning Board, and ultimately the Commissioners, approve the zoning amendment submitted by the Maddys, the County should be aware that it will be subject to the protest provisions of § 76-2-205, MCA. We believe that a sufficient number of owners in the LMR Zoning District would protest the provision that the Commissioners would not be able to adopt it.

In reviewing the range of options, we would ask the Planning Board and Commissioners to consider their constitutional duty to "maintain and improve a clean and healthful environment", which was accurately reflected in the "Purposes" section of the original zoning. Lake Mary Ronan is a special resource deserving the kind of attention and protection that Lake County has already put in place with the original zoning, and we ask that the Planning staff and Board continue to protect the Lake for future generations.

Please provide copies of this letter to the Planning Board. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read 'DKW', with a large, sweeping flourish extending to the right.

David K. W. Wilson, Jr.

(DKW)

Enc.

cc: Friends of Lake Mary Ronan

Memorandum

September 1, 2011

To: Friends of Mary Ronan

From: Barry C. Moore, Ph.D.

Re: Renewed development proposal at Lake Mary Ronan, Montana

In 2005, I performed a review of available data to assess potential water quality impacts from a proposed development along the western shoreline of Lake Mary Ronan in the Flathead Lake watershed. A memorandum summarizing my professional assessment is attached. The central conclusions were that the proposed development would have substantial negative impact on the lake water quality and fishery.

It is my understanding that a new development with even greater housing densities has more recently been proposed. Since the 2005 review, there is some updated water quality data. Although the data are limited to a few observation dates, these data are sufficient to clearly indicate that water quality in the lake has not improved. Based on this updated information and on the specific watershed and hydrologic conditions, it is my professional option that water quality at Lake Mary Ronan continues to be threatened, that the watershed and hydrologic characteristics make it especially vulnerable to sediment and nutrient additions, and that additional development will substantially degrade the water quality and fishery.

Most likely impacts of development will include:

1. Increased export of nutrients (nitrogen and phosphorus) and sediments from the watershed to the lake
2. Increased nutrients, particularly phosphorus, will stimulate greater algae growth with accompanying lowered water clarity
3. More frequent and intense Cyanobacteria (blue-green bacteria) blooms during summer and late fall
4. Higher organic loading from more algae will produce greater loss of dissolved oxygen (DO) in the hypolimnion (bottom water layers) during summer stratification
5. Lower hypolimnetic DO will greatly decrease suitable cold-water fishery habitat and will reduce in fish survival, growth, and reproduction

Impacts from increased nutrients are thoroughly documented in the scientific literature on freshwater lakes. Much of my scientific career has been devoted to restoring water quality and fisheries in lakes in very similar geologic and developmental settings. Restoration activities are typically very costly and require many years or decades to effectively reverse the impacts from nutrient pollution. It is always much more cost effective to avoid the negative impacts by eliminating the potential cause. Indeed it is ironic that the very aesthetic and recreational

opportunities that come from new home ownership in a setting like Lake Mary Ronan are likely to be degraded by the construction and use of those very homes.

Overall, the conclusions presented in my June 20, 2005 memorandum to Bob Lambeth are still appropriate, so they will not be repeated here, other than some additional observations that apply to the newer proposal.

Some nutrient data from August 29, 2008 list a total phosphorus concentration of 0.127 mg/L. This is an extremely high value for a lake, in the range that indicates eutrophic conditions. No conclusions on long-term trends should be drawn from a single datum, but this value, and older data described in the 2005 memorandum show that Lake Mary Ronan has high phosphorus and is particularly vulnerable to further external nutrient loading.

Lake water quality profiles from July 26, 2010 were also available. The temperature profiles show that the lake was stratified at that time, with thermocline depth between about 7 to 8 m. The bottom waters were hypoxic to anoxic below about 11 m. DO concentrations above 2 mg/L at the interface between water and lake sediments are considered critical to prevent recycling of sediments phosphorus back into the water. Recycling of nutrients such as phosphorus is termed "internal loading", and is indicative of a lake that has accumulated large amounts of organic material in the sediments. Such lakes are especially vulnerable to increased external loads, and the limited data indicates that this condition applies to Lake Mary Ronan.

It is my understanding that the new proposal is for even greater housing density. Soils derived from granitic rocks, as surround Lake Mary Ronin, do not provide good sites from septic systems, as they are sandy and lack sufficient chemical binding for nutrient removal. On-site septic systems in general provide poor removal of phosphorus, which is the most important nutrient. Steeper slopes along the western shoreline increase the risk of erosion with even greater sediment and nutrient export to the lake.

In summary, all the newer data serves to reinforce my professional conclusion that development at Lake Mary Ronan will cause substantial and long-lasting degradation to the water quality and fisheries.

