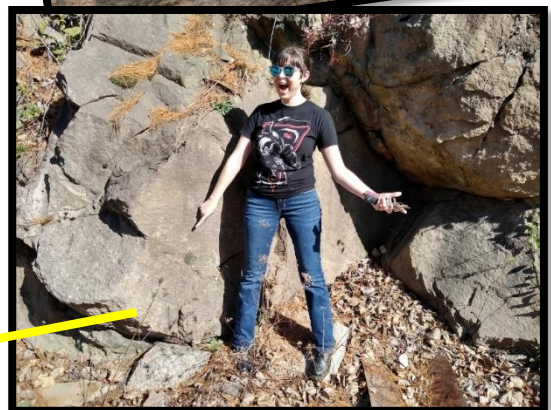
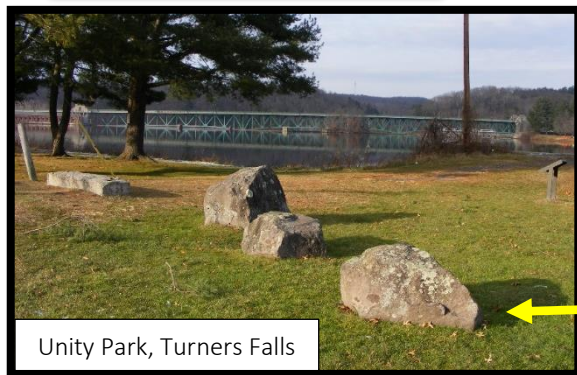


FRANKLIN COUNTY'S UNIQUE ARMORED MUD BALLS **WHERE TO SEE THEM**

There are only 8 places to see Franklin County's unique lithified armored mud balls outside "in the wild". They are also in several museums, schools, and libraries.

This document reveals exactly where to see them (or where they have been found).

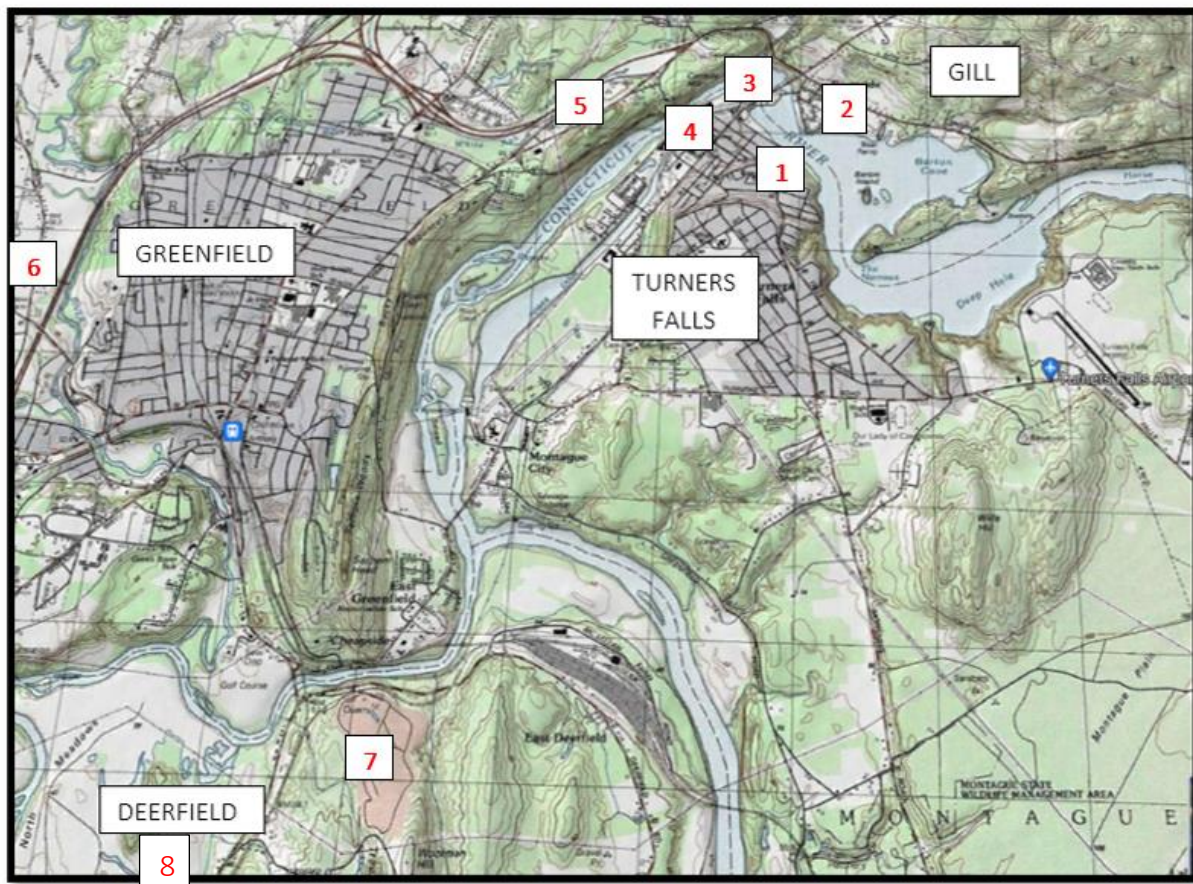
ONE PAGE OVERVIEW (Please see the photos and details on following pages)



