

# **Stonybrook Long Island Geologist's Conference**

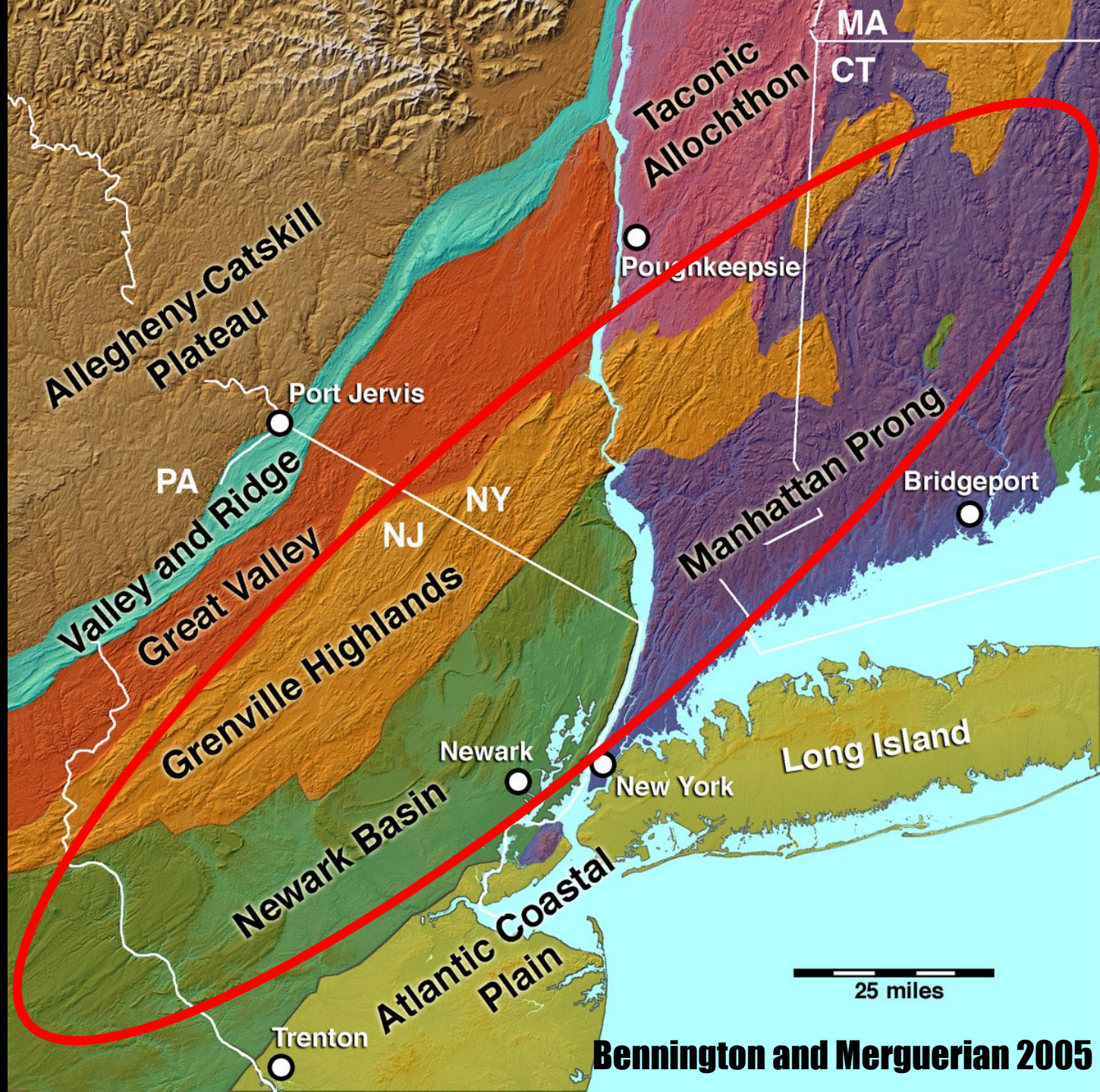
## **Geological Controls on Constructability –**

### **An Excavation Guide for New York City**



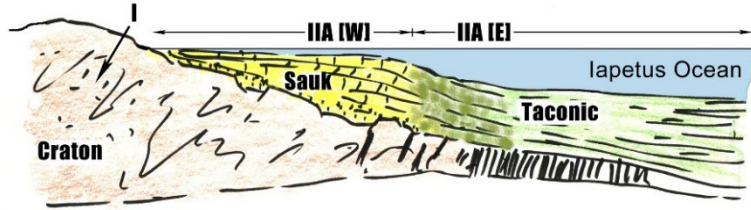
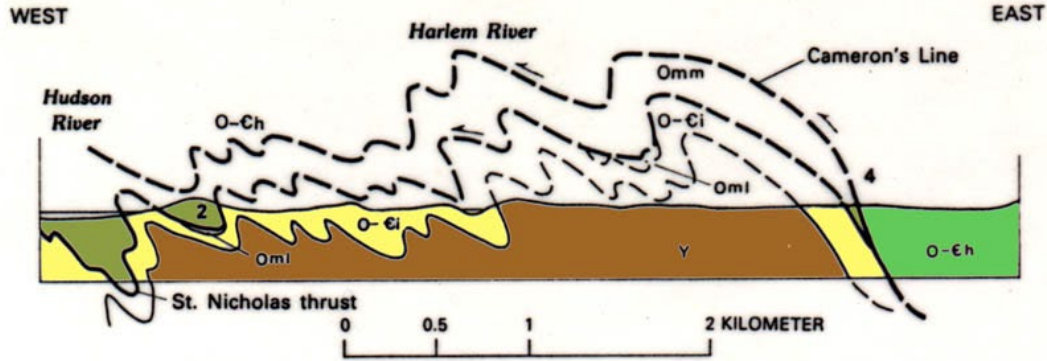
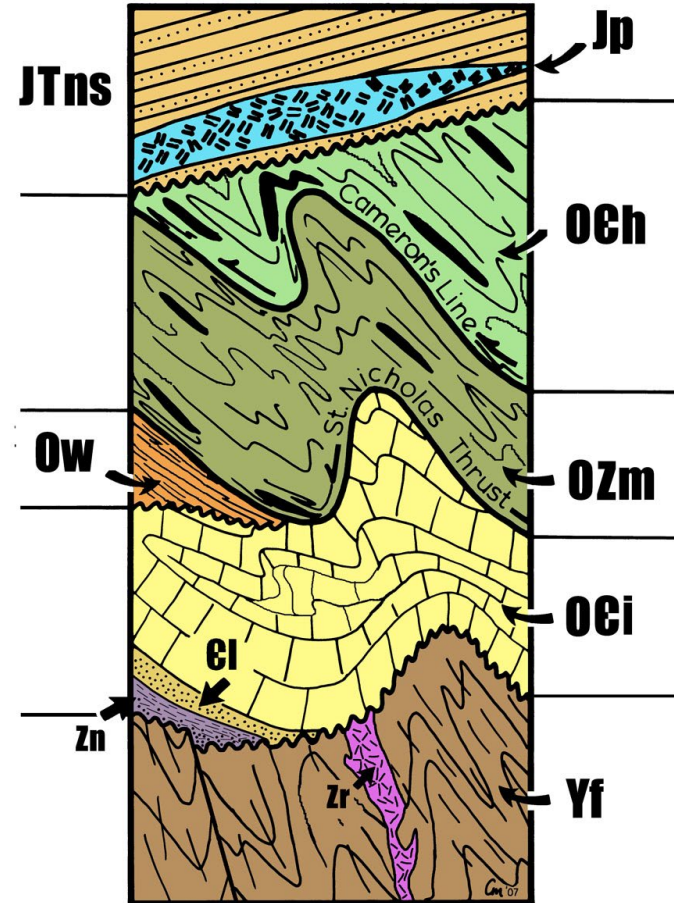
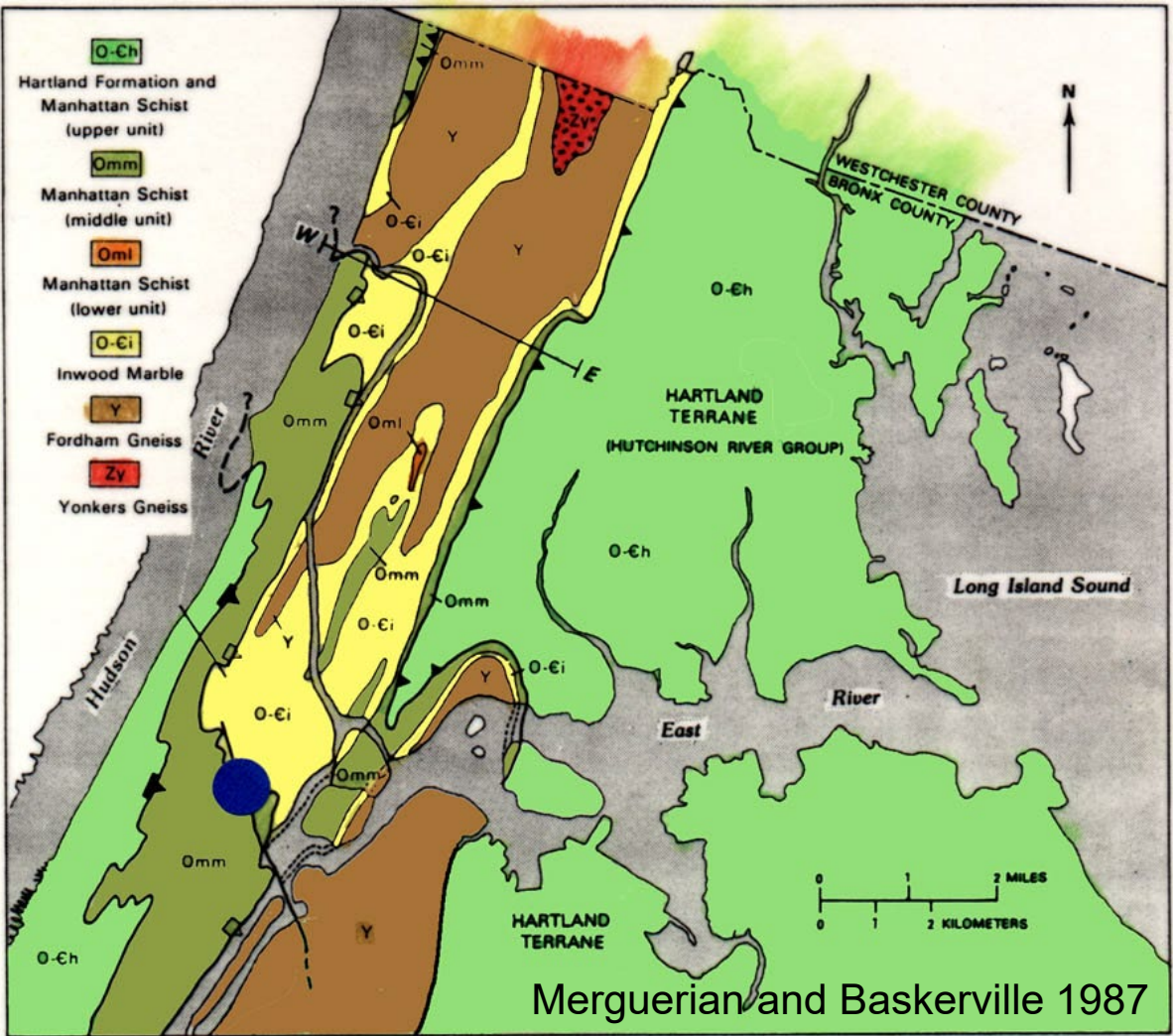
*Charles Merguerian*  
*J. Mickey Merguerian*  
*19 April 2026*

