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(Continued on page 6)

CRYSTAL LAKE & WATERSHED ASSOCIATION – A "NEW" ORGANIZATION!

Stacy L. Daniels - Crystal Lake & Watershed Association

Exciting changes for the future of the Crystal Lake Watershed, Benzie County, MI, occurred in September 2004 with the merger of the former Crystal Lake Association (CLA) and the former Crystal Lake Watershed Fund (CLWF) into a new organization, the Crystal Lake & Watershed Association (CLWA). This coming together of minds, energies, and diverse talents results in a combined stronger, more efficient organization. The new CLWA is a membership organization with a 2020 Vision Fund and an Endowment Fund to support stewardship projects, scientific studies, and educational programs. The CLWA is a "new" organization with fifty years of history. Our purpose is to protect and promote the natural qualities of the Crystal Lake Watershed, and our goal is to preserve its beauty and recreational resources now and for the future. The CLWA conducts water quality monitoring, provides educational programs, promotes sustainable land development, and encourages safe use of Crystal Lake. Committees include: Executive, Water Quality Zoning & Land Use, Education & Communications, Development & Financial, and an ad hoc Boat Launch Committee. The new website is (www.CLWA.us), and the newsletter is Crystal Whitecaps (www.clwa.us/PDF/Crystal Whitecaps 2004fall3.pdf).

CRYSTAL LAKE WATERSHED

Benzie County, in NW Lower Michigan, is the smallest of 83 counties in land area (321 sq mi); but 24th in total water area (538 sq mi); and 18th in inland lakes water area (26 sq mi). The Crystal Lake Watershed is small compared to two larger riverine watersheds to the north and south. It encompasses parts of six townships, is comprised of 17 subwatersheds, and flows into the Betsie River and Lake Michigan Watersheds. The Villages of Beulah and Benzonia are near the East End; the City of Frankfort and the Village of Elberta are near the West End. Benzie County was first surveyed in 1838-9 by Alvin and Austin Burt, who called Crystal Lake, "Cap" Lake (short for "Whitecap," for its large waves). Since its original survey, Crystal Lake has changed only slightly in area, but dramatically in level – now set at 600 +/- 0.25 feet summer to winter. The Crystal Lake Watershed is unique – the surface of the Lake is ~ 35% of the total Watershed (land + water). It covers 43.67 square miles (28,145 Acres) with a watershed perimeter of 44.65 miles, a Lake perimeter of 20.838 miles and a reach of 8.11 miles. The surface area of Crystal Lake is 15.4 square miles (9,854 Acres), making it the 9th largest inland Lake in Michigan! Its depth is 70.7 feet (avg) and 165 feet (max). It contains almost 1/4 trillion gallons (242,000,000,000 gal = 740,000 Acre-ft = 0.220 cu mi)! See Watershed FAQs at www.clwf.org/watershed FAQ.htm.

(Continued on page of

ENVIRONMENTAL CONCERNS

The Crystal Lake Watershed contains many diverse, but hydrologically intertwined ecologies and unique environmental niches, including active sand dunes, forested heights, wetlands, tributaries, and a large deep inland lake connected to Lake Michigan. Crystal Lake, with its immense body of pristine water of exceptional clarity, mixed sandy and rocky nearshore perimeter, sandy shoreline, deep marl bottom, and high-ridged vistas, captivates all who view it. The responsibility of those of us in the present is to respect, maintain, and preserve the character of the Crystal Lake Watershed for the generations that follow us. The unique features of the Crystal Lake Watershed make it alternately very resistant or potentially vulnerable to environmental impacts. Concerns that affect property owners and visitors include:

- Septic Systems & Alternatives
- Lawns, Gardens, Fertilizers, & Pesticides
- Natural Greenbelts, Land Conservancies, & Scenic Vistas
- Boating, Swimming, and Fishing
- Litter, Garbage, & Hazardous Materials
- Planning & Zoning
- · Land Use & Water Access
- Construction & Development
- Land Cover, Trees, Other Vegetation the Viewshed
- Critical Areas Steep Slopes, Wetlands, Dunes, & Other Critical Habitats
- Erosion & Shoreline Protection
- Soil, Sediment, & Nutrient Runoff
- Atmospheric Deposition & Ozone
- Aquatic Vegetation, Fish, & Waterfowl
- Algae, Bacteria, & Molds
- Nonindigenous Plants, Animals, & Microorganisms
- Aesthetics & Noise
- Natural, Economic, & Social Challenges

WATER QUALITY MONITORING

From 1820 – 2004, over 160 environmental studies have been done in the Crystal Lake Watershed or in contiguous watersheds (www.clwf.org/PDF/CLWFREFS04071304.pdf). Many have been done by the CLWA and its predecessors with other organizations, including the Cooperative Lakes Monitoring Program with MDEQ, and Watershed Monitoring of Lakes & Streams with Interlochen Arts Academy (www.mlswa.org/School-Lake-Project/Interlochen.htm). Recent studies include: lake monitoring, biomonitoring (www.clwf.org/PDF/CLWFvolmonfinal032804.pdf), and nearshore monitoring. The longterm program relates lake water quality to social and political aspects of watershed planning. Volunteers and a Science Review Panel (www.clwf.org/sci_rev_panel.htm).

ZONING & LAND USE

The CLWA is active in addressing issues of public interest, such as a proposed boat launch and alternative treatment units for septic systems. In 2004, concerns were raised about size, scope and justification for a public boat launch proposed by the MDNR and permitted by the MDEQ. The CLWA

petitioned the MDEQ to reconsider its earlier decision. It is hoped that a thorough examination will result in an outcome that provides the people of Benzie County adequate and safe access to Crystal Lake without diminishing the beauty and unsurpassed recreational opportunities that make Crystal Lake unique. For history, see at www.cla-upnorth.org/ dnr.html and www.clwf.org/DNR_launch.htm. In 1989, Benzie County was the first county in the U.S. to adopt a precedent-setting ordinance to require upgrading of onsite wastewater treatment systems prior to sale of any properties. Enforcement has focused on upgrading failed or poorly operating systems located near water bodies. To date, several hundred individual systems have been upgraded. Benzie and Leelanau Counties have adopted new standards for Alternative Treatments Units (ATU's) using "innovative" or "advanced" technologies provide greater treatment to protect water quality. This allows septic systems to be built on properties with soils that do not allow wastewater to percolate (www.clwf.org/development.htm#Regulations).