FRANKLIN COUNTY'S UNIQUE ARMORED MUD BALLS **WHERE TO SEE THEM**

There are only 8 field sites that have the rare lithified armored mud balls. I have identified and described all of them below for your information and as a historical record. The 8 places are located in Gill, Greenfield, Turners Falls, and Deerfield.

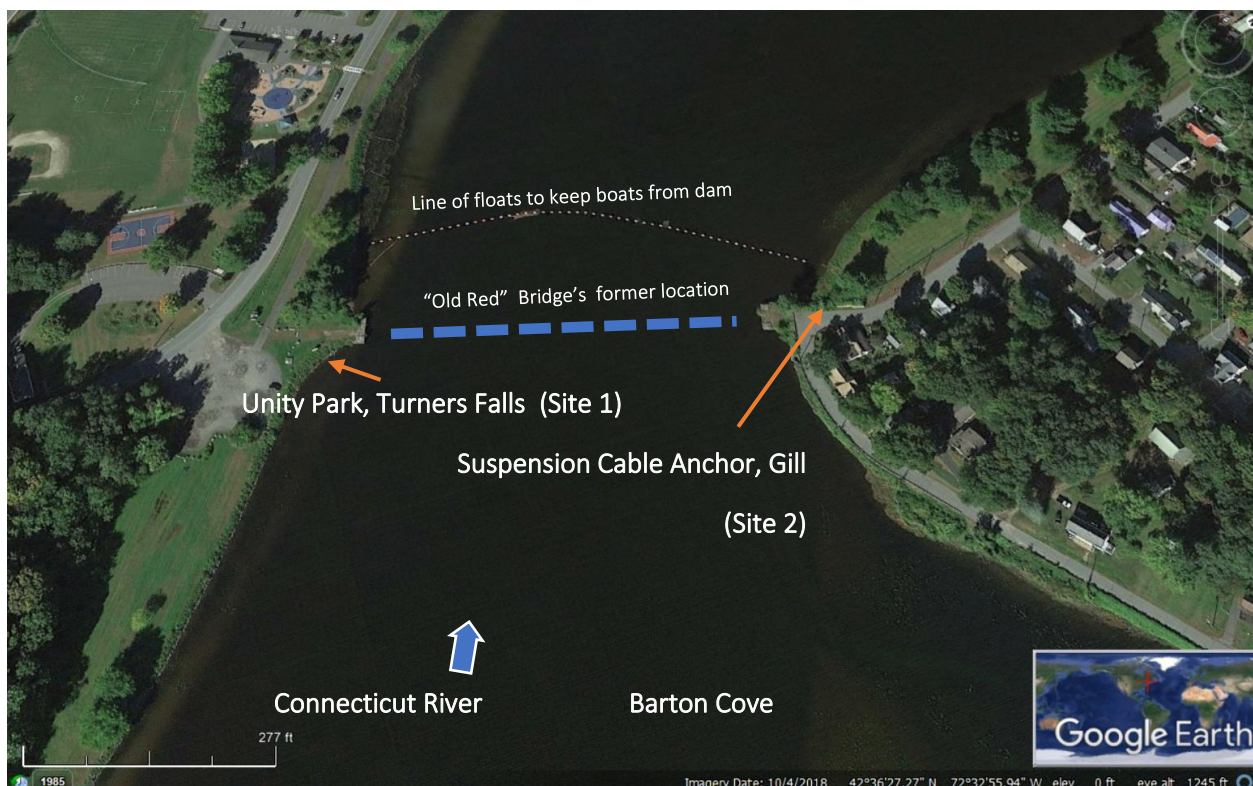
Location Maps. The numbered locations are described in the following pages. [See the last page for a geological map and diagram.]



