TRIECA 2017 CONFERENCE

Thank you to all of our 2017 sponsors:

AECOM

AQUATECH™ DEWATERING COMPANY

CVC CREDIT VALLEY CONSERVATION

ECHELON ENVIRONMENTAL

filtrexx CANADA LAND IMPROVEMENT SYSTEMS — let nature do it.

AG GEMS

GEOSTORM

Hydro International

Lake Simcoe Region conservation authority

RM CONSTRUCTION

SOLENO Mastering Storm Water

terrafix geosynthetics inc.

UNILOCK DESIGNED TO CONNECT.

York Region

MEDIA SPONSOR

WATER CANADA — THE COMPLETE WATER MAGAZINE

HOSTS

Toronto and Region Conservation for The Living City

CAN•IECA CANADIAN CHAPTER

ESC Planning & Implementation

▶ March 2017

Learning objectives

1 Highlight some ESC planning and implementation challenges using 3 case study examples
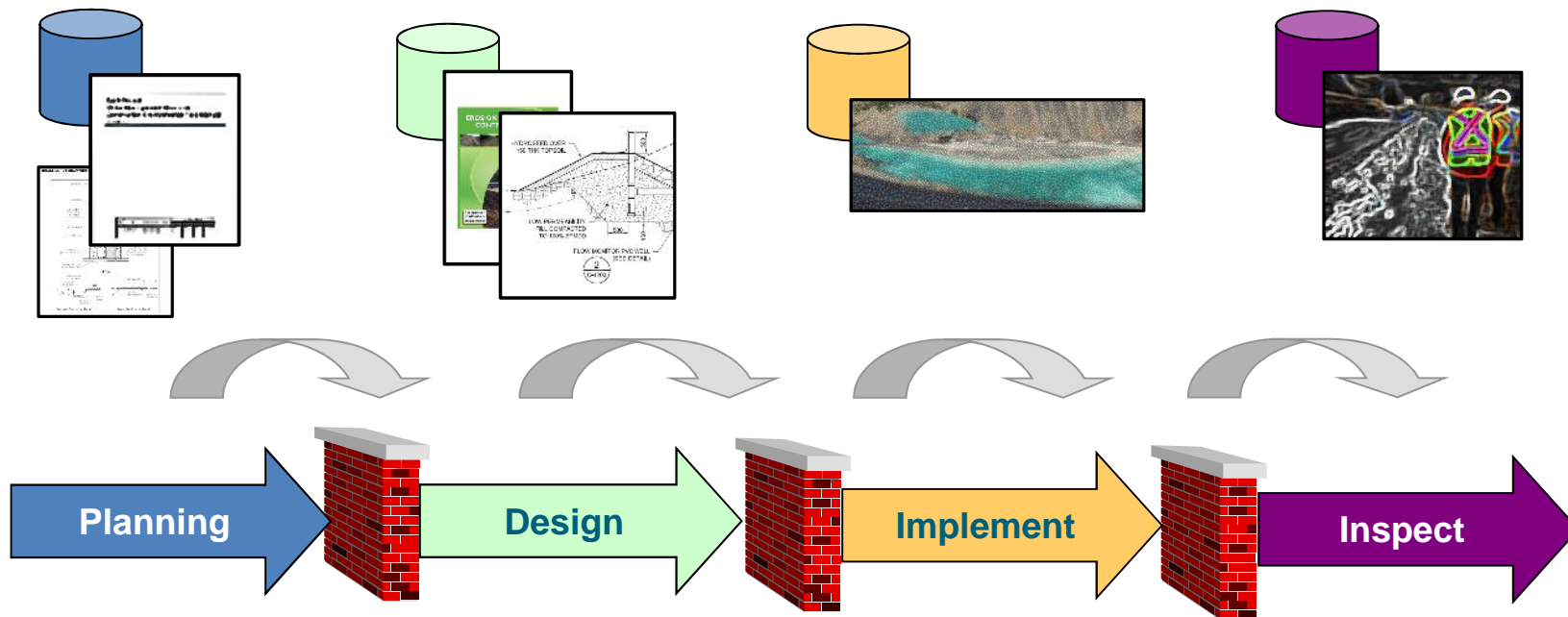
2 Change management and 'mini failures' as feedback