EDUCATION & COMMUNICATIONS

The Crystal Lake "Walkabout" is an educational program to teach students, property owners, and visitors about the Crystal Lake Watershed. Focusing on hydrology-how.water moves about the Watershed – it addresses water quality, ecology, land use, zoning, septic tanks, green belts, sustainable development, and watershed management. The "hands-on" approach involves observational monitoring and environmental exploring. Participants "walk about" Interpretive Sites in the Watershed – the Lake, and its tributaries, wetlands, dunes, and high ridges, as environmental professionals describe features and conduct activities. Each participant receives a "Walkabout" T-shirt with a map of the Watershed. The "Walkabout" Interpretive Manual (www.clwf.org/PDF/CLWFWalkabout04Fall Manual.pdf), is both "An Educational Primer for Students" and "A Reference Handbook for Property Owners and Visitors." It contains maps, facts, descriptions of the Interpretive Sites, a chronology of Crystal Lake Watershed history, and the listing of concerns of Watershed property owners. Since 1994, the "Walkabout" has been presented to over 2,200 students, residents, and visitors to the Crystal Lake Watershed. it is now a biennial event for all of the 6th and 8th grade students in Benzie County.

ADDITIONAL REFERENCES

Decker, R. William, Chair, Ad Hoc Committee, Benzie County Board of Public Works, "Crystal Lake – Life or Death," A Lake Owners' Manual, 1987, 32 pp, www.clwf.org/development.htm#MANUAL; Crystal Lake Handbook, CLA and MSU Extension, Betsy Youngblood, Editor, Beulah, MI 2002, 64 pp.

Winnie, Donald E., Crystal Lake, Benzie County, Michigan, Michigan Riparian, Nov. 1989, Cover + p 8; Groves, A. F., Crystal Lake Protection Plan – Par 1., Michigan Riparian, Feb. 1993, pp 10-11; Ibid., Part II., Michigan Riparian, May 1993, Cover + pp 10-12, 20-21; Daniels, S. L., Letter to the Editor, Michigan Riparian, Nov. 1993, p 6.

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www.mi-riparian.org

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PLAN NOW to attend Michigan Lake & Stream Association's 44th Annual Meeting at Boyne Mountain Resort on April 22-24, 2005, Boyne Falls, Michigan.

Plans are being made to cover topics that have surfaced in the past few months, such as lowering lake levels, beach closings due to E coli bacterial infestations, key-holing issues, spread of exotic plants and animals to more inland lakes, road end abuse by non-riparians, groundwater consumption and contamination, etc.

Registration and Reservation Forms are found on pages 13 and 14.

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Lightning – Part II

by John Sedgwick

ELECTRONS CONTINUALLY LEAVE THE EARTH TO JOIN THE CLOUDS

Think of the earth and sky as two oppositely charged metal plates. The earth, for reasons we will get to in a moment, maintains a steady surplus of electrons that leaves it charged at three hundred thousand negative volts compared to the sky, in particular to that region of the sky forty miles up, the ionosphere, which is full of electrically charged ions. The air, which separates these two plates, is normally a poor electric conductor, but it breaks down in the face of the colossal voltage involved, about fifty volts a foot. (This means, incidentally, that your head has about two hundred fifty volts compared to your feet-depending on your heightbut you don't feel anything because of the minuscule current involved.) In normal, fair weather conditions. electrons are continually drifting off into the clouds, dissipating the earth's charge. Either they emigrate on the backs of evaporating water droplets, or they are discharged from any sharp object-blades of grass, tips of branches, telephone poles-which, because of their configuration, squirt the electrons into the air.

But the earth and sky form a closed circuit; none of the electrons are lost permanently, for there is another force to be reckoned with-lightning. Lightning bolts resupply earth's charge 125 million volts at a time.

ELECTRICAL CHARGES PRODUCE LIGHTNING AND THUNDER

How does a thundercloud get so charged up? No one knows for sure. As one professor of atmospheric electricity put it, "There are fourteen major workers in the field and fourteen major theories." Most of them, however, involve some version of the idea that as the water (or ice) particles are blown about in the swirling currents of the thundercloud, slamming into one another, electrical charges are exchanged, one particle ending up positive, the other negative. These newly charged particles then migrate to align themselves with the cloud's basic electric field-positive charge going to the top, negative charge to the bottom. The field intensifies; the process repeats; the field intensifies still more. Finally the negatively charged cloud base accumulates a whopping potential of up to a billion volts. This is enough to overcome the air's resistance and, since like charges repel, force the earth's fickle electrons to change directions, actually driving them back through the same sharp objects-grass, branches, polesthrough which they had attempted to exit in the first place.

If the field is particularly intense, the electrons actually glow as they gather about these points, producing a strange but harmless blue effulgence known as Saint Elmo's fire, named after the patron saint of sailors. The "fire," which sailors knew often preceded a lightning flash, was taken-rather optimistically-as a sign of the saint's protecting presence. During storms the fire can sometimes be seen flaring off the tops of skyscrapers such as the Empire State Building. Mountain climbers near summits often find themselves glowing with it. Biblical scholars speculate that Saint Elmo's fire might explain Moses' vision of the burning bush that flamed without being consumed. Eerily, the fire sometimes clings to cattle out on the plains, transforming, as one rancher put it, "every steer into a devil with flaming horns."

