

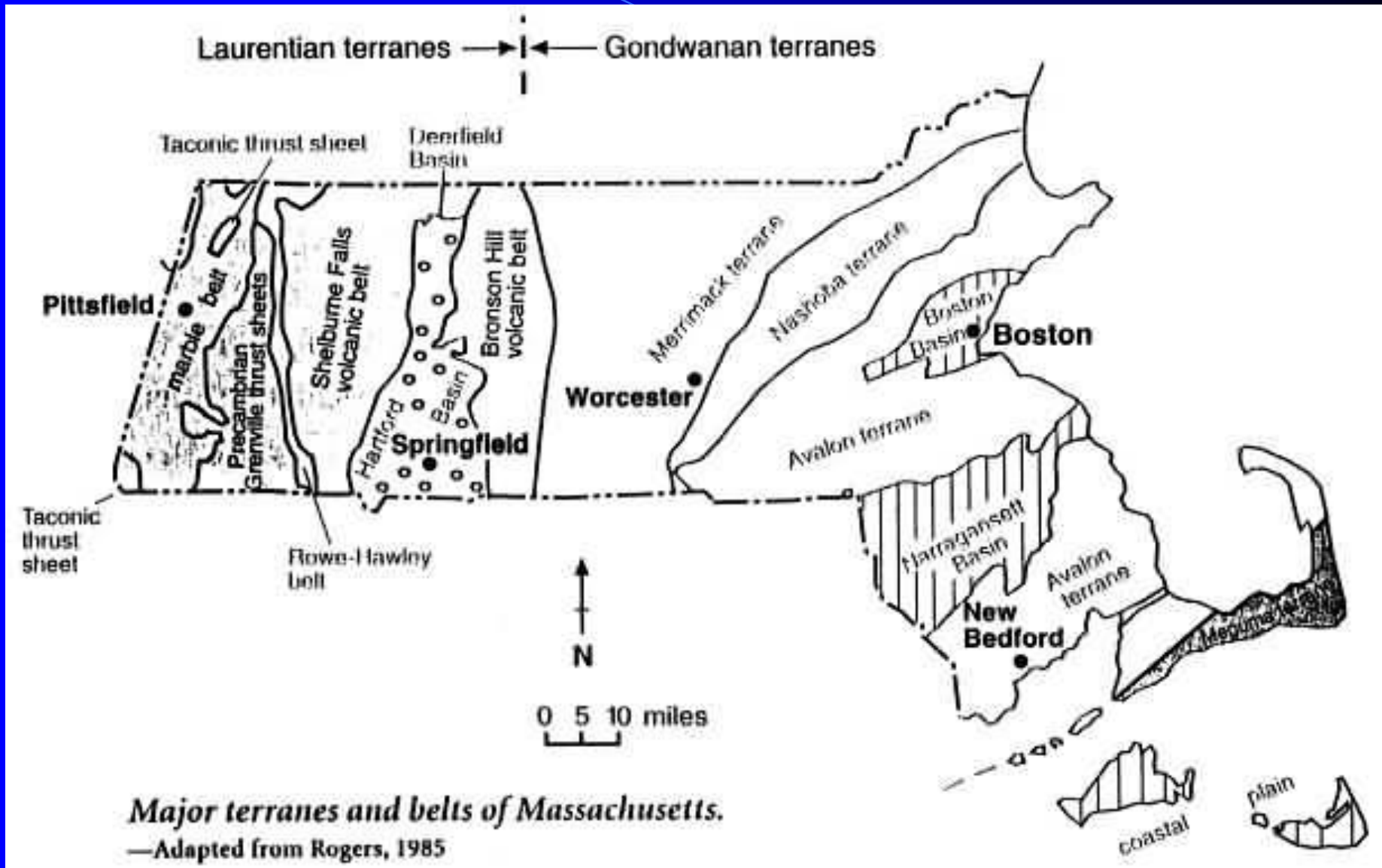
*Puddingstone* and Other  
Geological Goodies – A Boston  
Basin Virtual Field Trip

