

Municipality of Brockton Class EA for Saugeen River Bank Erosion - Walkerton

Council Meeting
January 10, 2023

Agenda

- Background
- Erosion 101
- Sub-consultant Reports
- Class EA Process
- Class EA Alternatives
- Cost Estimates
- Recommended Approach
- Next Steps

Project Study Area



Site photos (Sept. 2021)



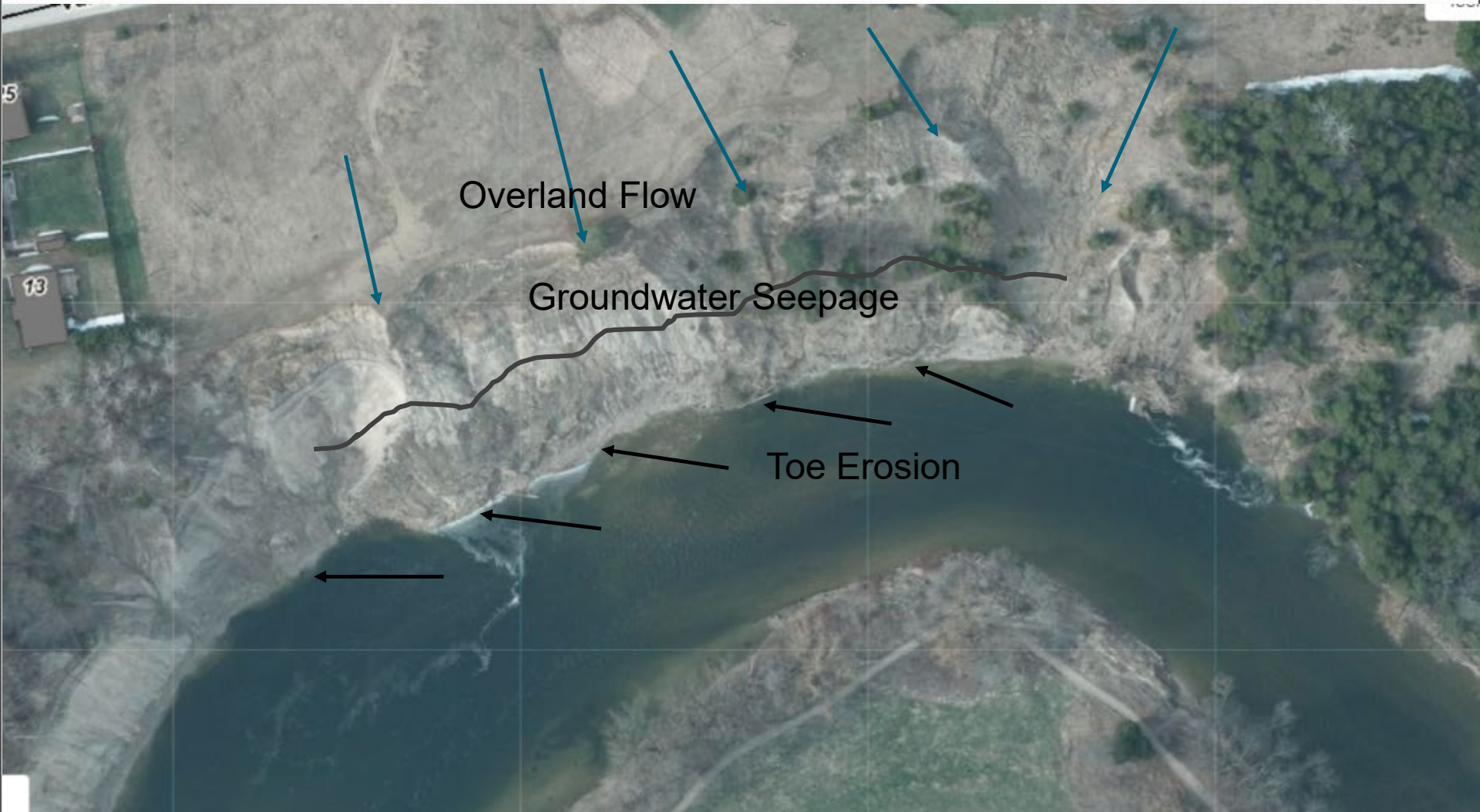
Site photos (Sept. 2021)