3 Broaden range of BMPs to address source control and sediment control objectives
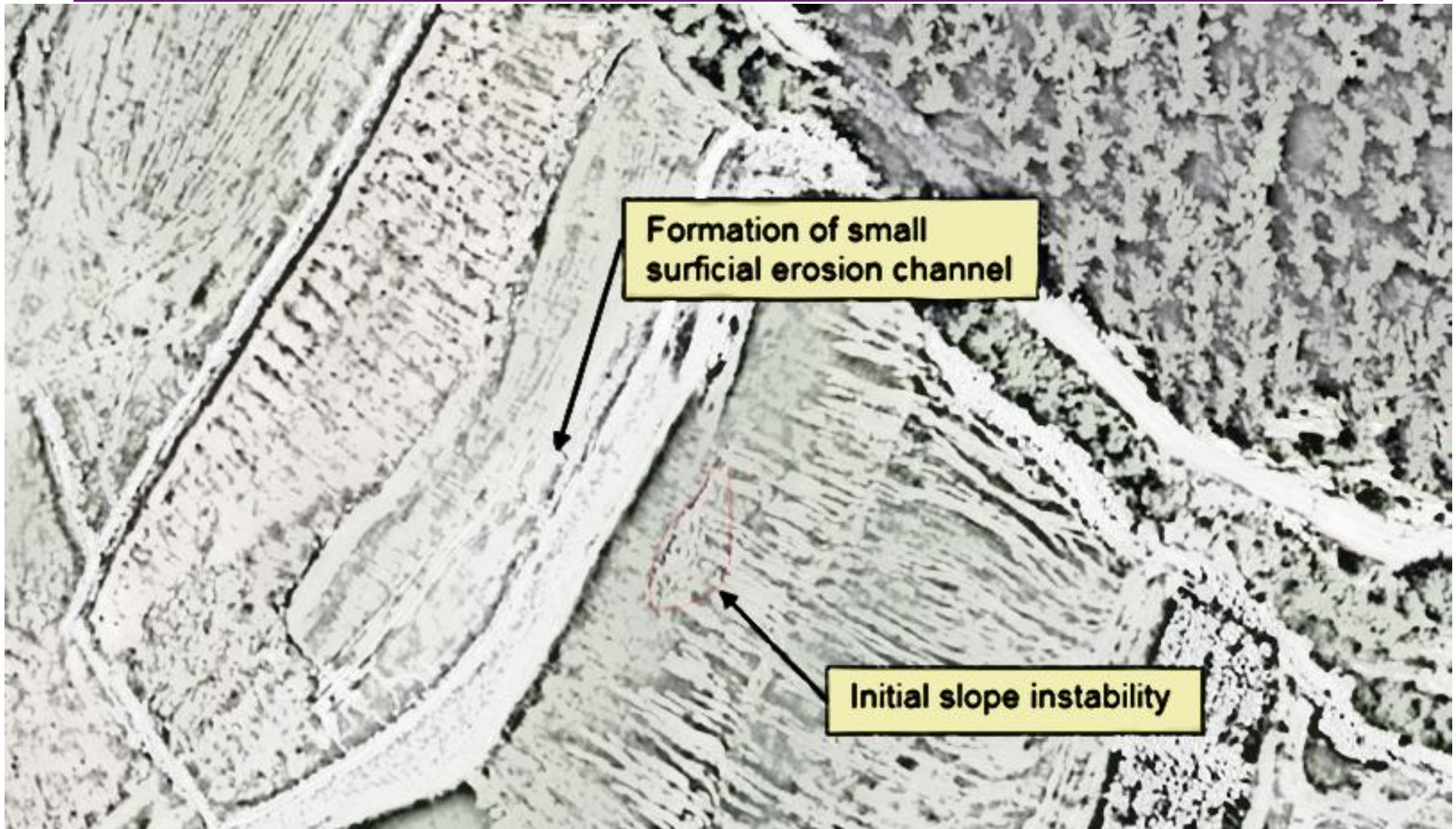
Gaps in ESC Implementation
Identifying the barriers

