



LAKE LINDEN-HUBBELL MIDDLE SCHOOL TRAPROCK RIVER NEWSLETTER 2001

| PAGE | ARTICLE |
|------|--|
| 2 | Greetings! by Middle School Staff A Trap Rock Poem by Katie Polzien, Phillip Waara, April Johnson, Josey Aalto The Life of a Tree by Amber Killian, Greg Meneguzzo, Mandi Gertz, Ryan Frendewey |
| 3 | Water Chemistry Testing by Renee Dumonthier, Kelly Pepin, Peter Dilny Upper Scales Creek by Mandi Gertz, Amber Killian, Ryan Frendewey, Greg Meneguzzo |
| 4 | Torch Lake by Zack Posz, Nicole Stemen, Evan Harju, April Foster Back in Bob's Time by Renee Dumonthier, Kelly Pepin, Peter Dilny |
| 5 | Probes by Kim Norton, Linda Hendrickson, Holly Seppala The Life of a Benthos by Ashley Codere, Ashley Hine, Kevin Koskela |
| 6 | What's In a River? by Ashley Codere, Ashley Hine, Kevin Koskela Help Wanted by Laurel Chadde, Tia Baccus, Chris Dion, David Perin |
| 7 | Torch Lake Crossword Puzzle |
| 8 | Lake Superior & Mercury by Kristen Provost, Jesse Trezona, Travis Dessellier, Nikki Buschell |
| 9 | We Rode the Bus to the Trap Rock River by Meghan Cross, Brooke Beauchamp, Trevor Perala, and Adam Fountaine Upper Peninsula History by Phillip Waara, Katie Polzien, Josey Aalto, April Johnson |
| 10 | Organisms In and Around the Trap Rock by Trevor Perala, Brooke Beauchamp, Meghan Cross, and Adam Fountaine The Moonscape by Teryn Codere, Michelle Englund, Michelle Locatelli, Salina Trevino |
| 11 | Community Involvement by Angela Guisfredi, Joel Michaelson, Preston Taylor, Tammy Racine Why Do We Care? by Angela Guisfredi, Joel Michaelson, Preston Taylor, Tammy Racine |
| 12 | Trap Rock: Then & Now by Megan Thomas, Gregg Byykonen, Casey DeMars Timeline: Lake Superior by Kristen Provost, Travis Dessellier, Nikki Buschell, Jesse Trezona |
| 13 | Mining in the Copper Country by Jessica Joosten, Jeremy Huuki, Cole Bonini Payday at C&H by Jessica Joosten, Jeremy Huuki, Cole Bonini |
| 14 | Photos of Students at Work |
| 15 | Map of Trap Rock River Watershed by M. D. Hyslop, MTU Ecological Mapping Laboratory |

Greetings!

The 8th graders at Lake Linden-Hubbell Middle School took part in the Trap Rock River Project for the 7th year in a row. This year the Middle School teachers worked to stretch this project into all areas of the curriculum and thus, this student-written Trap Rock Newsletter was re-born.

During fall 2001, we took two field trips. The first field trip provided students with a historical overview of our area and the Trap Rock River watershed. We visited the Keweenaw National Historic Park in Calumet and learned about the connection between our area and copper mining. We then learned about the effects that copper mining has had on our natural resources. Bruce Peterson, with the Natural Resources Conservation Service, showed us the stream restoration work in upper Scales Creek. Gary Aho, also with the Natural Resources Conservation Service, took us on a tour of the Torch Lake Remediation Sites.

The second field trip took us to the Trap Rock River where we spent an entire morning conducting tests to determine the health of the river. Student Groups collected stream macroinvertebrates, measured stream flow rates and tested the water for oxygen, pH, copper and other parameters. The good news is that overall the health of the river is pretty good!

We worked closely with Joan Chadde, of the Western Upper Peninsula Center for Science, Math and Environmental Education at Michigan Tech. The project benefited greatly from Joan's steadfast involvement and advice. She arranged our guest speakers and worked closely with science teacher, Bill Jarvis, in designing the field trips and conducting water quality tests on the river.

The educators at Lake Linden-Hubbell Middle School believe that the idea of community is important. We hope that all students are able to make connections between themselves and their community. The Trap Rock River Project has shed light on our community's past, present, and future. As we looked at the river's health, we were able to study our Native American predecessors, the legacy of mining in our area, the ecosystems in the Lake Superior watershed, as well as, the many land uses in our area.

We are immensely proud of this newsletter, as it is completely student-written. We hope you are impressed with the amount of research, energy and creativity our students dedicated to this project. Unfortunately, due to space constraints, a few articles had to be shortened.

A special thanks to all of the people involved in the Trap Rock project, and especially to the Houghton-Keweenaw Conservation District & Lake Linden-Hubbell School District who provided the funds to print and mail this newsletter.

As always, feel free to contact us with any questions or concerns you may have. Enjoy the newsletter!

Jennifer Klipp, Language Arts Teacher
Bill Jarvis, Science Teacher
Andy Crouch, Social Studies Teacher

Lois Codere, Math Teacher
Kristen Rundman, Guidance Office

A Trap Rock Poem

Phil Waara, Katie Polzien, April Johnson, Josey Aalto

I slip by the trees hanging over the slopes
of my banks.