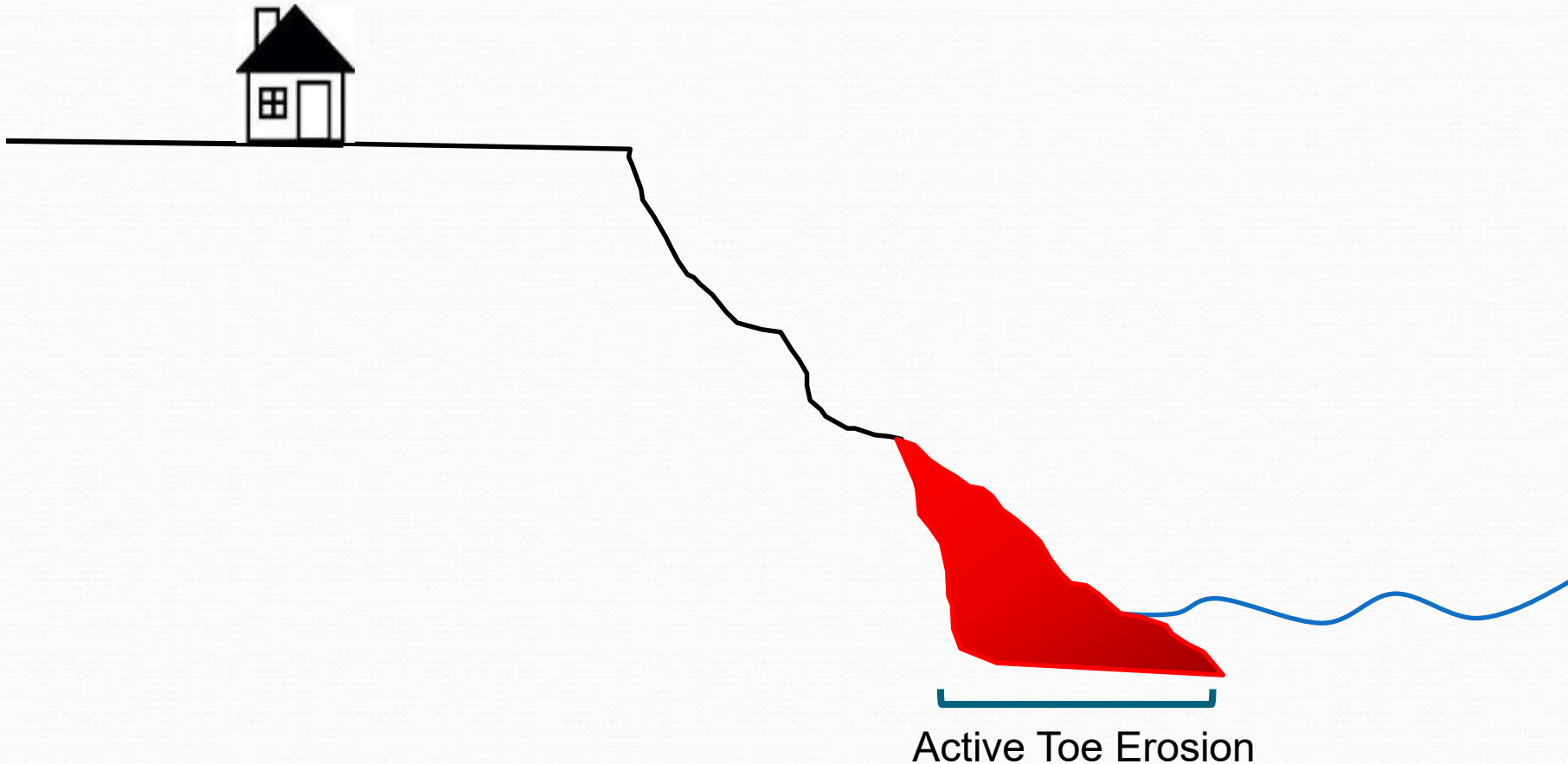
Background

- Phase 1 of Class EA Initiated June 2020
 - Mailed to Adjacent Properties and published in Walkerton Herald Times for two consecutive weeks
 - Letters sent to Agencies and Indigenous Communities
 - SVCA Provided copy of 1987 Geotech Report May 2020
- Phase 2 of Class EA
 - Complete Topographic Survey April 2021
 - Golder retained to update 1987 Report June 2021
 - Class EA Alternatives Identified June 2021
 - Cost Estimates Developed March 2022
 - Fluvial Geomorphology Study November 22