Memorandum

To: Bob Lambeth

From: Barry C. Moore, Ph.D

Re: Proposed Northridge Major Subdivision Development at Lake Mary Ronan, Montana

Date: June 30, 2005

A review of potential water quality impacts on Lake Mary Ronan from the proposed Northridge Subdivision was performed at the request of Mr. Robert Lambeth. My qualifications in this matter include formal academic training (BS- Environmental Science, 1975, Birmingham-Southern College; MS- Environmental Science, 1980, Washington State University; PhD- Environmental Engineering, Washington State University, 1984) and over 26 years involvement in water quality, lake and stream ecological studies. In that time, I have directed numerous major water quality and restoration projects on lake and stream restoration in the Pacific Northwest, including environments similar to Lake Mary Ronan.

I have reviewed existing water quality and fish monitoring data for LMR, and my basic conclusion is that the proposed Northridge Subdivision will have substantial and sustained negative impacts on water quality of Lake Mary Ronan. It is my understanding that the initial permit review process, which is the responsibility of the county commission, is designed to identify and address any negative environmental impacts. From the information provided to me, it appears that the county staff did identify substantial negative impacts from the proposal, but that the initial approval did not adequately address those impacts. A summary of my review and findings is presented below.

Based on the data and information provided from Lake Mary Ronan, I believe the following observations and conclusions are evident. Supporting details follow.

- 1) Sufficient data are available to make a basic assessment of trends in trophic condition of Lake Mary Ronan (LMR) over the past several decades.
- 2) Water quality conditions in LMR indicate a meso- to eutrophic, or nutrient-rich, condition. Consequences of nutrient-rich status include water quality characteristics that substantially degrade the lake for human uses, including aesthetics, recreational, and fishery resources. Additional nutrients will produce further water quality degradation in the lake.
- 3) Because of a low flushing rate for its size, LMR is particularly susceptible to even more additional nutrients, especially phosphorus. More phosphorus in the lake will drive increased algae growth. Especially pronounced will be increased masses or “blooms” of blue-green algae (or bacteria). Such blue-green algae blooms often cause multiple problems in lakes, including severe impacts such as fish kills and animal poisonings.
- 4) The proposed development will directly and indirectly increase loading of nitrogen, phosphorus, and sediment to LMR. External phosphorus increases to LMR will also drive internal loading sources due to process related to loss of dissolved oxygen in the hypolimnion (deep water) during summer stratification.
- 5) The combination of increased internal and external nutrient sources will create self-reinforcing conditions in which the increased algae productivity occurs and eventually creates

increased sediment accumulation on the lake bottom. As these materials decay on the lake bottom, oxygen depletion occurs during the period of summer stratification. With low oxygen, phosphorus moves from lake sediments to the water column, where it in turn causes increased algae growth. Once this feedback system is established, restoration of desirable water quality conditions is usually a difficult, long-term, and highly expensive process.

Lake Mary Ronan Review: Supporting Details

1. Sources: Various sources provide data on Lake Mary Ronan over a period of over 30 years, from 1970 through the present. The most detailed limnological data available was contained in the survey report of LMR and other Flathead Basin lakes prepared by personnel from the Flathead Lake Biological Station of the University of Montana. This is a competent and well-respected group, and their report provides the most significant data from personnel with scientific training in limnological methods. Similarly, the fish management assessment prepared in 1987 by R.Domrose of the Montana Department of Fish, Wildlife, and Parks provides excellent data, particularly as related to the fisheries and fish habitat of LMR. Volunteer monitoring data were collated and provided by the Flathead Basin Commission. Although it is not proper to draw conclusions from the general to the specific, numerous studies have demonstrated the ability of trained volunteers to obtain and report useful information for long-term lake monitoring and assessment. The volunteer data on LMR appear to be consistent with the professionally obtained data, and thus should be considered valid for assessment of lake water quality trends.

2. Best evidence indicates that LMR is a productive, meso- to eutrophic lake. This is based on reported total phosphorus concentrations in excess of 30 $\mu\text{g/L}$ (Ellis et al. report 54 $\mu\text{g/L}$). Soluble reactive phosphorus (SRP) values, which represent the inorganic phosphorus fraction immediately available for algae uptake, were frequently in excess of 1 to 2 $\mu\text{g/L}$ for growing season samples. Because phosphorus is limiting to primary producers, any measurable SRP is unusual except in eutrophic lakes with relatively high total phosphorus availability. High SRP often indicates a transition to nitrogen-limiting conditions, another characteristic of eutrophic freshwater systems

3. The flushing rate or retention time in LMR is quite slow. Ellis et al. (1998) report mean hydraulic retention time (T_r) of 2.8 years for 1997, based on average outlet/inlet flow rates. A check of their calculations duplicates the same figures. Domrose (1987) reported T_r to be 17.4 years, based on a 1976 EPA report. The respective reports note that retention times were based on relatively high and low water years, respectively. Without annual inflow and outflow data for year during the interval, no estimate of an average T_r can be made. However, it is reasonable to assume that these values represent some estimation of the range in hydraulic retention times for LMR.

