



# Wabasha Street Rock Slide

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Slides prepared by Itasca Consulting Group  
May 30, 2018

Summarized for presentation by City of Saint Paul Public Works  
June 1, 2018

# Topics for Today

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- Rock slide, investigation, factual findings
  - ❖ Recent events
  - ❖ Background information (geology, groundwater, etc.)
  - ❖ Site investigation & findings
  - ❖ Key factors creating rock slides at Wabasha Street
- Remedial Actions

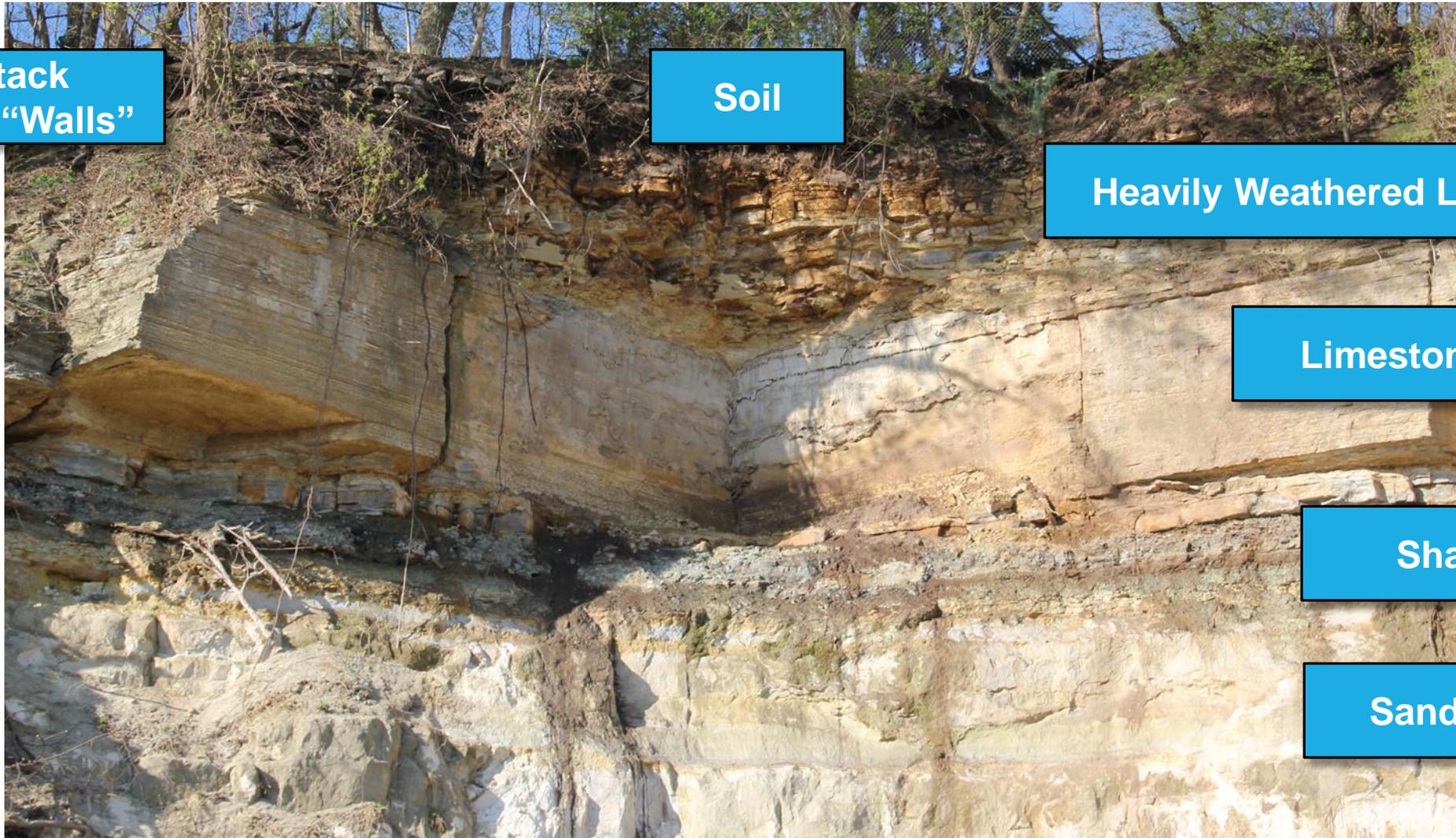
# Site Activities Summary

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- Initial site visit, and development of an investigation plan
- Collect site geometry (photogrammetry and laser scanning)
- Collect information about the rocks and soil
  - ❖ Weathered limestone
  - ❖ Fresh limestone
  - ❖ Limestone joints
  - ❖ Shale character
  - ❖ Sandstone strength and joints
- Collect information about surface and groundwater
- Initiate a monitoring program