This "point discharge," as Saint Elmo's fire is mistakenly called (since electrons are not departing, but returning), is one way the thundercloud restores the earth's electron supply. The other is more dramatic-in a lightning burst. As it happens, only 20 per cent of all strikes actually reach the ground (the rest flash within the cloud or from one cloud to another), but to us earthlings, the cloud-to-ground strikes are the most important. Here, in a nutshell, is what happens. [For the full story-on this and other topics—see Peter Viemeister's *The* Lightning Book.] As the thundercloud's charge drives electrons into the earth, it creates a positive charge on the earth's surface, a charge that the negatively charged bottom of the thundercloud finds very attractive. When the thundercloud's potential reaches the vicinity of a billion volts, the air can hold it off no longer. The charge spills out from the cloud in what's called "stepped leaders," a faint latticework of angular streamers, too faint for the eye to detect in the face of the blinding light that immediately follows. The zig-zagging leaders sweep down to earth cautiously, as if they didn't dare get too close. Finally, when one comes wriggling to within thirty yards of the ground, the earth can take it no longer and lets loose with a mammoth "return stroke," a tremendous eruption of radiant light that shoots back up the path the leader has broken to the cloud, filling out some side channels and wrong turns on its way, to form a blazing, many-channeled stream of light. This is what we see. At 30,000°C, the lightning splits open the air to create a massive shock wave-the roar, crack, and rumble of thunder. That is what we hear. Usually the cloud then responds with another spurt of energy, this time a 'dart leader' that zips back down the lightning path, provoking

another tremendous convulsion. Then there might be another dart leader and another return stroke. And another and another, producing as many as forty flashes. But they happen so rapidly that they appear as no more than a quick flickering in the lightning shaft.

BALL LIGHTNING—FACT OR FANTASY

The God of the Winds, however, still retains some of his secrets. One phenomenon in particular leaves researchers utterly baffled. Consider this:

Kim Fadiman, a young mountaineer, was up on New Hampshire's Mount Washington with a group of friends several winters ago. They had been waiting out a blizzard for three days in a cabin near the peak; their only recreation was square dancing on the icy floor of the hut. Eager for a diversion, the six raced outside when a freak lightning storm broke out over the mountains. To their amazement, they discovered that the whole area was charged with a strange blue flame-Saint Elmo's fire. Besides glowing on branches, it flared from their fingers, their hair, even the tips of their noses. It spurted from their ice axes, and the group immediately split up to duel with these bizarre rays. "The glow gave little sense of electricity when it touched you," Fadiman explains. Suddenly they heard a loud hiss "like the buzzing of a swarm of bees" coming from the roof of the cabin. Everyone looked up to see a glowing reddish orange ball about the size of a pumpkin hovering on the cabin's lightning rod. As they watched, astounded, the fireball flew straight up into the sky for several seconds until, several hundred feet up, it explodedblam! Fadiman says that even the most experienced climber among them said, when he saw the flaming orb and heard it explode, "You could have made me believe in any religion."

What the group saw was ball lightning. Only recently have scientists accepted its existence, having previously chalked it up to blurred vision on the

part of the observer, the result of being blinded by a lightning flash. But they still have no idea what it is. From reports, ball lightning varies between the size of a golf ball and a basketball. It's generally a fiery orange or red-and often emits a loud buzz. It seems to have a fondness for the indoors, sometimes sliding down chimneys, passing through screens, even slipping between cracks to get inside, where it hovers at about chest height for a few seconds or drifts by in the air. One ball glided down the aisle of a BOAC prop plane. After about five seconds the balls disappear, often with a bang, leaving behind a vague smell of sulfur. Weird stuff. Some people say the balls are UFOs. Who knows? Maybe they are.

PRECAUTIONS TO PREVENT YOU FROM BEING LIGHTNING'S NEXT VICTIM

If, however, you are outdoors in a lightning storm, don't look for alien beings, take precautions. Lightning normally strikes the tallest object, because that provides the shortest path to the ground. In an open field, the tallest object is you. Lie down, in a gully if possible-assuming it's still dry. Resist the temptation to take cover under a tree. Lightning can travel down into the tree's root system and zap you. If you are out in a boat or swimming, you also make an attractive target. Even if the flash doesn't hit you directly, it can travel as far as two hundred feet through the water. But remember that lightning can also strike the shore. (Curiously, when it does, it fuses the sand particles along its path, forming what looks like an oversized antler.)

Best of all, go to your car and roll up the windows. If lightning strikes, you'll be insulated from the blast since the lightning will stick to the car's metal shell. Keep your hands off that radio dial and other metal parts of the interior, though. The charge wouldn't kill you, but it could give you a nasty shock. Incidentally, it's not, as many people believe, the car's rubber wheels that protect you. Lightning that has shot

through twenty miles of air isn't going to be put off by a couple of inches of rubber (and that goes for sneakers as well). Nelson Smith, for instance, was hit on his rubber-wheeled cattle feeder out in Iowas last spring. The flash threw him to the ground and scattered his cattle. His reaction? As his father, Barney Smith, puts it, "Let's just say that Nelson was very impressed." Nelson himself speculates that the lightning went for him because of his ability to detect underground water with a divining rod, a sensation he says is electrical.

Although a quarter of all lightning deaths occur indoors, it's a safe place to be during a storm. To protect yourself, stay clear of electrical appliances, telephones, and light switches when the storm is really zinging overhead. (You can tell how near the storm is by counting the seconds between the lightning flash, which you see instantly, and the thunder, which travels at one thousand feet per second. Multiply the number of seconds times a thousand to get the distance to the storm. Because of the way sound travels, you tend not to hear thunder more than fifteen miles away.) Joseph Karmel reached out to turn on a light during a thunderstorm over his house in Maryland. The next thing he knew he was on the floor wondering what happened. A flash had hit the lawn and was pulsing through the underground wires just as he touched the switch.

DO YOU NEED LIGHTNING RODS FOR YOUR HOME?