By G. N. Eby

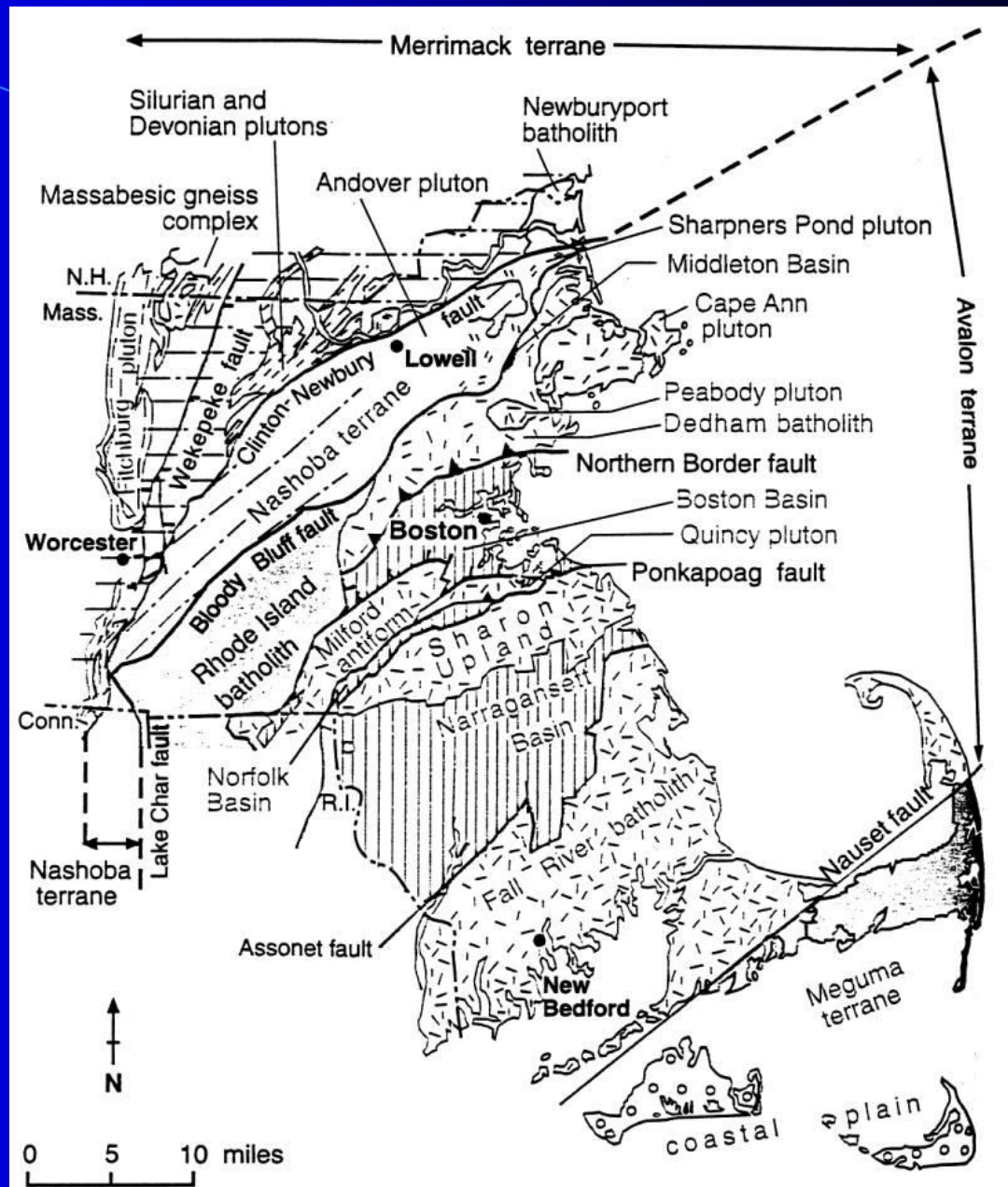
University of Massachusetts Lowell



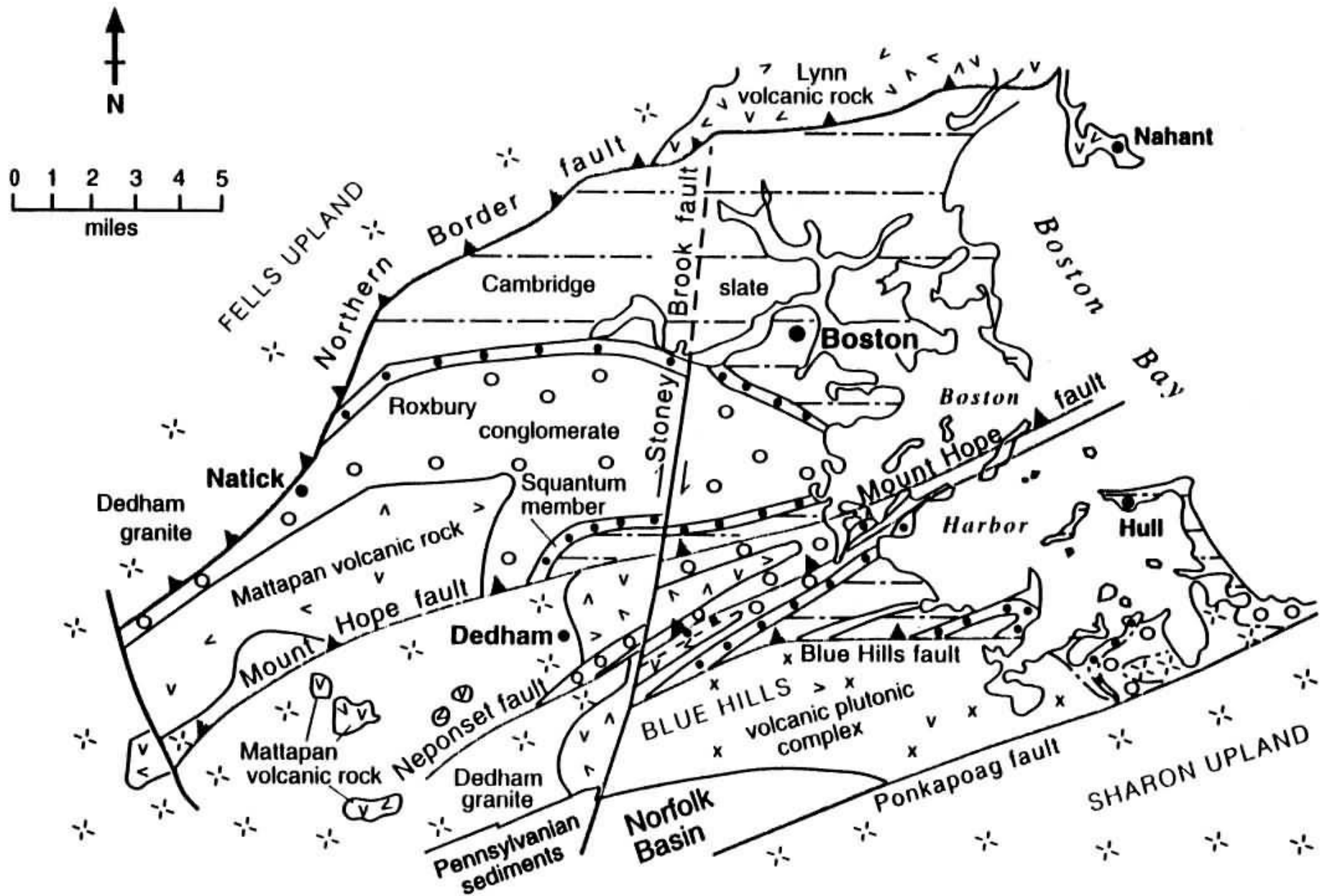
# Major geologic terranes and belts of Massachusetts