# Layer I Bedrock

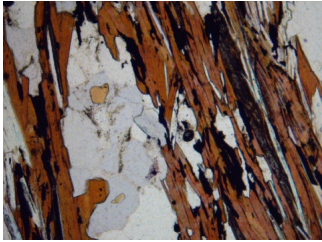
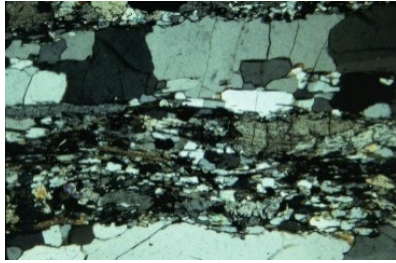


Bennington and Merguerian 2005

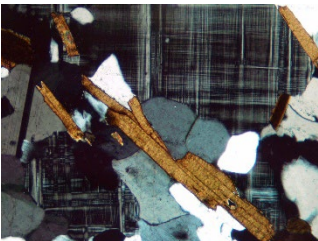
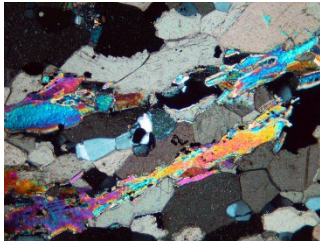
# New York City



# Layer I - Bedrock



TIPPECANOE SEQUENCE



JTns

TACONIC SEQUENCE

OW

SAUK SEQUENCE

BASEMENT



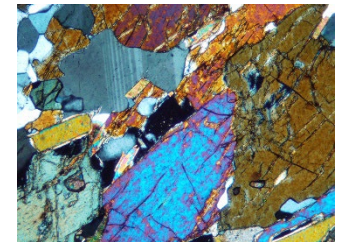
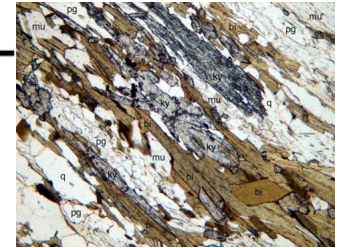
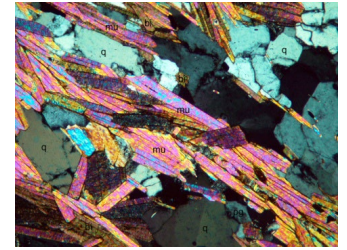
Jp