My water is cool and clean,
Lush moss covers the boulders set in the middle of
my journey to the great lake, "Gitchigumee"

I see the Indian Chief and his tribe,
They enjoy my cool and refreshing liquid,
They cleanse in my bountiful stream.

I cruise by, and they slowly start to fade away . . .

Hundreds of years later,

I can hear mining drills in the distance,
I see more sand going onto my surface,

I can't believe what's going on,
If this carelessness doesn't stop, I'll become ill . . .
My bottoms are being suffocated with stamp sand.

I'm being punished with every tire thrown in me.
I have more lifeless things floating in me, than living.

As I float through my channel, I am now awake,
I feel like a new river, fresh and clean,
Because of the 8th grade from Lake Linden Jr. High,
I'm a healthy river,

Not just an exhausted, old watershed.

The Life of a Tree

Ryan Friendway, Amber Killian, Greg Meneguzzo, Mandi Gertz

This story begins when I was just a sapling. I was nothing compared to the mighty trees that towered over me. I grew on the banks of the stream called Upper Scales Creek. The water was pure and clean; the fish were plentiful; and there was lots of animal life. Rabbits would playfully hop in and out of their dens, herds of deer would peacefully drink from the creek's plentiful water source, and long grass hung over the sides of the bank. White puffy clouds hung motionless in the clear, blue sky. The cheerful songs of the birds could be heard echoing throughout the forest. It was a very peaceful and happy time. But as the years passed, things started to change . . .

UPPER SCALES CREEK

Mandi Gertz, Amber Killian, Ryan Frendewey and Greg Meneguzzo

Scales Creek is located in the Trap Rock River watershed. Scales Creek is the main tributary to the Trap Rock. It's also the most polluted tributary going into the Trap Rock. What is it polluted with and how did it get that way? Back in the copper mining days, miners took copper out of the rock by crushing the rock until it was a sand-like substance called stamp sand. Then the miners dumped this stamp sand into the stream, river, or lake. After the miners were done mining copper in the area, when it rained, water washed stamp sand and copper into Scales Creek.

Who cares if stamp sand and a little bit of copper gets washed down into the creek? Well, this affected the fish and other aquatic life in the water. For example, the stamp sands covered up the rocks and stones at the bottom of the river. Then, when the fish and aquatic life laid their eggs, they weren't able to get down into the crevices between the rocks. So first, they were not protected from predators. Second, when the current came they got washed downstream. Third, the stamp sand covered the already laid eggs, so the eggs could not hatch. The aquatic population decreased dramatically in the following years.

In 1998, the Natural Resource Conservation Service (NRCS) started to do something about this problem. Bruce Peterson headed the project. He started by putting down a filter cloth over the stamp sands washing into Upper Scales Creek. Then he went looking for some old mine rock to lay down over the filter. The purpose of the filter was to keep the stamp sand from entering the river, and the purpose of the rocks was to filter the water and to provide protection for the aquatic eggs. The pollution has decreased from what it was. It is now up to our generation, and generations to come, to keep improving Scales Creek.



Water Chemistry Testing

Renee Dumonthier, Kelly Pepin and Peter Dilny

The freezing wind was rushing through the trees as our bright yellow bus rounded each corner. We got off at Site 1 in the Traprock Valley along the Trap Rock River, which had a lot of big, bushy trees and shrubs overhanging the water. The water was clean and clear, and the bottom had a variety of different colors and sizes of rocks. Now the excitement begins.

Student groups tested at four sites along the river:

Station #1: Trap Rock bridge on Woodbush Road

Station #2: Scales Creek bridge on Valley Rd.

Station #3: Trap Rock bridge over Valley Rd.

Station #4: Trap Rock bridge over Angman Rd.

At Station #1, our group did water chemistry testing for: Oxygen, Phosphorus, Nitrogen, pH, and Copper.

Station #1 Results

Oxygen: 16.4 parts per million

There is a lot of oxygen in the water here that supports a healthy aquatic life for fish, frogs, and macroinvertebrates in the Trap Rock River.

Phosphorus: Zero parts per million

Phosphorus makes plants grow. Zero parts per million of phosphorus is great because it tells us that the vegetation buffers that we use to stop run-off from getting into the stream helped.

Nitrogen: Zero parts per million.

“Nitrogen is a colorless odorless gas. It is important in making ammonia, explosives and fertilizers.” Zero parts per million is good

because that means there is no Nitrogen in the water.

pH: 7.25

The pH of pure water is 7 with lower numbers indicating acidity and higher numbers indicating alkalinity. No river water is perfect, so having a 7.25 pH is a great rating to have.

Copper: 10 parts per million

10 parts per million of copper is OK. It means there still is a small amount of copper in the water from the mining days.

In conclusion, the tests that we performed show that the Trap Rock River is a healthy river.

Torch Lake

Zack Posz, Nicole Stemen, Evan Harju, April Foster

Torch Lake is part of a watershed. The Trap Rock River is a part of the Torch Lake watershed. The Trap Rock River empties into Torch Lake, that then flows into Portage Lake, to Lake Superior, to the other Great Lakes, and eventually into the Atlantic Ocean.

Most of us don't think much about Torch Lake. We just think that it's always been there, as it is today. The truth is, it's gone through many changes to get to the condition it's in today. Torch Lake used to be dangerously polluted.

In 1868, the first mill opened near Torch Lake. Its name was Hecla Mill. At the mill, mine rock containing rich amounts of copper was stamped or crushed so the tiny particles of copper could be removed. The crushed rock left after the copper was removed is waste product of mining called stamp sand.



