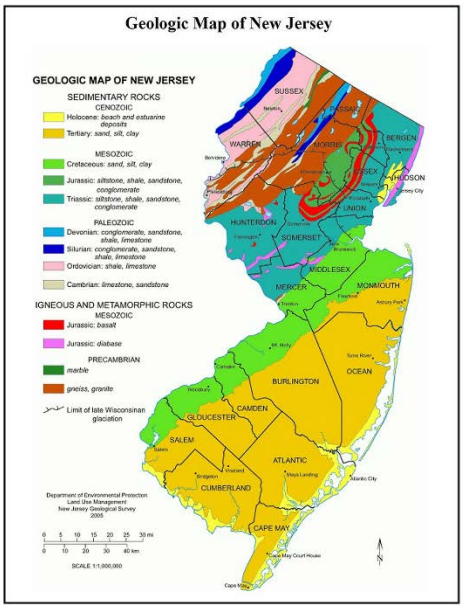
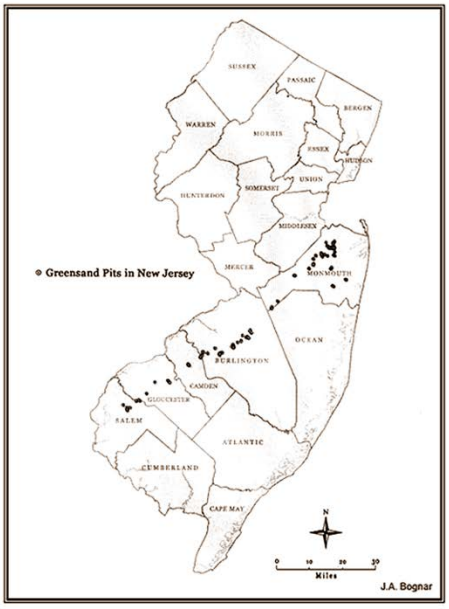




South Jersey's Great Marl Region – Part 1

By Jim Alexander

Marl is a substance found in the ground in areas formerly under water, typically formerly shore areas. A massive amount of it lies underground across a line roughly between Sandy Hook and just below Philadelphia. That's where the ocean came up to eons ago.

It results from the slow deposit of minerals in beachfront or lagoon sand, coupled with the decaying bodies of fish and other creatures. In many cases, the skeletons of these beings, including shark teeth and larger life are buried in the marl, having died there or nearby millions of years ago. Algae are believed to play a role in its creation.

The practice of digging marl up and spreading it on agricultural fields dates back at least to the Roman Empire. Deposits of marl underlie the White Cliffs of Dover. The key element in marl is its potassium, or potash, content. Typically, it contains 6 or 7 percent, as well as calcium, lime, and many trace elements.

Following the American Revolution, many farmers saw a decline in crop production. A main cause was the depletion of potash. Plants need it to grow, and techniques such as composting, crop rotation, and adding manure don't replace it.

An early record of marl in New Jersey can be seen in a letter that a Quaker farmer from what was then part of Evesham, now upper Medford, wrote to a Pennsylvania agricultural journal in 1806. Josiah Reeve wrote of what he had found in places on his large farm, located off of Fostertown Road at what is now Reeves Station Road (he actually identified his location as “Rancocas Creek”). He described deposits of what he called a “black sulphuric substance by us called marle,” saying it was “found in great abundance” in the banks of streams and at the bottom of their wells. He wrote: “on my farm, and through our neighborhood, it abounds near the surface in the meadows, and generally in the banks or hill sides, about 4 to 6 feet below the surface.” He went on to explain how he had talked with other farmers in Burlington County, and had tried various methods of spreading it on the top of the soil, the results of which were an enhancement in plant growth.

Experts in Philadelphia analyzed a sample that Reeve sent them, and concluded that it was “a ferruginous clay.” It was typically green, from its iron content. Later, soil experts came to refer to it as greensand, whose main component was glauconite, which held the iron and other minerals. In other areas such as Lumberton, it took on a brown shade, and was locally called “chocolate marl.” Here, it was found in the vicinity of Eayrestown Road around East Landing Street and Bridge (then called Belly Bridge) Road.

