

WISCONSIN GROUND WATER ASSOCIATION *NEWSLETTER*

1ST QUARTER 2014, VOL. 28, NO. 1

PRESIDENT'S MESSAGE:

Greetings fellow groundwater professionals,

What a cold, snowy winter it has been! Conducting field work certainly has been challenging this season. Between snow-covered wells and freezing equipment, this is one winter that will not be forgotten.

We hope that the weather warms up a bit in time for the WGWA Annual Meeting, "The Water M's – Monitoring & Modeling," which will be held Friday, March 7 in Waukesha. The WGWA board is pleased by the abstracts submittals thus far, which include landfill monitoring requirement changes, groundwater modeling, contamination in municipal water sources, and even how a brewery is taking steps to protect water quality! In addition, there will be ample time to network and enjoy great food and beverages.

If you are unable to join us for the Annual Meeting, please mark your calendars for June 18, when we will be participating in a webinar on Frac Sand Mining research. Additional networking and learning opportunities over the summer are also in the works.

The board is pleased to announce that Aaron Schneider will serve as President Elect in 2014. Most of you already know Aaron, who has been involved with WGWA for the last seven years and has worn many hats in our organization (area coordinator, membership development, program/luncheon director, etc.). Aaron also currently manages our website and LinkedIn group.

In addition, Chris Lawn has been appointed as an at-large board member. Chris recently became a member, and has volunteered to assist the board with upcoming events. We appreciate the commitment that Aaron, Chris, and all of our board members have made to ensuring the continued success of our organization.

I look forward to seeing you at the conference. Until then, stay warm!

Regards,
Jodie Peotter



IN THIS ISSUE...

FEATURE ARTICLES

- [Stratigraphic Corner: Tales of Marblehead](#)
- [Avoiding Salt](#) - in a newly identified tropism, plant roots steer clear of salinity
- [Beneath the surface](#) - Minnesota's pending groundwater challenge

OFFICERS AND COMMITTEES

GROUND WATER RELATED CONFERENCES, MEETINGS, EVENTS, AND COURSES

UPCOMING COURSES AND WEBINARS

INTERESTING ARTICLES AND OTHER TIDBITS ON THE WEB

BOARD MEETING MINUTES

- Board Meeting Minutes are archived on the WGWA website and can be found [here](#)

2014 BOARD MEMBERS

President (2014)

Jodie Peotter
True North Consultants, Inc.
Phone: 608.234.7183
jpeotter@consulttruenorth.com

Past President (2013)

Jim Bannantine
Geosyntec Consultants
Phone: 414.291.2362
JBannantine@Geosyntec.com

President Elect (2014)

Aaron Schneider
Pappas Delaney
Phone: 414.858.1384
aaron@pappasdelaney.com

At Large Board Member

Michael Raimonde (2012-2014)
Foth Infrastructure & Environment
Phone: 414.336.7900
michael.raimonde@foth.com

Treasurer/Membership (2012-2014)

Rebecca Caudill
Natural Resource Technology, Inc.
Phone: 262.719.4517
rcaudill@naturalrt.com

Secretary (2013-2014)

Jeff Ramey
Pace Analytical Services
Phone: 262.442.1776
jeff.ramey@pacelabs.com

At Large Board Member

Anna Fehling (2013-2014)
Montgomery Associates
Phone: 608.886.7245
anna@ma-rs.org

At Large Board Member

Chris Lawn (2014)
Pure Element Resources
Phone: 608.827.5447
chris@pure-element-resources.com



GROUND WATER RELATED CONFERENCES, MEETINGS, AND EVENTS

- February 18-20 — **19th Annual Wisconsin Wetland's Association Conference:** La Crosse, WI. This 2-day Wetlands Conference will include a keynote address, organized symposia, topical oral sessions, a poster session, working groups, a banquet, and wetland field trips. Visit their [website](#) for more information.
- February 25-26 — **NGWA Conference on Hydrology and Water Scarcity in the Rio Grande Basin** : Albuquerque, NM. Click [here](#) for more information on this conference
- February 27 — **Government Affairs Seminar:** 7:45-3:45 at the Marriott Madison West, in Middleton, WI. Environmental issues presented by recognized experts with an emphasis on options for compliance with new regulations on phosphorus discharges. Click [here](#) for the brochure on the seminar.
- March-April—**2014 State of Wisconsin Hazardous Materials Awareness & Waste Disposal:** Held at various locations throughout WI. For dates, times, and locations visit Veolia's [website](#) or [contact](#) Amy Walden.
- March 7 — **Wisconsin Ground Water Association (WGWA) Spring Conference:** Milwaukee Marriot West, Waukesha WI. [Submit](#) abstracts to Jodie Peotter. Click [here](#) for registration.