OCh

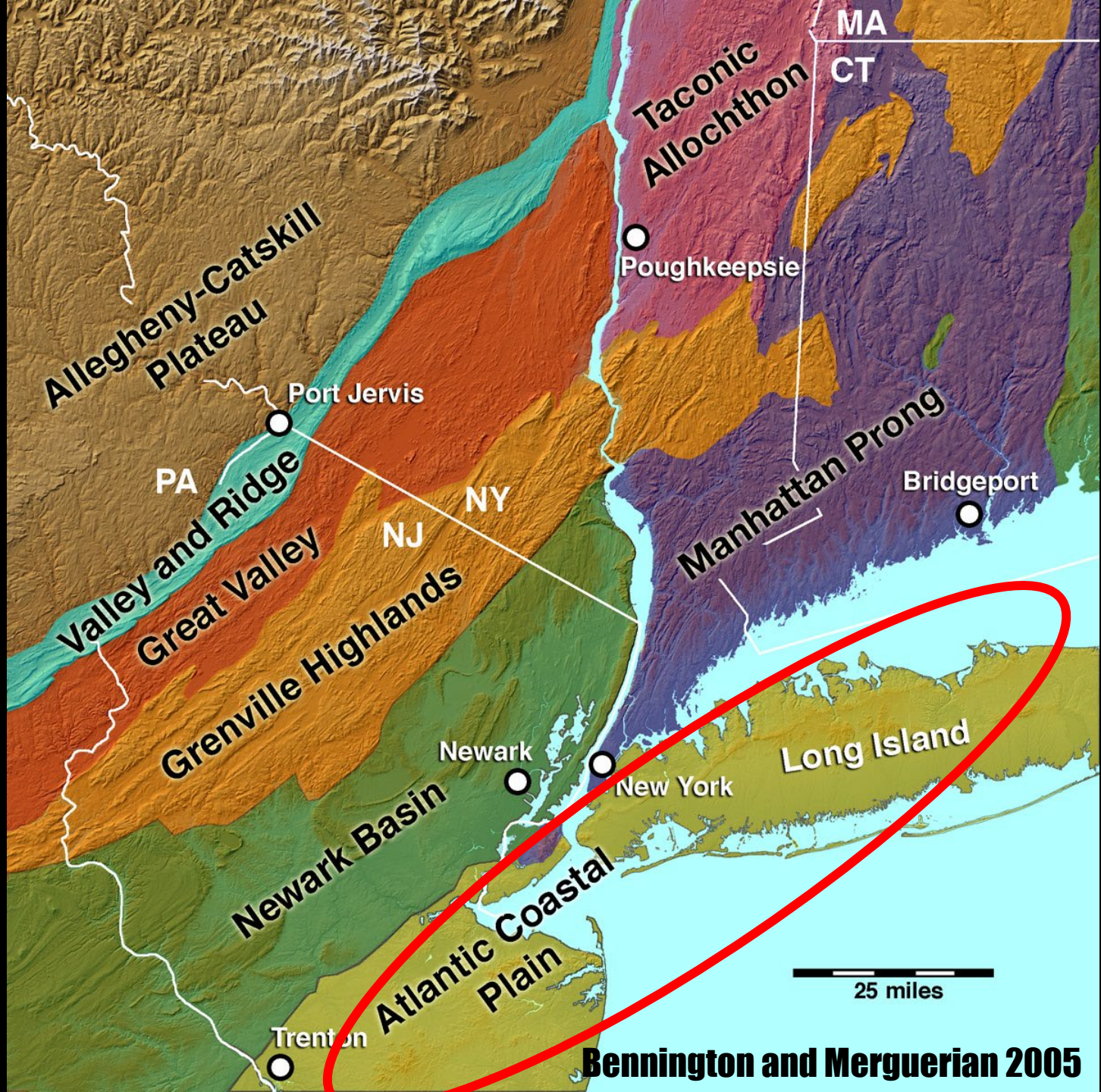
OZm

Oei

Yf



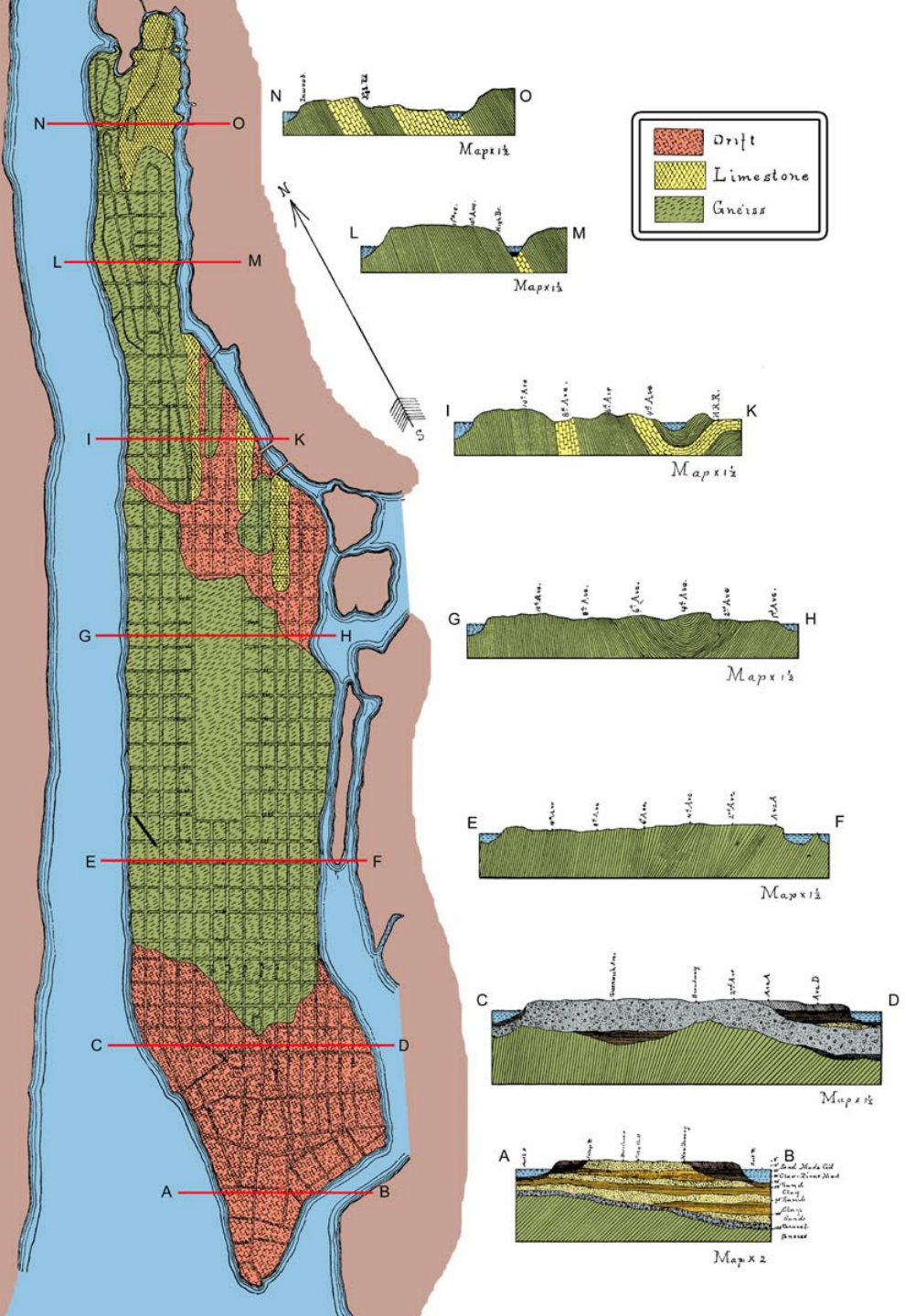
# Layer II - Regolith



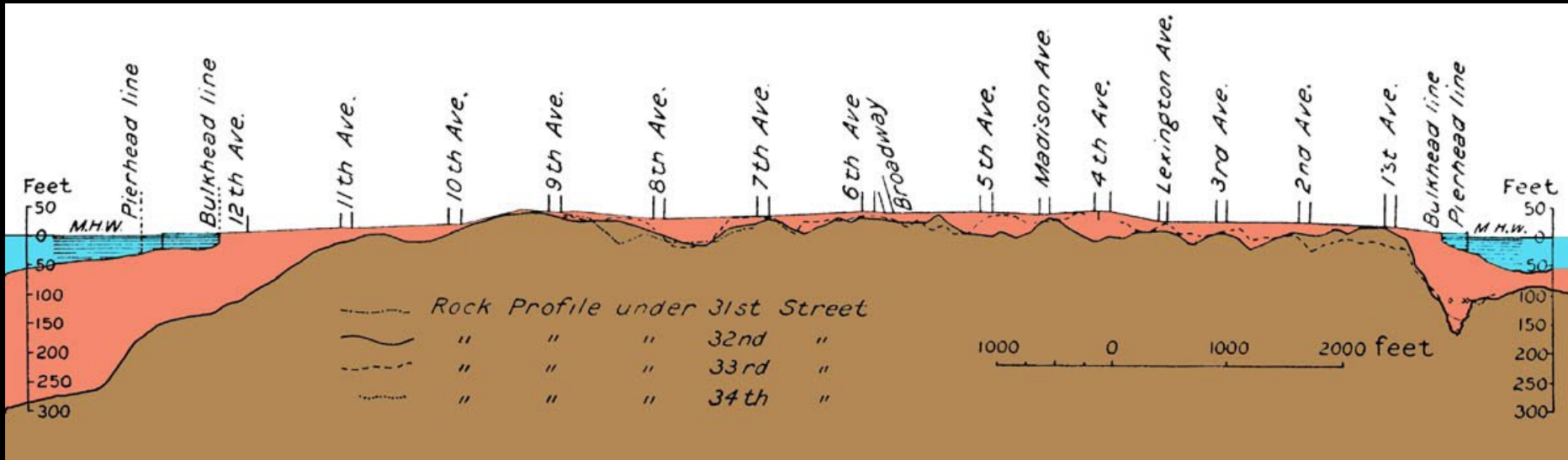
# Layers I + II

**Geological Map of  
Manhattan and NW-SE  
Profile Sections  
Showing Variable  
Structure of NYC  
Bedrock and Regolith.  
North of Midtown,  
Rock at or Near  
Surface**