Digging out the marl could be a challenge, because a cubic foot of it might weigh as much as 90 pounds. There were many reports of farmers being killed when piles of earth fell on them as they attempted to dig out the substance. While some farmers shared it with nearby farms, transporting it to more distant locations for sale required the use of strong railroad cars, and railroads had just come into existence.

While main lines were being built by strong economic organizations such as the Camden and Amboy Railroad and the West Jersey Railroad, shorter connecting lines were needed to carry the marl from the pits where it was dug to the main lines. Records show it was sold for use on the grounds of the State Capitol, as well as to North Jersey and nearby states.

A major proponent of the use of marl and the creation of the short feeder railroads was George Hammell Cook, a pioneering leader at Rutgers University,

who was responsible for it becoming a land grant college in the 1860s, and for whom the Cook Agricultural School was later named. In 1867 he wrote: “The transportation of marl on our railroads is rapidly increasing.... Every mile of new railroad adds to the value of our farms; it gives cheaper and quicker access to markets and makes it possible to bring in fertilizers to enrich the soils and increase the crops.” Cook was eventually named New Jersey’s State Geologist, largely based on his work with marl.

Current air view of Reeve farm location, marked with location of former railroad spur to the first Reeve marl pit.

Reeve died in 1841, and his son-in-law, H. P. Ely, a respected Medford doctor, became president of the Mt. Holly, Lumberton and Medford Railroad, which opened in 1869. A prominent feature of this short line was a large spur extending to the west from where the railroad crossed the Reeve farm. It was built to allow the marl being dug there to be transported for sale.

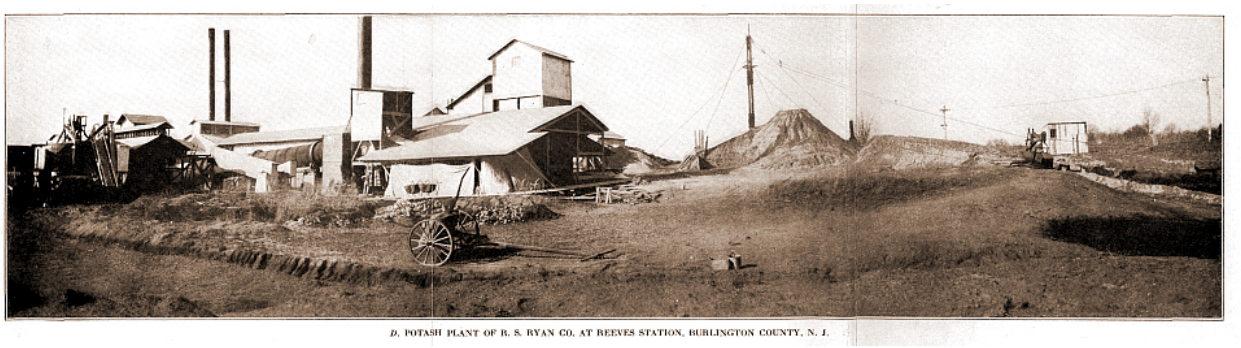
Around the same time, other similar short lines were being built. In Vincentown, a short line ran directly into its marl pit area, sponsored by General John S. Irick, one of the richest and powerful men in South Jersey. In Birmingham, part of Pemberton, another branch line ran into the marl pits being developed there. Massive sand deposits were also in the Pemberton, Hainesport and Lumberton areas, which were later hauled by the same railroads.

The Vincentown Marl Pit

While the Burlington County area was at the center of what maps came to call the Great Marl Region, large amounts were mined in Monmouth County (Marlboro is named for it), and down into Gloucester County. The place name of nearby Marlton (part of Evesham Township) derived from the many pits located there as well.

Hundreds of thousands of tons of marl were dug from such pits and hauled on long trains to points of sale, facilitating wealth and agricultural productivity.

(Part 2 continues on next page.)