Events continued on page 3

2014 COMMITTEE CHAIRPERSONS

Newsletter Editor

Lee Trotta
Phone: 262.930.1135
ltrotta53072@yahoo.com

Newsletter Assistant Editor

Karl Gunst, Assistant Editor
Cardno ATC
Phone: 920.285.8421
karl.gunst@cardno.com

Education Committee

Paula Richardson
Saga Environmental & Engineering
Phone: 920.674.3411
prichardson@saga-ee.com

Web Site

Aaron Schneider
Phone: 414.858.1384
aaron@pappasdelaney.com

Ground Water Sand Model Reservations

Kathi D. Ried, P.G.
CH2M Hill
Phone: 414.847.0464
Kathi.Ried@CH2M.com

Lori Rosemore
Ayres Associates
Phone: 715.834.3161
rosemore@AyresAssociates.com

WGWA News and Updates



WGWA Annual Conference The Water M's – Monitoring & Modeling

The date of our annual conference, Friday, March 7th, in Waukesha, is fast approaching! To register, see our website www.wgwa.org. There is already a great lineup of speakers including David Swimm, Gerald DeMers, and Gregg Breese from DNR, Christopher Hessler-QED, and others.

The Wisconsin Ground Water Association will still accept abstracts and presentations for this year's conference. Oral and poster sessions are intended to address both surface water and groundwater issues in Wisconsin.

Suggested topics include:

- Water Supply Issues
- Water Quality Issues
- Watershed Management
- Reports of Ongoing Research
- Other topics of interest

Presentations

Speakers will present a 20 minute talk followed by 10 minutes for questions from the audience.

Posters

One session will be devoted to viewing posters, so you won't have to decide whether to hear the talks or see the posters!

ATTENTION STUDENTS!

We are interested in having both undergraduate and graduate student presentations, and will be presenting cash rewards for the best student presentations and posters! Abstracts (including contact info) may be submitted to

Jodie Peotter

True North Consultants, Inc.

WGWA President

jpeotter@consultruenorth.com

Welcome our new President Elect!

As last year's President Elect has now moved into the President position, WGWA is pleased to announce Aaron Schneider as President Elect for 2014. Aaron has been involved with WGWA for the last seven years as area coordinator, membership development, program/luncheon director, website editor. The President Elect is responsible for planning of WGWA events, which include an annual conference (Spring) and field trip (Fall). Please join us in welcoming Aaron!

EVENTS CONTINUED...

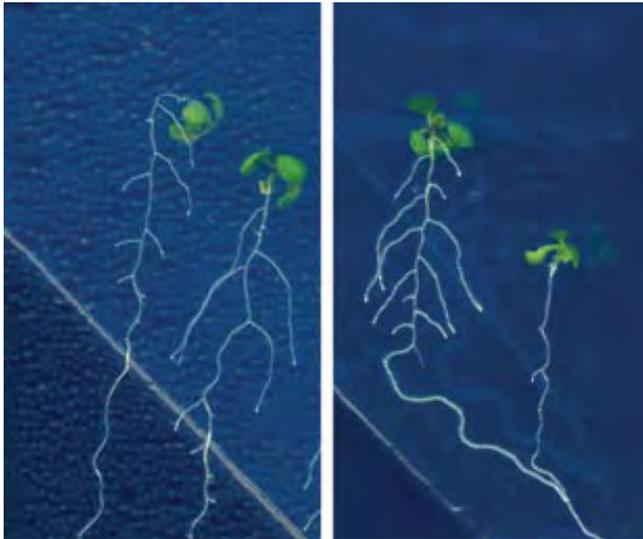
- March 8—**Going Down the Toilet Event:** Madison, WI. A tour of MMSD Nine Springs Treatment Plant. Tours run from 9:30-11:30am. RSVP by [emailing](#) Nancy Sheehan.
- March 13 —**Red Cedar Conference** : UW-Stout, Menomonie, WI. Early bird registration fee (\$35/person) through March 1, 2013. Fee includes sessions, lunch, breaks and materials. Click [here](#) for more information.
- March 26-28 — **2014 Sustainability Summit:** Wisconsin Center, Milwaukee. The Sustainability Summit and Exposition recognizes unprecedented opportunities and encourages investment and development in the green sector. We highlight Energy, Water, Lifestyle, Business and Workforce. For registration and highlights from past summits click [here](#).
- March 29—**Rock River Coalition Biannual Monitoring Confluence:** Fitchburg, WI at the City of Fitchburg Community Center. 8:30am—3:30pm.
- April 24-26— **Wisconsin Lakes Partnership Convention** : Holiday Inn Convention Center, Stevens Point, WI. Poster Session with displays on innovated projects and intriguing research. Visit the [website](#) for more information on the convention.