This stamp sand was dumped into Torch Lake. Back then they didn't care where it went, as long as it was gone and out of the way. But the truth is, it wasn't out of the way. It was, in fact, covering aquatic animals' habitat and food sources, killing many of them. This huge detail was noticed in 1988 and a superfund was created. (A superfund is a site of concern where millions of dollars are spent to fix it.) In 1968, the last mill closed on Torch Lake.

In 1992, the Environmental Protection Agency decided to place a 6-inch layer of soil over the "sands" [along the shoreline] and plant grass and other vegetation. This was included as a part of the superfund site. The actual work of this project started in 1999 and continues today.

Before the mid-1970s, wastes were being dumped into Torch Lake. In 1973, sauger and walleye were found to have cancerous liver tumors and other organ problems. In 1975, raw sewage stopped being dumped into the lake.

As a result of all of the hard work and dedication put into cleanup, Torch Lake is gradually returning to the way it was before it was polluted.



Back In Bob's Time

Renee Dumonthier, Kelly Pepin, Peter Dilny

I am Herman Fish and I am here to tell you a story that has been passed down from fish to fish tracing back to the mining days. The story is about Bob Fish, his family, and how the river looked back then.

Now travel back to the mining days when that was how the humans made a living.

Bob Fish lived in the Trap Rock River and saw the hard-working miners dump load after load of stamp sand into the water, making the water a reddish foggy color that lingered for days.

Bob also saw the strong loggers send the logs downstream to the mill. It was horrid for the fish that lived in the river at the time, because when the logs were rapidly zooming down the river, the fish had to either flatten themselves against the rocks or find minuscule crevices to hide in. The fast gigantic logs did not stop for anything once they got in their death-defying path. Bob Fish decided to move he and his wife, Bobetta Fish, to Torch Lake to get away from the logs and the murky water.

It was heaven for a while until the copper from the stamp sands came to affect the aquatic life in Torch Lake. He noticed many fish were getting humongous-sized tumors and the babies were having birth defects like extra tails and heads. Soon he and his wife grew tumors, and out of the millions of eggs that they laid, only two were born. Tragically, Bob Fish, Jr. and Bobetta Fish, Jr. died sooner than normal.

After the death of many organisms, the humans decided to make Torch Lake a Superfund Site and clean up the lake. A while after that, the 8th grade students of Lake Linden-Hubbell Middle School did tests and cleaned up the disgusting, scummy Trap Rock River, which is one of Torch Lake's largest tributaries. And that concludes the story of Bob Fish.

Note: The 8th grade students of Lake Linden-Hubbell Middle School continue to clean up the river. Now the river is clean, clear, and we fish are HAPPY! ☺

PROBES

Kim Norton, Linda Hendrickson, Holly Seppala

Temperature, pH, dissolved oxygen, flow rate, and turbidity. You're probably thinking, "What are you talking about?" Well these are the different kinds of probes we used in our eighth-grade computer applications class. I will explain to you what probes and lab pros are, and how Lake Linden School got the money for them.

Probes are scientific instruments that measure many different things in the water. At our school, we have eighteen different probes, and the prices range anywhere from \$15 to \$100. Lab pros are scientific instruments that collect information from the probes. On average, lab pros cost \$220. Our school has fifteen of them!

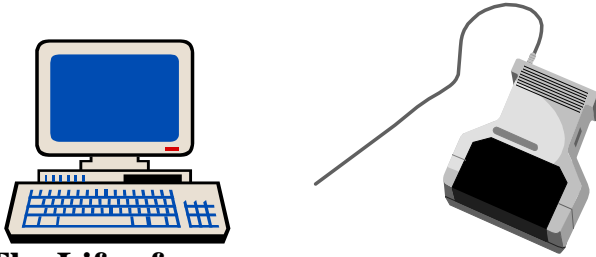
All schools have budgets, and not many budgets have extra money to put toward these expensive purchases. For our school to get the money, we had to apply for a grant. They first told us we would get the money in a year but many school grants were cut back and our school's was one of them. We waited for another year and then found out we got the money. We purchased the probes and lab pros and now use them for many different classroom experiments.

My class was lucky enough to get to use them in the testing of the Trap Rock River. It was a very fun and educational experience. I hope in future years Lake Linden will get more new technology and our learning will be more hands-on.

Instructions: How To Use A Lab Pro

1. Take the lab pro and a scientific calculator and hook them in a case.
2. Use the calculator cord and connect the lab pro to the calculator.
3. Turn on the calculator and go to the data mate program.
4. Push the quick start button on the lab pro.
5. Put the probe in the water.
6. Push the start on the calculator.

7. The lab pro will start collecting data.
When
it's done, a graph will appear.



The Life of a Benthos*

Ashley Codere, Ashley Hine, Kevin Koskela

There was a problem in our nice little home. There was no food to eat. The algae, our food source, was dying because no sun reached it to help it grow. The trees around the river were covering up the sun. The owner of the mills found this out and started cutting down trees to provide sun for the environment, but what they didn't know is that they were just making the biology there worse from the logging.

August 3, 1949:

"We are running out of food, Bill," said Sally. Bill and Sally are both benthos.

Bill replied, "The sun all of a sudden isn't out anymore and I don't know why!"