# The Boston Basin is in the Precambrian Avalon terrane.

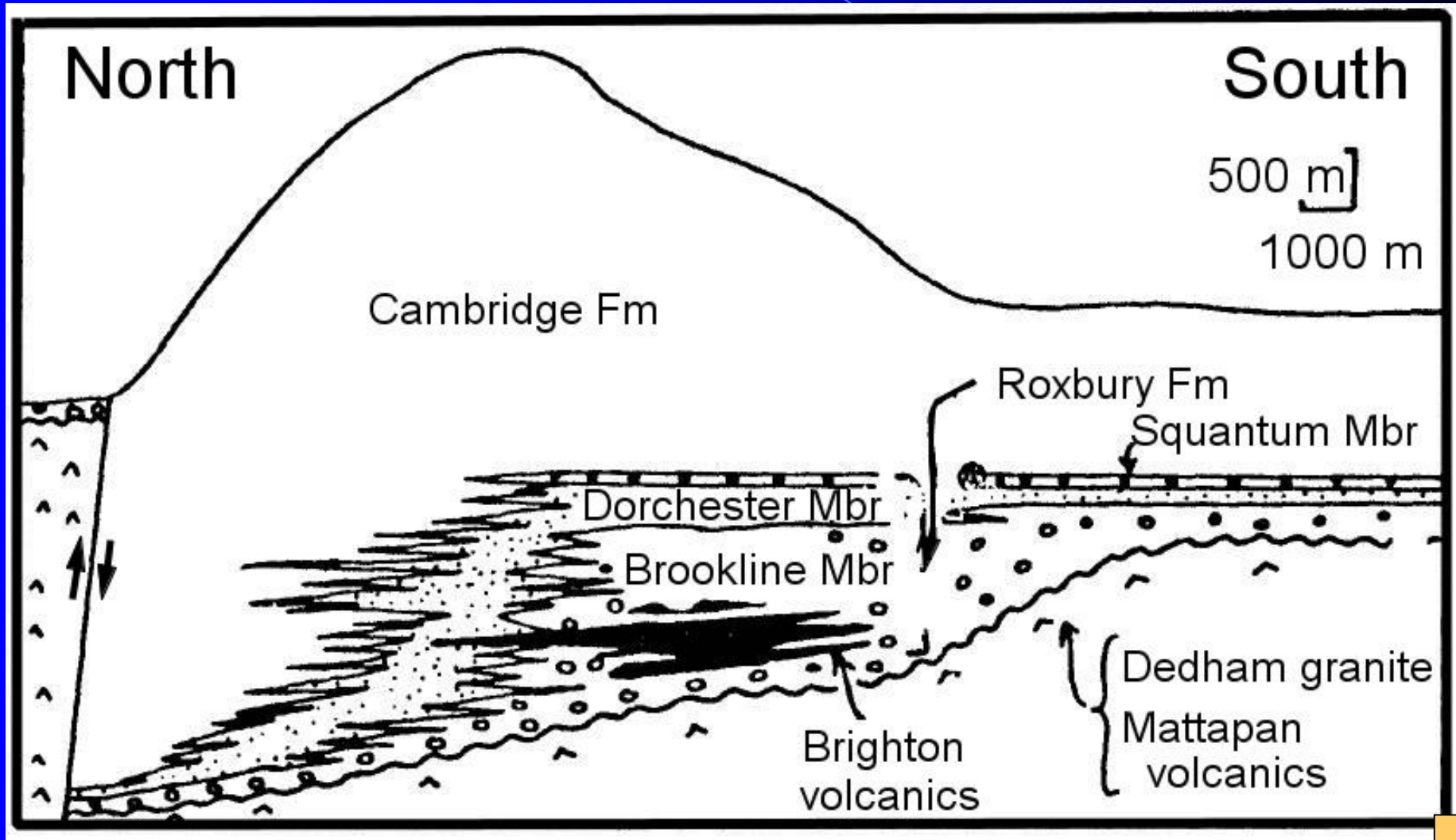


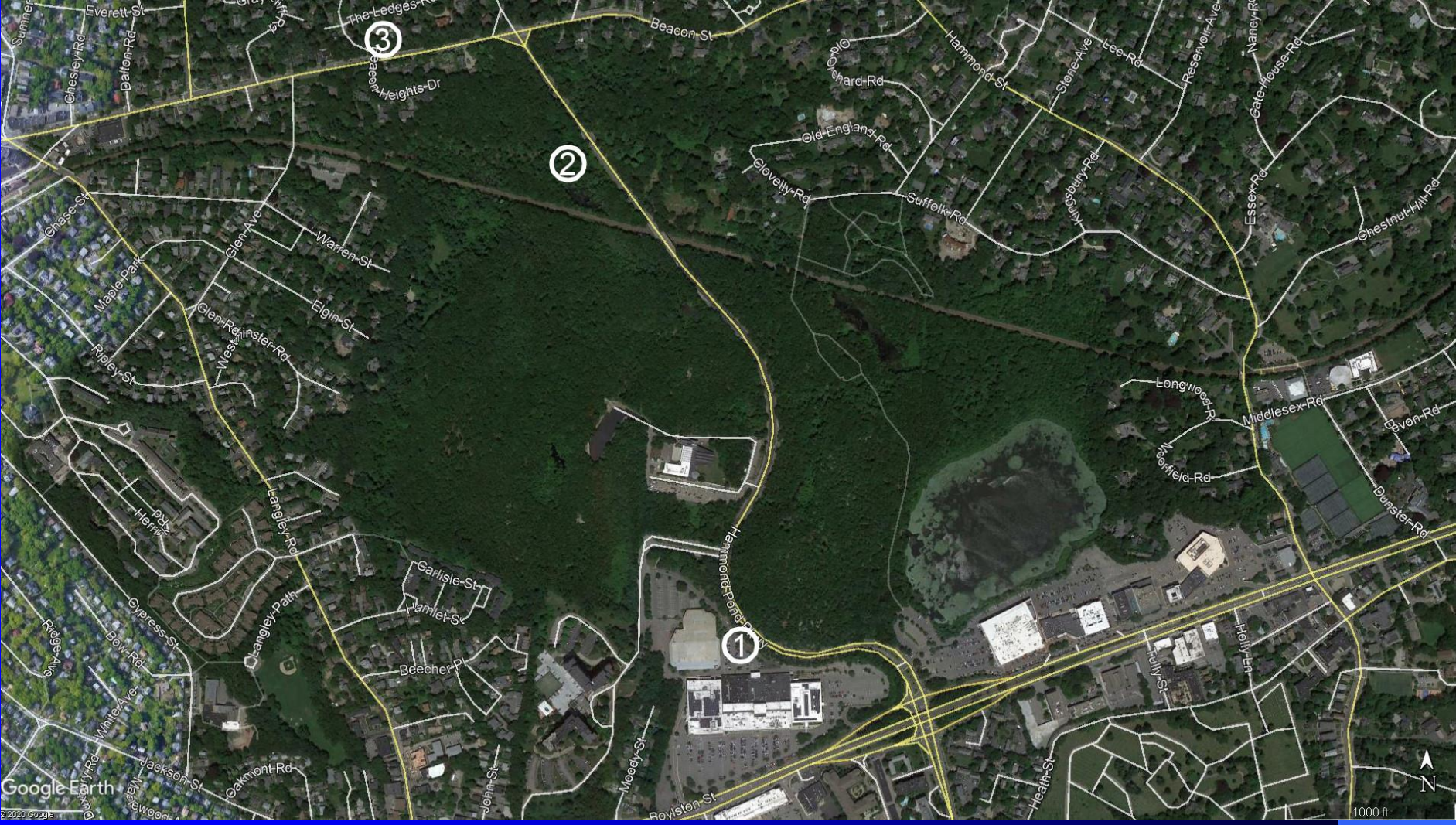
Geology of eastern Massachusetts. —Modified from Zen and others, 1983



*Major formations and structures of the Boston Basin. —Modified from Billings, 1979*

# Geologic Section for the Boston Basin. Note the boundary fault at the left of the section.





# **Stop 1 – Chestnut Hill Mall**

**Roxbury Formation (Brookline Member)**

**Outcrop sequence (from west to east)**























# **Types of Rocks found in the Chestnut Hill Mall Outcrops**

# Conglomerate – large pebbles in sand-sized matrix



**The types of pebbles in the conglomerate tell us what rock(s) were being eroded. These rock fragments were deposited in the basin of deposition.**