Events continued on page 4

- Avoiding Salt -

In a newly identified tropism, plant roots steer clear of salinity.

By Abby Olena in “*The Scientist*” January 2014



BYPASS THE SALT: The roots of Arabidopsis seedlings (controls on left) change their downward course when they encounter salinity (right). Colors have been enhanced. CARLOS GALVAN-AMPUDIA

The paper

C.S. Galvan-Ampudia et al., “Halotropism is a response of plant roots to avoid a saline environment,” *Curr Biol*, 23:2044-50, 2013.

The context

Gravity guides the course of root development in plants through a process called gravitropism. Salt may also change the architecture of plants’ root systems, but until now, it was unclear whether this response was directional—a true tropism—or an effect of salt that somehow made the roots less responsive to gravity.

The finding

A team led by Christa Testerink of the University of Amsterdam grew Arabidopsis and tomato seedlings in agar prepared with a diagonal salt gradient. The roots of the seedlings changed direction when they encountered the salinity, a response the group termed halotropism. “We could see that they are not randomly following gravity, but really growing away from the salt,” said Testerink. She added that this is the first time that scientists have observed “that a toxic substance, like salt, could cause a tropism.”

continued on page 5



EVENTS CONTINUED....

- April 28-May 2 — **Working Together for Clean Water - 9th National Monitoring Conference**, Cincinnati, OH. This biennial conference is the place to be to mingle with your fellow water-quality monitoring professionals! . Click [here](#) for more information.
- May 4-7—2014 **NGWA Groundwater Summit** , Denver, CO. For registration and additional information regarding the conference, visit the NGWA’s [website](#).
- July 28-30—**3rd International Conference on Earth Science & Climate Change**: San Francisco, CA. The main theme of the conference is An Insight into the Recent Advancements in Geosciences and Climate Change Control. Visit the [website](#) for more information.
- May 4-7, 2014—**2014 NGWA Groundwater Summit**: Denver, Colorado. For additional info and registration go [here](#)

UPCOMING COURSES AND WEBINARS

- February 27-28, 2014—**Applying Water Data Science to Proactively Identify and Manage Groundwater Risks**. Albuquerque, NM. Click [here](#) for registration info on this course.
- February 27-28, 2014—**Fundamentals of Groundwater Geochemistry**. Albuquerque, NM. Click [here](#) for registration information on this course.

BENEATH THE SURFACE

MINNESOTA'S PENDING GROUNDWATER CHALLENGE



Minnesota DNR
Pilot Groundwater Management Areas



By Elizabeth Dunbar

Groundwater demand in an area of central Minnesota has increased by 175 percent in the past 25 years — five times as much as the state average, according to the Department of Natural Resources.

That's a big reason the Bonanza Valley, an area that stretches from southern Douglas County to Paynesville in Stearns County, is one of three areas in which the DNR is setting up a groundwater management area. These test areas aim to study how groundwater is being used, identify any problems with its quality and determine whether to place restrictions on pumping.

Beneath the Surface: Minnesota's Pending Groundwater Challenge

The area is mostly rural, and most of the 15 billion gallons pumped in 2012 were used to irrigate corn, soybean and potato crops.