# Site Geology



Dry-Stack  
Concrete "Walls"

Soil

Heavily Weathered Limestone

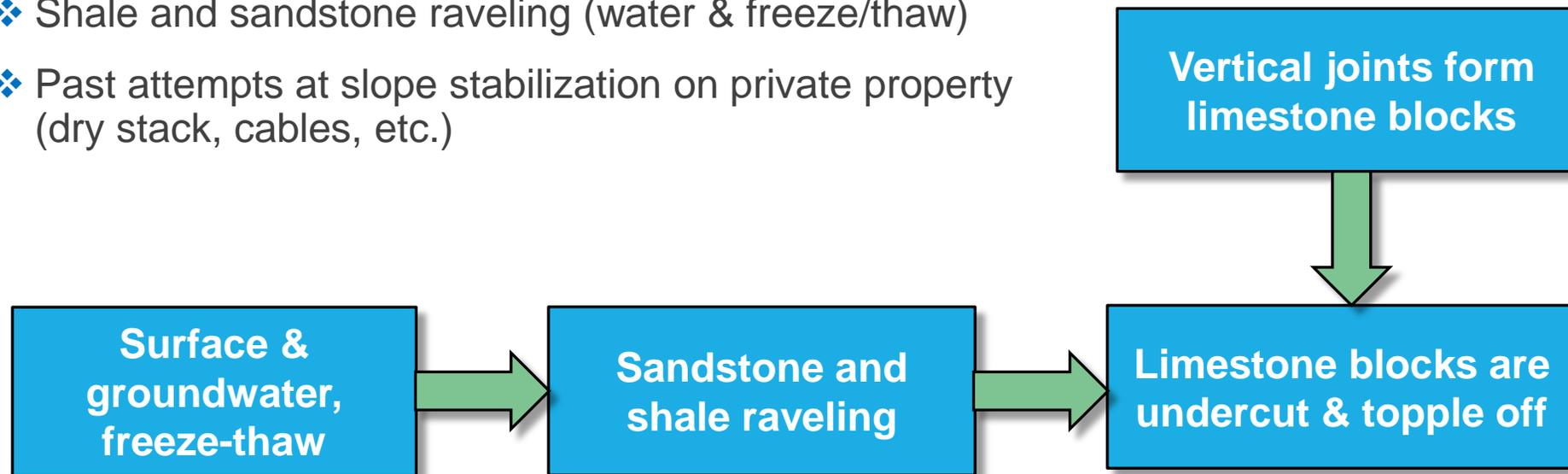
Limestone

Shale

Sandstone

# Key Factors at Wabasha Street Site

- These apply to past, recent and future rock slides:
  - ❖ Weathering and karst at geological time scale
  - ❖ Vertical joints and horizontal seams in the Platteville limestone
  - ❖ Likely quarrying of the Platteville limestone
  - ❖ Surface runoff
  - ❖ Shale and sandstone raveling (water & freeze/thaw)
  - ❖ Past attempts at slope stabilization on private property (dry stack, cables, etc.)