Irrespective of the actual average or range, a T_r value of 2.8 years, which is probably close to a minimum value, is very low for such a relatively small lake. The water quality consequences for low flushing rates are substantial. Most important for analyzing potential impacts of the proposed development is the fact that nutrients entering the lake basin will tend to be retained for long periods. This creates very substantial opportunity for nutrient accumulation in lake sediments, setting the state for enhanced nutrient recycling, increased internal loading, and increased algae productivity. Overall, the long retention times not only makes LMR very susceptible to additional nutrient inputs, it also means that water quality impacts are likely to be long and sustained.

4. As noted in the staff report, titled, "Proposed Findings of Fact Made by Staff on the Primary Review Criteria Northridge Major Subdivision, March 3, 2004", the proposed development will result environmental impacts to LMR. In terms of water quality, the most important are likely to be from significant phosphorus additions to LMR through septic system leachate waters. Pressure septic systems can provide some degree of nitrogen and phosphorus removal when adequately maintained. For example, some nutrients are retained associated with biological solids within septic primary

settling tanks and are removed periodically if pumped at proper intervals. Tanks that are not pumped at proper intervals do not even provide this small degree of removal.

However, septic systems convert most nutrients to soluble forms that are discharged into leach fields. Conventional estimates are that pressure systems, as proposed, provide about 50% nitrogen removal and yield little phosphorus removal. Therefore, substantial phosphorus will be added to the lake from domestic sources that include human wastes, detergents, and grey-water household wastes.

In addition, substantial research and practical experience with septic systems has shown that minimum drainfield setbacks should be 100 feet, with increased setback distances for site specific conditions in highly permeable and other soils that may provide poor nutrient retention.

Other potential sources of nutrients include domestic pets, lawn fertilizers, and soil erosion from site disturbance activities. Also, indirect nutrients can be expected from increases in boating, fishing, swimming, and other activities. Such items are difficult to quantify, but invariably accompany domestic residential sites. In my analysis, the initial approval of the proposed subdivision does not address any of the water quality impacts in any substantive manner.

5. In predicting the likely course of water quality developments in LMR, there is much evidence that portends development of severe water quality problems with any increase in nutrient levels, which will likely result from the proposed subdivision. This evidence is related to observed patterns of dissolved oxygen (DO) in summer depth profiles. LMR has exhibited what is termed a summer "clinograde" DO profile that is characteristic of stratified, eutrophic lakes.

Clinograde profiles are characterized by higher DO in surface waters, with sharp declines with depth. DO at the sediment/water interface in this profile type is low or depleted, and the low- or no-DO conditions may extend at various distances into the water column. As the sediment DO is depleted, phosphorus-containing compounds are converted from oxidized to reduced forms. Reduced phosphorus is 100 to 1000 times more soluble in this state, and large amounts are recycled back from sediments to the overlying waters. When the lake mixes again in fall, the phosphorus is reintroduced to the upper, photic zone, where it can stimulate fall algae blooms or algae blooms during the next year's growing season. Nitrogen compounds, particularly ammonia, are also subject to the same recycling process, but at somewhat reduced rates compared to phosphorus.

For LMR, this process is likely to be accelerated by additional phosphorus from the proposed development. Additional phosphorus will stimulate more algae growth. During the growing season, dying algae are constantly precipitating through the water column, ultimately contributing to accumulations of organic matter in the lake sediments. As this organic matter decays, it exerts DO demand that causes loss of oxygen in the bottom waters. Over time, increased algae productivity organic matter tends to accelerate these processes until they become a self-reinforcing cycle that ramps up ever increasing algae, organic matter, DO demand, and phosphorus recycling. Lakes that develop this process typically have very poor water quality, experiencing frequent and severe blue-green algae blooms with associated loss of lake aesthetics, recreational uses, and fishery declines or crashes. Economic impacts on fish, recreation, and property values are often extreme. Restoration of acceptable water quality for lakes in this condition can be accomplished by a combination of in-lake and watershed nutrient reduction options, but such activities are expensive and often take many years to decades to complete.

Sources

Domrose, R. 1987 Lake Mary Ronan Fish Management Monitoring Report 1965 to 1986.

Ellis, B., J. Craft, and J. Stanford. 1998. Baseline Water Quality Study of Little Bitterroot, Mary Ronan, Ashley and Lindbergh Lakes, Montana.

Flathead Basin Commission. var dates 1994 to 2000. Misc. water quality data.

Rowland Environmental Consulting, Inc. 2004. Environmental Assessment Northridge Subdivision.