Grand Avenue Pathway

City Council

October 23, 2025

Grand Avenue Pathway

Background

- Vehicle access closed in 1980s; pathway retained for pedestrians
- Repeated closures and repairs due to ongoing bluff retreat
- 2005: Council voted to maintain an 8-foot walkway within right-of-way
- 2017–2025: Recurrent bluff failures and storm damage leading to multiple relocations

Grand Avenue Pathway

Grand Avenue Pathway

Recent Events

- 12/23 & 2/25 storms: major bluff failure between Saxon & Oakland
  - Partial path collapse
  - Drainage damage
- April 2025 Council meeting
  - Steering committee
  - Evaluation of Central Ave to Oakland Ave
- October 2025: hazard assessment completed; drainage repairs finished

Grand Avenue Pathway
Bluff Erosion Process

Episodic Bluff Retreat

- Storms, wave action, earthquakes, and saturation of soil

Two-Part Failure Process:

1. Wave Erosion of Bedrock

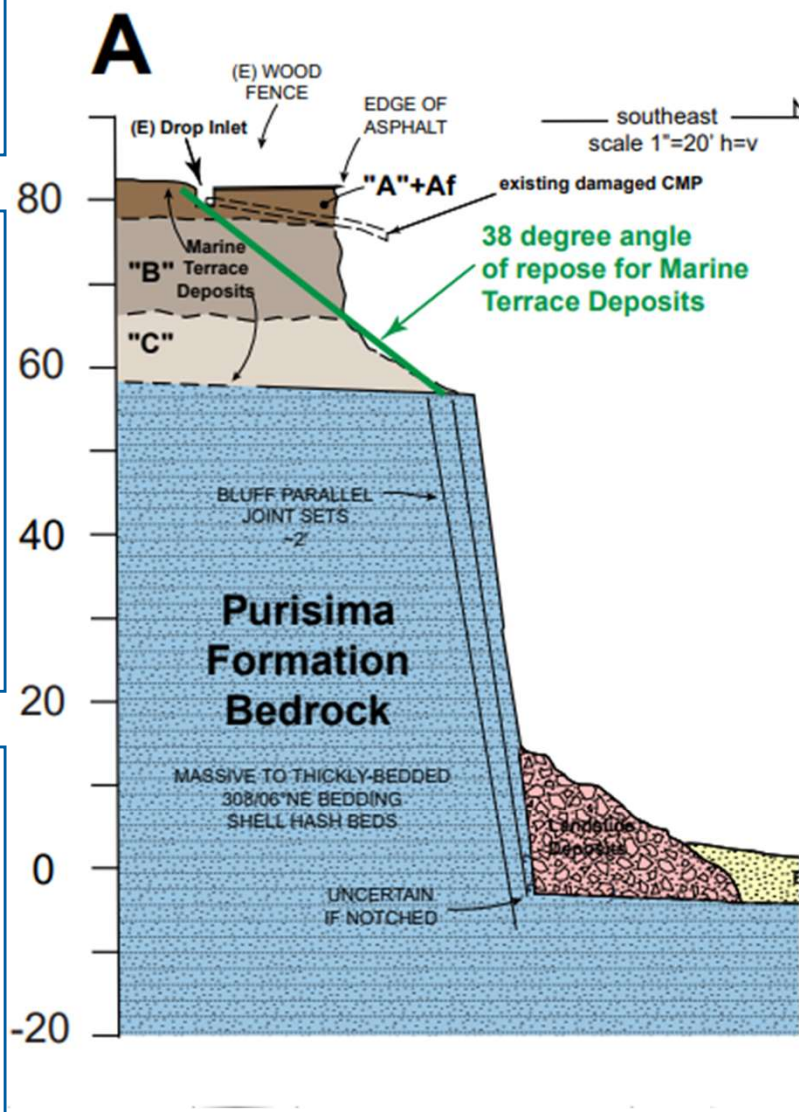
- Waves notch into **Purisima Formation bedrock** until slab topples