D. POTASH PLANT OF B. S. RYAN CO. AT REEVES STATION, BURLINGTON COUNTY, N. J.

Marl pit in Medford at former Reeve Farm

South Jersey's Great Marl Region – Part 2

By Jim Alexander

The prosperity generated from the presence of marl encountered a blow during the Panic of 1873. Soon, the industry was suffering because the farmers could not afford the cost of marl and its railroad transport. Fortuitously, the farmers had also discovered that once spread amply on fields, the beneficial effect lasted for several years. And during the late 1800s too, refined potash became available, largely from Germany. This weighed less, were easier to transport and apply, and was cheaper. Thus, by the end of the 19h century, the US marl industry was in major collapse, and in some locales the small railroad extensions were removed, while in other areas they remained to provide commercial service that aided in the development of their areas.

With the start of World War I in Europe, however, blockades against maritime commerce halted the import of potash from Germany, and access to material from South American sources was also hampered. Concern arose over the deterioration of American agricultural productivity. Talk started about reactivating America's marl supplies.

Thus, by the early 1920s, old marl pits were being reopened. These included the Pemberton pits, the Reeve pits, and a number of newly activated pits along what is now Route 70 towards Marlton. Companies such as the American Potash Company came to prominence there, and once again railroads were hauling the material.

With the reopening, changes came. The Reeve farm had been sold, and eventually its pits came under the ownership of a chemical company, as did the Pemberton operation. Now, with processed chemical fertilizers readily available, there was less demand for marl as a fertilizer. Companies changed their production methods so as to sell marl for water filtration use, both at the home and municipal water plant level. This also happened at a large pit in Mantua Township in Gloucester County, which came to be known as the Inversand Company pit. Inversand was actually owned by Hungerford and Terry, which had also acquired the former Reeve location. The pits in Marlton gradually went out of business.

Model of Hadrosaurus foulkii in Haddonfield

An interesting feature of marl was that it often contained fossils of fish and other creatures, some very small, some larger. In 1858, dinosaur bones of what came to be called Hadrosaurus foulkii were found in a marl deposit in Haddonfield. For the first time in history, enough bones were found to allow the full creature to be recreated; this became New Jersey's official dinosaur. Farther south, in 1866 the 23-foot long Dryptosaurus Aquilunguis was unearthed, and in 1869, the Mannington Mastodon was dug out of marl at Swedes Run, not far from the Inversand pits.

With relatively little demand for marl, the former Reeve location had been sold to an individual who reverted its sales to fertilizer purposes, and for some years until 1963, the little Mt. Holly, Lumberton and Medford Railroad, now owned by the Pennsylvania Railroad, maintained a smaller siding there to haul off bagged marl. Customers could also stop by, in response to local newspaper ads, and buy marl and other natural soil-enhancement products. Initial ads referred to marl as a fertilizer, but later ads said it was a soil enhancer, since research had shown that its beneficial effects involved more than just the release of potash to the soil. It actually could rejuvenate both sandy and clay soil, and improve soil mechanisms.

Edelman Fossil Park Museum at Inversand Site.

As decades passed, the remaining Inversand pit became an economic burden on the company, since they could import marl cheaper than mining it there, and new environmental rules added to local production costs. In its latter years of operation, it had gained attraction for being periodically open for the public and scientists to dig for fossils.

Research by one leading paleontologist, Kenneth Lacovara of nearby Rowan University, led to a plan under which Rowan purchased the site from Inversand, and has built a modern museum there which will explain some fascinating history. Lacovara is convinced that aside from the thousands of fossils the public will be encouraged to dig up, that the part of the site contains a unique fossil record of the rapid demise of three quarters of Earth's species some 66 million years ago. At that time, a meteor smashed into the Yucatan, disrupting sunlight and casting massive amounts of earth into the air. Dinosaur skeletons, such as ones found

nearby, are expected to document this result of what's called Earth's Fifth Extinction.

Aside from that, millions of tons of marl remain untouched under the soils of South Jersey.

The museum opened in March 2025.

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