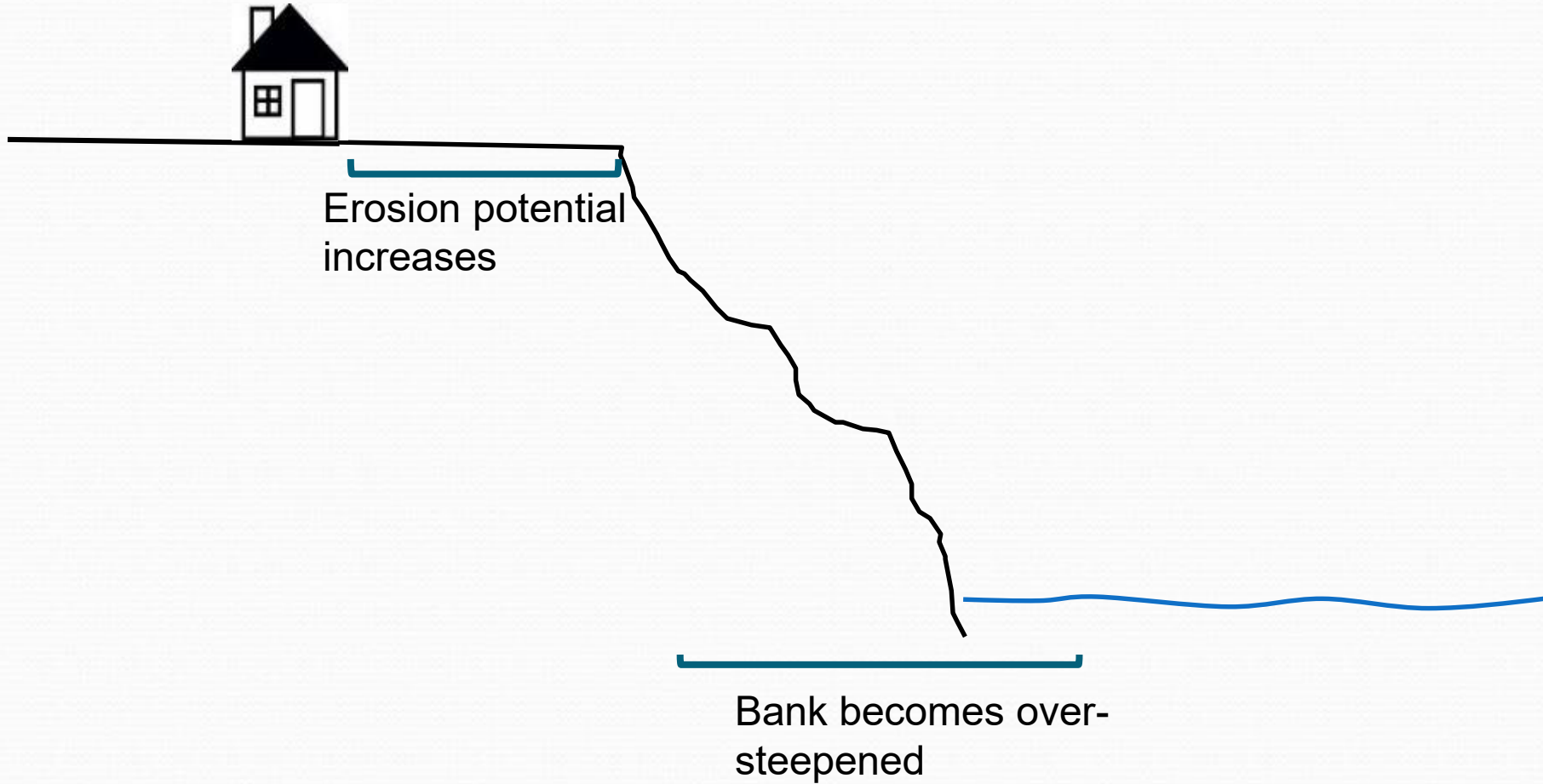
Erosive Forces



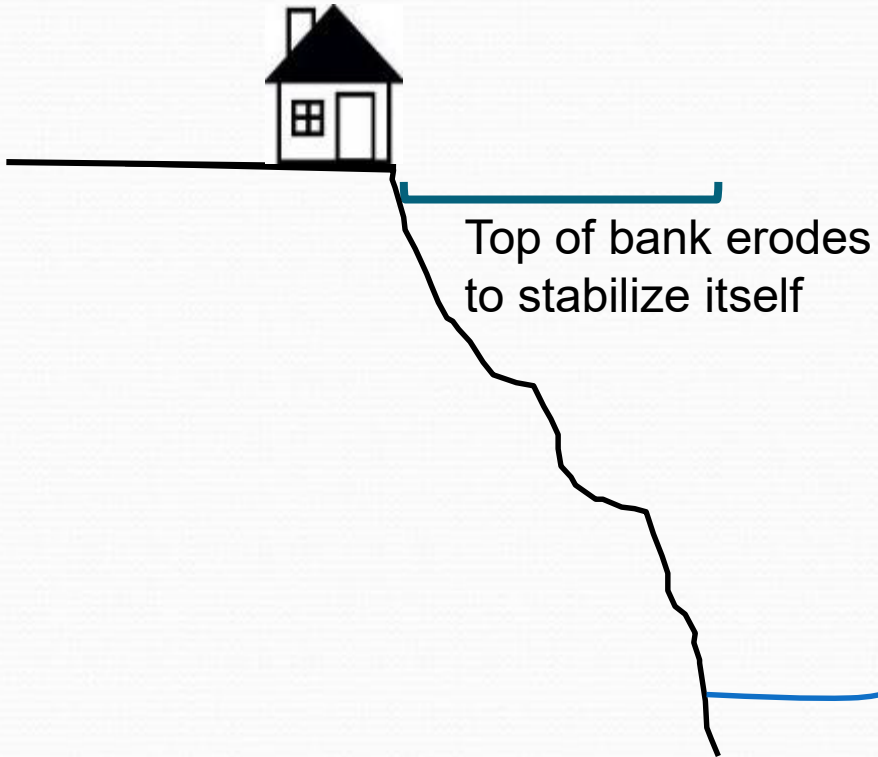
Erosion progression



Bank is over-steepened

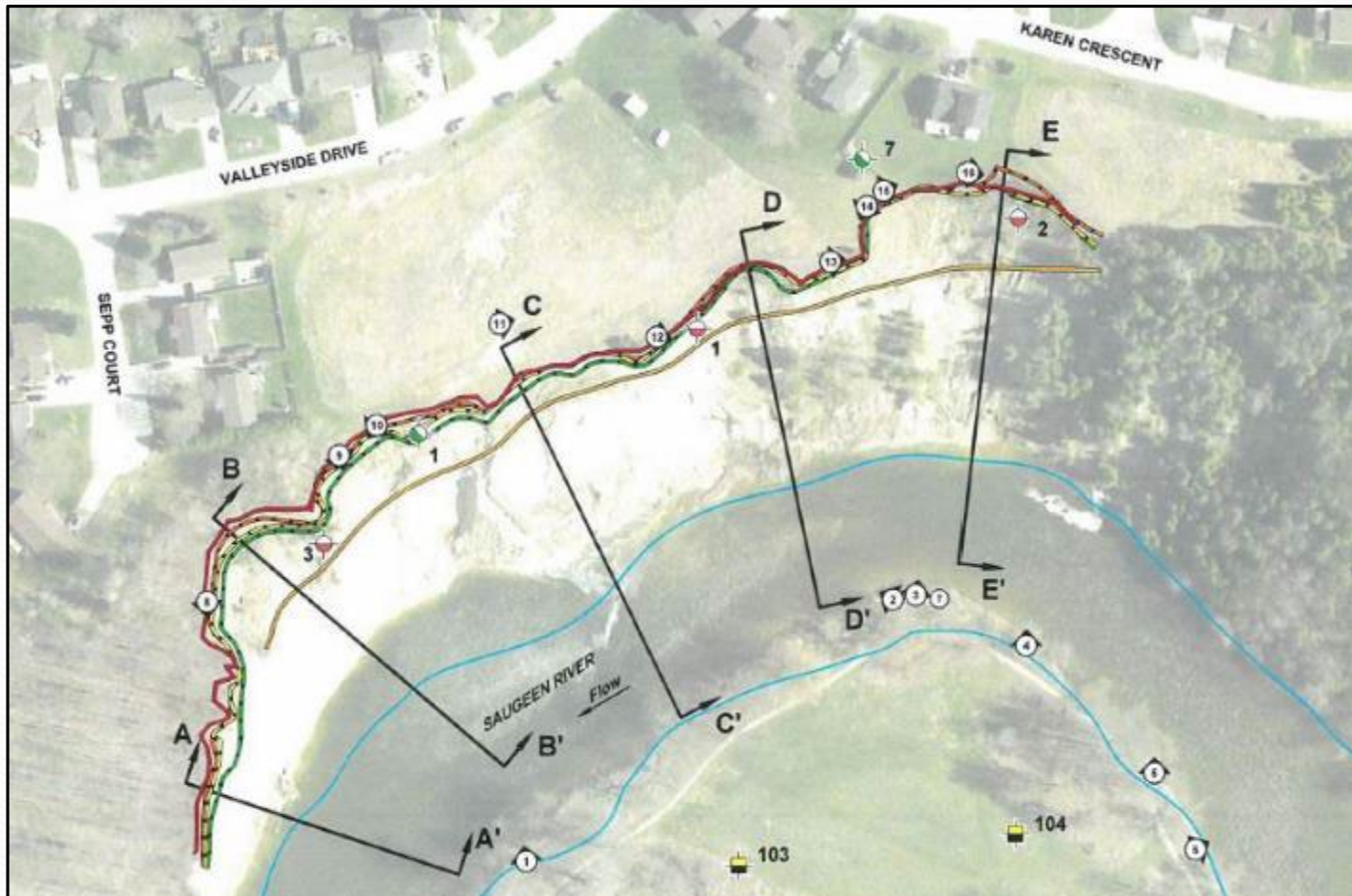