**Colorized from Kemp 1887**



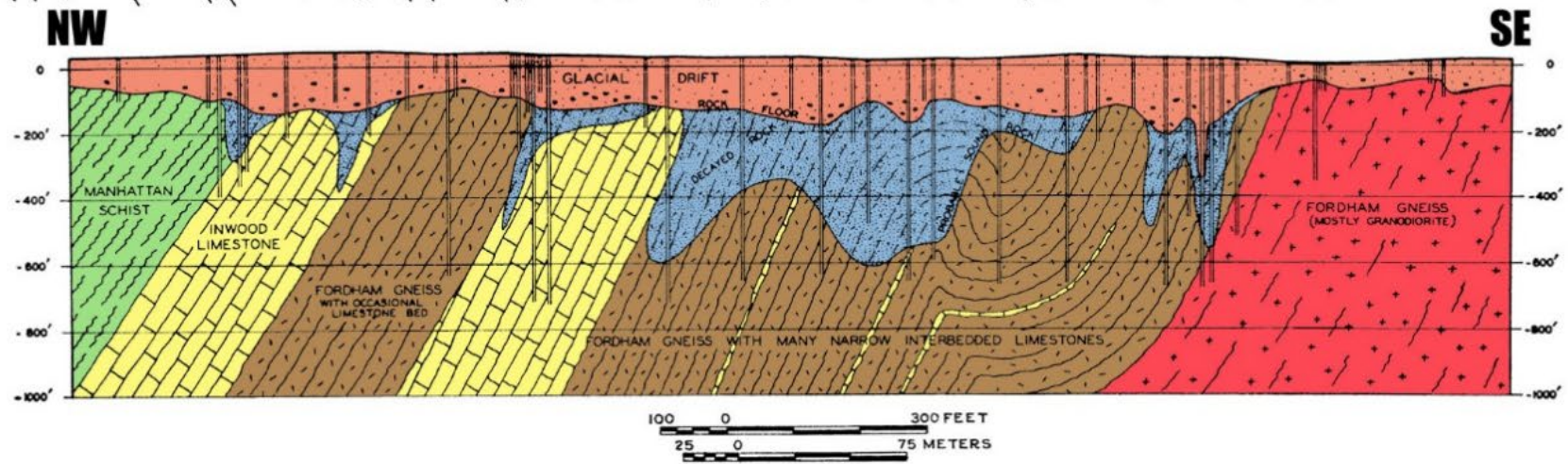
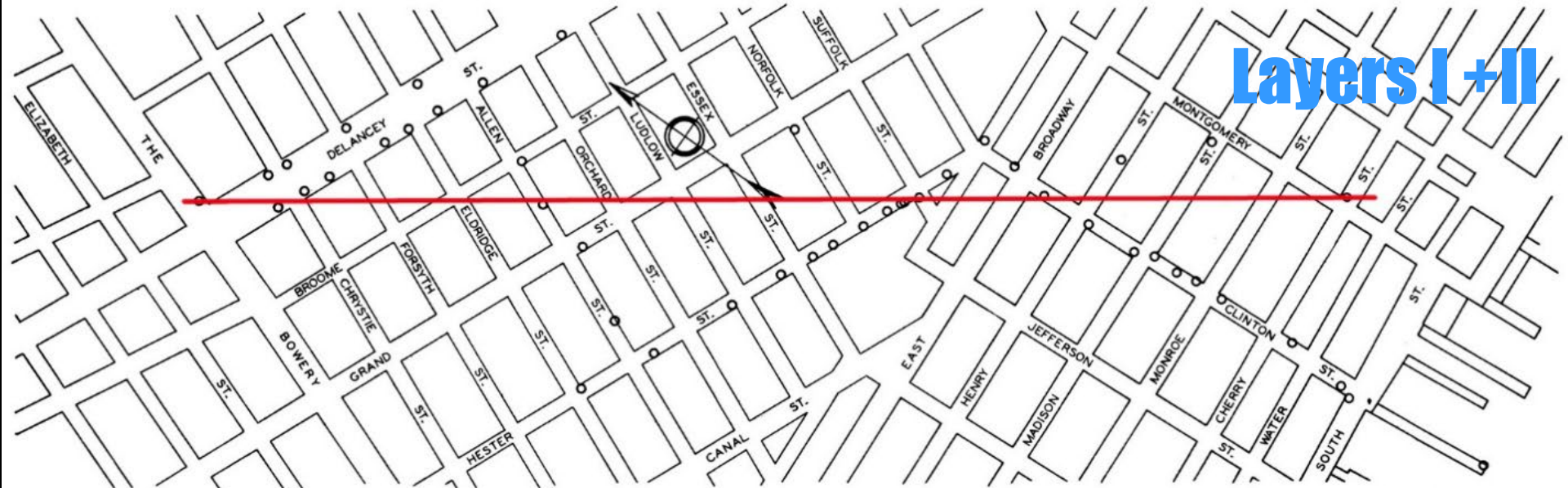
# Layers I + II



**Section Parallel to ~34th Street in Manhattan  
Showing Thin Veneer of Regolith Above  
Crystalline Bedrock**

**Adapted and colored from Berkey 1910**

# Layers I + II

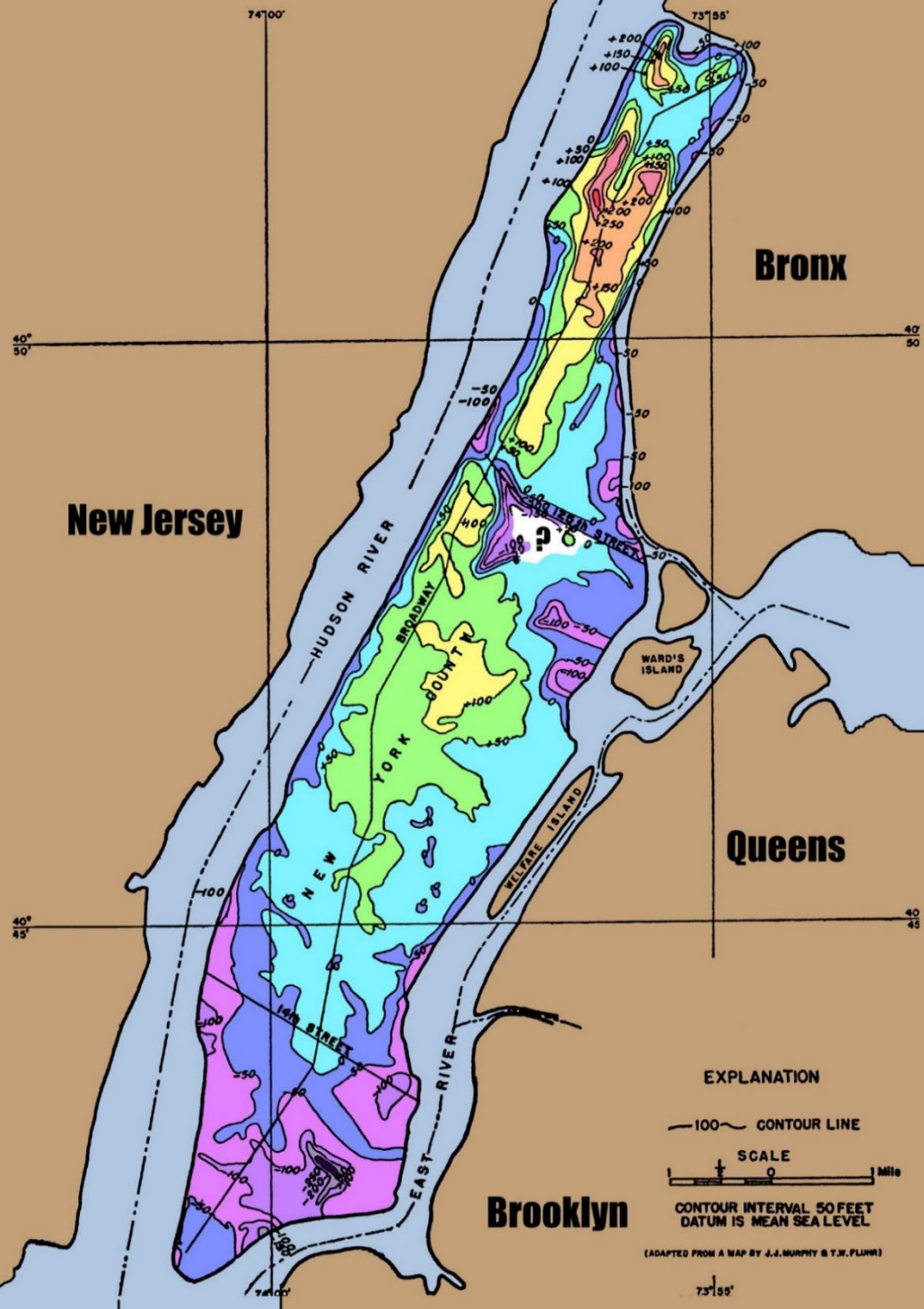


**NW-SE Section Southern Manhattan and Overlying Blanket of Pleistocene Drift Averaging over 100' in Thickness**  
**Note Deep Decay of Bedrock (blue) at Top of Rock**