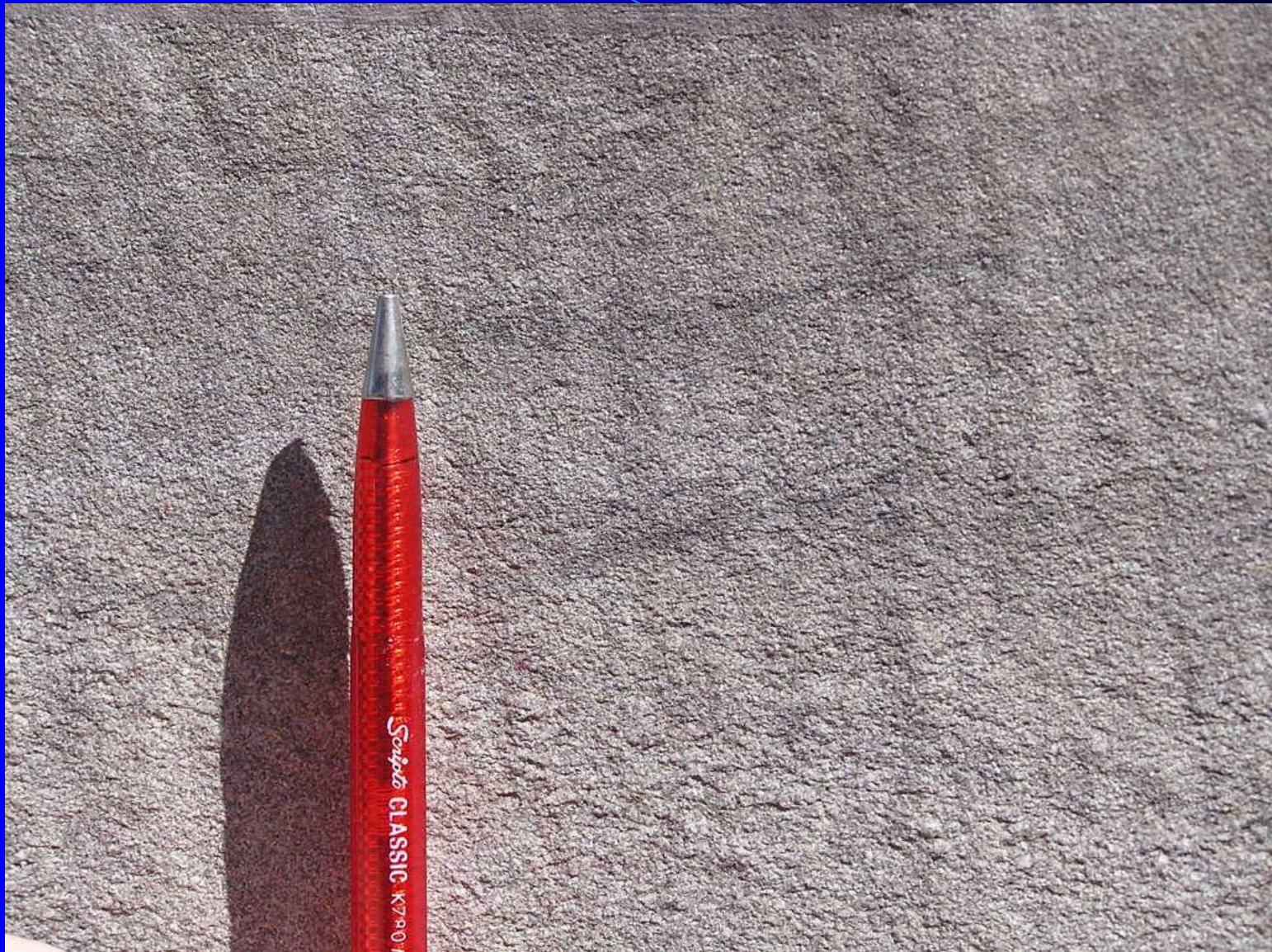
Basalt clast

Rhyolite clast



Quartzite clast

# Sandstone – sand sized grains cemented together



**Siltstone – silt-sized pinkish color in center of picture**



# Basalt – fine-grained mafic igneous rock

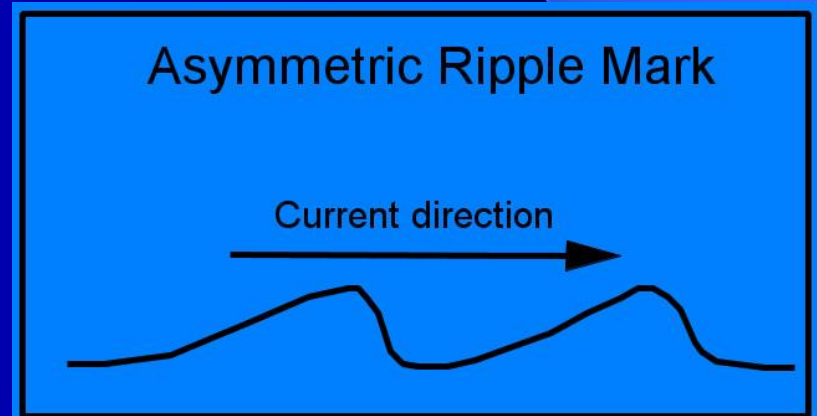




## Contact between conglomerate and sandstone



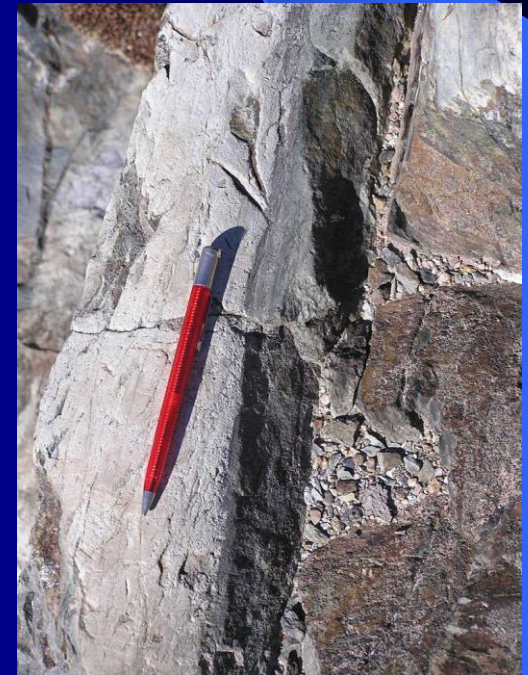
**Asymmetric ripple marks  
show current direction.  
Pencil points in direction of  
current.**





**Sill – a tabular intrusion injected parallel to existing layering. We can tell this is a sill, not a lava flow, because it has chilled margins.**