Top of bank fails



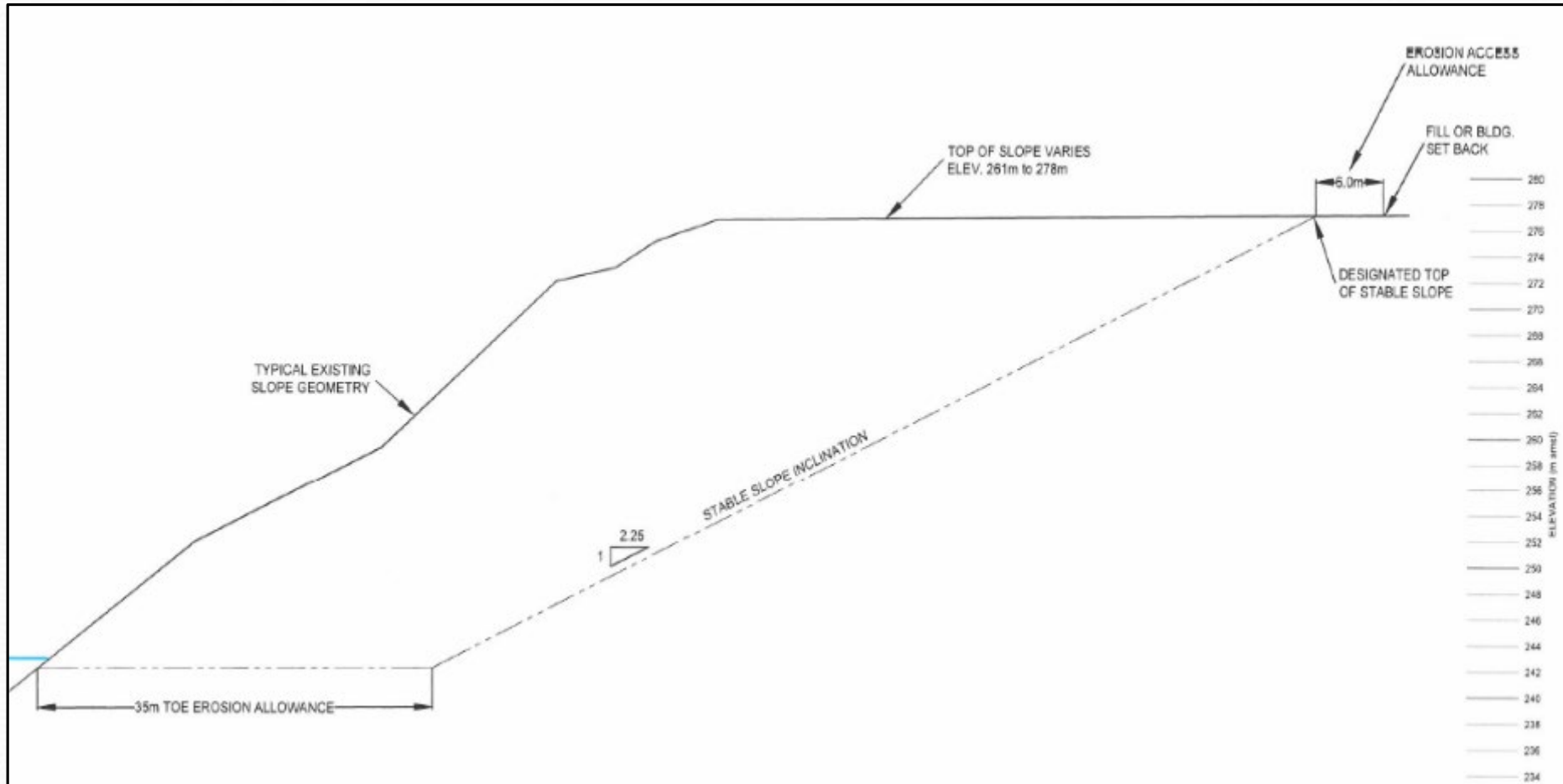
Erosion Recession Rate

- Based on historical reports and a review of aerial photos from 1970's to current – rate of 0.35m/year identified