The walls of most houses are crammed with electrical wires that provide a convenient channel for lightning to pass through without blasting a hole in the roof. That's not too good for your wiring system, so you might want to consider investing in lightning rods—particularly if you live in a lightning-riddled area like Florida, which has more thunderstorms than any other state in the United States, about ninety a year. (It could be worse: Uganda

(Continued on page 15)

LAKE BOARD ACT AMENDED

Bv

Tony Groves, Water Resources Director, Progressive AE

This is the first of a two-part article about lake boards. The first article discusses recent amendments to the lake board act and the second article will explore the pros and cons of organizing a lake project under an existing township board versus establishing a lake board.

In the final moments of the 2003-2004 Legislative Session, several changes were made to the act that governs lake boards in Michigan. Part 309 (Inland Lake Improvements) of the Natural Resources and Environmental Protection Act provides for the establishment of lake boards and special assessment districts to finance lake improvement projects. Since 1966, this act has been used extensively to organize and finance a variety of lake projects. Currently, there are over 100 active lake boards in Michigan. The recent amendments change the membership of a lake board (Section 30903), project costs (Section 30927), and provide a formal mechanism for dissolving a lake board (Section 30929).

SECTION 30903

Section 30903 of the act defines the composition of a lake board and requires that a lake board consist of all the following:

- A member of the county board of commissioners appointed by the chairperson of the county board of each county affected by the lake improvement project.
- A representative of each local unit of government (other than the county) affected by the project appointed by the legislative body of the local unit. However, if there is only 1 local unit of government involved, 2 representatives of that local unit shall be appointed to the board.
- The county drain commissioner or his or her designee.
- A property owner, appointed by the lake board, who owns land abutting the lake.

Under the amendments, a representative from the Michigan Department of Environmental Quality (MDEQ) will no longer sit on the board. However, many lake projects will require the issuance of a permit from the MDEQ so the department will still provide regulatory review of proposed projects. Amendments to this section also require that once established, a lake board must now elect a treasurer, in addition to a chairperson and secretary.

SECTION 30927

Section 30927 deals with the computation of project costs and requires the lake board to make a computation of all costs associated with the project including preliminary engineering, contract work, inspections, publication of notices, legal expenses, administrative costs, permit fees, and contingent expenses. Amendments to this section require that a lake board shall not expend money unless it has adopted an annual budget.

SECTION 30929

Section 30929 was added to the act to provide a mechanism for dissolving a lake board. Prior to this amendment, Part 309 was silent on this issue. Section 30929 provides for a lake board to be dissolved if all the following conditions are met:

- The governing body of each local unit of government in which all or part of the lake is located holds a public hearing on the proposed dissolution, determines that the lake board is no longer necessary for the improvement of the lake because the reasons for establishing the lake board no longer exist, and approves the dissolution of the lake board.
- All outstanding indebtedness and expenses of the lake board are paid in full.
- Any excess funds of the lake board are refunded based on the last approved assessment roll. However, if the amount of excess funds is a minimal amount, the excess funds shall be distributed to the local units involved with the project apportioned in accordance with last approved special assessment roll.
- The lake board determines that it is no longer necessary for the improvement of the lake, because the reasons for its establishment no longer exist, and adopts an order approving its dissolution.

To ensure compliance with the recent amendments to Part 309, existing lake boards should appoint a treasurer. Also, if there is only one local unit of government involved with the project, request that the legislative body of the governmental unit appoint a second representative to serve on the lake board. Finally, if a lake board has not formally adopted an annual budget for expenditures, it should do so.



Attorney Writes

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Liability Concerns

Periodically, I receive questions from riparians who serve on a lake or river property owners association (or who are considering doing so) and are concerned about potential personal liability for themselves possibly arising out of such service. They also wonder whether their own personal insurance will cover any such potential liabilities, and if not, whether the association should carry appropriate insurance.

In general, there are two potential types of liability for which officers or directors of a property owners association should be concerned. The first type of liability is that which comes to mind for most lay people—a person or their property is physically injured (or, in the case of a person, also if death results) which either occurs on association owned or controlled property or as the result of an association sponsored event (such as a boat parade, ice cream social or meeting). Insurance to cover such potential damages is often referred to as general liability insurance. The second type of liability potential involves malpractice, malfeasance or misconduct by an association or its officers or board members. Insurance to protect against such liability is often referred to as "errors and omissions" insurance. Members of the board of directors and the officers of an association can shore up their defenses against potential personal liability by ensuring that the association is properly set up as a Michigan nonprofit corporation. (Please also see my earlier column on the benefits of such incorporation in the February 1997 issue of the Riparian). Ensuring that a property owners association is a Michigan nonprofit corporation in good standing will help insulate against potential liability for officers and directors, but will not completely eliminate all potential for personal liability. In fact, there are at least two different ways where an association's corporate status will not protect against personal

liability. The first situation occurs where the association has little or minimal assets or insurance. In that case, a court will sometimes "pierce the corporate veil" of an undercapitalized association and potentially pursue personal liability against officers or directors. The second situation may come into play where an officer or director is sued personally for potential liability and damages (often in addition to the corporation, and potentially other officers and directors, being sued) since the particular officer or director involved personally participated in the event which gave rise to the injury. (For example, the corporate officer helped build the association's swing set which collapsed on a child or personally libeled or slandered another individual regarding an association-related matter). Thus, while incorporation of a property owners association can help diminish the potential for personal liability of officers and directors, the risk of personal liability is not eliminated altogether.

Based on the above, it is important that proper insurance be in place. Unfortunately, most insurance policies for individuals do not cover damages for liability related to the person serving as an officer or director of an association (whether the injury is based upon physical injury or alleged malpractice or misconduct). Therefore, to the extent that there will be any insurance coverage, it will likely have to be contained in an insurance policy or policies covering and purchased by the association. The bad news is that such insurance coverage can be expensive. While it is fairly common for property owners associations to have general liability insurance for property damage and personal injury, most such associations do not carry errors and omissions insurance for officers and directors. For a fuller discussion regarding insurance coverage for riparian landowners in general, please see the August 2004 issue of the Riparian magazine.

gets two hundred forty-two. Thunderstorm frequency gradually declines to the north and west. Maine has about twenty storms a year; California, ten. In the middle ranges—Pennsylvania, for instance, gets about fifty storms a year—the chances of a frame house in a fairly developed neighborhood being hit by lightning in any one year are about one in a hundred. But don't think that just because lightning has already struck your house it won't strike again. Remember Dooms Sullivan?