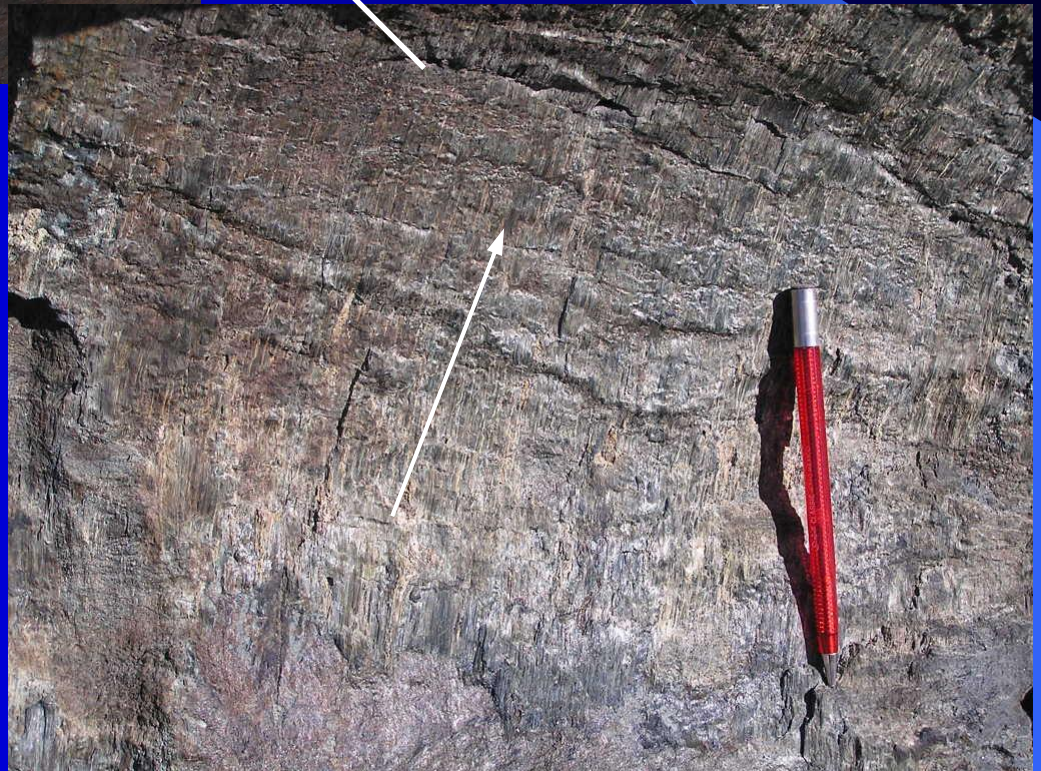
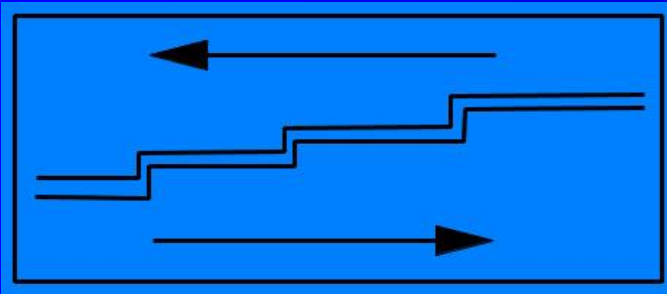
**Close-up view of contact between sill and country rock. Note the fine-grained margin indicating rapid cooling.**



**Slickenslides show sense and direction of movement on a fault plane.**



**Direction of movement**



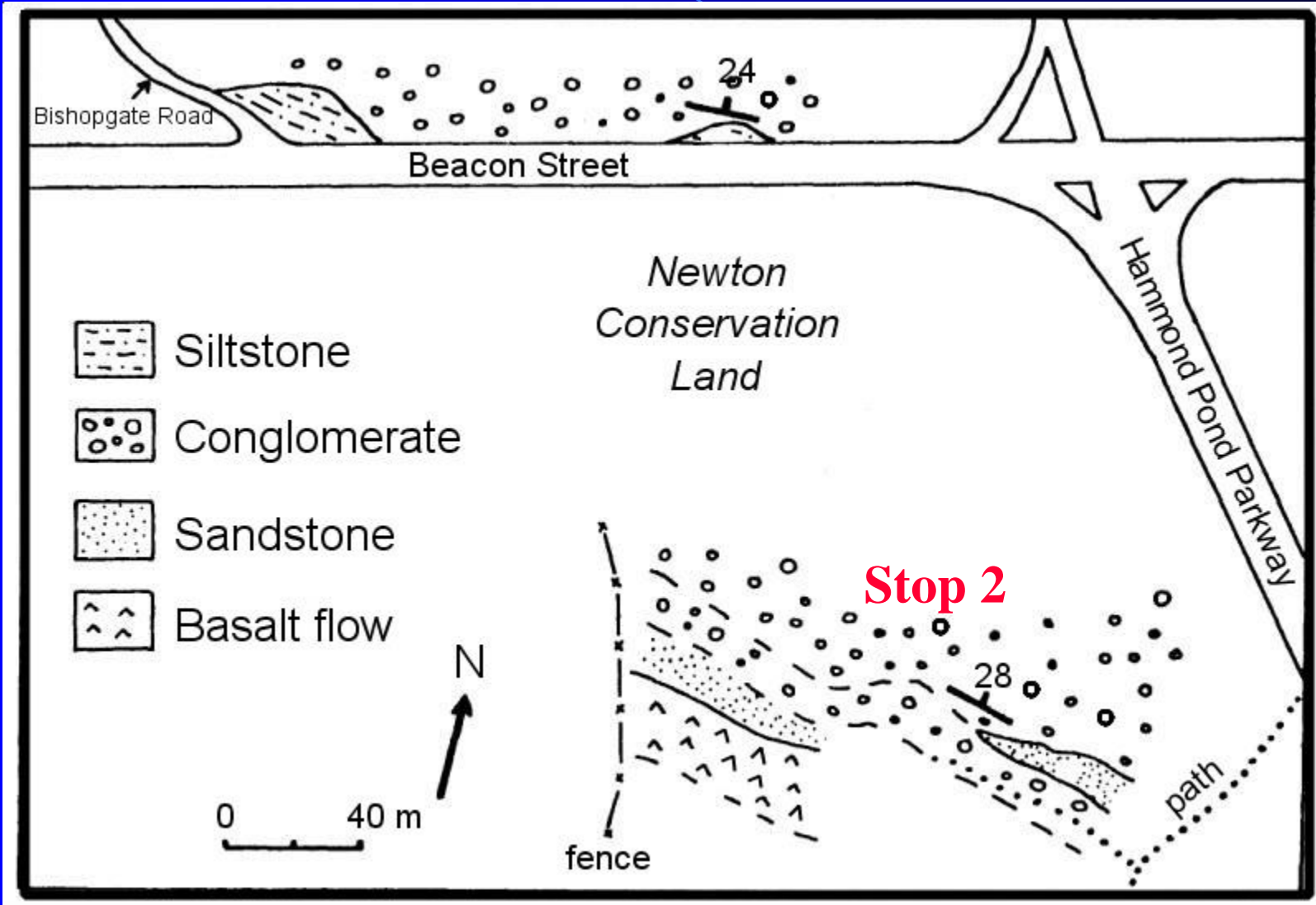
# Glacial grooves and striations. Pencil shows sense of motion.