- ESC embedded in different guidance
  - Designs, Specs, Care of Water, EMP, regs (fed, provincial & local)
- Confusion between roles and responsibilities
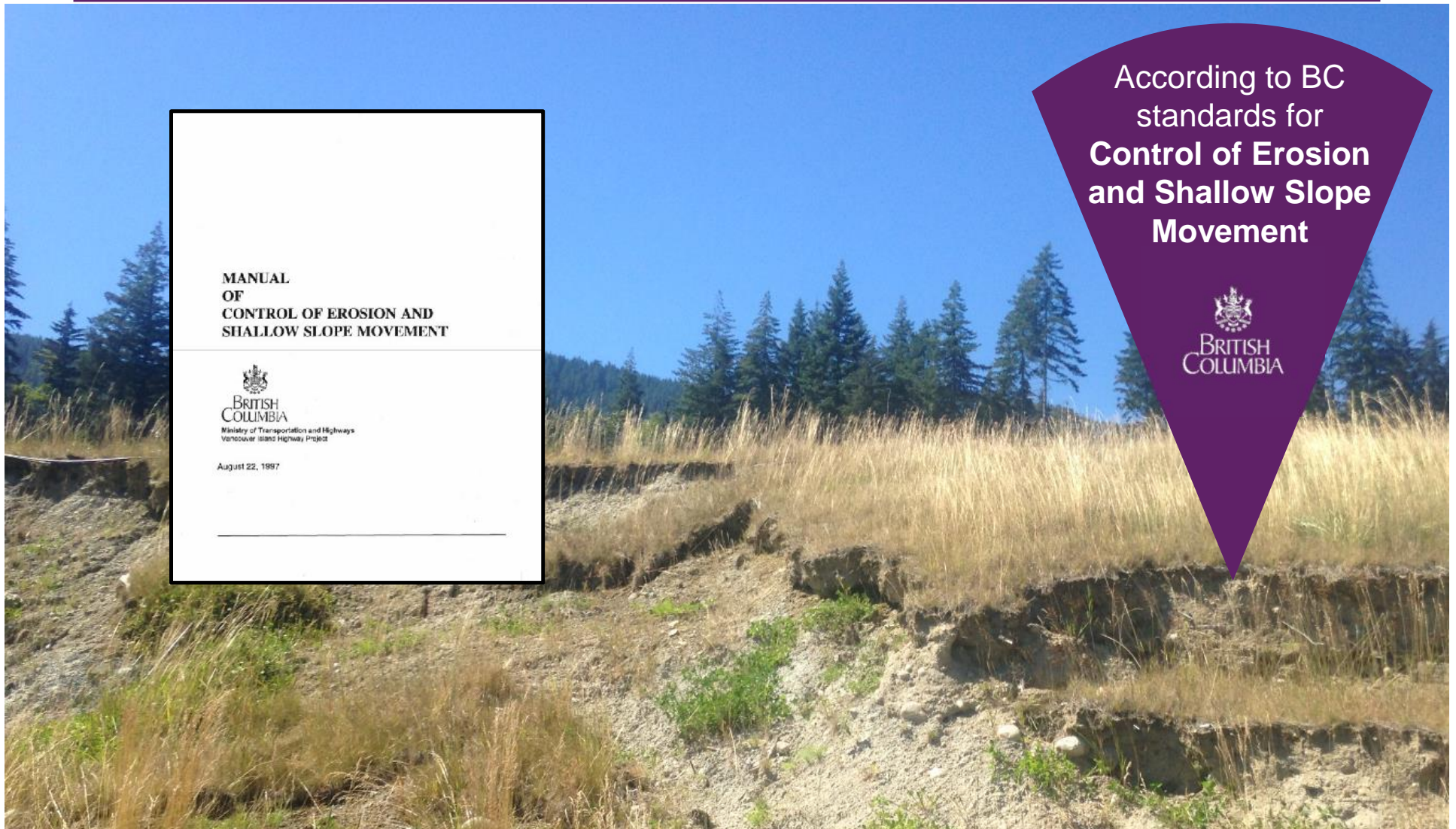 - Owner, Contractor, Sub-contractor, Engineer