Lightning doesn't always hit the roof. One New York family on the ninth floor of a fifteen-story building received

an unwelcome visitor one stormy afternoon when lightning blasted through their living room window and clobbered a lamp, singeing a chair along the way.

If someone near you has been hit by lightning but is still breathing, chances of his recovery are good. Lightning kills by paralyzing the body's electrical system, blocking such involuntary mechanisms as the lungs and heart. So always attend to victims who *aren't* breathing first, giving them mouth-to-mouth resuscitation and heart massage as necessary. Call for medical help and continue your efforts; it may take hours to revive them fully. The lightning strike

fact, attract the light-

ning bolts, but then

channel them harm-

lessly along the con-

ductors to the ground?

that the tips of the rods

do discharge electrons

-you can see the weird

blue glow of Saint

Elmo's fire around

them during a thunder-

storm-making them

more enticing to a

strike. But, happily,

this just means that

the lightning is all the

more likely to hit the

rods instead of your

roof. The rods transmit

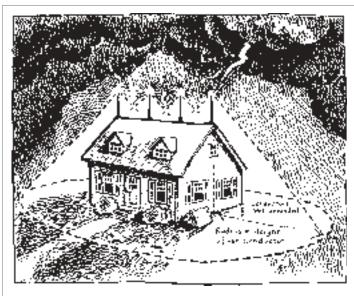
the charge painlessly

The answer is

is so instantaneous that it takes a while before the victim's body cells begin to degenerate—giving you more time to bring him or her back to life.

Still, don't get the wrong idea. The chances of being killed by lightning this year are one in a million. It's sixteen times more likely you'll die falling down stairs. Take precautions, sure. But don't get carried away, hiding under the bed with all the shades down. For all its hazards, lightning is still the greatest show on earth. Don't miss it.

JOHN SEDGWICK is a free-lance writer whose most dramatic view of lightning came atop the Austrian Alps near midnight.



The Cone of Protection

With all this white-hot danger flashing around your house, you might want to consider some protection. The most prominent and reliable form is as old as the knowledge of lightning's electrical nature itself—Ben Franklin's lightning rods.

They've changed little since Franklin's time. Usually made of copper, the rods thrust up sharp points at intervals on the roof of a house, run down the outside walls, and are imbedded several feet into the ground. Properly constructed and installed, they offer nearly total protection from lightning damage.

Even though the rods' effectiveness has been proved time and again, it wasn't clear for a long while just what they did. Did they reduce the chances of a house being struck by dissipating the thundercloud's electrical charge, as Franklin himself thought? Or did they, in

to the ground.

Lightning seeks the shortest route to ground voltage. Since the lightning rods are wired to the ground, they maintain ground voltage even while they stand on rooftops hundreds of feet in the air and so make an ideal target for lightning as it plunges down from the sky. The lightning will actually divert its strike in mid-air to get at them. The area the lightning passes up is the shape of a cone—the "cone of protection" in industry parlance—whose radius is equal to the height of the rod. Properly installed, the rods shelter your entire house under these conic umbrellas.

Unfortunately, the protection doesn't come cheap. The current price of installing copper lightning rods on an average-sized four-bedroom house is \$600. Aluminum rods are somewhat cheaper, but they are slightly less conductive. Although insurance companies offer 15 per cent discounts on

property insurance to farms that have installed lightning rods, they don't give the same deal to private residences.

It is not recommended that the homeowner try to cut costs by installing the rods himself. As Wally Akerman of the American Lightning Rod Company in Dover, New Hampshire, says: "A bad system is even worse than none at all." It attracts the lightning, but doesn't protect you from it. Also, it is best to use materials certified by the Underwriters Laboratory.

Are the rods worth it? That depends on whether your house is going to be hit by lightning, obviously. The incidence of strikes increases nationally to the south and east, meaning the Northeast is relatively lightning-free. However, there are hot spots around, such as Washington, New Hampshire, which according to Akerman has been hit so often every house in town has rods. Kurt Lochman at the Franklin Lightning Rod Company in Reading, Massachusetts, recommends the protection for houses near water-lakes, ponds, an artesian well, even a swamp can bring the lightning raining down on you, he says. Exposed houses in a field, say, or on high ground are also vulnerable. Tall trees around your house, on the other hand, can serve as lightning rods themselves and save you \$600, as long as they don't fall on your house when they get hit.

But strange things can happen. In Connecticut recently, lightning hit a tall pine in front of a house, traveled down the trunk, through the roots, into the house water pipes, up the plumbing, and into the kitchen sink where it smashed a stack of dinner plates. With lightning, you can't be too careful.

J.S.

TOWNSHIP POWERS, WHAT IS LEGITIMATE? WHAT IS NOT?

In 1943, the Michigan legislature passed the Township Rural Zoning Act, Act 184, Public Acts of 1943. This Act, and amendments thereto, provides that townships may pass zoning ordinances to regulate land and water use and development, to meet the needs of the state's citizens for food, fiber, energy, and other natural resources, places of residence, recreation, industry, trade, service and other uses of land; to limit the overcrowding of land, and congestion of population; to facilitate adequate systems of transportation, sewage disposal, water, energy, education, and to promote public health, safety and welfare.

In 1945, the Michigan legislature passed the Township Ordinance Act, Act 246, Public Acts of 1945. This Act provided that Township Boards may pass ordinances to regulate the health, safety and general welfare of persons and property within the township. They may establish a police department, or may call upon the county sheriff to provide special police protection.

Townships may not pass ordinances that would violate the common law of the state. The common law includes all court decisions that have been published and recorded. For example, a township cannot grant riparian rights to a non-riparian—a person who does not own shoreline property of an inland lake or stream.