"There are a couple of concerns we have about the long-term sustainability of our groundwater resources. One is the use of groundwater, which has increased significantly over the past 25 years. The other is groundwater quality," said Mark Hauck, a community assistance specialist with the DNR who is organizing the meeting. Nitrates from fertilizing crops are getting into groundwater, which could threaten drinking water supplies, DNR officials said.

Reprinted with permission from MPR blog, "[Beneath the Surface](#)". Original article is found [here](#).

AVOIDING SALT (CONTINUED FROM PAGE 4)

The mechanism

The researchers showed that salinity induced endocytosis of the cell membrane protein PIN-FORMED 2 (PIN2), a regulator of auxin transport, on the side of the root encountering the salt. Consequently, concentrations of auxin, a hormone that helps determine the direction of root growth, were redistributed, and the direction of root growth changed course.

The implications

The paper "highlights the need to really look at many environmental stresses . . . at this high spatial resolution," says plant biologist José Dinneny of the Carnegie Institution for Science in California. "It may be that a lot of stimuli—nutrients, heavy metals—induce similar tropisms. Simply, people haven't looked carefully enough at those stimuli to really know if that's the case."

Original article found [here](#)

UPCOMING COURSES AND WEBINARS CONTINUED...

- March 6, 2014 - **Modern Statistics for Groundwater Compliance and Attaining Clean-Up Standards: Part 1: Using Confidence Intervals to Assess Compliance and Clean-Up (ONLINE)**. Click [here](#) for registration and additional information on this webinar.
- March 10 — **Introduction to Wind Systems (ONLINE)**
Participants will learn how to define wind energy and how residential wind energy systems work. Click [here](#) for more information.
- April 1-2—**Light Nonaqueous—Phase Liquids: Science, Management, and Technology** - Kansas City, MO. Register [here](#).
- April 28 to May 2, 2014, Las Cruces, NM. Several groundwater field courses are offered by the Nielsen Environmental Field School. Check their [web site](#) for details.
- May 4—**Estimating Rates of Groundwater Recharge**: Denver, CO. For additional information and registration click [here](#).

TALES OF MARBLEHEAD

By Lee Trotta

The community of Marblehead is no more. However, like a haunting ghost, it still has stories to tell. How it got its name, where the houses went, and the discovery of dinosaur bones – all are intriguing.

I learned of the Marblehead area from an old friend, Larry Lienau. Larry, who served in Viet Nam with me, used to teach school in the nearby village of Eden, Wisconsin. Larry came back for a visit in 2013 and mentioned what a shock it was that the town of Marblehead could no longer be found. It was as if the town where he used to visit his students had never existed. After hearing his stories, we agreed that the history of Marblehead is too interesting to be forgotten forever.

Marblehead was a mining town. Larry says “the village used to be called Graniteville or Nasbro and then changed to Marblehead when the owners of local mining operations changed”. Well the only name shown on the USGS topographic sheet is Marblehead. At first the product mined was lime. “Lime production is evident as

early as the 1870's. It was first owned by Gustave Rusch, then mined by Julian Andrea” (Schwartz, 2000). Today still the Graymont – Eden Plant mines lime at N4520 County Road V, located 6 miles south of Fond du Lac, the site of the former village of Marblehead.

The Graymont website provides the following history:

The Eden manufacturing operation produces Dolomitic Pebble Lime and Type S Pressure Hydrated Lime from dolomitic limestone quarried on site. The Eden rotary kilns produce 250,000 tons of Dolomitic Oxide annually. In addition to the kilns and hydrator, the company operates a blending plant for lime-based mortars, available in over 250 colors. We ship products throughout Canada and the U.S. under the brand names: Western Miracle Masons Lime, Western Type S, N and M gray and Colored Mortar Mixes and Limate, General Purpose Lime. Both the Eden and Green Bay plants are served by the Canadian National Railroad.

1872 Wilhelm Nast and his two sons, August and William, form Nast Brothers Lime and Stone in Marblehead (Town of Eden), WI

1874 The largest lime kiln in the early days of Grafton, WI was one controlled by J.W. Ormsby, and O.W. Robertson of Milwaukee. This kiln was started in 1874 under the name of the Ormsby Lime Company, and Charles Stuart was made foreman. He employed 12 to 15 men, and turned out about 25 barrels of lime per day.