Long term erosion hazard limit

- Using the MNR slope stability guidelines – toe erosion allowance + stable slope + erosion access allowance



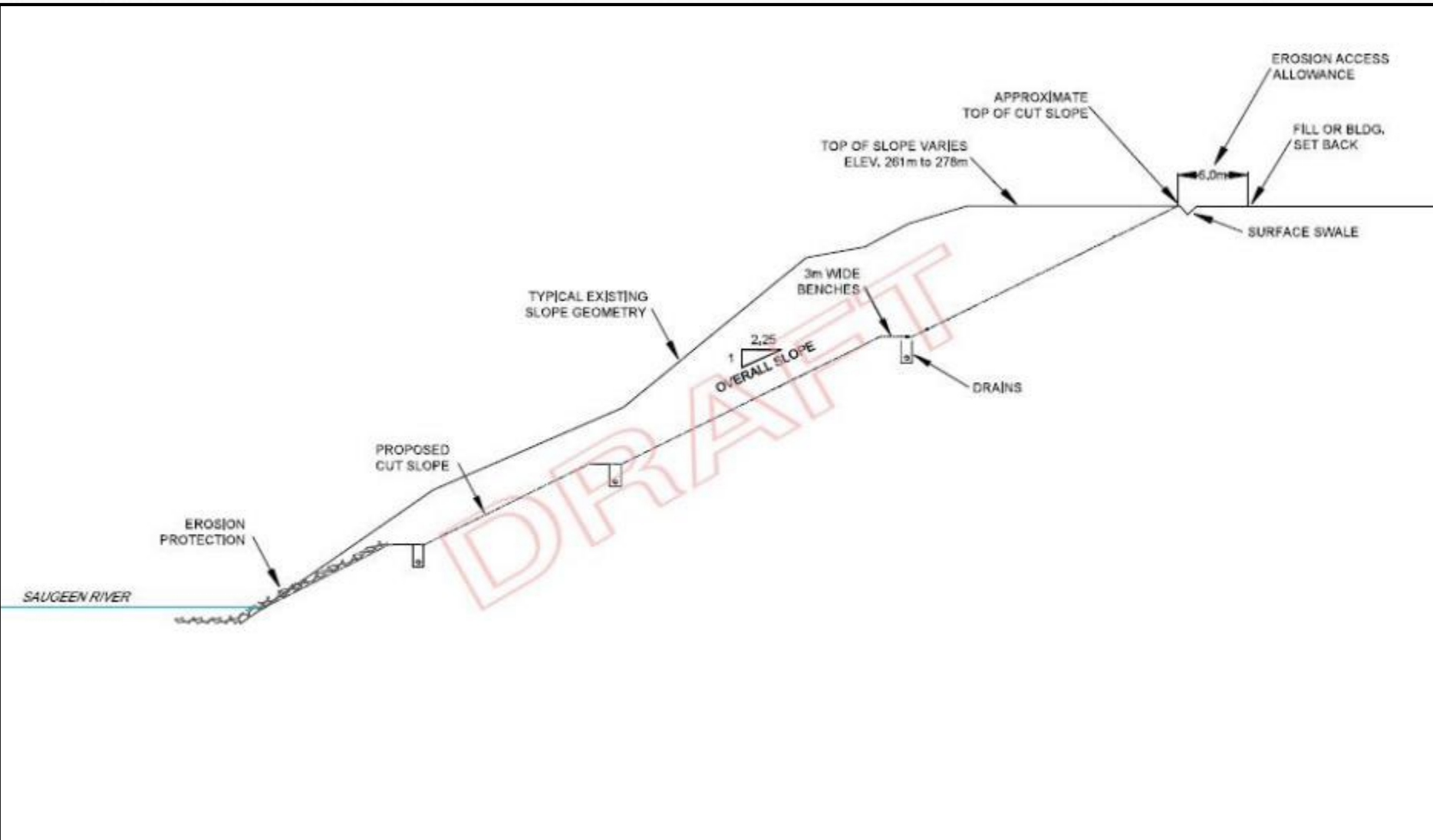
100 year recession limit



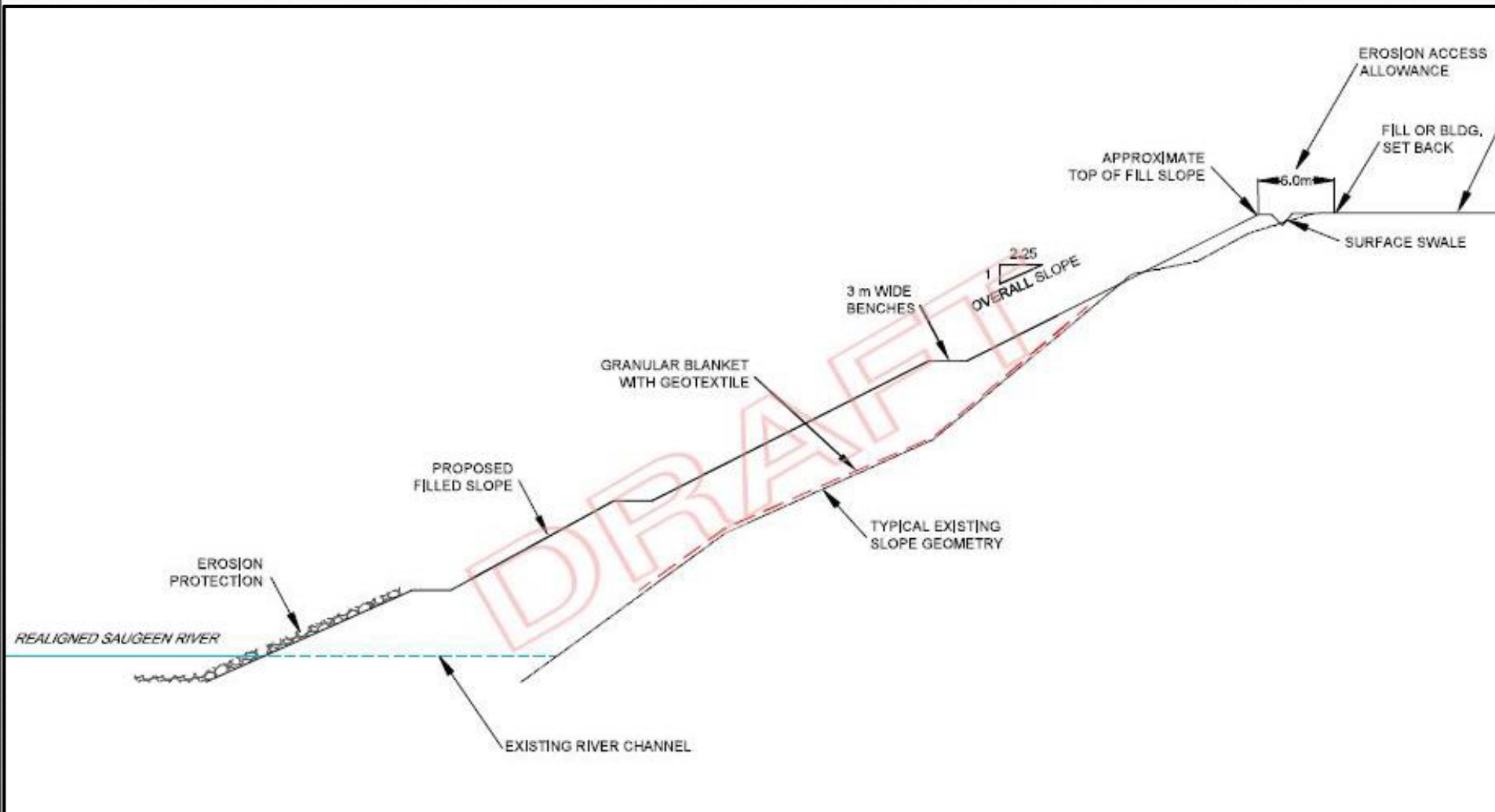
Golder Associates Report

- 1987 Geotechnical Assessment completed by Golder at request of SVCA
- Report identified 4 Alternatives (including Doing Nothing)