The Michigan Supreme Court, in Thompson v Enz (379 Mich 667, December, 1967) states that a person must be a shoreline property-owner to be entitled to moor a boat in the waters of a public lake. The Court also stated that, "Riparian rights are not alienable, severable, divisible or assignable apart from the land which includes, or is bounded by, a natural water course."

YANKEE SPRINGS TOWNSHIP ZONING ORDINANCE UPHELD BY MICHIGAN APPEALS COURT

In 1987, the Yankee Springs Township Board adopted a Zoning Ordinance for the purpose of preventing the overcrowding of lakes within the township.

That Ordinance was challenged by Richard Fox, owner of 1/8th undivided interest in a 103 foot shoreline lot on Gun Lake in Yankee Township, Barry County.

Mr. Fox took the position that the trial court erred in "enjoining him from using his undivided interest in the lake lot for access to Gun Lake for the following reasons:

- 1. That the Yankee Township Anti-funneling ordinance did not apply to Gun Lake because the lake is not wholly located within the township's borders.
- 2. That the regulations of the Ordinance are vague, and "do not provide fair notice of the conduct proscribed."
- 3. That the lot in which he has an interest does not constitute access property under the Ordinance.
- 4. That the Ordinance is unconstitutional since it denies him his substantive "due process" rights.
- 5. That the Trial court erred in not finding that the plaintiff's claim should have been barred by an affirmative defense of "laches."

The Appeals Court disagreed with the above Defendants arguments as follows:

- 1. The location of the riparian land and not the location of the lake determines the townships authority and jurisdiction.
- 2. To meet this argument, reasonable minds must agree that the interpretation of the statute could differ. The Court does not believe that reasonable minds could disagree with the meaning of this ordinance.
- 3. For this argument to be valid, it must be proven that there is no reasonable governmental interest, and that the statute is arbitrary and capricious.
- 4. The regulations of the Ordinance are related to reducing congestion and lowering the risk of accidents on the lakes of the Township and are neither arbitrary nor capricious.
- 5. The Court does not agree that the township deliberately delayed taking action against him.

HOMEOWNER TOLD TO MOVE ILLEGAL SEAWALL

By Theresa D. McClellan

THE GRAND RAPIDS PRESS

CANNON TOWNSHIP — It's not quite Berlin, but Bostwick Lake resident Patrick Mulvihill has been told to tear down his wall.

Authorities say the 41-year-old homeowner illegally built a seawall jutting 8 feet toward the water, past the lake's high-water mark. Mulvihill installed the wall after erosion caused his lawn to buckle, but opponents said it could alter the water's motion and affect the environment.

Mulvihill appeared Thursday in Rockford District Court to be sentenced in the case that has been disputed for two years.

He will have to pay \$7,200 in fines or move the wall closer to shore. Mulvihill has 56 days to decide. If he chooses to move the wall, it likely will not happen until this spring.

That's far better than the hefty fine of \$10,000 a day—dating back to September 2002, when the wall went up—that could have come with the two misdemeanor charges.

Mulvihill, who had no prior criminal record, violated the Natural Resources and Environmental Protection Act by installing the structure without permits, a jury determined earlier this year.

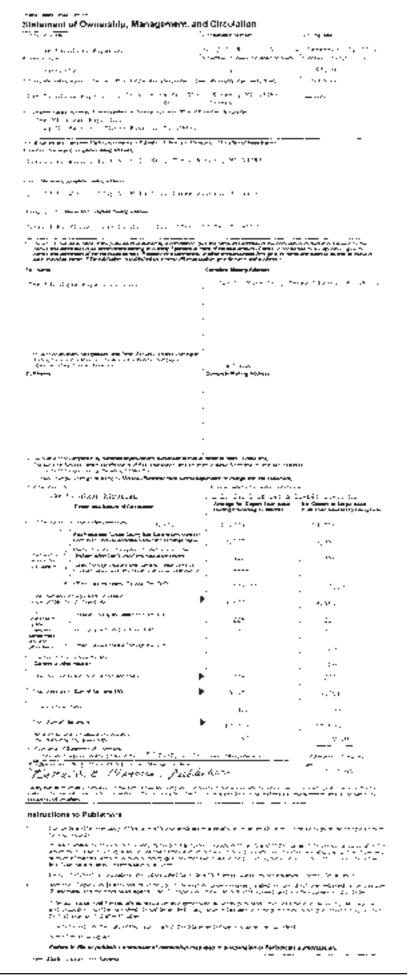
He will remain on probation for six months, but it will be dropped once he makes the changes on his property.

It was a rare case for the local court. So odd, in fact, that District Judge Steven Servaas questioned why it was a criminal matter. He told the parties they should have resolved the issue earlier.

In the end, the state offered a compromise, allowing Mulvihill to keep the wall if he moves it about 4 feet inland.

Mulvihill said he will take his time making a decision. He believes the case got this far because "it's personal."

But Assistant Kent County Prosecutor Patrick O'Keefe said authorities got involved because "this is a matter of public trust."



Neighbors lose battle for access to lake THE DAIL

BY DON REID STAFF WRITER THE DAILY REPORTER, Daily Newspaper of Branch County, Friday, December 10, 2004

COLDWATER — The public and residents along the east side of Coldwater Lake can no longer use the 28-foot lane from Miller Drive to access the lake.

Branch County Circuit Court Judge Michael Cherry ruled on Wednesday that Allen and Jamie Dolson own the land and it is not a public Road, the extension of Miller Drive. Earlier Judge Cherry had ruled there was no adverse possession or prescriptive easement over the property for the 26 neighbors who filed suit to force the Dolson's to remove a fence.

The couple bought their small lakeside cottage in the fall of 2002 and erected a fence across the lane in May of last year — just before Easter.

The 26 neighbors filed suit to open the lane. Their attorney, Charles Bappert, said he will recommend an appeal of Judge Cherry's decision.

The judge heard testimony over several months. His notes filled 22 pages. Robert King and his sister, Doris, who sold to the Dolsons, testified that for the 18 years they owned the cottage the public used the land. Robert King allowed a neighbor to put a dock at the end of the road but had it removed when Dolsons made the purchase.