**Adapted and colored from Berkey 1933**

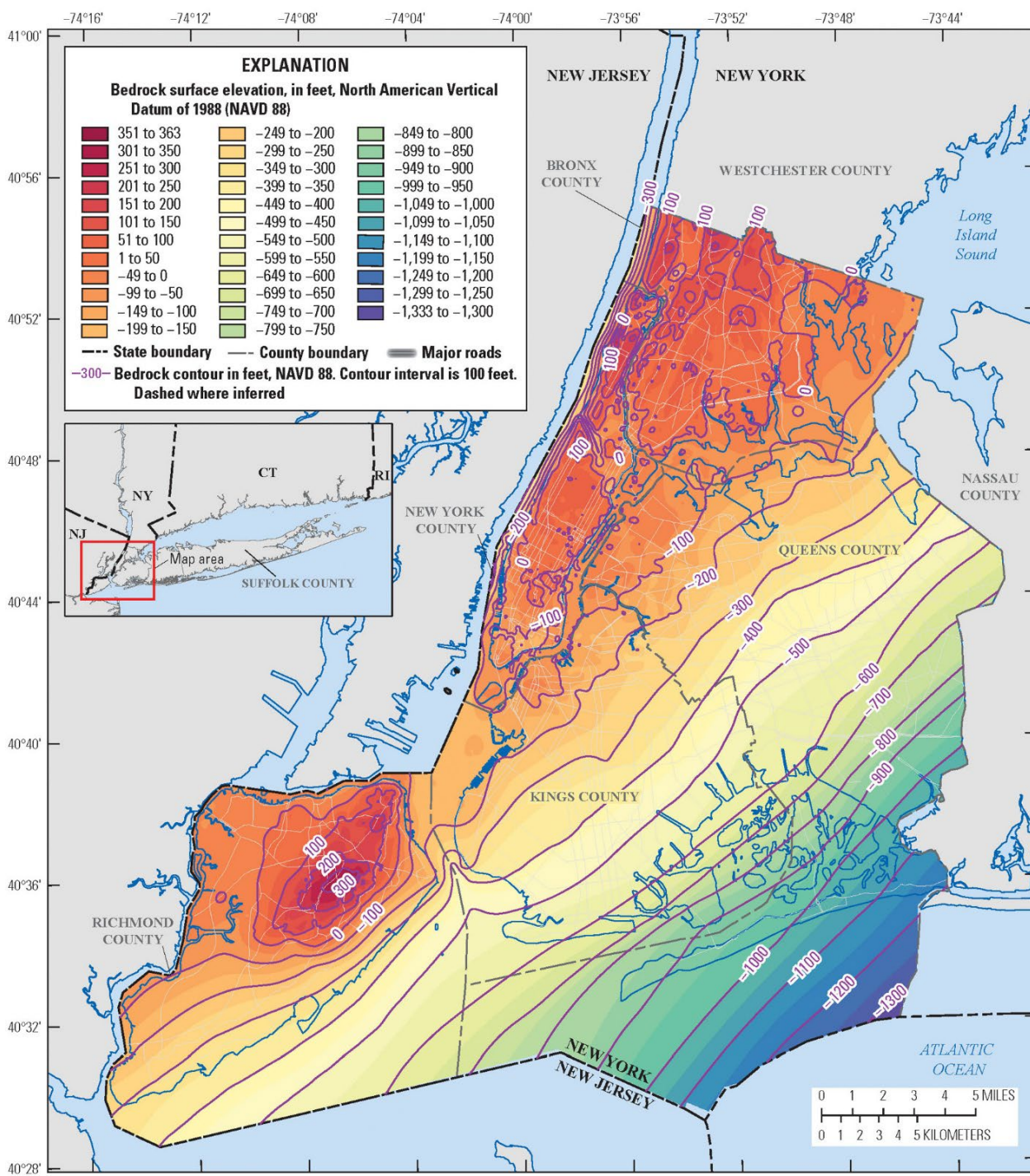
# Bedrock Contour Map 50' Intervals

Areas of Shallow and  
Exposed Bedrock in  
**Blue-Green-Yellow-  
Orange-Red**

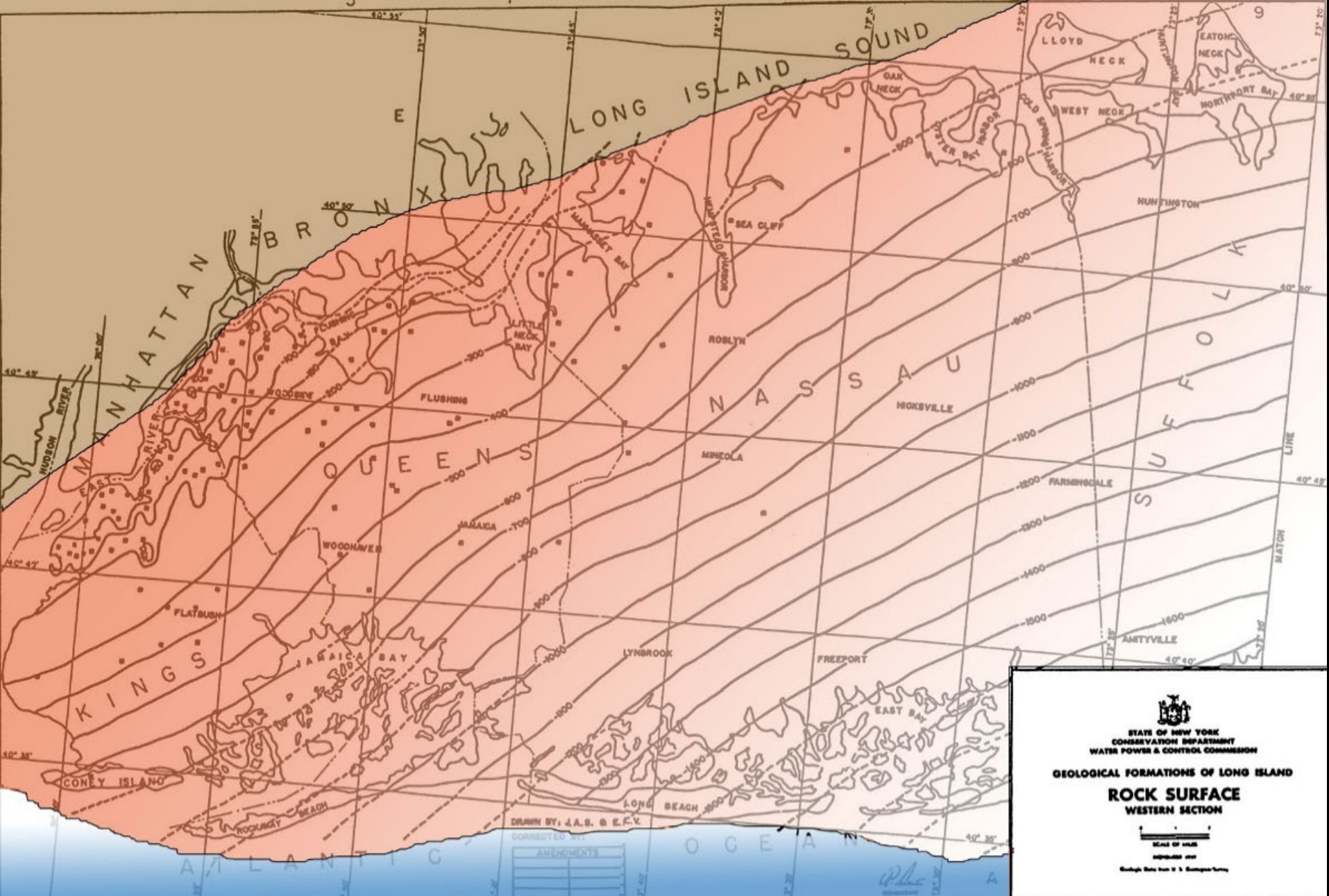


From Perlmutter and Arnow 1953

# Bedrock Contour Map - 100' Intervals



**DeMott, Stumm and Finkelstein, 2023**

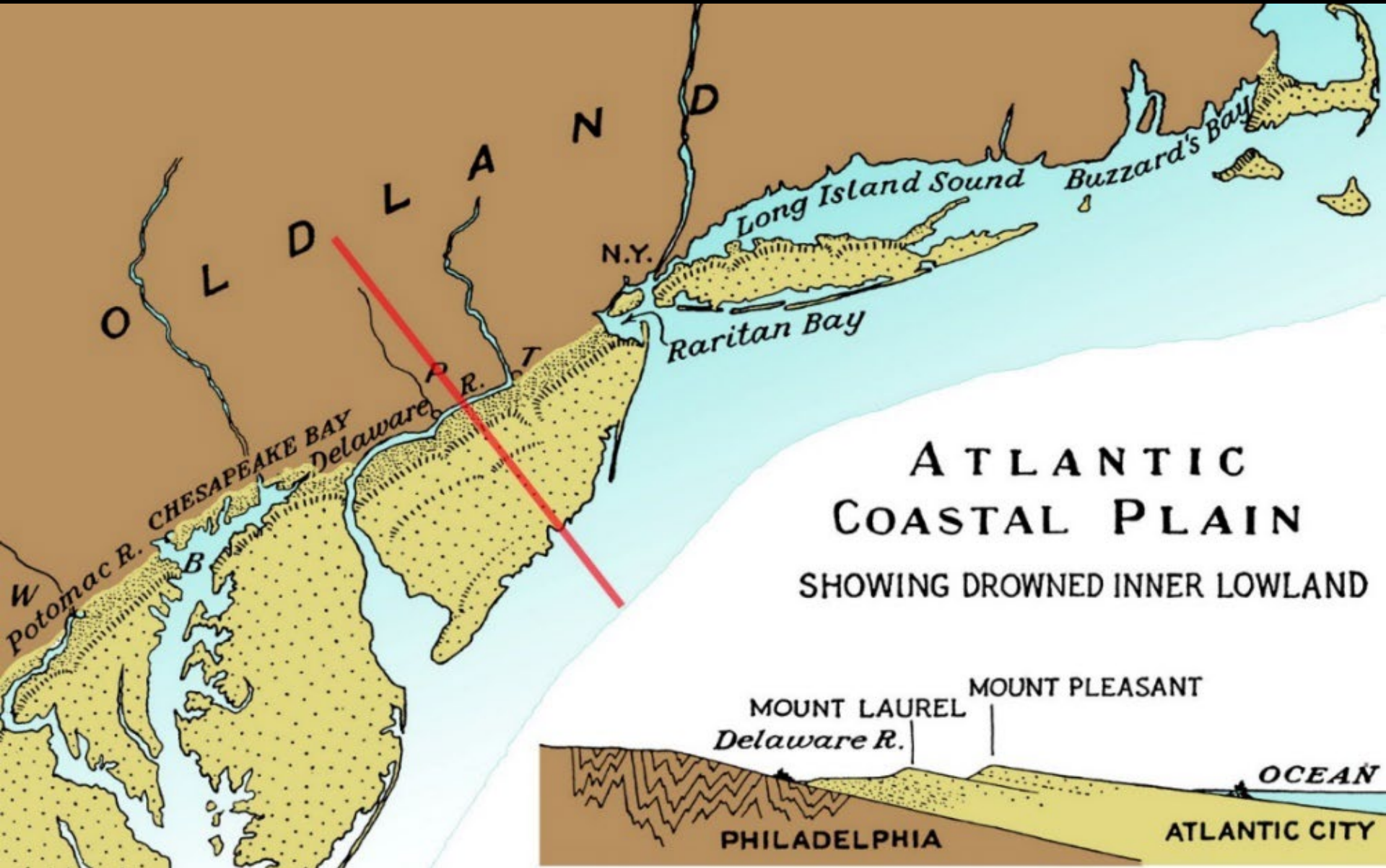