# Physical weathering – growing tree wedging rock apart



# Stop 2 – Newton Conservation Area



**Roxbury Formation –  
conglomerate and  
sandstone**



**Lava flow**



## Roxbury conglomerate

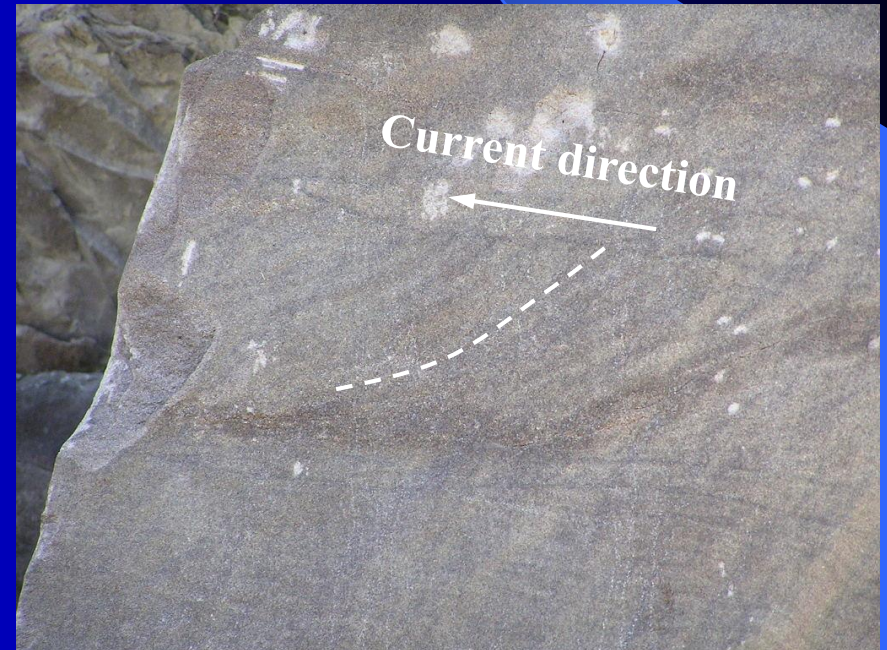
Note change in pebble (clast) size and density