Formation of small surficial erosion channel

Initial slope instability

Case Study 1
Former gravel quarry

MANUAL
OF
CONTROL OF EROSION AND
SHALLOW SLOPE MOVEMENT

BRITISH
COLUMBIA
Ministry of Transportation and Highways
Vancouver Island Highway Project

August 22, 1997

According to BC standards for **Control of Erosion and Shallow Slope Movement**
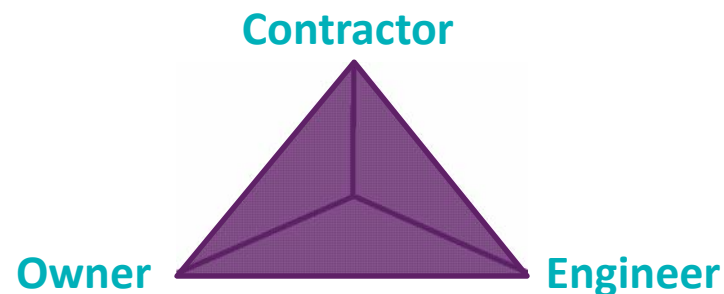
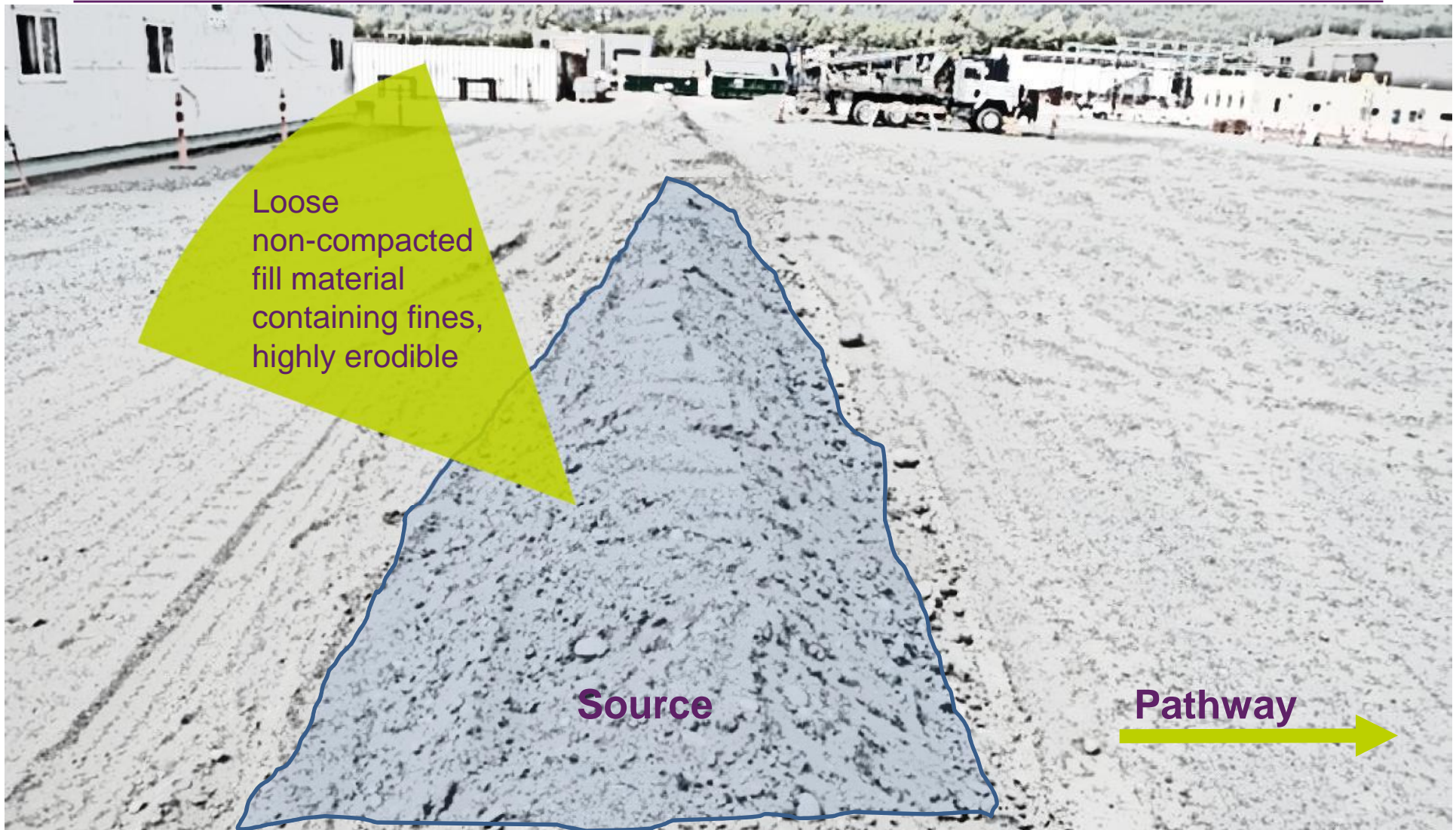BRITISH
COLUMBIA