Others testified the public had access since the 1930's. During the 1970's there were signs which indicated it was public access. The county road department even put gravel on the ruts.

In 1930, the McNitt Act took all public roads from township control and created road commissions. While Miller Road to Lake Drive was listed as a road, the extension to the lake is not.

Branch County Road Commission manager, Richard Losinski, who has been with the department for 39 years, said there is nothing in the records which indicates the lane is a public road. It was not on the 1958 certification of public roads in Branch County.

"There was some kind of public dedication in the 1880's," but there is no record, Bappert said.

All of those who filed suit said they were told at the time they made their purchases they had a public access to the lake across the land but Judge Cherry noted there is no evidence on any deed or official record which shows that access or right.

Losinski said in the past the road department, as a courtesy, provided grading and gravel for private roads, but that did not mean they were public roads.

The northern one-half of the lane was used for a septic system years ago and the owner built on the land.

Losinski said the road commission could not have accepted property for a roadway unless it met the 66-foot right-of-way requirements, had a gravel base and was paved.

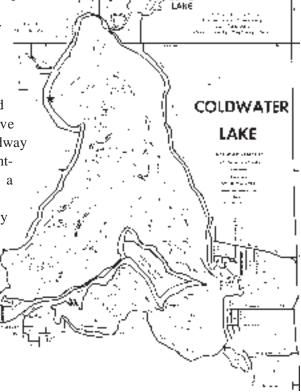
Witnesses told of hay crews, Amish and others swimming at the access. Others launched boats and ice fishing huts from the location. It was even used as a launch for ice boat races.

This general public use defeated one argument for continued open use by the neighbors. Bappert urged adoption of the legal theory of adverse possession or prescriptive easement to give the neighbors the right to continue to use the lane.

Judge Cherry ruled that theory was only for specific individuals and since the lane was used by the public in general, prescriptive easements were not created.

With so many lakes in Branch County, the issue of legal access to lakes through road extensions affects other accesses now in use.

This ruling effectively leaves no public access to the middle portion of the east side of Coldwater Lake.



GLOBAL WARMING?

WHO SAYS SO?

WHAT IS YOUR PROOF?

The pictures below show the receding Angel Glacier at Mt. Edith Cavell near Jasper, Alberta, Canada. The left picture was taken in 1922, and the right picture in 2002.

The retreat of most Rockies glaciers alowed in the late 1940s, and some glaciers actually began to advance in the 1950s, in response to a worldwide cooling trend that matched the natural cycle respresented by the Milankovitch climatic curve. The Columbia Glacier, which drains the northwest side of the Columbia Icefield, advanced over a kilometer between 1950 and 1981.

But that minor fluctuation is now over, and the retreat of the Rockies glaciers seems faster than ever. This comes despite the cooling trend expected from the Earth's position in the Milankovitec cycle. Are we seeing the effect of human-caused global warming, due to increasing levels of atmospheric carbon dioxide from burning fossil fuels? The evidence for global warming continues to accumulate, and there are few doubters left in the scientific community. Since 1850, the world's CO₂ concentration has increased from 290 ppm to 350 ppm, enhancing the earth's natural greenhouse effect and holding in more heat than normal.

If the warming is as much as recent predictions indicate—up to 5°C in the next 100 years—then the world is going to lose a lot of its glacial ice.

How Much? A study of the retreat of a large icefield in the Peruvian Andes shows a 43% loss since 1963, with icefront retreat accelerating from 8 m per year between 1973 and 1983 to 14 m per year more recently. The projection is for all glacial ice on high peaks at tropical latitudes to be gone in the next 50 years. This may be true for Rockies glaciers as well, because warming at our latitude is expected to be greater than it will be close to the equator.

The information above is from the book entitled, *HANDBOOK of the CANADIAN ROCKIES*, by Ben Gadd. Printed by permission from Ben Gadd. Ben also supplied the photos of the Angel Glacier at Mt. Edith Cavell, near Jasper.





Pair of photos taken from approximately the same point showing recession of the Angel Glacier at Mt. Edith Cavell, near Jasper. Left photo shows the glacier as it appeared in 1922, when the ice was still close to its Little Ice Age maximum extent. Right photo shows the glacier in 2002. Today the angel's robe has become a mini-skirt. Historical photo by F.M. Slark, courtesy Mrs. D. Guild.

The Michigan Riparian 19 FEBRUARY 2005

RECENT EVENTS

by: Clifford H. Bloom Law, Weathers & Richardson, P.C.

In the November, 2004 issue of *The Riparian*, I reported on a Michigan Court of Appeals decision which decisively upheld a township's anti-funneling regulations. However, at the time when the court opinion was issued, it was an unpublished opinion and was not binding precedent. Recently, however, the Court of Appeals ordered that the opinion in that case of Yankee Springs Township v Fox (Case No. 249045) be published, such that it is now binding precedent throughout Michigan. Accordingly, if a riparian property owner or lake association is trying to prompt a reluctant municipality to enact antifunneling regulations, the Yankee Springs Township decision (as well as the earlier Michigan Supreme Court decision in Hess v West Bloomfield Township, 439 Mich 550 (1992)) can be cited to support the validity of anti-funneling regulations.

Unfortunately, the Michigan Legislature did not adopt House Bill 4141 before the legislative session ended this past December. That bill would have made misuse of public road ends at lakes (whether by installing unauthorized dockage, leaving or mooring boats overnight, and similar prohibited activities) a state offense, pursuant to which any sheriff deputy or other police official could write a ticket. Storing or mooring boats, installing shorestations, and similar activities at public road ends is generally not permissible under civil law, and normally requires a private civil lawsuit to remedy the situation. HB 4141 would have streamlined the enforcement process by authorizing prosecutions through the criminal justice system.