"Well, we are going to have to flow down stream a bit to see if there is any food down there," Sally said.

"Did you hear that, Sally?" Bill said.

"Hear what?" Sally asked. V-R-R-O-O-O-M-M-M!

"There it goes again," said Bill.

"I heard it that time. I think it's a device called a saw, which humans use to cut down trees. But logging is a good thing— though they just should be careful on how they do it, I heard," said Sally.

Dust and mud sediment started pouring into the river and Bill screamed, "Hurry, hide under the rock."

And so they did. But then something happened that distracted them. They heard a helpless little voice. It was a tiny lost benthos with confusion and fright on its little face. Sally sped out of the rock, knowing she was going to do the right thing. As the little insect screamed in horror, Sally yelled, "Hold on little one."

So he held on with all his might and they started heading up stream. When they reached Bill, they hid under the rock, terrified of the noises. The noises started to get louder and it started to get a bit darker from the sediment. Bill screamed, "Look out!" And Sally pushed the young one down the stream, but it didn't make it. A log the loggers threw in the water to move downstream to their log factory squashed Bill, Sally, and the little benthos. And from that day on, they were never forgotten because they risked their lives for a young one in a very serious situation also known as pollution.

What I am trying to get at, is that there is too much stuff going on, such as mining and factories, that disrupt our waters. But thanks to our 8th graders, we made our stream a lot healthier by cleaning it and taking tests every year since 1995. Now our river is a lot healthier for everyone to enjoy!

* *Benthos* – a benthic macroinvertebrate, or bottom-dwelling organism, that lives on the bottom of a lake or river. Benthos (*pl.*) are often the larval forms of insects, such as mayflies or dragonflies. They provide food for fish and other organisms.

WHAT'S IN A RIVER?

Ashley Codere, Ashley Hine, Kevin Koskela

Have you ever wondered what's in the water? Maybe some perch and little fish and also seaweed? Well that's right, except that not all places have these water animals.

There are three types of organisms:

- i) Pollution-tolerant organisms that tolerate lots of pollution,
- ii) Mid-tolerant organisms that tolerate some pollution,
- iii) Pollution-sensitive organisms that tolerate very little pollution.

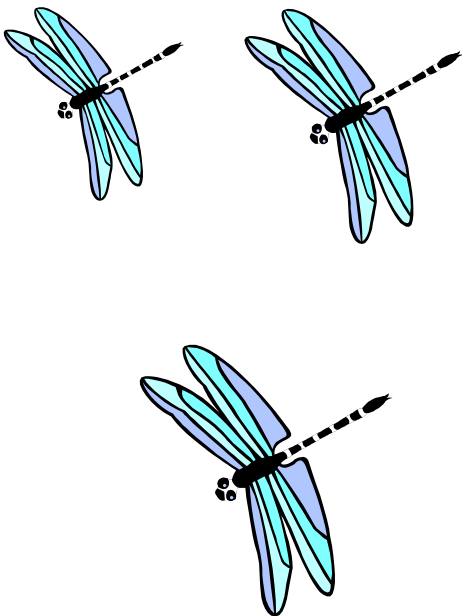
Our area has mostly pollution sensitive organisms.

Aquatic invertebrates live on the bottom of rivers and lakes. They are also called benthic macroinvertebrates (benthic = bottom, macro = large, invertebrate = no backbone) or benthos, and are good indicators of watershed health. Benthos can be affected by low oxygen, toxic chemicals, nutrients, and habitat quality.

Biological monitoring, also called *Rapid Bioassessment* by the EPA, is used by all of the states as a “quick, low-cost” method of evaluating stream health. This method has been tested in streams in various parts of our country. *Rapid Bioassessment* was designed as an inexpensive screening tool for determining if a stream is supporting or not supporting designated aquatic wildlife (like fish).

Around the Trap Rock River, we have found many good aquatic organisms such as stonefly,

mayfly, and caddis-fly larvae. The river is mostly made up of gravel, which provides good shelter for the insects. Some fish lived in the deeper parts of the river, called pools. Also there was lots of vegetation all over creating a better, healthier habitat for the stream. Now you can see with all the data that we have collected, *Rapid Bioassessment* can get you lots of information on your river. All in all, the Trap Rock River is healthy for aquatic life.