# The Key Factor

- Sandstone/shale raveling

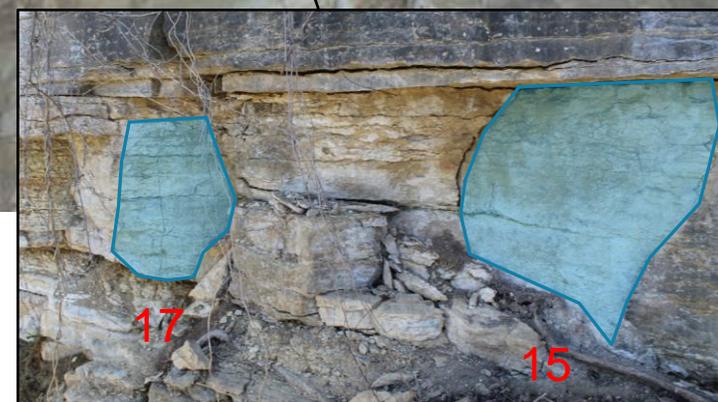
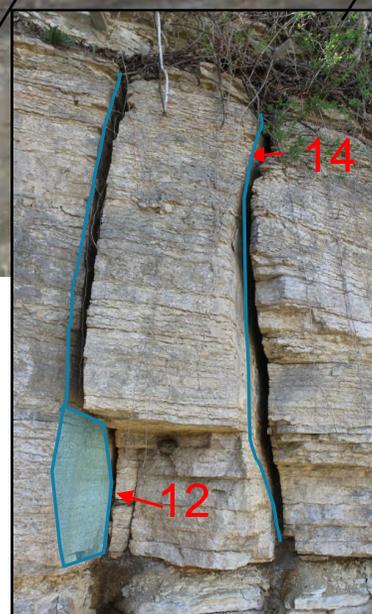
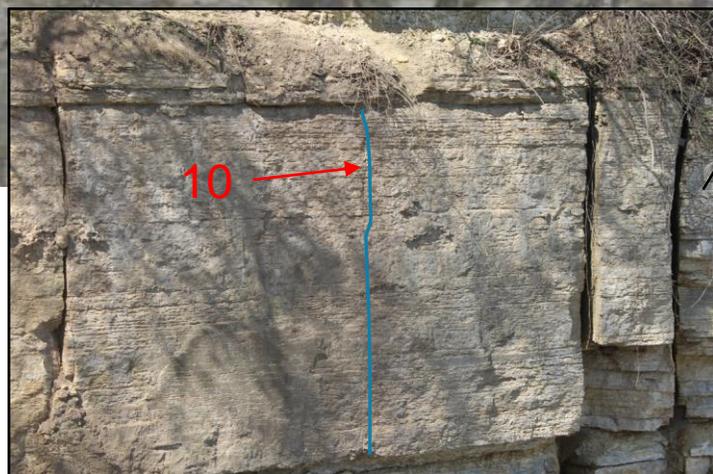
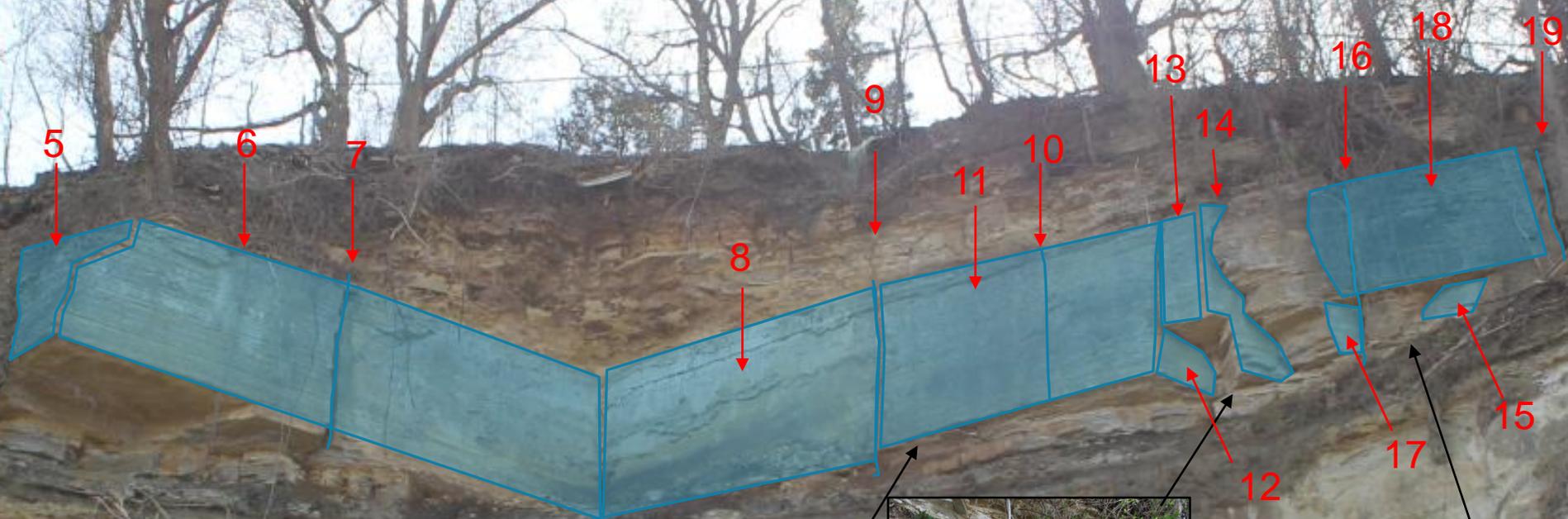