A small number of backlot property owners (many of whom favor floating private marinas at public road ends and often advocate the private appropriation of these public properties by a few backlot individuals) was able to lobby and confuse matters so much that HB 4141 was not enacted

during this past legislative session. Even though this common-sense legislation was supported by such respected and diverse groups as the Michigan Lake & Stream Associations, Inc., the Michigan Townships Association, Michigan United Conservation Clubs, the state of Michigan, the Michigan Waterfront Alliance, and other groups, a small group of selfinterested backlotters was able to derail the legislation by playing upon some legislators' sympathies and making rather silly arguments. In fact, the backlot owners groups even tried to have inserted into the proposed legislation a "grandparent" clause which would have given those who improperly took over the road ends in the past exclusive privileges to continue to do so in the future! It is not clear whether a similar bill will be introduced again in the future or whether this matter will be left to the courts to shut down improper activities at public road ends on a case-bycase basis.

An important published decision was issued by the Michigan Court of Appeals on December 7, 2004, in the case of *Glen Lake-Crystal River Watershed Riparians* v *Glen Lake Ass'n* (Case No. 248580). The case dealt with important issues regarding the level of Glen Lake, the Inland Lake Level part of the Natural Resources and Environmental Protection Act, water flowage to the Crystal River, and other issues.

Finally, the Michigan Court of Appeals in its unpublished decision in *Czeryba* v *Marzolo* (Case No. 246955, decided November 2, 2004), once again confirmed that an easement which merely grants access to a lake does not encompass the right for a backlot owner to construct and maintain a dock and boat lifts at the easement or to moor boats at the easement. The court also discussed whether or not the original scope of the easement rights could be exceeded due to prescriptive easement claims.

GETTING TO KNOW YOUR LOCAL WATERSHED.

LET'S START BASIC: WHAT IS A WATERSHED?

A watershed is an area of land that drains into a lake or river. As rainwater and melting snow run downhill, they carry sediment and other materials into our streams, lakes, wetlands* and ground water.*

WHY IS YOUR WATERSHED IMPORTANT?

We all live in a watershed. Watersheds are the places we call home, where we work and where we play. Everyone relies on water and other natural resources to exist. What you and others do on the land impacts the quality and quantity of water and our other natural resources.

Healthy watersheds are vital for a healthy environment and economy. Our watersheds provide water for drinking, irrigation and industry. Many people also enjoy lakes and streams for their beauty and for boating, fishing and swimming. Wildlife also need healthy watersheds for food and shelter.

Managing the water and other natural resources is an effective and efficient way to sustain the local economy and environmental health.

Scientists and leaders now recognize the best way to protect the vital natural resources is to understand and manage them on a watershed basis. Everything that is done in a watershed affects the watershed's system.

POLLUTANTS AND WATER QUALITY.

In the past, most water quality problems were traced to the most obvious cause... point-source pollution.* This means the problem can be traced to a specific location such as a pipe or disposal site.

Technical and regulatory methods have been used to detect and control these problems. Much progress has been made in preventing further water quality problems from point sources.

However, water quality problems from nonpoint-source pollution* are more difficult to isolate and control. These sources are often hard to identify and difficult to measure. This type of pollution results from a wide variety of activities over a wide area.

Nonpoint-source pollutants are in the water that runs off crop or forest land. Others include failing septic systems, parking lots, construction sites, irrigation systems and drainage systems. It can even result from automobile exhaust getting in the atmosphere and falling back to earth in the rain.

A partnership among all who live, work or play in the watershed can help identify concerns, educate those involved and encourage them to take action. Watershed management plans focus on prevention of pollution. This is easier and cheaper than trying to clean up a watershed after the fact.

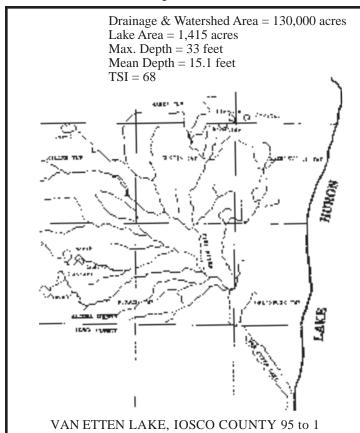
Understanding your watershed is the first step in protecting the water and other natural resources.

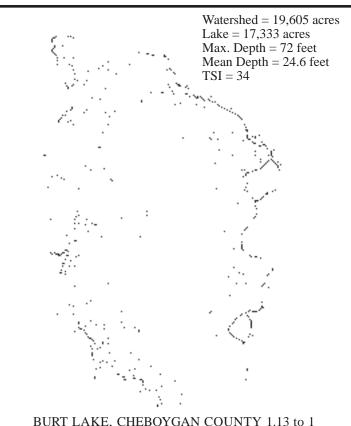
(See examples on the next page.)



WATERSHED SIZE AND LAKE DEPTH HAVE BEARING ON LAKE WATER QUALITY

Lake and Watershed areas in acres are given below. Also given is the maximum and average depth of each lake and the Trophic Status Index. The TSI is a measure of lake biological productivity. The ratio of the watershed to the lake size is given below each lake and watershed diagram.





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The appellate court decisions are final.

The following is an excerpt from a letter from William Carey, Attorney at Law, to Robert Frye, President, Michigan Waterfront Alliance:

The legislative branch of government may not, by ordinance or statute, change the court decisions. More specifically, House Bill 4141 cannot broaden the scope of the allowed uses of the roadends within the Higgins Lake subdivisions. Any argument that the current version of House Bill 4141 can "over rule" the decisions of the Court of Appeals is clearly erroneous and without merit. The only advantage House Bill 4141 has to property owners at Higgins Lake is that the enforcement of allowed uses would be undertaken by a government agency and not by private individuals. The HLPOA currently serves as the enforcement agent of the Court of Appeals decisions. House Bill 4141 could benefit the remainder of the lakes and streams within Michigan. The fight at Higgins Lake is over. Legislative actions will not change that.

I hope this opinion is helpful to you and your organization. Should you have further questions please do not hesitate to contact me.

Sincerely, WILLIAM L. CAREY