1. and 2. These two locations are the site of the cable anchors of the "Old Red Bridge," a suspension bridge, now dismantled, that crossed the Connecticut River from 1878 to 1942 when it was demolished for scrap to aid the war effort.

The suspension cable anchor foundations include quarried sedimentary bedrock (early Jurassic Turners Falls Sandstone) from small excavations, now built on, west of Avenue A (the "main street"), Turners Falls (reference 1). The Turners Falls Sandstone in this area represents low-gradient stream deposits with sand as the dominant sediment, along the outer edges of alluvial fans and close to lake shorelines. Occasional floods would erode hard clay banks and tumble the mud chunks, making them round and sticky on the outer margin. Stream bed pebbles would coat the exterior, forming the armor. Then, quick burial, lithification, and 200 million years later, the sedimentary rock with armored mud balls is excavated from Turners Falls to become the foundation for the four suspension cable anchors. The two in Unity Park, Turners Falls (site 1) have been dismantled and the scientifically important rock components moved to Greenfield Community College (now displayed along the Geology Path described in Site 6). Three of the original quarried rocks remain at the Unity Park site (see below). Across the river in Gill is one remaining anchor (site 2).

Location Photo, Unity Park Turners Falls to Gill's cable anchor locations.



UNITY PARK, OLD RED BRIDGE SITE (Site 1) Photos



U.P. 1: Bridge location (x), view to N. The 4 lgray (Deerfield Basalt) rocks were not part of the original structure.



U.P. 2:

View to west. These 3 sedimentary rocks (Jurassic age Turners Falls Sandstone Formation) were part of the original suspension cable anchors. Armored mud balls are best preserved in the first rock (arrow). Other rocks from the dismantled Unity Park cable anchor are in the Greenfield Comm. College Geology Path (Site 6). In the 3rd rock here are saw marks. Two Connecticut geologists looking at the armored mud balls discovered that a “pebble” in the conglomerate was actually a dinosaur bone. This rare small fragment may be from a medium sized theropod (reference 2). Dinosaurs certainly may have had their eyes on the Jurassic rolling mud balls!



U.P. 3 & 4: Armored mud balls, close-up views of above rock with arrow.



U.P. 4 View of the 3 sedimentary rocks with armored mud balls located (arrows)



Gill's "Red Bridge" Suspension Cable Anchor (Site 2)

Location: opposite #37 Riverview Drive, Gill, MA

This large structure made of local stone, both quarried sedimentary rock (Jurassic age Turners Falls Sandstone) plus glacial erratic granite boulders is impressive. It is a **Massachusetts Historic Engineering Landmark (plaque photo to right)**. There are two obvious armored mud balls in the upper part of the structure, plus the cut-off remains of the suspension cable is still present. There is a painting of the old suspension bridge at the site.



Gill Cable Anchor
(G.C.A.) 1



G.C.A. 2 Southerly view, east face of the cable anchor, from Riverview Drive. The armored mud ball specimen is indicated. Close up photos below.



G.C.A. 3 & 4 The armored mud ball, top of E face of the Gill Cable Anchor.



G.C.A. 3 & 4 Front of anchor, looking north & upward. Cut suspension bridge cable is visible protruding from the top surface. Armored mud ball location at arrow.



G.C.A. 5 Front armored mud ball close-up.



G.C.A. 6 Westerly face of the Gill cable anchor, about 8 feet high on left edge, shows the diverse rock types. There are three rounded granite boulders, plus angular quarried local sedimentary rocks. A



Site 3. Connecticut Riverbed, below the Turners Falls Dam. Armored mud balls have been found in the outcrops near the dam base and also occasionally in loose conglomerate slabs along the riverbanks.

Site 4. Turners Falls Park, Third and Canal Street. Armored mud balls in outcrop.