HELP WANTED

Laurel Chadde, Tia Baccus, Chris Dion, David Perin

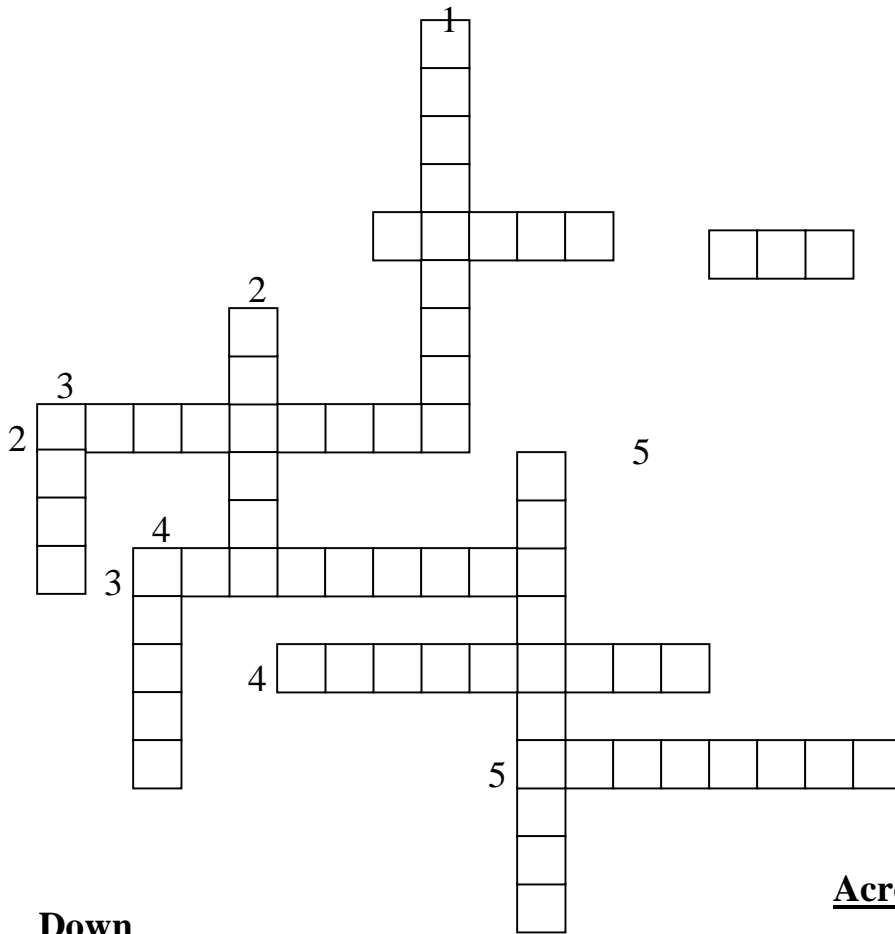
Please come help clean up the Trap Rock River. I am being polluted more and more each day with the growing amount of people coming to this area.

With the power of the community, and the people who treasure this area most, WE can make the river healthy again. There is no age limit or pay, just the thought that you did something useful and helpful for the community.

If we work together I will be able to be used for recreation for many eventful years to come. If you would like to pick up trash, come visit the Trap Rock River watershed.

GO CLEAN THE TRAP ROCK RIVER!

Torch Lake: Test Your Knowledge



Down

1. A site or area of concern where millions of dollars are spent.
2. A mineral mined in the Keweenaw since the 1800s.
3. Material leftover from separating metal from rock.
4. An abnormal growth on fish found in Torch Lake in 1973.
5. Five freshwater lakes that surround Michigan.

Across

1. River that flows into Torch Lake.
2. Crushed, leftover rock from the copper extraction process.
3. Lake that Trap Rock River flows into, and topic of this puzzle.
4. Waste that harms the environment (rhymes with solution).
5. Ocean that water from Torch Lake eventually flows into.

LAKE SUPERIOR & MERCURY

Kristen Provost, Jesse Trezona, Travis Dessellier, Nikki Buschell

Lake Superior is known as the largest freshwater lake in the world. It has an average depth of about 483 ft and reaches a maximum depth of about 1,332 ft. It is about 350 miles long, and 160 miles wide, with a volume of 2,900 cubic miles—enough to cover North, South and Central America with one foot of water! There are several states and cities that are part of the Lake Superior watershed. The watershed includes parts of Wisconsin, Minnesota, Michigan and the province of Ontario, Canada. The Lake Superior watershed covers about 81,000 square miles, but only about 39% of its area is covered by water.

There are different types of pollution that affect Lake Superior. Some of the pollutants are

mercury, dioxin, and PCBs. Mercury is the main contaminant in fish—the fish you catch and feed to your family for dinner. Do you want your whole family to be eating all that mercury? After mercury enters the water, it is converted to methyl-mercury, which is an organic form of mercury. It is then taken into the food chain, and into the fish we



eat. Salmon, Lake Trout and Walleye are just a few of those fish that could have a mercury concentration over a million times higher than that of the surrounding water! This results in about 7 million women and children eating mercury-contaminated fish each year. Many of those women may someday have children, and because of the mercury their children could develop serious developmental delays in walking, talking, writing and hearing. Impacts at higher levels include cerebral palsy and mental retardation. I don't know what others think, but being a child of the future doesn't sound too pleasant.

Mercury comes from mine tailings, discarded auto batteries and discharges of some industries.

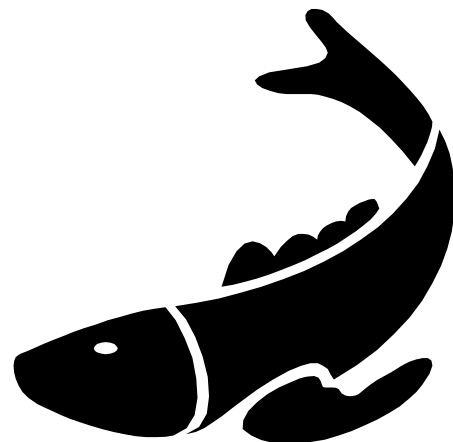
How can this be fixed? First, we have to stop adding more pollution, and secondly we must clean up the pollution already there. There are a number of Lake Superior pollution-prevention initiatives within the watershed, which are slowly helping to clean the lake. Some of these pollution-prevention initiatives were begun as part of the “Binational Program” to restore and protect the Lake Superior basin. This program is working towards a goal of zero discharge and emissions of toxic substances entering Lake Superior. But they need help from everyone, including you, to make a cleaner, brighter future for everyone!