2. Collapse of Upper Bluff

- Overlying marine terrace soils collapse
- Leaves a steep bluff face

Why It Keeps Failing:

- Loose sand/gravel from marine terrace deposits erodes gradually
- Naturally settle toward a **38-degree slope**
- Wave action restarts the cycle: **erosion never fully stops**



BASE PHOTO: Screen shot taken of "2023 04 04 Capitola Depot Hill and Explanade" by Misa Burich; drone video can be accessed at https://www.youtube.com/watch?v=Lt5N3-Gl5zM&t=1s

Pacific Crest
ENGINEERING INC

ANNOTATED APRIL 2023
SNAPSHOT OF COASTAL BLUFF
City of Capitola
Grand Avenue Footpath
Between Saxon Ave. and Oakland Ave.

Date: 8 June 2022	Revised:
Job #2381	
Scale: n/a	**Plate 2**
Drawn by: ENZ/enz	

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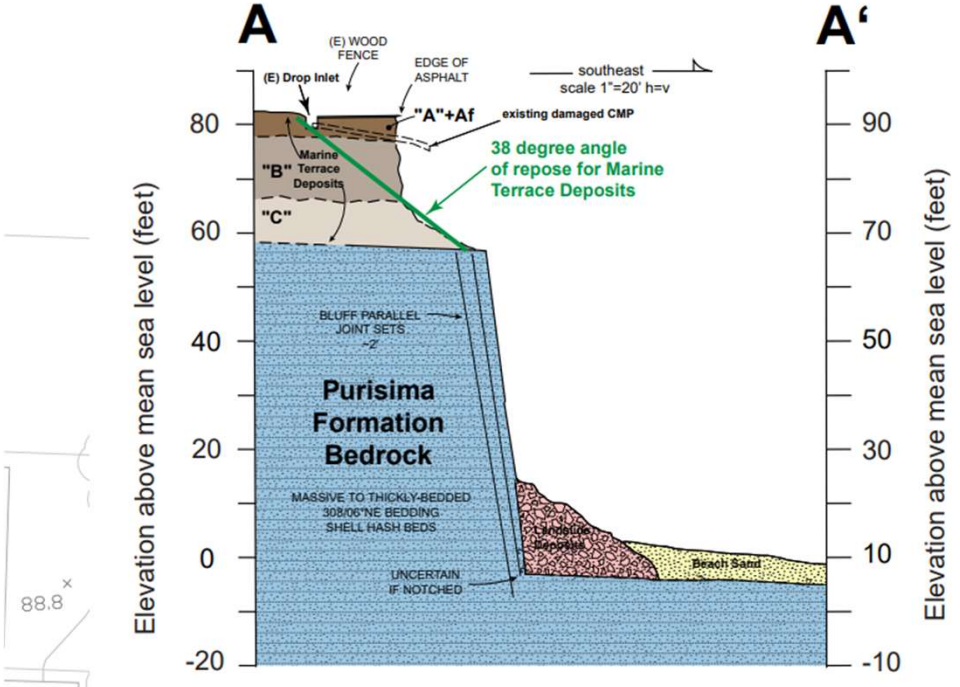
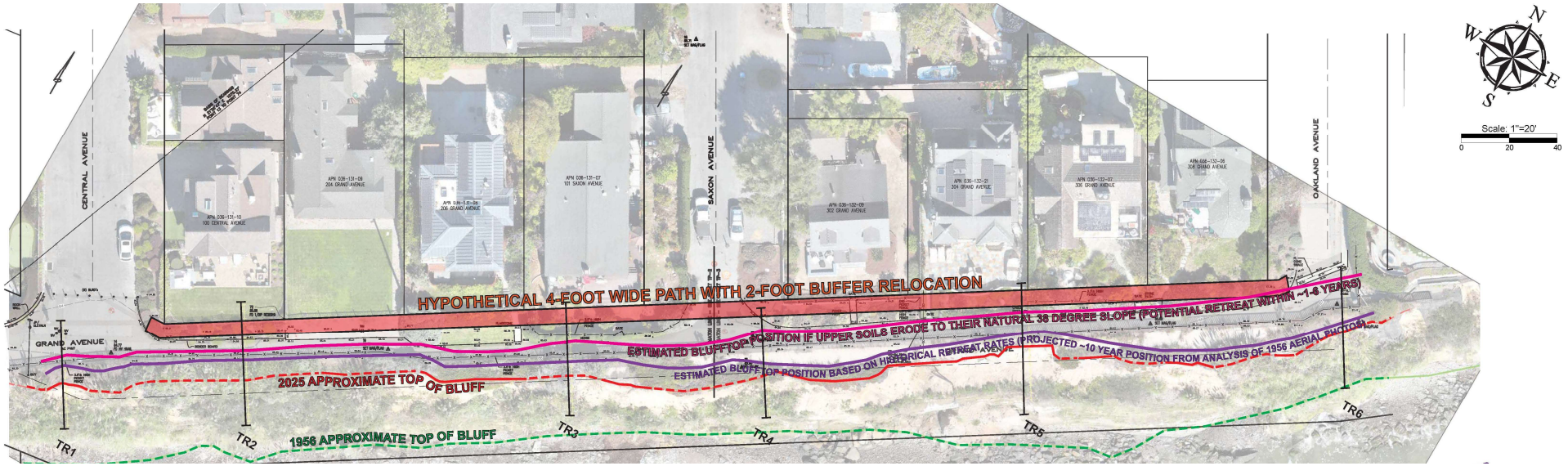
Grand Avenue Pathway
Bluff Retreat Modeling Methods