- Golder was retained in June 2021 to revisit the original report and update the recommendations
- Same 4 Alternatives were determined to be valid
 - Do Nothing
 - Provide Erosion Protection and Regrade Slope by Cutting
 - Realign River to the South and Regrade by Filling the Slope
 - Realign River to the South and Regrade by Filling and Cutting

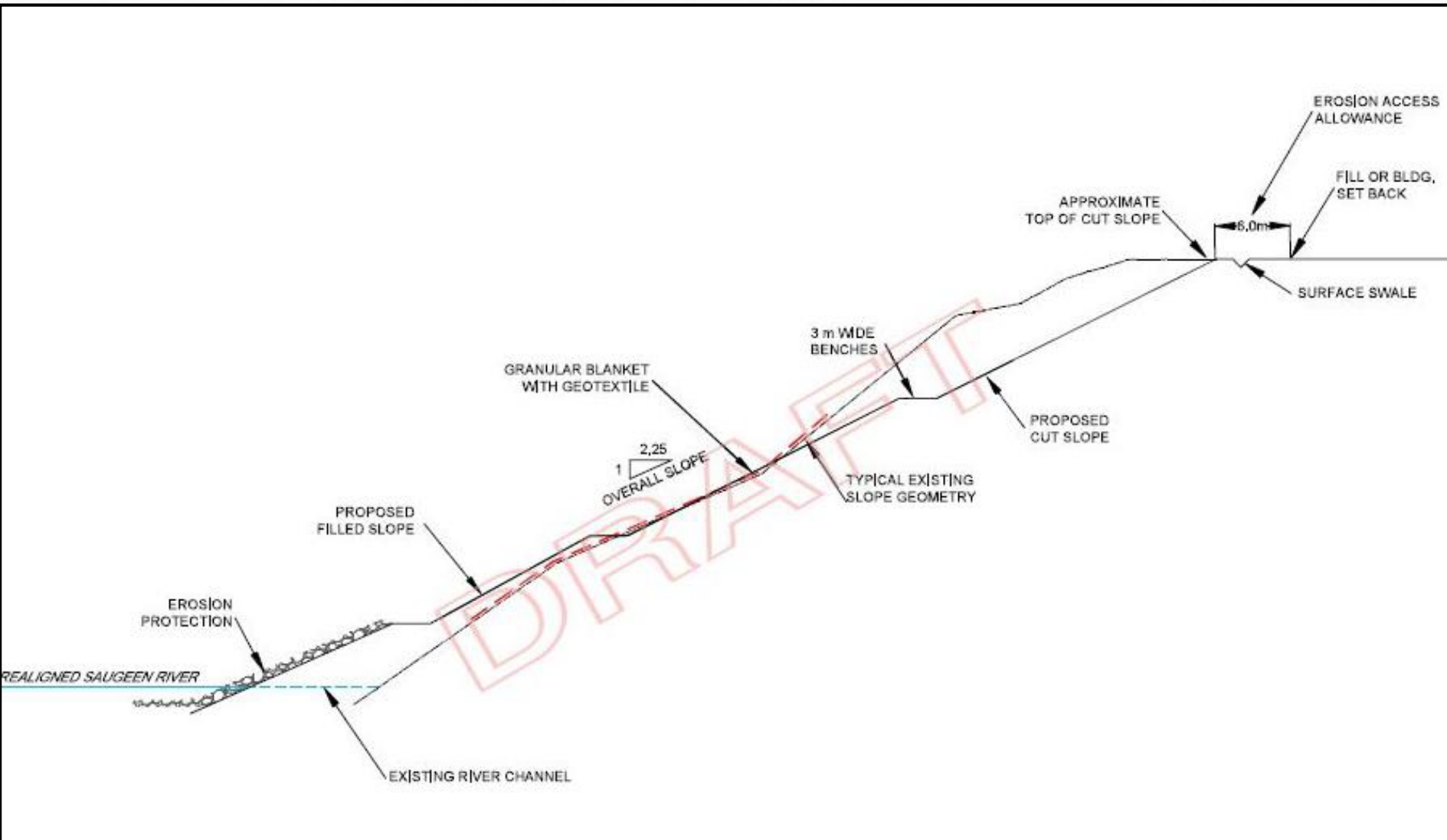
Erosion protection & regrade slope by cutting