In conclusion, we don't want to prevent you from ever eating fish again, in fact, eat all you want. We just want to prevent you from adding more pollution to Lake Superior, and to do all you can to rid the lake of the pollution already there. Then you and future generations can live a healthier, happier life not having to worry about feeding your families contaminated fish.

We rode on the bus to the Trap Rock River . . .

Meghan Cross, Brook Beauchamp, Trevor Perala, Adam Fontaine



The sight of the river first made me quiver
 There was Trash all around,
 All over the ground.
 The water so cold,
 It made us shiver.
 We cleaned up its bank,
 While in the mud we sank.
 We found a bug
 And named it Hank.
 The bugs were big,
 The bugs were small.
 Some were short
 And some were tall.
 It was dirty before,
 But we made it clean.
 No one would have imagined,
 No one would have dreamed.
 We did our share
 And that's only fair.
 So until ninth grade,
 It will be in our care.

The first humans to inhabit this area were the Native Americans. Of course you knew that, but did you know which tribes existed here? The Chippewas were a major tribe. Sometimes the Chippewa tribe were called the Ojibwa. Ojibwas located in the western end of their territory (near us) were considered to be the most fierce. The name Ojibwa came from a combination of the word Ojib meaning "puckered or drawn up" and ub-way meaning, "to roast." The Ojibway were so fierce that when they captured enemies, such as the Sioux tribe, they would burn them alive and roast them until they started to pucker.

The Native Americans were the ones to discover the copper here. They actually had their own mines, which the immigrants built onto. In the late 1800's, the copper business really started booming. People came from all over the world, like the English, Cornish, Croatians, Slovaks, and the Germans. Those were some of the first immigrants to establish the mines up here. Many young and old men, however, lost their lives in the mines. Sometimes they died from rock in the mines falling on them and crushing them, or slipping into one of the shafts. Copper mining ended in the late 1960's.



Students work on their stream tests as our faithful guidance counselor, Mrs. Rundman, offers assistance.



Michelle Englund takes good notes on the Trap Rock River watershed tour on September 11, 2001.

Upper Peninsula History

Phil Waara, Katie Polzein, Josey Aalto, April Johnson

The Upper Peninsula, what a beautiful place! With its bright springs, joyful summers, colorful falls, and its white winters, we are very lucky to live here. But the Upper Peninsula is also bursting with history—from the Native Americans to the copper mines, the Keweenaw has a very interesting past.

Organisms In & Around the Trap Rock

Trevor Perala, Brooke Beauchamp, Meghan Cross, Adam Fountaine

In the beautiful Trap Rock River, there are many different organisms that are both big and small. The stream macroinvertebrates that we found included: snails, caddisflies, mayflies, crane flies, dragonflies, aquatic worms, midges and pouch snails. Many of the organisms were still in their larval or nymph stages.

To find the insects, we had to get into the cold water and rub, stomp and scrape the rocks to release the bugs from the bottom of the river. We used long nets to catch them. We placed them into ice cube trays so we could observe and identify them. When we were finished, we released them back into the river.

The macroinvertebrates we collected were grouped into three different groups: sensitive, semi-sensitive, and tolerant—meaning they can tolerate polluted water. The macroinvertebrates we found were mostly in the sensitive and semi-sensitive groups, indicating the river is in good condition.

The vegetation around the river is also healthy and abundant. The river is perennial, running all year long. There are also mammals around the area, such as raccoons, squirrels, and even bigger animals like cougars and bears. Cougars can get up to 5 feet long and live from 10-20 years. They mainly prey on deer and elk so we assume that deer thrive in the area, too.

From our studies, we found the Trap Rock is clean and healthy. And if we continue to be concerned about our river, and take care of it, it will remain a healthy aquatic ecosystem.



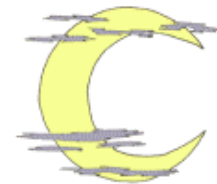
Students use kick screens to collect stream macroinvertebrates from the Trap Rock River.

THE MOONSCAPE

Teryn Codere, Michelle Englund, Michelle Locatelli, Salina Trevino

Once, this field of grass was nothing but black hills and gullies of stamp sand. The name “moonscape” given by the DNR, truly fit with this mysterious place for it looked just as though you were on the moon. It would have been neat to have seen this site when it was first made. Now, because of remediation, there is no longer a place on earth where you can be on the moon at the same time. Remediation is the correcting of an environmental problem.

When Mother Nature was left to deal with the moonscape on her own, she naturally had a hard time. This is because moonscapes are nothing but tons and tons of stamp sand everywhere.



Literally tons! Stamp sand is crushed rock that copper has already been removed from. When left in the sun, it can get almost twice as hot as the air! For example, on a typical day in fall, the air could be 60 degrees

Fahrenheit and the stamp sand could get as hot as 110 degrees Fahrenheit! Now imagine moonscapes, with their hills and gullies of stamp sand on a hot summer day. No vegetation could possibly grow and it’s easy to see why.

For 80-100 years, the Upper Scales Creek moonscape was a black wasteland, desperate for help and concern. Finally, a few years ago, people decided to put some time, money, and effort into the site. They laid down huge plastic tarps over the stamp sand and put down a layer of soil and plants. Soon grasses began to cover the stamp sands. The moonscape has become a meadow. Will it continue to improve? Only time will tell... All we can do now is hope for the best and watch nature work its wonders.