Case Study 1
Lessons identified

Restoration of former gravel quarry

► **Seepage loss**: utilize geosynthetic liners to reduce seepage loss from bottom of ditches to avoid oversaturation of top of slope.

► **Review hydroseed spec**: hydroseed application on nutrient poor soils is insufficient (on its own).

  ► Combine bonded fiber matrix with a soil amendment such as biotic earth and hydroseed to reduce the risks of surficial erosion.

► **Disciplined communication**: develop protocols that facilitate 3-way communications.

  ► Construction staff and Engineering staff do not communicate enough.

Contractor

Owner   **Engineer**

Case Study 2
Large industrial site

Loose non-compacted fill material containing fines, highly erodible

Source

Pathway

Case Study 2
Large industrial site

Coir / straw wattle and filter cloth used at drop inlet as sediment control measures

Case Study 2
Large industrial site

► Weighted fiber roll with overlap and use gravel bags as weights.

NON-WOVEN FILTER FABRIC SET UNDER DRAIN INLET

WEIGHTED FIBER ROLL OR FIBER ROLL WITH GRAVEL BAGS AS WEIGHTS

FLOW

FLOW

FLOW

FLOW

6" (MIN) OVERLAP

SHEET FLOW INLET
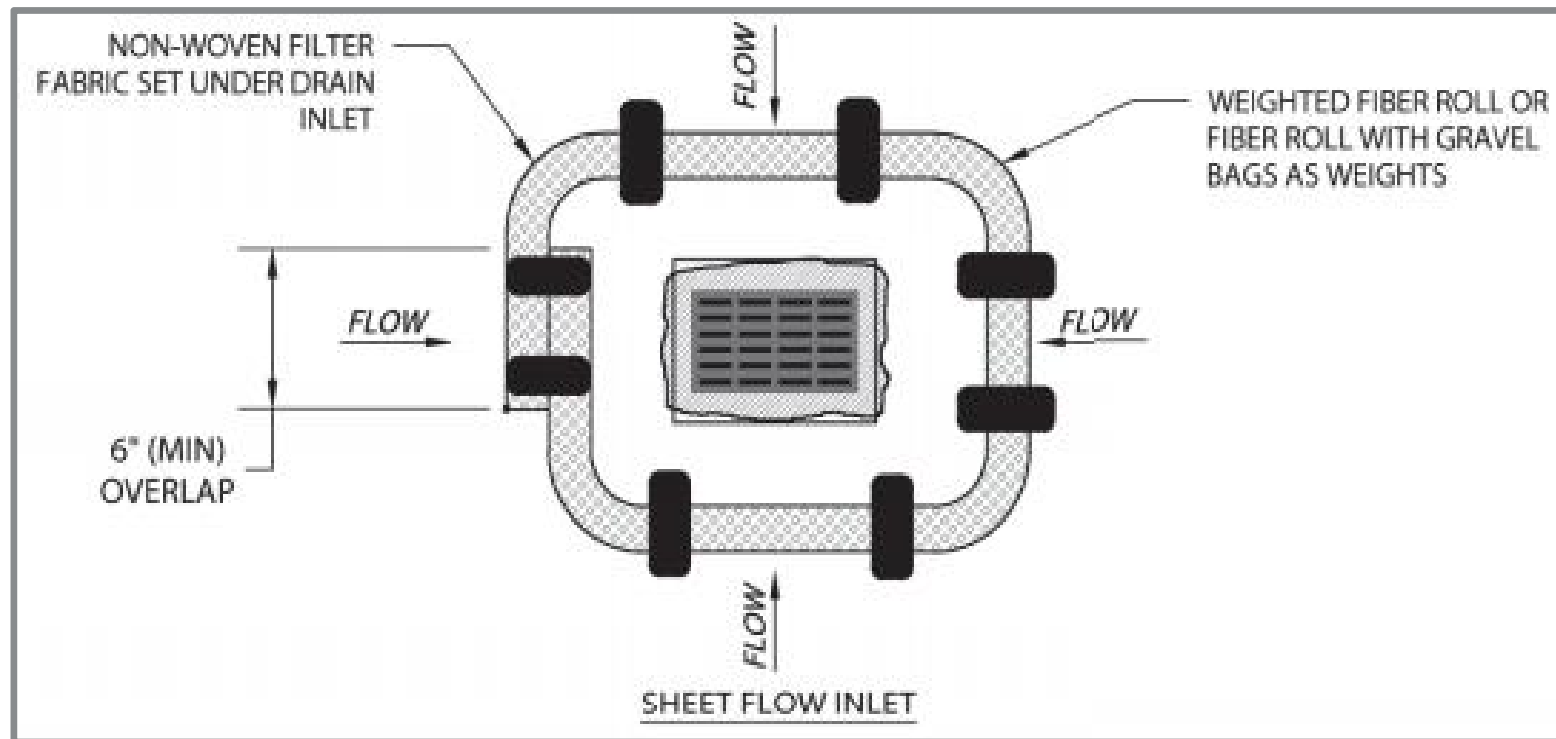
Case Study 2
Lessons identified

Industrial site

► Too much emphasis on **sediment control** measures as opposed to **source control** measures.

► Gravel fill material for Contractor's lay down area was the source.