**Overhanging  
block**

**Block  
that fell**

Limestone joints numbered



Site Map

PRIVATE PROPERTY

Joints are dashed because the length and orientation are uncertain

Overhanging block

Block that fell in late April

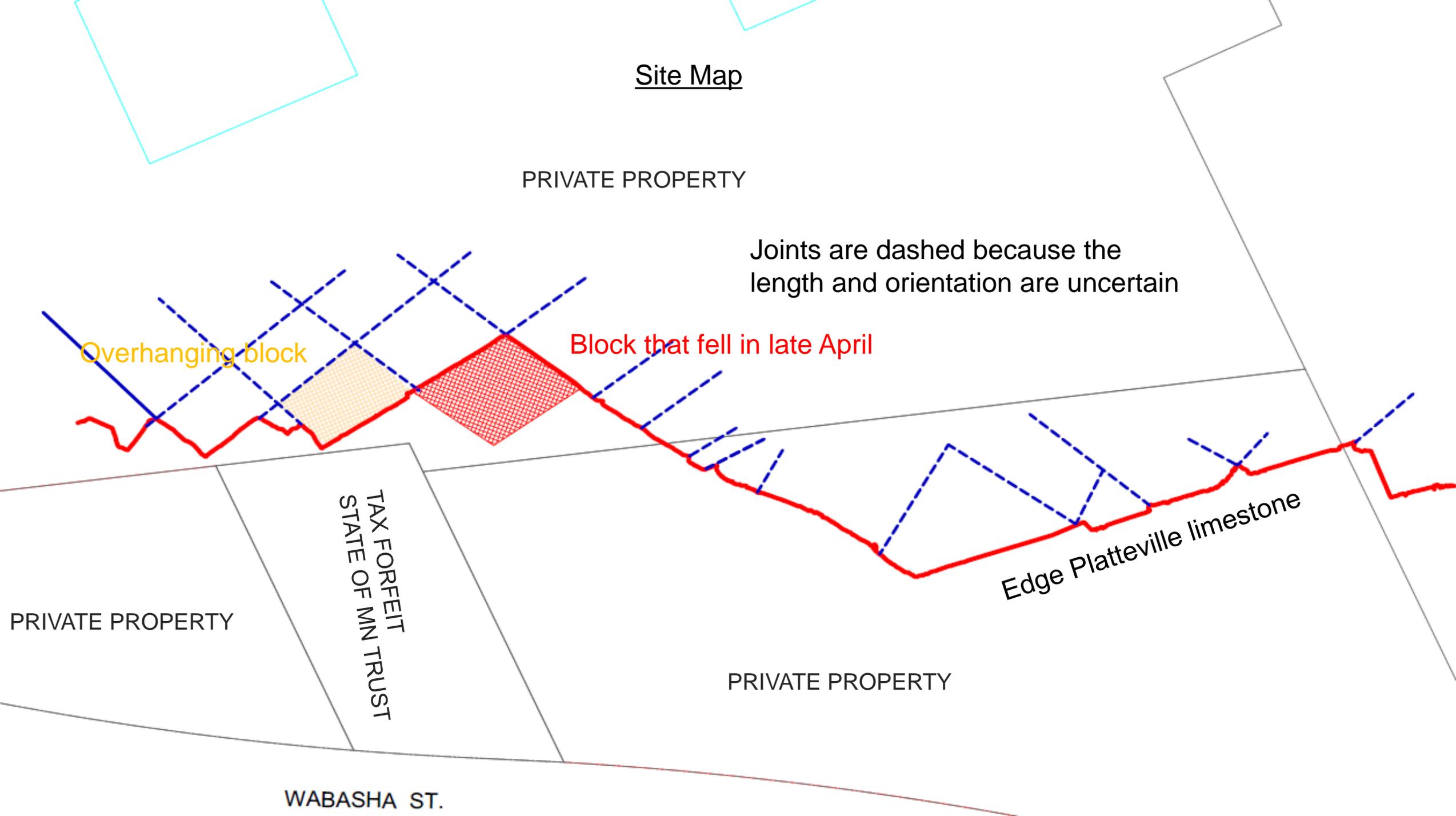
Edge Platteville limestone

TAX FORFEIT  
STATE OF MN TRUST

PRIVATE PROPERTY