**Channel fill in conglomerate**

**Cross-bedding in channel fill**

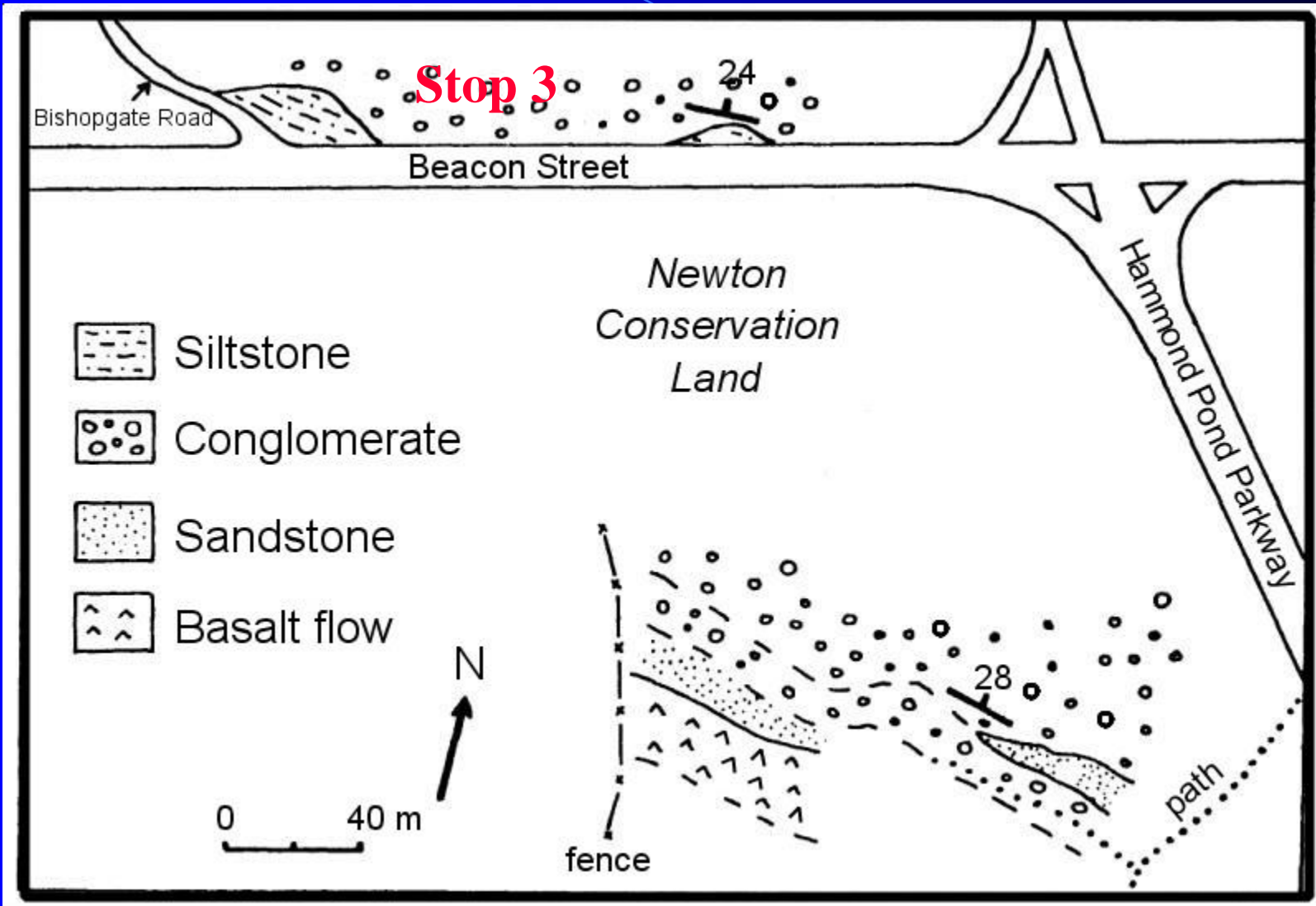


## Lava flow

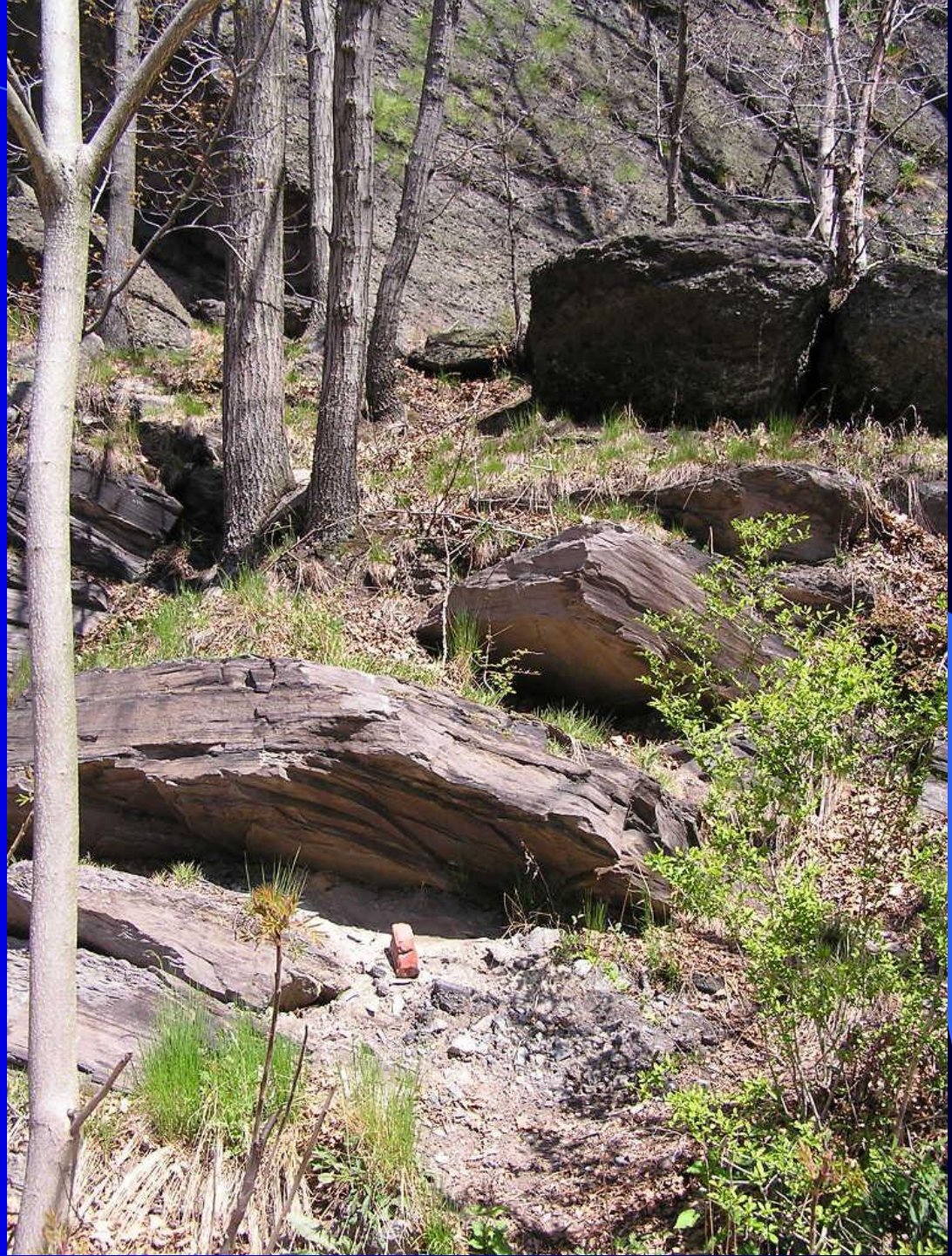


## Vesicular basalt at top of lava flow

# Stop 3- Beacon Street



**Along Beacon  
Street –  
conglomerate  
overlies siltstone**



# Corner of Beacon Street and Bishopgate Road – Siltstone



# Soft sediment deformation



# Soft sediment deformation





# Soft sediment deformation



# Soft sediment deformation