Realign river and regrade by filling slope



Realign river and regrade by filling & cutting

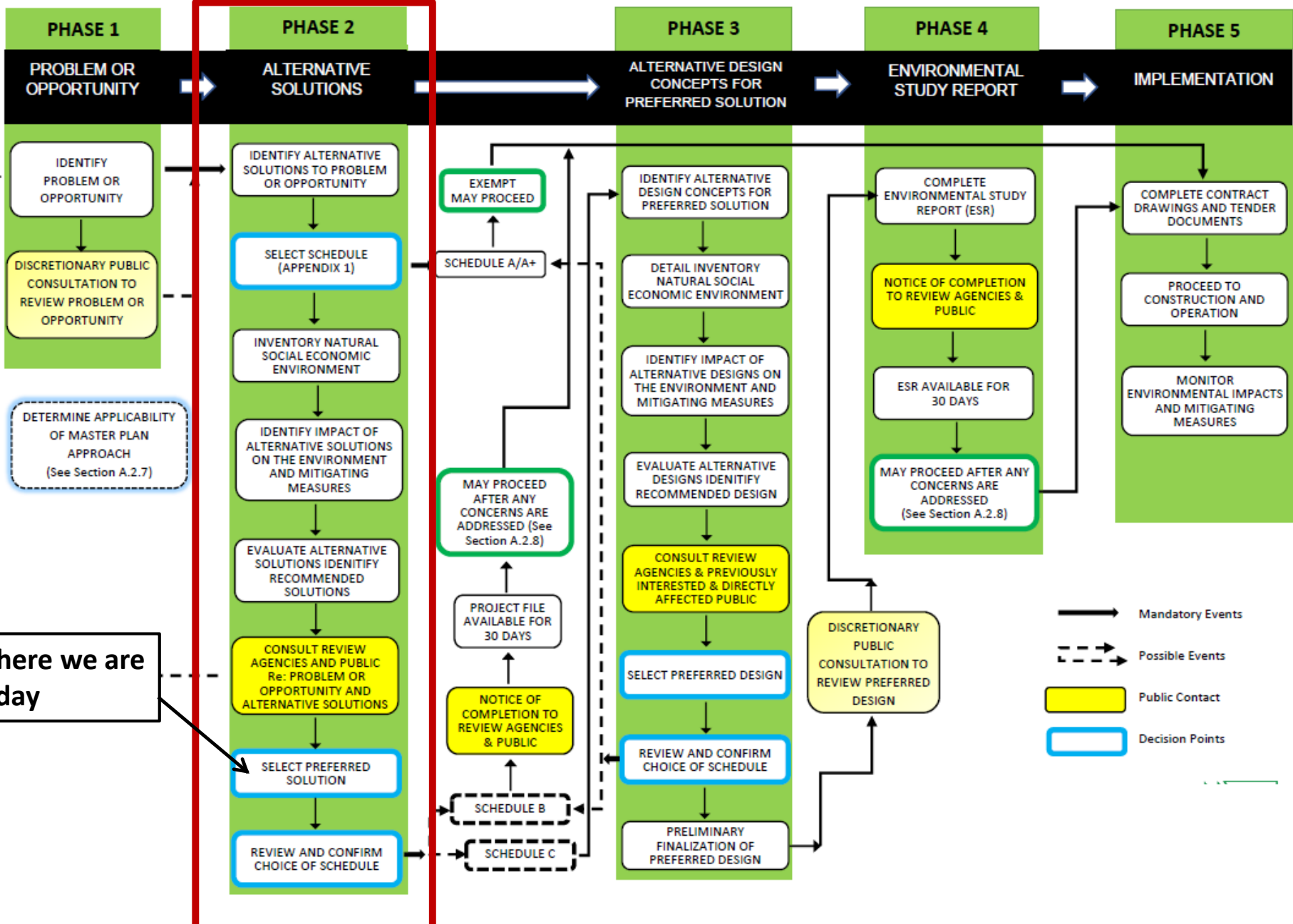


Fluvial Geomorphology Assessment

- Water's Edge Fluvial Geomorphologists retained to examine the river system and provide input on selection of a preferred approach to address erosion
- The primary purpose of the assessment was to understand if protecting the toe of slope would negatively impact areas downstream
- The average 100 year erosion rate, across the entire site, is 50.3 m in 100 years or 0.503 m/year.
- Protecting the toe of slope is less impactful than allowing the slope area to continue eroding unabated (material deposited into the river from erosion could negatively impact downstream areas).