► Sediment control measures were not installed or maintained correctly.

► Multiple sieve tests of gravel revealed high quantity of fines.

► Broader use of alternative BMPs.

► Build in redundancy and plan for failure.

Case Study 3
Brownfield redevelopment

Drainage inlet protection
- No use of native seed mix
- No hydroseed
- No soil amendment
- No BFM

Case Study 3
Brownfield redevelopment

Site ingress / egress

Innovative track-out solutions could be considered

Case Study 3
Brownfield redevelopment

Topsoil placement

Case Study 3
Brownfield redevelopment

► Practical and proven solutions to reduce surface runoff.

► ESC Design and Planning QP needs feedback loop with Contractor to identify what's working and what's not.

► Attenuation rock check dams with upslope non-woven filter cloth.

Rock check-dam

Case Study 3
Brownfield redevelopment

- Rain on frozen ground in Feb

- Rock check dams working, but some minor soil loss occurring

- Some source control measures implemented but not hydroseeding

Rain on frozen ground

Ephemeral stream

Case Study 3
Lessons identified

Large Brownfield site

► As site development progressed, need to revisit ESC Plan.

► We've moved on the from the steam shovel and a wider adoption of current BMPs needed (too much emphasis on straw bales).

► Build and strengthen awareness to ESC measures in Contractor and Owner community.