Two approaches used to estimate bluff-top retreat

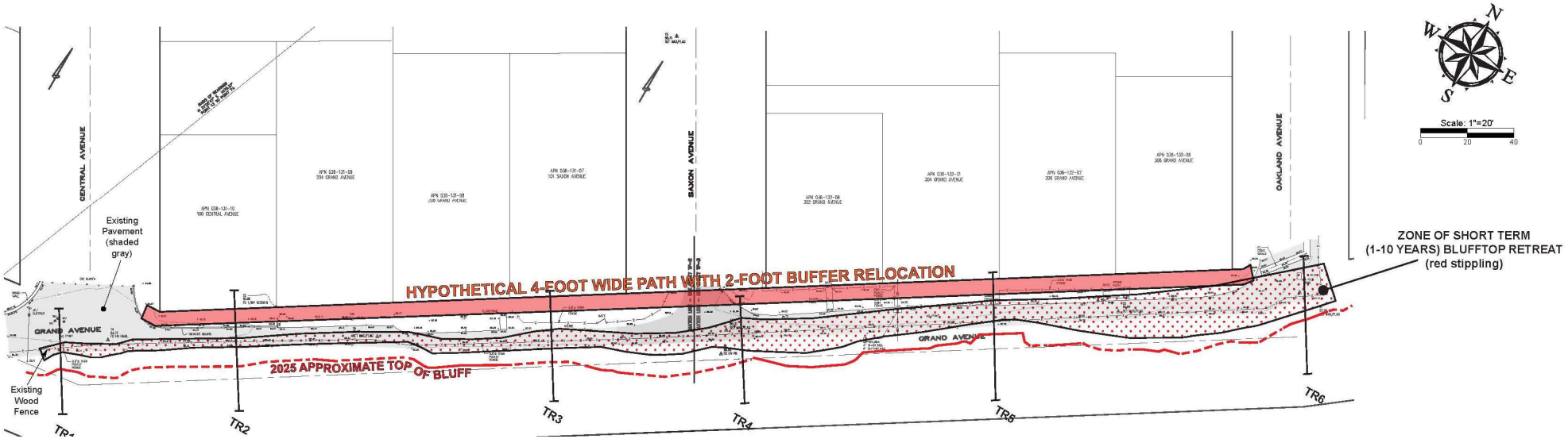
- Historic photo analysis
  - 0.33–0.66 ft/yr
  - ≈3–7 ft over 10 yrs
- Angle-of-repose model (~38°)
  - 12–22 ft retreat within 1–6 yrs