Adapted and colored from Suter et al., 1949

**Layer IIA – Holocene (Recent) Beach-, Lake-, and River Deposits**

**Layer IIB – Pleistocene Drift (Lake-, Till- and Outwash Deposits)**

**Layer IIC – Cretaceous Clay, Silt, Sand, Gravel**

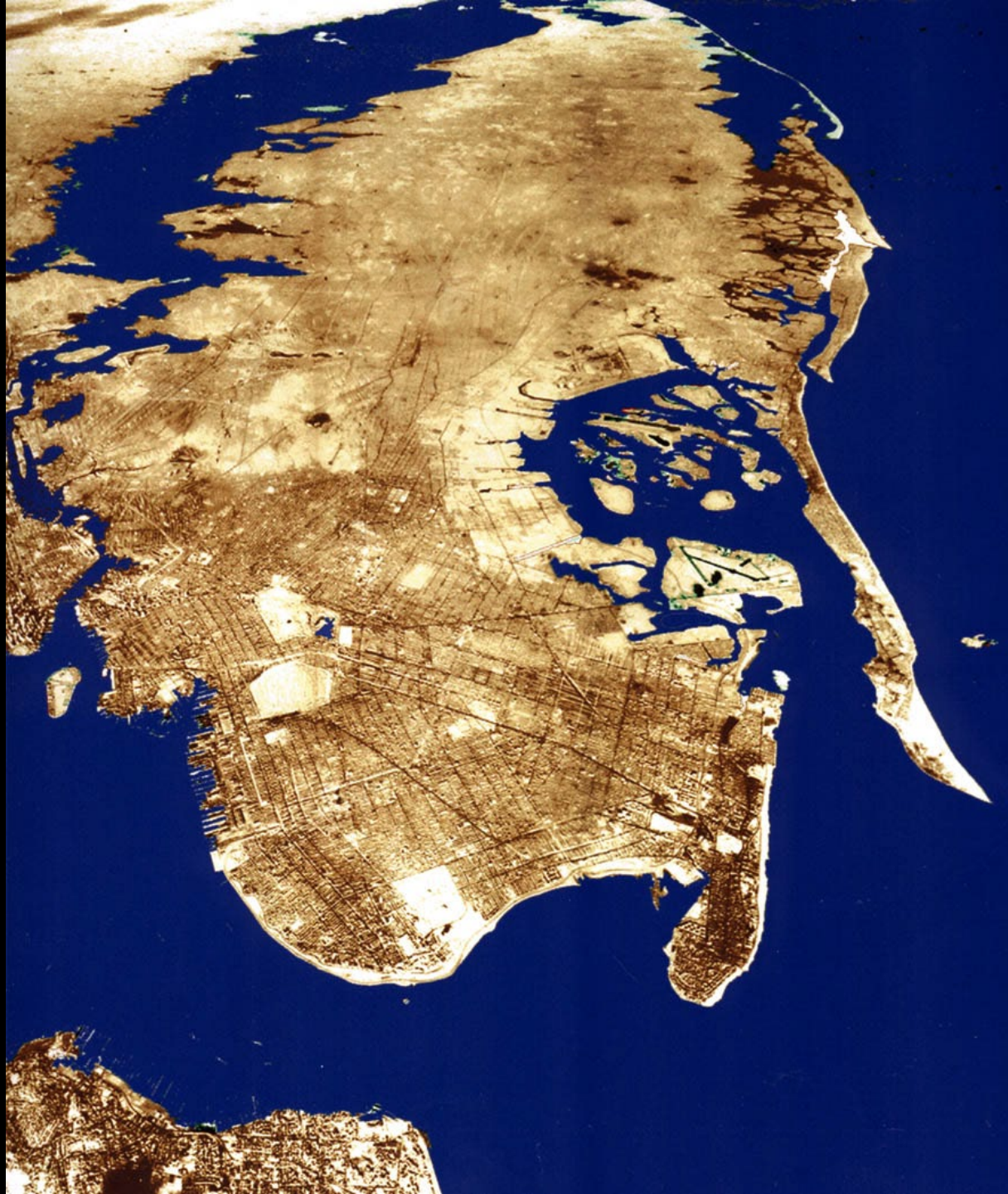
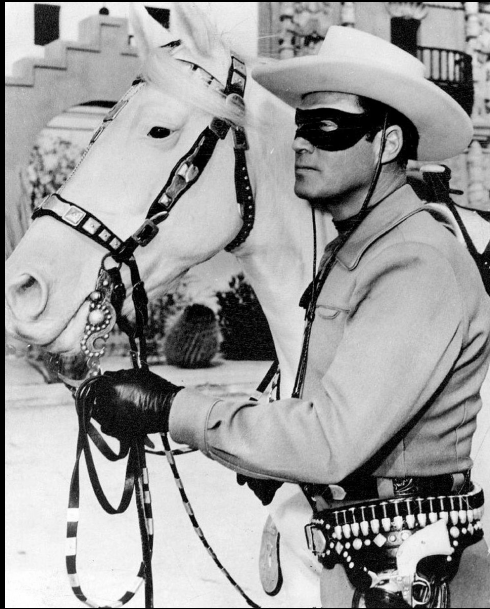