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



Class EA Alternatives

- 1) Provide erosion protection at toe and regrade slope by cutting
- 2) Realign river to south, protect toe, and regrade slope by filling
- 3) Realign river to south, protect toe, and regrade slope by filling and cutting
- 4) Protect toe of slope – leave bank as is
- 5) Do Nothing

Cost Estimates

Site Access

- Construction access is difficult due to steep bank and river
- Access from top is very expensive and from west would result in tree removal – route from east is preferred



Construction Cost Estimates

Alternatives

Estimated Costs

- | | |
|---|---------------------|
| 1) Protect toe, regrade slope by cutting | \$ 7,820,000 + HST |
| 2) Realign river, protect toe, regrade slope by filling | >\$ 7,820,000 + HST |
| 3) Realign river, protect toe, regrade slope by filling and cutting | >\$ 7,820,000 + HST |
| 4) Protect toe of slope – leave bank | \$ 3,100,000 + HST |
| 5) Do Nothing | |

Preferred Approach

Alternative 4 – Protect Toe and Leave Slope As Is

- It addresses the identified problem statement;
- Is the most cost effective solution that addresses the problem;
- Minimizes impacts to adjacent properties;
- Results in fewer impacts to surface water and river hydraulics by maintaining the current location of the toe of slope.
- Results in the fewest impacts to aquatic and terrestrial species and their habitat, with any impacts being short-term in nature and mitigated through site specific measures.
- Is supported by results of the Fluvial Geomorphology review



to... eyside Dr

Sepp Ct

5-210
5-410
408

23
25
15
13

15

17

19

Walkerton

104

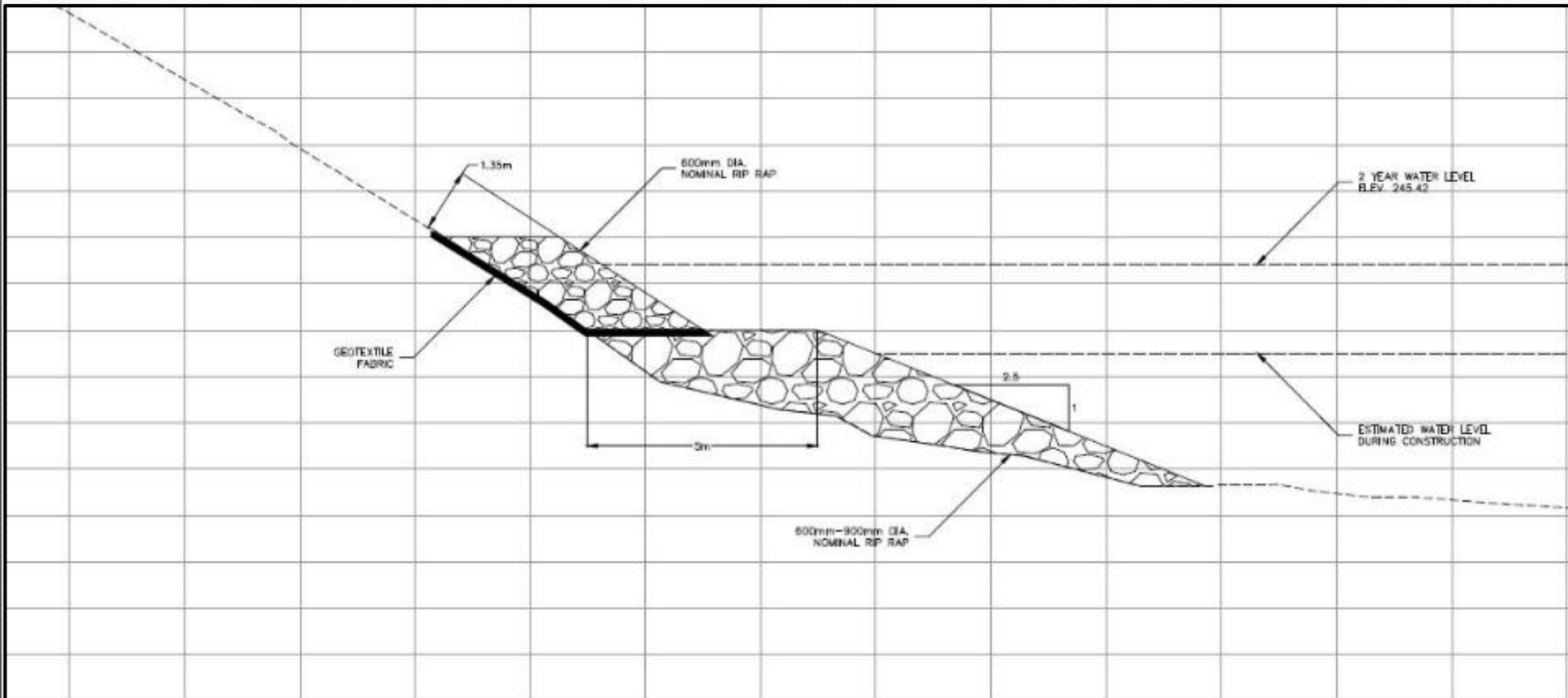
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120

111

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Cross-section of toe protection



SCALE - 1:75

Approvals

- MECP – Permit may be required under ESA (Endanger Species Act)
- SVCA – CA Regulations
- MNRF – Permit Needed
- DFO – Fish Habitat Impacts
 - Freshwater mussels
 - Alterations to fish habitat



Bank Swallow nesting habitat

Next Steps

- Council to select Preliminary Preferred Alternative
- Additional consultation will be completed with agencies, Indigenous communities and adjacent property owners
- Feedback to be obtained from Geotechnical Engineer
- Following review period, Council to confirm selection of Preferred Alternative
- Screening Report & Notice of Completion will be prepared
- Class EA process can then be finalized.
- Finalize Engineering Design and proceed to Tendering

Questions?