WABASHA ST.

PRIVATE PROPERTY

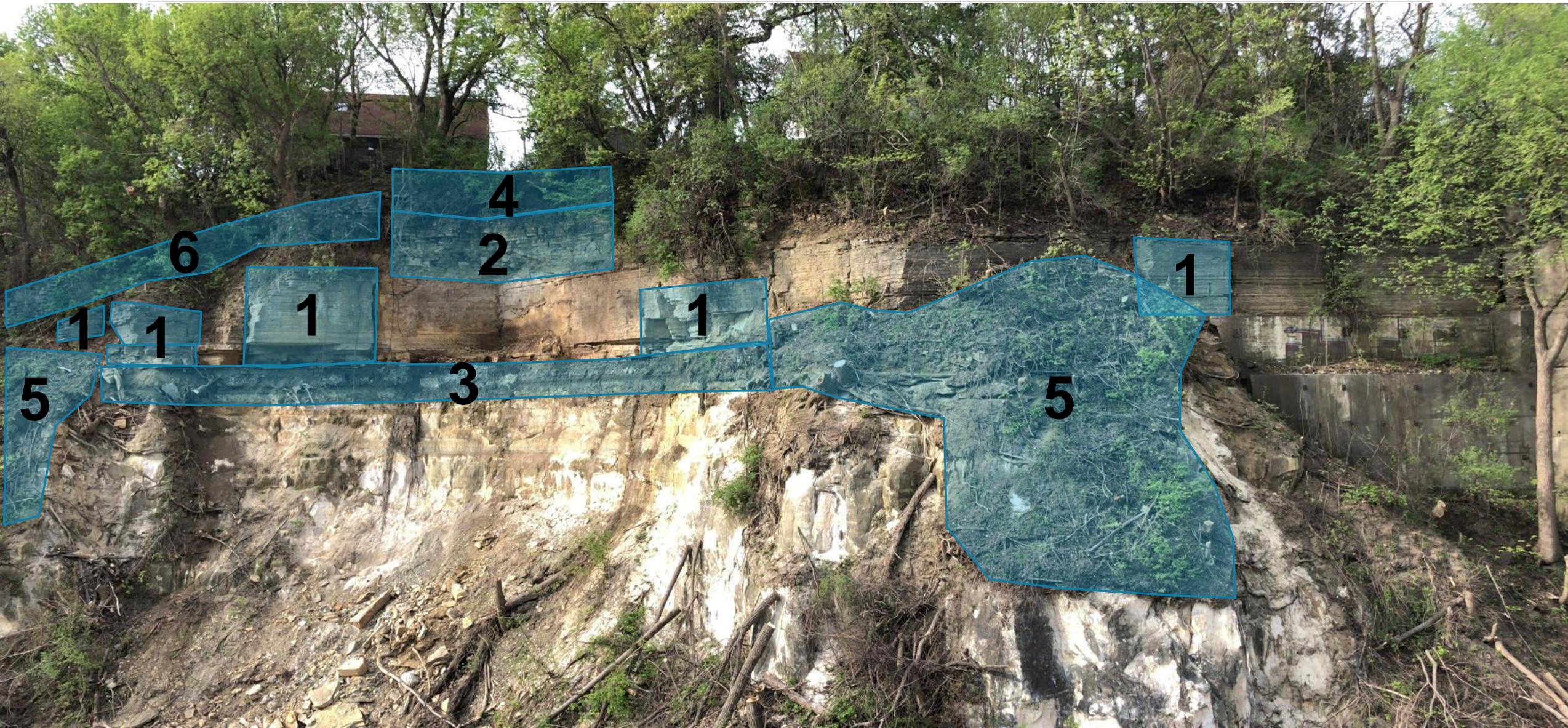


# Specific Site Features (Categorized into Types)

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1. Limestone blocks
2. Upper (weathered) limestone
3. Limestone-shale-sandstone interface
4. Upper Soil
5. Lower Soil
6. Prior slope stabilization