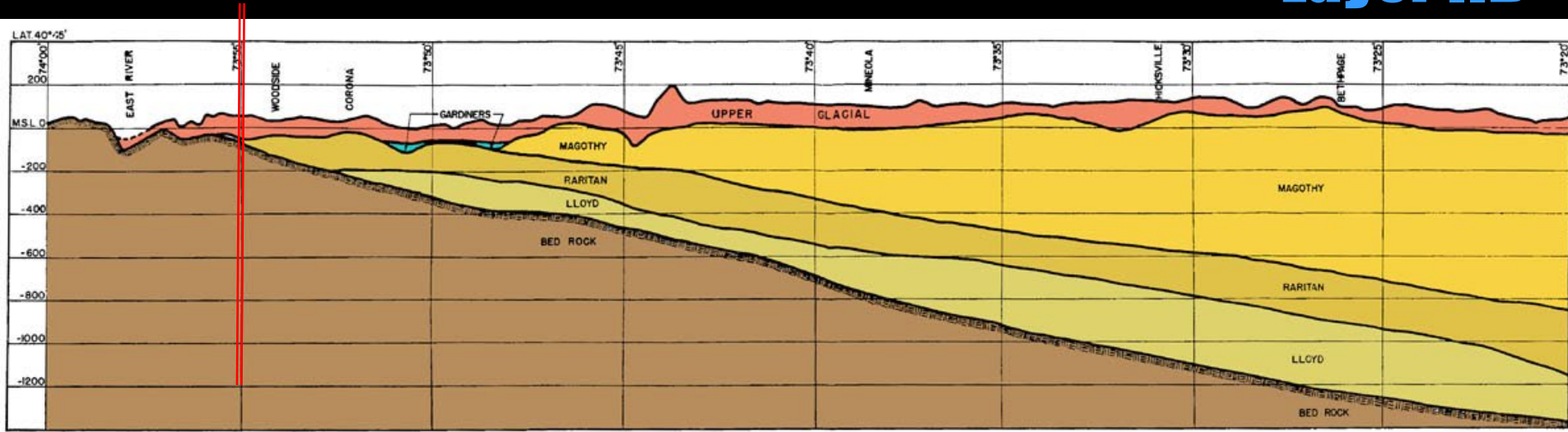


# Lone Gisland

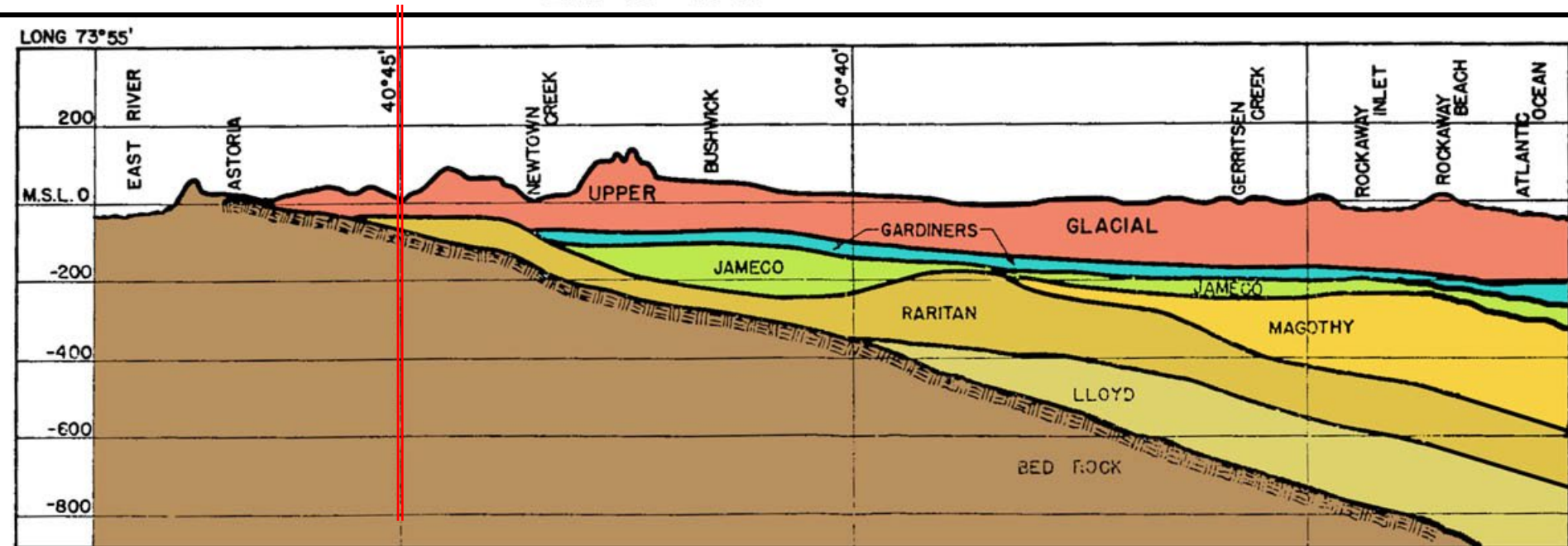
## Lone Ranger



# Layer IIB



LAT. 40°=45' N



LONG. 73°=55' W

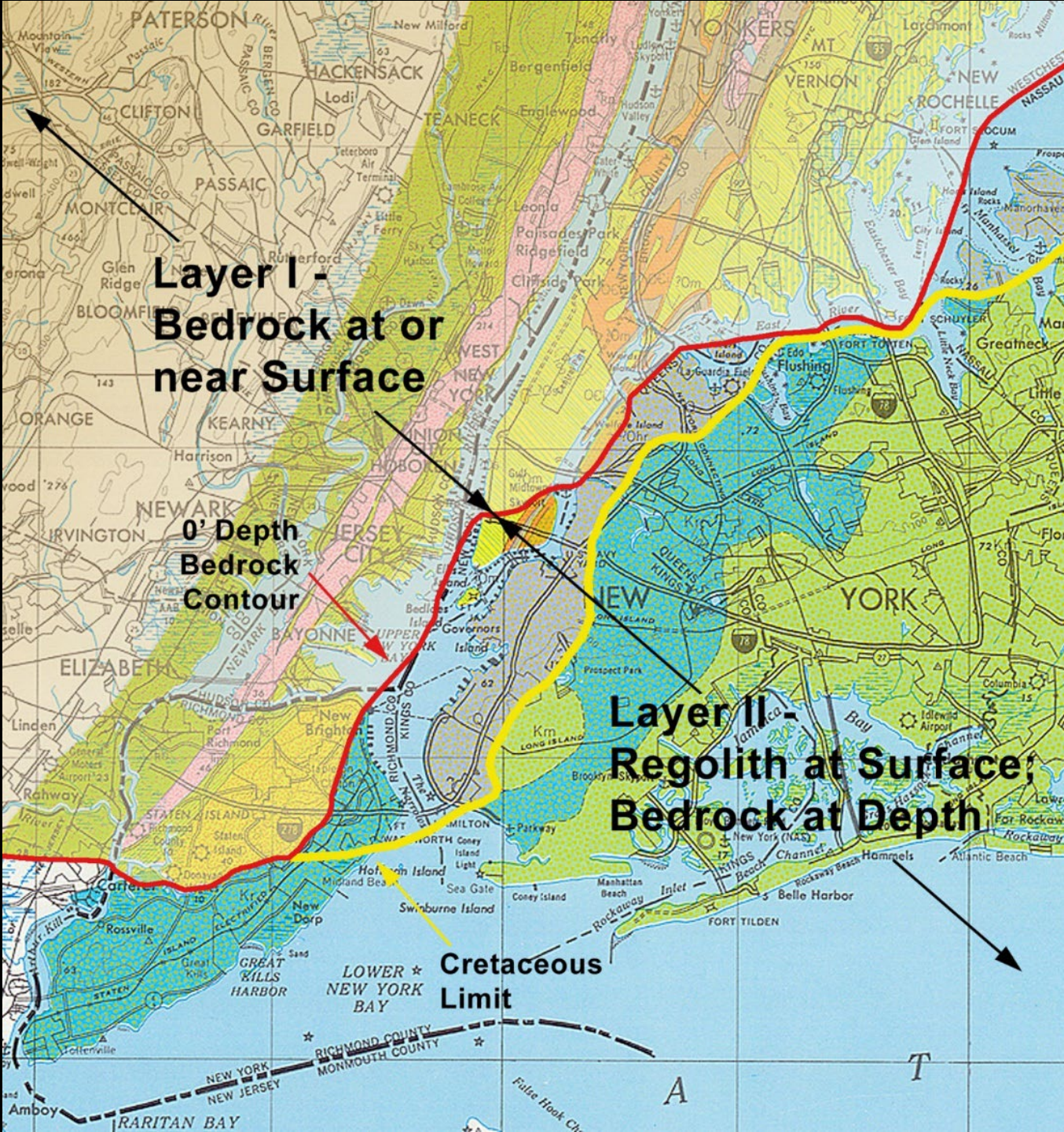
**Suter et al. 1949**



# Layer IIB



# Layers I + II



**Layer I -  
Bedrock at or  
near Surface**

**0' Depth  
Bedrock  
Contour**

**Layer II -  
Regolith at Surface,  