Brooke Beauchamp and Cole Bonini conduct a streamside



Students perform water chemistry tests on the Trap Rock River.



habitat evaluation at the river.

“Mock Advertisement for Community Involvement”

Angela Guisfredi, Joel Michaelson, Preston Taylor and Tammy Racine

Come on down to Lake Linden-Hubbell Middle School, where the 8th grade kids are selling community involvement, to clean up rivers and lakes. For your payment of only \$9.99, you can be a better person. You will be able to care and clean better than ever. All that will be asked of you, is to come to the Trap Rock River once a year and clean up a little trash. But wait, there’s more! If you come to the school right now—we’ll throw in a “We care about water” headband ABSOLUTELY FREE!

Call now, 1-555-CLEANWATER, or stop at Lake Linden-Hubbell Middle School, located at 601 Calumet Street. Do your part TODAY!

“Why Do We Care?”

Angela Guisfredi, Preston Taylor, Joel Michaelson, Tammy Racine

You know that 75% of the Earth is water, but did you know that only 2.14% of that is freshwater? We need to protect our freshwater. Would you want to go swimming in a lake that has frogs with two heads, or fish with tumors? That is how many lakes would be if we didn’t care.

Between the years 1840-1850, mining started. People from many nationalities including English, Finnish, Italian, and French came to the U.P. It was a new land and a new future for them. In 1970s, more than one hundred years later, the people of Houghton County found tumors on fish in Torch Lake. Mining companies had been dumping stamp sand (a crushed rock that nothing can grow in or on) into Torch Lake. Before mining companies dumped stamp sand into this lake, one part was 120 ft deep. Now that same spot is 20 ft above water. Thirty years after the tumors were found, there are still not many organisms living on the bottom of the lake.

Torch Lake has gotten a lot cleaner since we all started working together. Because of the extra effort people made and the care they have put towards the water, our town is a better place.

When people started getting concerned, the EPA (Environmental Protection Agency) got involved. The EPA spent money cleaning the rivers, lakes and the land

around this superfund site. Now residents can go fishing without being afraid the fish could have tumors, and

parents can let their kids swim in Torch Lake without thinking they might be exposed to cancerous materials.

“People care about the Trap Rock River because it is their home. A healthy river is much nicer to live near, camp or picnic next to, swim in, or canoe down. A healthy river is more attractive to birds and wildlife,” explains Joan Chadde, a resident of the Trap Rock River watershed.

A river is many things . . . it is home for fish, a swimmer’s hobby, a resident’s enjoyment, a fisherman’s job and much more. That should never be taken away from us. Torch Lake has gotten a lot cleaner since we all started working together. Because of the extra effort people made and the care they have put towards water, our

town is a better place. TRAP ROCK RIVER: THEN & NOW

Megan Thomas, Gregg Byykonen, Casey DeMars

Then

Stamp sand is finely ground rock from ore processing operations. It was deposited from the mines into Torch Lake and along the shore. The stamp sands affected life in and out of the water. The mercury in the stamp sands gave animals tumors. In 1973, sauger and walleye were found to have peculiar skin growths, cancerous liver tumors, and other organ abnormalities. From 1868-1968, Lake Linden, Hubbell, and Mason areas received over 200 million tons of tailings. The mining company that was primarily responsible for this, was Calumet & Hecla. Torch Lake contains widely scattered deposits of stamp sands from more than 100 years of copper mining, milling, and smelting. Waste water was also a problem. Local communities would discharge their wastes directly into the lake. The animals and humans were affected.



Mason Sands currently undergoing remediation.

Now

Torch Lake has improved since the mining days. Mining discharges ceased in 1968 and waste water discharges were eliminated in 1975. Since then, Torch Lake has been restored to a clear blue and vibrant body of water supporting an abundant fish population—it is developing a reputation for premiere walleye fishing.

Due to effects of past discharges, the U.S. Environmental Protection Agency (USEPA) designated Torch Lake and its entire watershed as a superfund site, including rivers and streams flowing into it. What is a superfund site?

A superfund site is an area that needs to be cleaned up and restored. A government grant is given to do this. These mill tailings and stamp sands are simply an unfortunate by-product of the mining era. The USEPA has granted \$15.2 million in remediation funds to do work on Torch Lake. The remediation plan includes covering the stamp sands with soil and vegetation to reduce their movement into the environment through wind and water erosion, and creating a substrate for restoring vegetative cover. More than 600 acres are covered with 6-8 inches of soil. This was a very expensive project, but it needed to be done. It will help the animals in the water, as well as the animals and people on land. It also made the land and places with stamp sand look a whole lot better.