# Specific Site Features



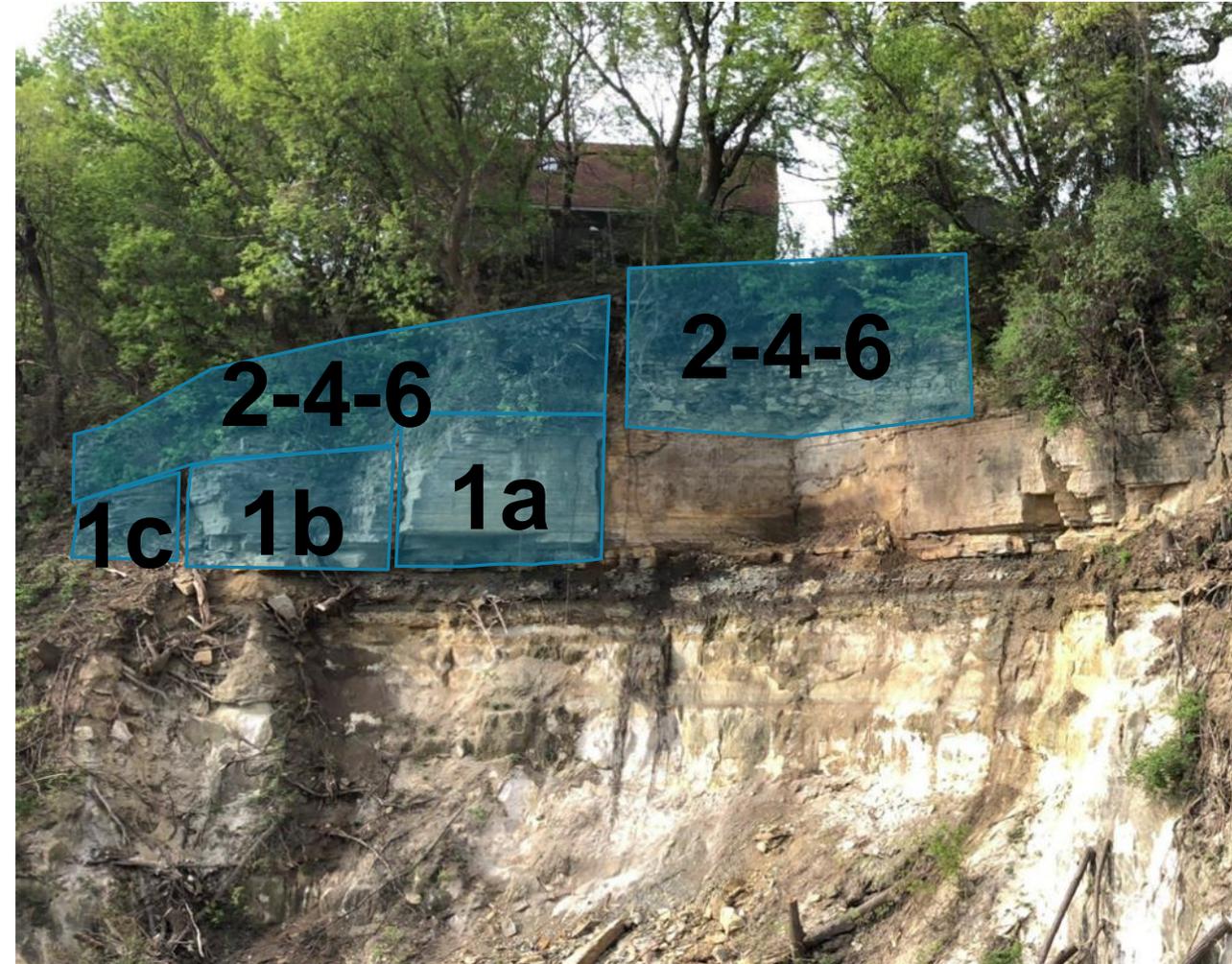
# Two Phases (at least)