1875 A.T. Howe forms the Marblehead Lime Company

Continued on the next page

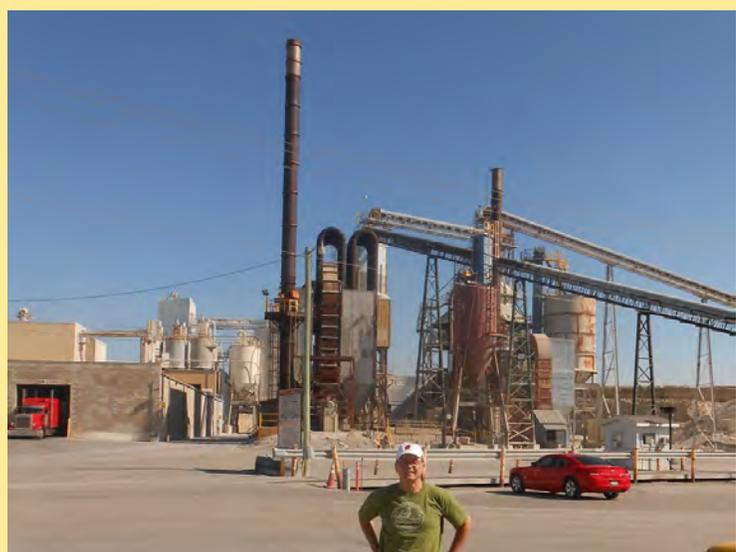


Figure 1. Author, Lee Trotta at the Graymont Lime Plant in 2013.



Figure 2: Advertising signs from several branches of Western Lime including “Marble Head Lime Company” are shown above and on the Western Lime website.

1886 Western Lime and Cement incorporated in the state of Wisconsin, offices in Milwaukee, WI. Founders/Owners: Ossian Cook, Rufus C Brown, Orrin W. Robertson. Board of Directors: Ossian Cook, Rufus C. Brown – Secretary, Orrin W. Robertson – President, A.T. Howe – Vice President, J.W. Ormsby. Western Lime Company had supply contracts and supply quotas arranged with Ormsby Lime Co. (Hayton), Marblehead Lime Co., and Cook and Brown Lime Co (High Cliff or Clifton). Western Lime and Cement operated a warehouse, 2 barns and a shop located at First Ave. and South Menominee Canal, Milwaukee, WI

The following history of the Eden Stone Company is taken from their website:

For 4 generations, we have produced and delivered natural building and landscape stone to national and international customers. Founded in 1950 by Emil Gesell, the company then known as Gesell and Sons, produced hand dressed veneer and flagstone products. With the help of his sons Bob and Bill the company expanded its production into a variety of landscape and building products. The company soon became known as Eden Stone and was lead by Bill Gesell, lovingly remembered today as “Senior.” It was Bill’s dedication and determination that made Eden Stone what it is today. In 1992 Eden Stone purchased Valders Stone and Marble, an internationally

known architectural stone cladding and specialty operation located in Valders Wisconsin. Valders, already famous for the quality and durability of its limestone, brought Eden Stone into the architectural marketplace. For more information on Valders Stone & Marble, or to see some of their projects, please visit their website at www.valdersstone.com.

The chances of there having been actual granite or marble within the reach of mining operations seem slim. The limestone/sandstone sequence in central Wisconsin has often been compared to a stack of pancakes. However, there are monadnocks of granite in the Fond du Lac area that tend to disrupt groundwater flow (see brown layer depicted in Figure 4). There may have been one such Precambrian exposure here that had a bit of associated marble.

Continued on the next page



Figure 3. Eden Stone/Valders Stone and Marble in 2013.

Tales of Marblehead (continued)