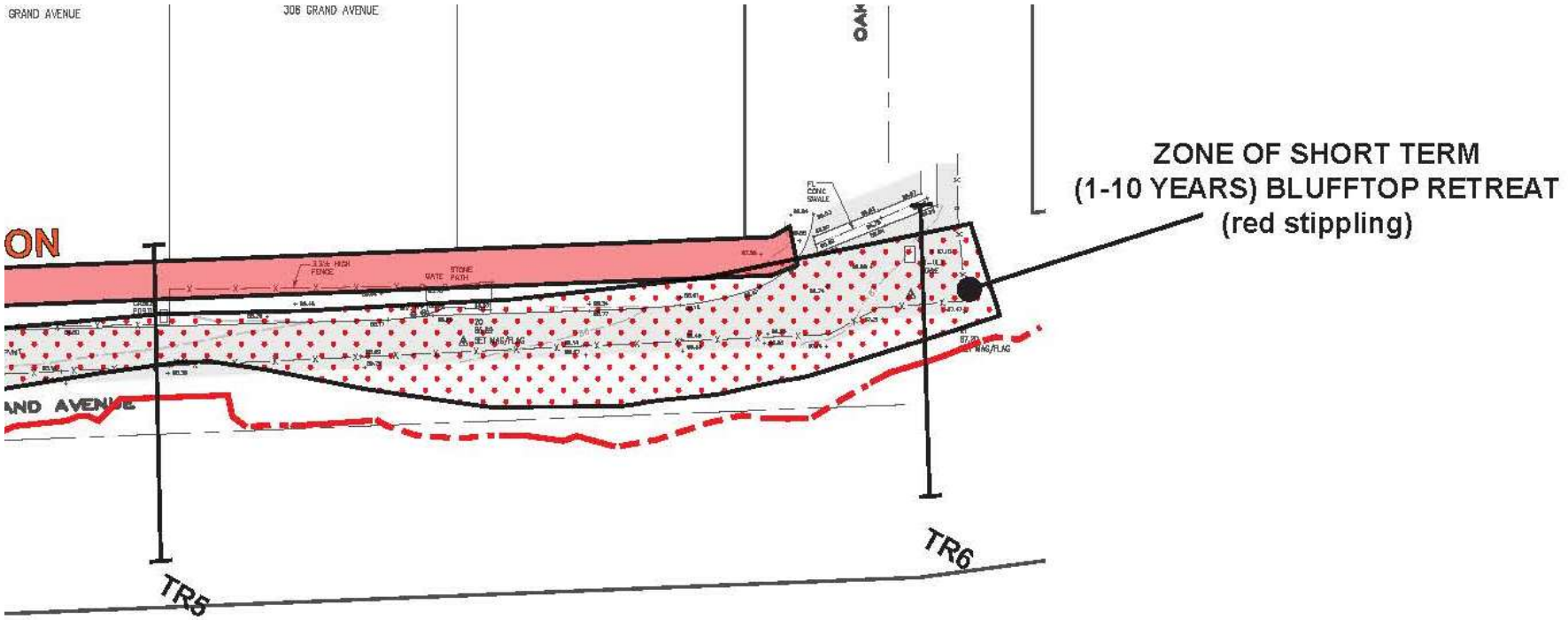
Expected future retreat lies between these projections