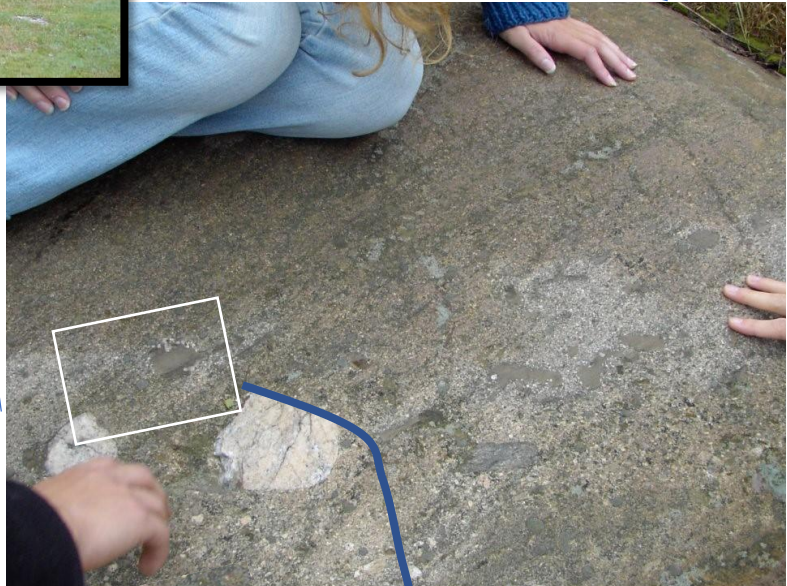
Site 5. Greenfield Stop and Shop Supermarket, 89 French King Highway (Rte. 2-A)

There are two locations for armored mud balls at the Greenfield Stop and Shop Supermarket. The location opposite the loading dock (yellow arrow) is perhaps the only place to see a specimen as the outcrop by the parking lot has been covered by sap and moss. Pictures of both outcrops are below.





Directly east of the parking lot there is a series of outcrops (Triassic-age Sugarloaf Formation) that are rapidly being shaded by tree growth. These photos are from c. 2012. The person with the red jacket is on the outcrop with the close-ups below.



Note: unfortunately, it is now (2021) not possible to see these unless the outcrop gets cleaned of moss and sap.

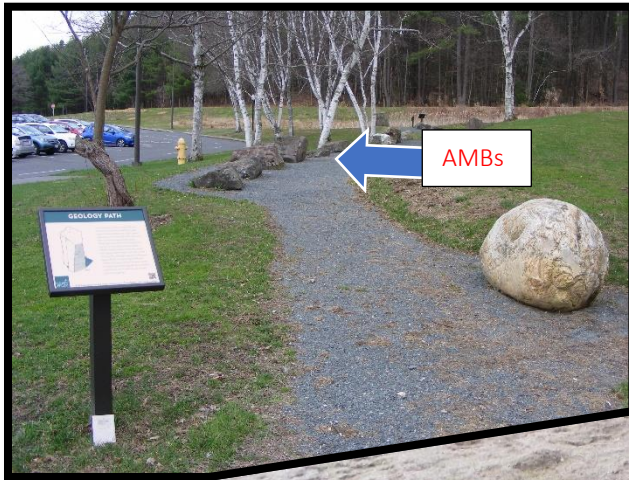
The loading dock area. (2021 photo)

Of all the sedimentary rock (Late Triassic Sugarloaf Formation) exposed here, only one isolated armored mud ball is found.

Note that the Sugarloaf Formation is hundreds of thousands of years older than the early Jurassic Turners Falls Sandstone specimens and there is a 200 foot lava flow (Deerfield Basalt) in between.