Bedrock at Depth**

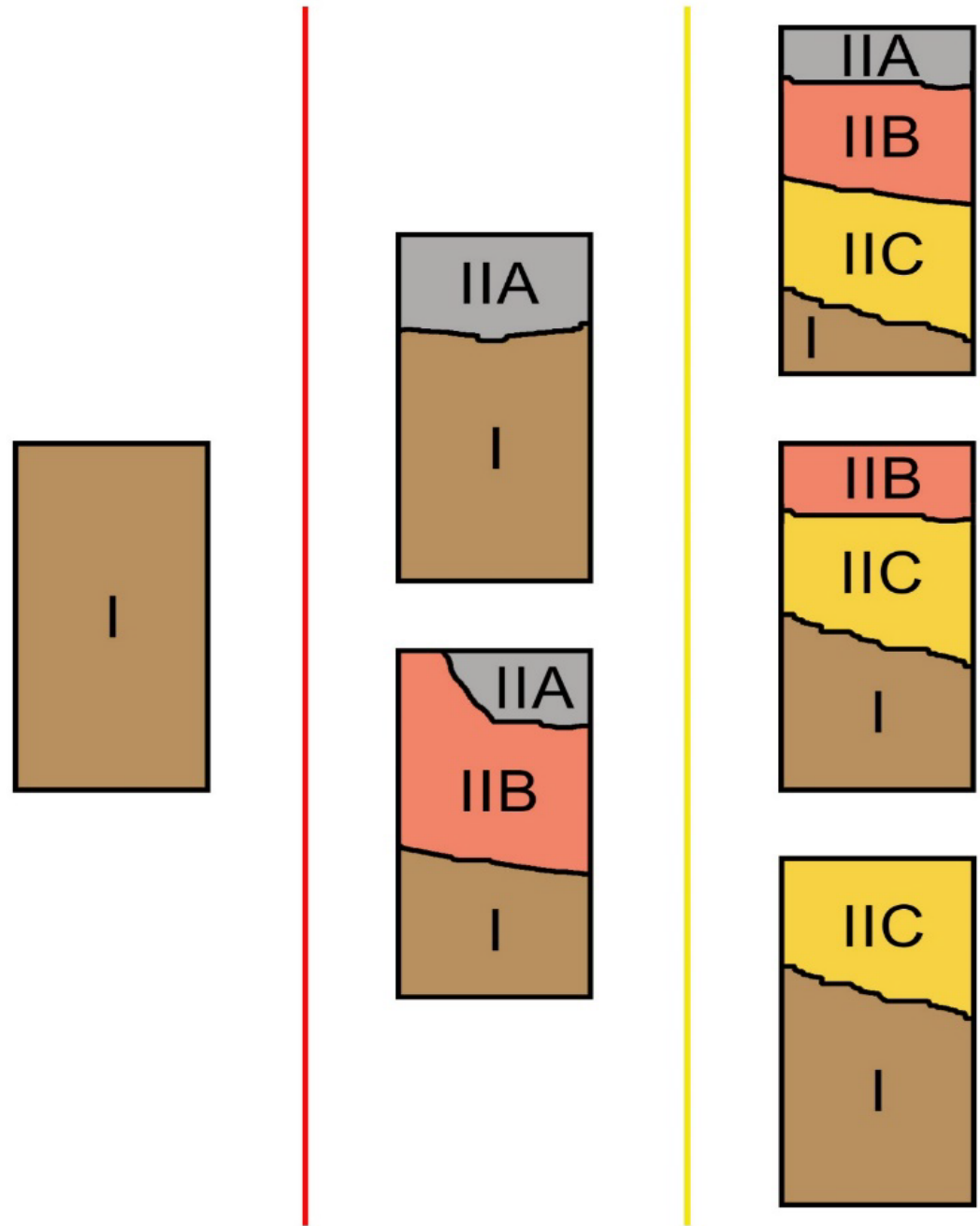
**Cretaceous  
Limit**

**Fisher et al. 1970**

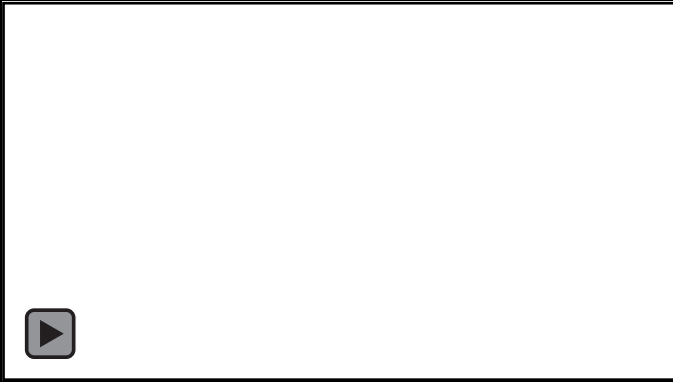
# Means and Methods



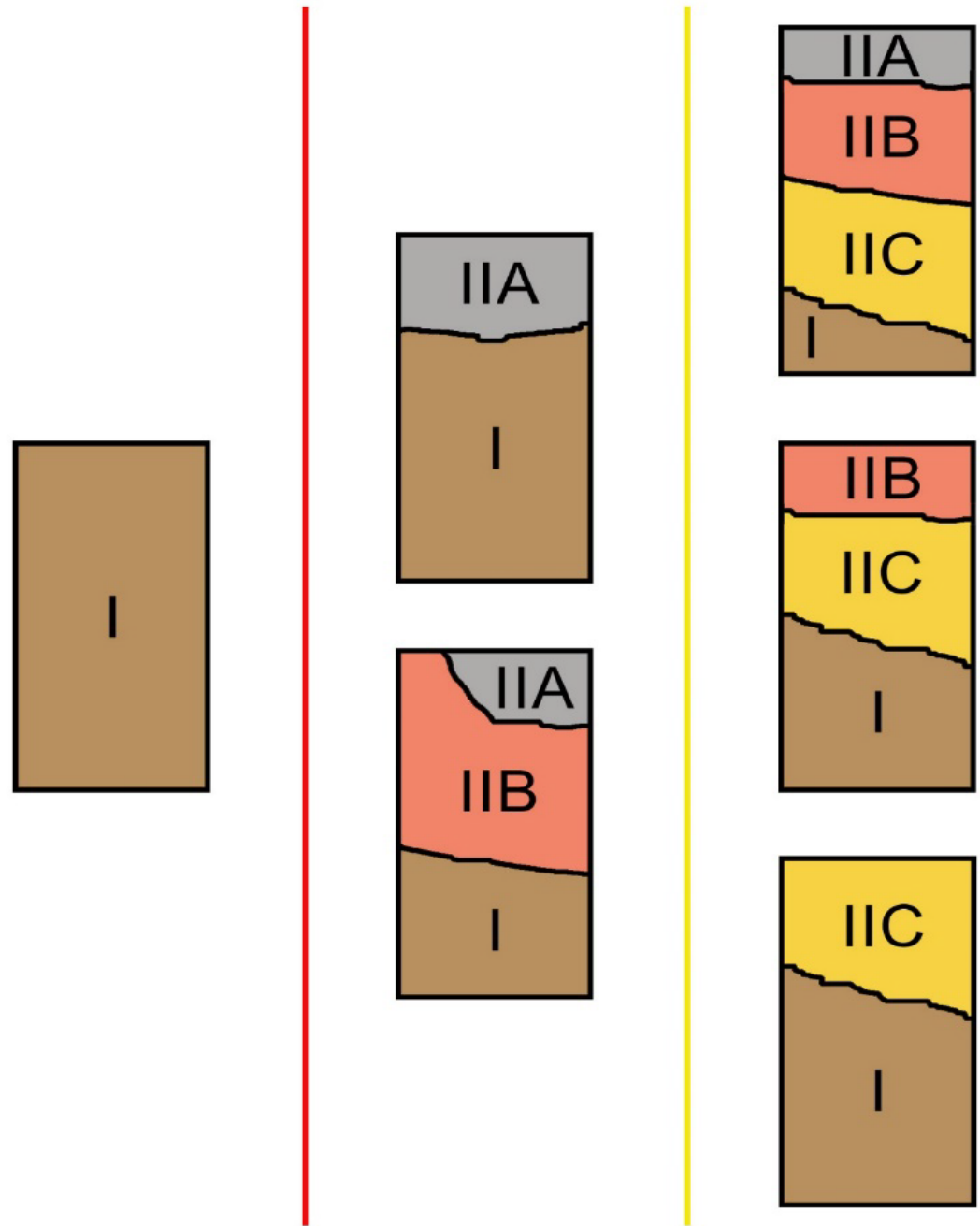
## Geology of Shallow Excavations - NYC



# Means and Methods



## Geology of Shallow Excavations - NYC



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**What's All  
That Noise?**