CENTRAL AVENUE
SAXON AVENUE
OAKLAND AVENUE
GRAND AVENUE
APN 036-131-10
100 CENTRAL AVENUE
APN 036-131-09
204 GRAND AVENUE
APN 036-131-08
206 GRAND AVENUE
APN 036-131-07
101 SAXON AVENUE
APN 036-132-09
302 GRAND AVENUE
APN 036-132-21
304 GRAND AVENUE
APN 036-132-07
306 GRAND AVENUE
APN 036-132-06
308 GRAND AVENUE
HYPOTHETICAL 4-FOOT WIDE PATH WITH 2-FOOT BUFFER RELOCATION
ESTIMATED BLUFFTOP POSITION IF UPPER SOILS ERODE TO THEIR NATURAL 38 DEGREE SLOPE (POTENTIAL RETREAT WITHIN ~1-6 YEARS)
ESTIMATED BLUFFTOP POSITION BASED ON HISTORICAL RETREAT RATES (PROJECTED ~10 YEAR POSITION FROM ANALYSIS OF 1956 AERIAL PHOTOS)
2025 APPROXIMATE TOP OF BLUFF
1956 APPROXIMATE TOP OF BLUFF
TR1
TR2
TR3
TR4
TR5
TR6
N
W
E
S
Scale: 1"=20'
0
20
40


APN 036-132-09
302 GRAND AVENUE
APN 036-132-21
304 GRAND AVENUE
APN 036-132-07
306 GRAND AVENUE
308 GRAND AVENUE
OAKLAN
T BUFFER RELOCATION
N IF UPPER SOILS ERODE TO THEIR NATURAL 38 DEGREE SLOPE (POTENTIAL RETREAT WITHIN ~1-6 YEARS)
SITION BASED ON HISTORICAL RETREAT RATES (PROJECTED ~10 YEAR POSITION FROM ANALYSIS OF 1956 AERIAL PHOTOS)
GRAND AVENUE
GATE
PAVER PATH
END PICKET FENCE
HIGH FENCE
3.3'± HIGH FENCE
STONE PATH
SET MAG/FLAG
FL CONC SWALE
VLT EDGE


CENTRAL AVENUE
SAXON AVENUE
OAKLAND AVENUE
GRAND AVENUE
Existing Pavement (shaded gray)
HYPOTHETICAL 4-FOOT WIDE PATH WITH 2-FOOT BUFFER RELOCATION
2025 APPROXIMATE TOP OF BLUFF
Existing Wood Fence
ZONE OF SHORT TERM (1-10 YEARS) BLUFFTOP RETREAT (red stippling)
TR2
TR3
TR4
TR6
N
W
E
S
Scale: 1"=20'
0
20
40


GRAND AVENUE
306 GRAND AVENUE
ZONE OF SHORT TERM
(1-10 YEARS) BLUFFTOP RETREAT
(red stippling)
TR5
TR6

Grand Avenue Pathway
Report Findings

Bluff Conditions & Pathway Outlook

- Inland alignment could remain usable for ~10 years
- Oakland Ave corner at higher near-term risk
- Erosion control may slow, but not stop, bluff retreat
- Armoring infeasible (tens of millions; multi-year permitting)

Option for Limited Extension of Pathway Life

- Relocate path as far inland as possible narrowed to 4 feet
- Grading and drainage to prevent runoff at bluff edge