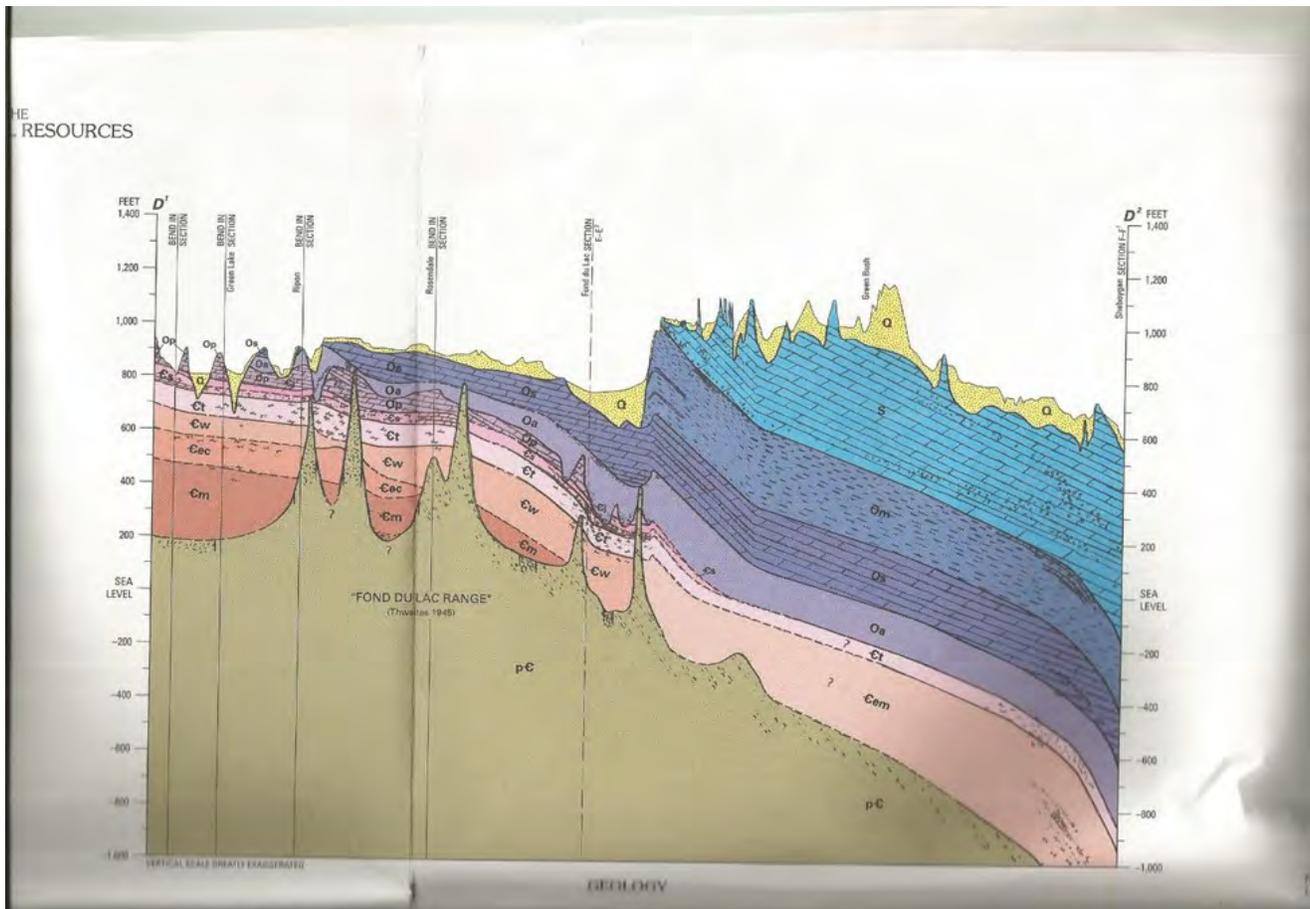


Figure 4. Geologic cross section D-D' from Green Lake to Sheboygan illustrating monadnocks (from Kammerer, Trotta, et al, 1998).

The village of Montello (57 miles west) has a good example of such a granite monadnock exposed at the surface, illustrated in the westward extension of section D-D' by Kammerer, Trotta, et al (1998).

So the mining operations still exist, but what about the residents of the unincorporated community of Marblehead? Its existence was documented by historians and photographs. Nate Schwartz (2000) reports, "It was once a sprawling group of ramshackle homes built to house employees of the Nast Brothers lime operations. Thus came the name Nasbro for this group of dwellings. These homes were given free to these workers for their lifetime. Although the mining operations dwindled and the employment dried up, these workers held the company to their promise and continued living there – often until they died. As workers died or moved on, the min-

ing company would tear down the buildings and perhaps expand the mining facility. Today there is not a trace of the happy homes that used to comprise Marblehead."