Lake Superior Time Line A Billion Years Ago To 1975

Kristen Provost, Travis Dessellier, Nikki Buschell, Jesse Trezona

A Billion Years Ago, the continents split apart which made lava flows; and lead to mineral deposits, which eventually attracted people to this area for mining, farming and logging.

| | |
|---|-----------------------------------|
| A glacier moved through the Lake Superior area, which formed Lake Superior. | 10,000 to 15,000 years ago |
| Indians began to mine in the U.P. and other parts of Michigan. | 1301 |
| French and English explorers and voyagers came in search of furs and minerals. | 1600s to 1700s |
| French and British traveled to the U.P. for the fur trade. | 1600 to 1816 |
| Americans moved here for the fur trade business. | 1816 to 1850 |
| Fur trade ended because the beaver hat went out of fashion in Europe. | 1850 |
| Douglas Houghton discovered Copper in the Keweenaw! | 1841 |
| Copper rush began! | 1843 |
| Michigan leading the world in copper mining. | 1847 to 1887 |
| Copper miners go on strike! | 1913 to 1914 |
| During a Christmas party for children on Christmas Eve, a man yelled “fire” at the Italian Hall in Calumet. 73 people died, most of them children, even though | 1913 |

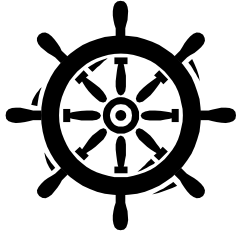
there never was a fire.

Wreck of Edmund Fitzgerald.
that made Lake Superior famous.

1975

MINING IN COPPER COUNTRY

Jeremy Huuki,



THE

Jessica Joosten,
Cole Bonini

has been
Keweenaw

There mining in the since prehistoric times. Native Americans were the first people to mine here. After that, when settlers came to the area they stumbled upon “Indian pits” or holes where the Native Americans had mined copper. Eventually, after many years, several small mining companies formed, all which had their own shafts and their own workers. People from Italy, England, Ireland, and all over Europe came here to mine. Later, one company known as C&H, Calumet and Hecla Mining Corporation, began to buy several of the other mining operations, creating a copper-mining monopoly in the district. One company they didn’t buy was Quincy, which had the deepest mineshaft on earth, the Quincy Mine, on Quincy Hill.

In their prime, the Calumet Division of C&H had 22 schools, 20 baths for men and 16 baths for woman. The baths were located in the company’s library basement. All people were supplied with houses because they were working hard, and for many hours a day. The process of mining was hard and dangerous—one of every four miners died. They used dynamite in the later days to blast away the rock, but in the early days, they used regular gunpowder. They only had candles on their helmets for lighting.

The reason the Calumet and Hecla Mining Corporation closed was Universal Oil Products Company moved up here and bought out Calumet and Hecla Mining Corporation. The income of Calumet and Hecla had been going down each year. Fewer than 200 employees were still here by 1962, far less workers than before. During the turn of the century, there had been more than 1,000 miners. In 1968, when the miners went on strike for higher wages, C & H Mining Corporation decided to shut down.

We asked Ed Yarbrough, from the Quincy Mine Hoist Association, his opinion on whether or not he thought there was any chance of copper mining starting back up in the Copper Country. “The price of copper would have to go a lot higher than it is now. Copper is very cheap now, 65 to 75

cents per pound, compared to what it was then. Underground mining is more expensive. Other places that mine copper use strip mining, and that is a lot less costly. We require mining,” he added.



Scene from the Year 1967: Payday at C&H

Jessica Joosten, Jeremy Huuki, Cole Bonini

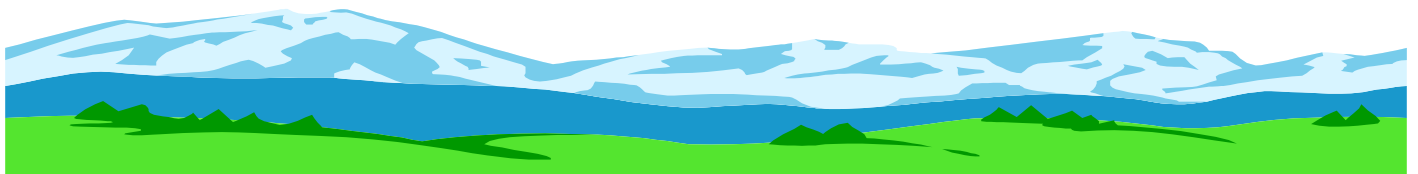
It's payday at Calumet and Hecla, and miners are cluttered all over the pay building trying to receive their week's pay from one of the pay booths. Miner Chuck Niemi steps up to a cashier to get his weekly salary . . .

Chuck: Sure are a lot less folks waiting in here than a few years ago, don't you think? I remember having to wait in lines that ran outside this building here, right into the miserably cold outside, it was so packed in here.

Cashier: Oh yeah, eh? It's kind of sad, there's only a couple hundred people left in those mines.

Chuck: I'd say, by the 70's, we ain't gonna have any people down there.

Cashier: Well, you never know what's gonna happen to us, we have that darn oil company breathing down our necks, waiting to buy us out. There is really nothing we can do about it either. Unless the price of copper goes up more than it is right now, I reckon we'll be done for.



Chuck: Well, it was bound to happen some time. You could see it coming for a long time, with our profits going down year-by-year, and everybody leaving.

Cashier: Yeah, and soon enough, we'll all be out of jobs. Now scram, I got more darn peoples in the line-up.

The cashier hands him his paycheck. Chuck looks around the small brick building, and leaves solemnly out the door . . .

LAKE LINDEN-HUBBELL MIDDLE SCHOOL TRAP ROCK RIVER NEWSLETTER 2001



"From our studies, we found the Trap Rock is clean and healthy. And if we continue to be concerned about our river, and take care of it, it will remain a healthy aquatic ecosystem." *Trevor Perala, Brooke Beauchamp, Meghan Cross, Adam Fountaine, LL-H Middle School Students*

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