Grand Avenue Pathway
Relocation Potential Next Steps

Phase 1 – Survey & Data Collection: Months 0–2

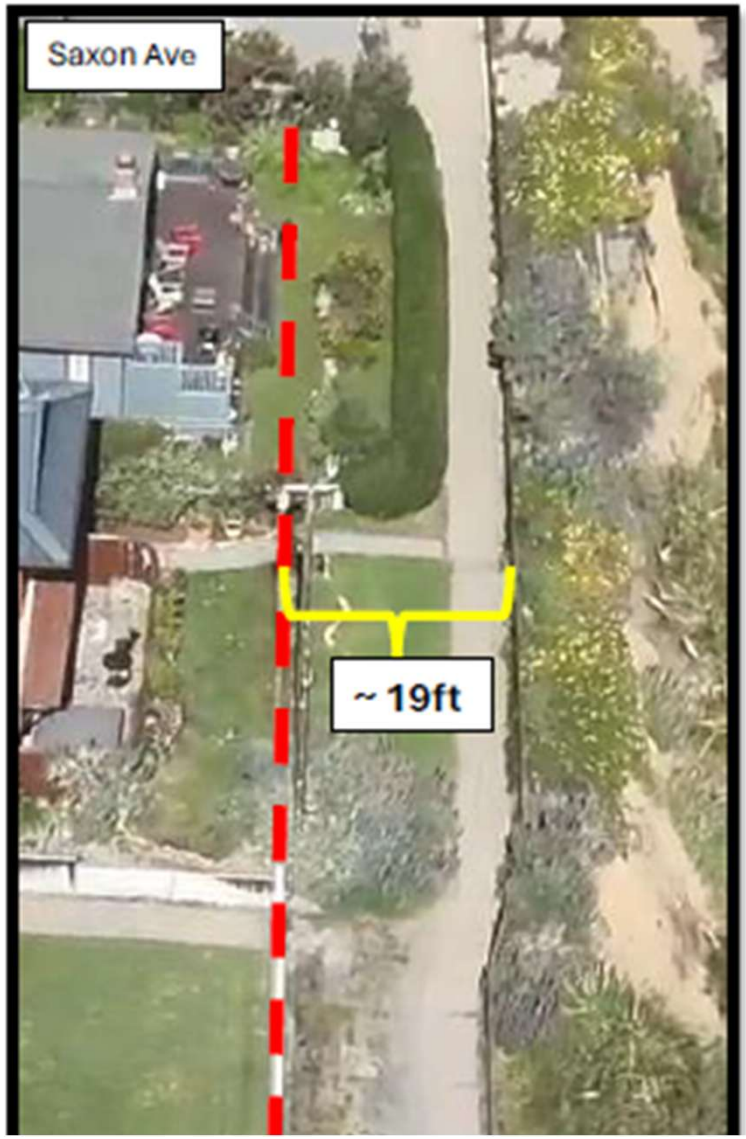
- Complete topographic survey
- Verify drainage and bluff edge locations
- Begin environmental screening
- Identify all encroachments

Phase 2 – Concept Design: Months 2–4

- Develop inland alignment concept
- Engineer grading, drainage, and fencing

Grand Avenue Pathway

Private Encroachments



Grand Avenue Pathway
Relocation Potential Next Steps

Phase 3 – Environmental Review & Permitting: Months 4–10

- Complete CEQA review
- Address encroachments
- Apply for Coastal Development Permit

Phase 4 – Final Design: Months 10–12+

- Finalize grading and drainage plans
- Solicit and award construction contract

Grand Avenue Pathway
Summary & Council Direction

Item	Amount	Status
Geological Evaluation	$18,090	Completed
Saxon Outfall Drainage Repair	$39,000	Completed
Design and Permitting	$40,000–$50,000	If Council Directs
Construction	$350,000–$600,000	If Council Directs

Additional Notes:

- Staff time would be required for coordination, environmental review, and permitting
- Encroachment removal (e.g., fences, landscaping) would occur at the expense of property owners

Grand Avenue Pathway
Summary & Council Direction

Summary of Findings

- Bluff erosion is ongoing and unavoidable; relocation is only practical near-term option
- Inland realignment could remain usable for ~10 years with proper grading and drainage
- Erosion control may slow but will not stop retreat; armoring is not feasible

If Moving Forward with Relocation

- Total Estimated Duration: 6-12 months depending on permitting
- Estimated Total Cost: $400K–$700K

Recommended Action

- Receive a report and provide direction to staff as needed