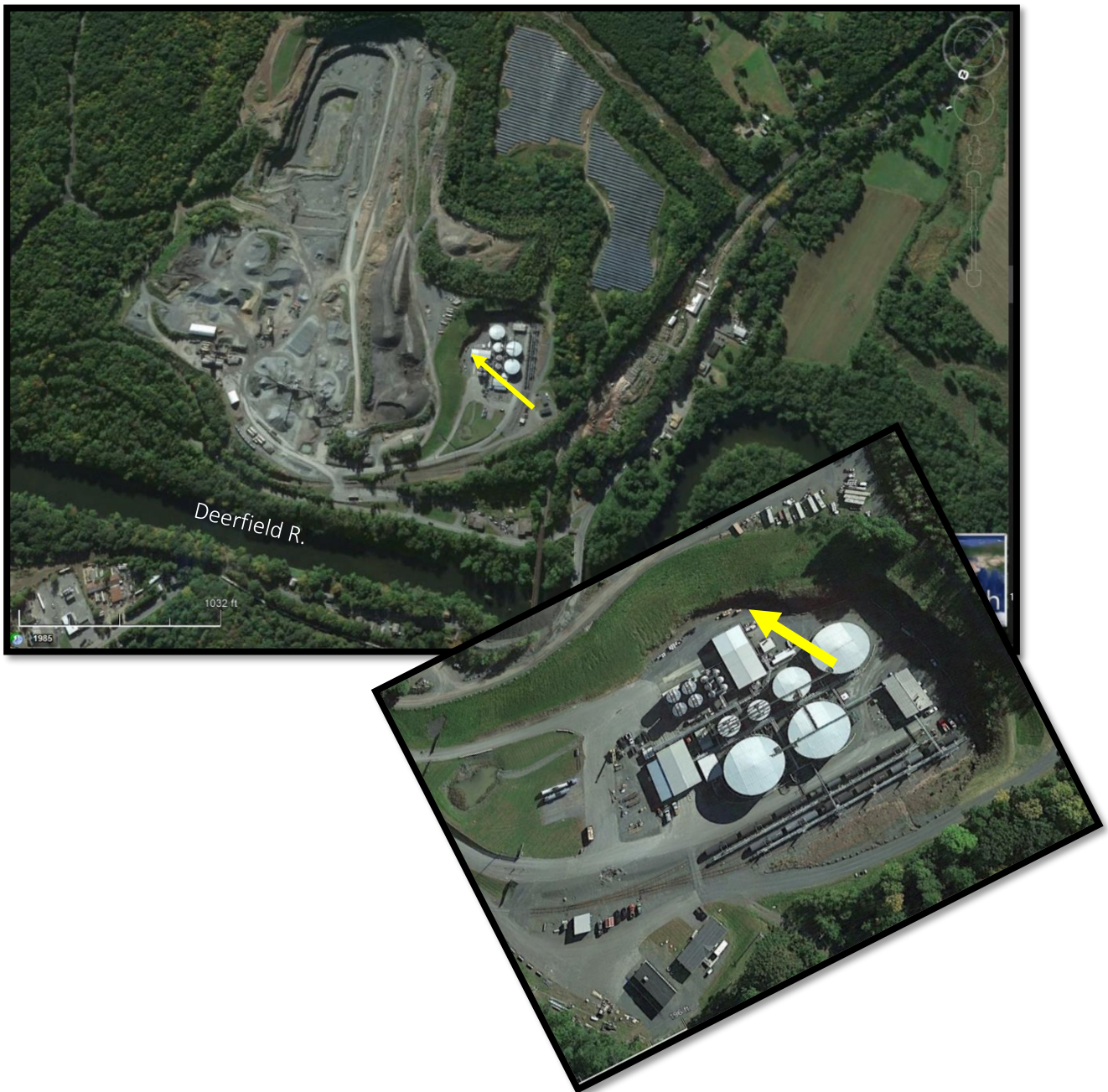
Site 6: Greenfield Community College's Geology Path. Also see geology displays, room N 350



The specimens here are well described in the Path Guide and include the world's best collection of armored mud balls. The sample (1) (*below*) came from the Unity Park Cable Anchor, (2) came from Deerfield's "Cheapside" Quarry, River Rd. (Site 7)



Site 7: The “Cheapside” Quarry, River Rd, Deerfield. The large block with AMBs (#2 photo above) came from a now-unused quarry section (arrow). The rock formation in this part of the quarry is the same as at Greenfield’s Stop and Shop Supermarket (Site 5), the upper Triassic-age Sugarloaf Formation. The quarry is mining the Deerfield Basalt, a 200 foot thick Jurassic lava flow, with occasional pillowed sections, indicating that the lava flowed into a Jurassic lake. The lava is younger and on top of the Sugarloaf Formation. See end page for geological map and diagram. This site is private property. Do not enter.



Site 8:

Deerfield Academy,
Little Meadow Rd. and
Koch Center walkway.

Decorative stone,
Sugarloaf Formation piece from
the Cheapside Quarry.