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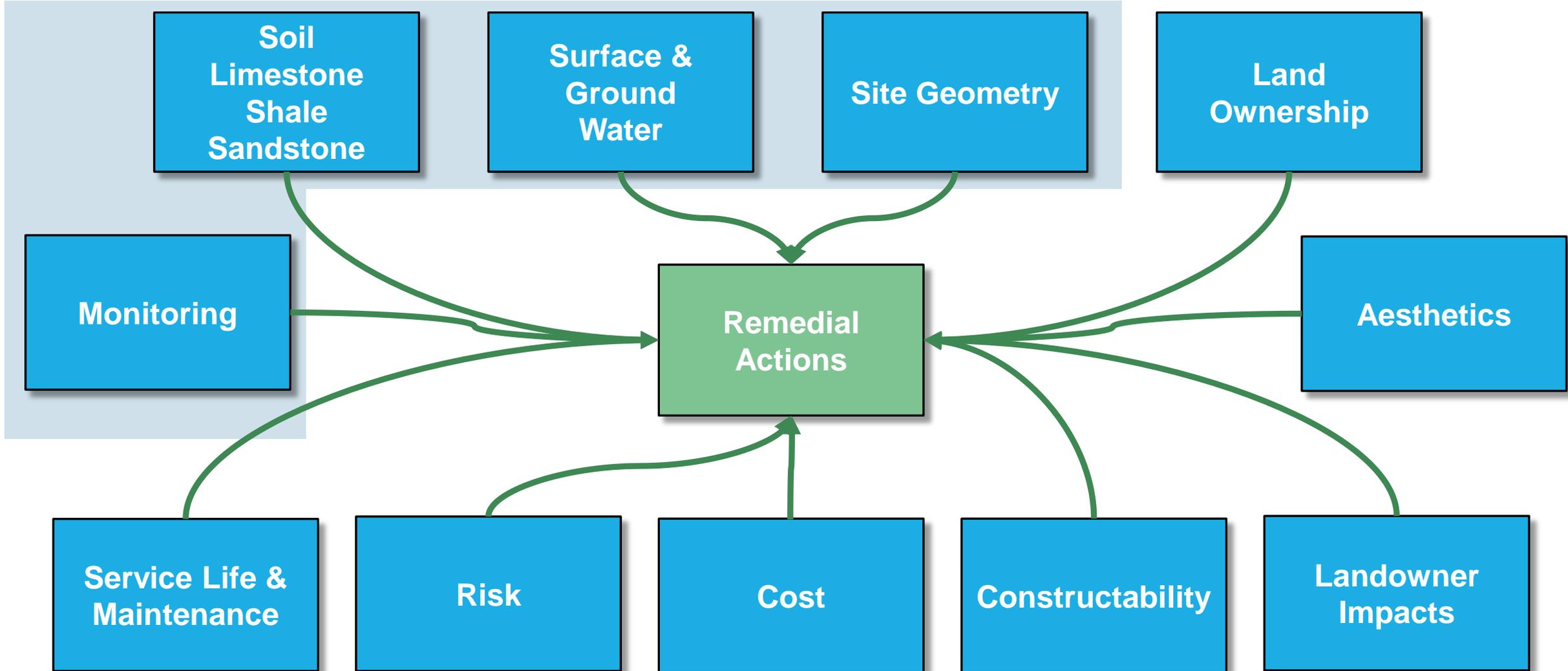
- Immediate threat treatment to permit Wabasha Street to be re-opened
- Longer-term treatment

# Immediate At-Risk Features (immediate threat)

- Overhanging weathered limestone, dry stack & soil above recent block fall
- Overhanging limestone blocks
  - ❖ 1a—Must be removed
  - ❖ 1b, 1c—Likely to be removed (due to removal of 1a or because of instability)
  - ❖ Overlying weathered limestone, soil, dry stack, etc. also removed



# Considerations Leading to the Longer-Term Treatment





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