continued on the next page

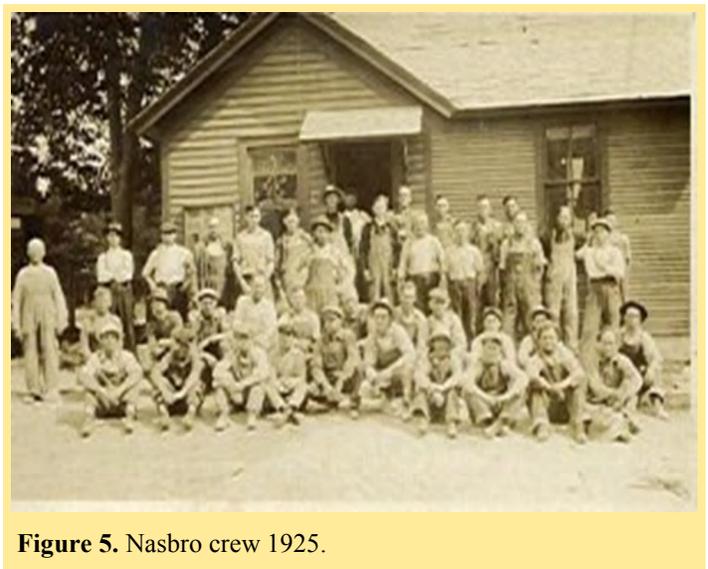


Figure 5. Nasbro crew 1925.

Elsewhere Schwartz continues, “At one time almost a dozen houses including a boarding house for employees were there. 50 residents once inhabited Nasbro. No houses remain. All that's left are four stone lime kilns. At its peak it had about a dozen houses, a store, and maybe a tavern.” (Nasbro Ghost Town website <http://www.ghosttowns.com/states/wi/nasbro.html>).



Figure 6. Lime kilns in action. Photo taken in 1911.

The most fantastic story Larry Lienau told me was that there was a discovery of dinosaur bones at Marblehead that still contained marrow. He said State geologists were called in to confirm it. Larry had the chance to explore the find himself and touched a sample of the “marrow” leaving his fingerprints in it when it hardened. He confirmed his recollection of the story by calling a friend who also lived there at the time (Ricky Hernandez).

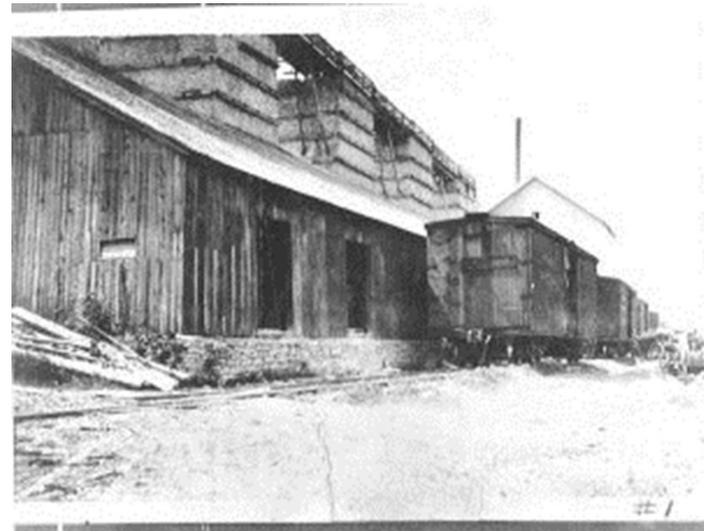


Figure 7. Nasbro kilns with train by Joel Valle.



Figure 8. Town of Nasbro from top of the lime kiln.

Speaking with Marty Biller (verbal commun., 8-14-13), geologist for Eden Stone, he said any dinosaur bones would have to have been transported from Canada in glacial debris. His quarry is in Silurian dolomite deposited millions of years before the age of dinosaurs. He was unaware of the story, however.



Figure 9 Windmills near Eden.

I personally suggested that if bones were found, they might have been mastodon bones (mastodons were more recent Pleistocene residents of Wisconsin and their remains have been preserved in several places). The “marrow” description sounds to me like possibly either clay till or some bits of funky Maquoketa Shale in glacial debris. At the time (perhaps 40 years ago), however, at least several people were convinced they had dinosaur bones.

continued on the next page

TALES OF MARBLEHEAD (continued)



Figure 10. Ruins of lime kilns at Graymont plant in 2011.

I then called the UW Geology Museum and spoke with Richard Slaughter (verbal commun., 1-13-14). Richard had not heard the story, but consented to check his electronic records for any relics submitted from the Eden area. No samples from the Eden area were found. On 1-21-14, I emailed former colleagues at the Wisconsin Geological Survey to see if they had any record of the supposed visit by State geologists. No confirmation of any visit has been reported so far.

A few former residents of the area remain convinced they had dinosaur bones at Marblehead. The spirits linger from a whole community that has now vanished. Perhaps these spirits fuel the winds that move the windmills dotting the area. Even though any remaining ruins are likely covered by prairie grass, Marblehead is still worth a visit for the tales it can tell.

On 2-4-14, I got a call from the Wisconsin Geological Survey to notify me they have no record of ever visiting the Marblehead site. Story over, right? Then, on 2-5-14, Larry Lienau called me with Ricky Hernandez' phone number.

I interviewed Ricky Hernandez – former Marblehead resident. He said the find at Marblehead was not dinosaur bones. Ricky was only 12 years old at the time of the discovery. Western Lime had reached the second level blasting and found grey matter (clay) about 80 feet down. They didn't know what it was and conjectured it might be marrow. Geologists came from the University of Illinois (Prof. H. E. Gaudette) to say it was actually "Marblehead Illite". See the published report on the internet entitled "The Nature of Illite – Marblehead", 1965. It says the nation's purist deposit of illite is at Marblehead. When the blasting at Western Lime endangered local wells, they told residents to move out. The Western Lime quarry still has amazing fossil beds and will arrange a tour if requested.

Now if I had been there at the discovery, I would have mistakenly called it glauconite. However, illite has less iron and green coloration. At least the mystery has been solved!

References:

Kammerer, P.A., Trotta, L.C., Krabbenhoft, D.P., and Lidwin, R.A., 1998, Geology, ground-water flow, and dissolved-solids concentrations in ground water along hydrogeologic sections through Wisconsin aquifers: U.S. Geological Survey Hydrologic Investigations Atlas HA 731, 4 plates

Schwartz, Nate, circa 2000, Nasbro Ghost Town website <http://www.ghosttowns.com/states/wi/nasbro.html>

Career Opening in Madison, WI

The Madison, Wisconsin office of **Leggette, Brashears and Graham, Inc.**, is seeking a Hydrogeologist with 5 or more years of groundwater investigation and remediation experience and a minimum of 2 years project management experience. The successful candidate must possess a B.S. or M.S. in geology with a groundwater emphasis and possess or be working toward obtaining a Professional Geologist license.

Responsibilities of the position include managing multiple environmental investigation and remediation projects to achieve client scope, budget and schedule expectations; developing project plans to resolve technical and regulatory issues; preparation of proposal and work scope documents; oversight of project teams; and subcontractor coordination.

The candidate must have strong written and verbal communication skills and show an ability to work independently and demonstrate a high level of initiative.

LBG offers an excellent benefits package including profit sharing, 401k, MPPP, health insurance, education benefits and more. Our work environment values innovative thinking that has led to many awards and multiple patents by our staff. LBG's staff of energetic engineers and geologists is involved with exciting groundwater and soil remediation projects that are located nationwide.

If interested, reply via e-mail with cover letter and resume to:

Brian C. Kimpel, PG
Associate Vice President
Brian.kimpel@lbgil.com

Do you have a job or ad you'd like to post in the WGWA newsletter?

WGWA accepts submittals for a small fee.

Advertisements www.wgwa.org/newsletters/

Job Postings www.wgwa.org/job-listings/

Dear Water Expert,

Have you been itching to talk about some water subject lately? The WGWA would love to hear you!

You have two opportunities: the WGWA newsletter and the WGWA Spring Conference. I'd love to see an article from you for newsletter publication.

The WGWA Spring Conference will be held on Friday, March 7th at the Milwaukee Marriot West in Waukesha. Submit a good abstract of what you'd like to talk on and we will try to make a place for it. Abstracts should be submitted to Jodie Peotter at jpeotter@consulttruenorth.com

Thanks for your consideration!

Lee Trotta, PG
WGWA Editor