Moving forward - Key success factors

► Tightening up construction specs

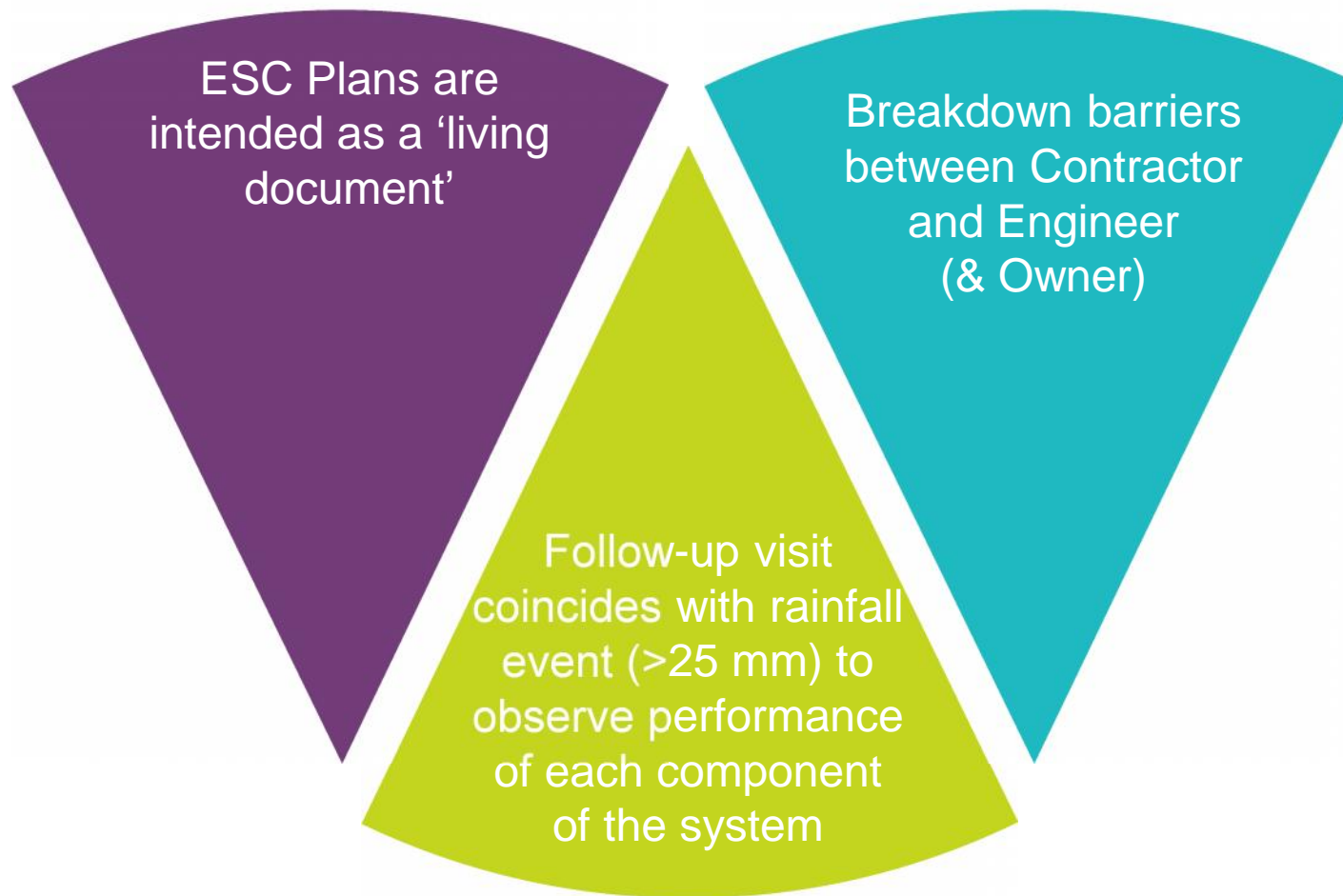► Drawings and specs are intended to be a communication tool but are not always maximized to full potential
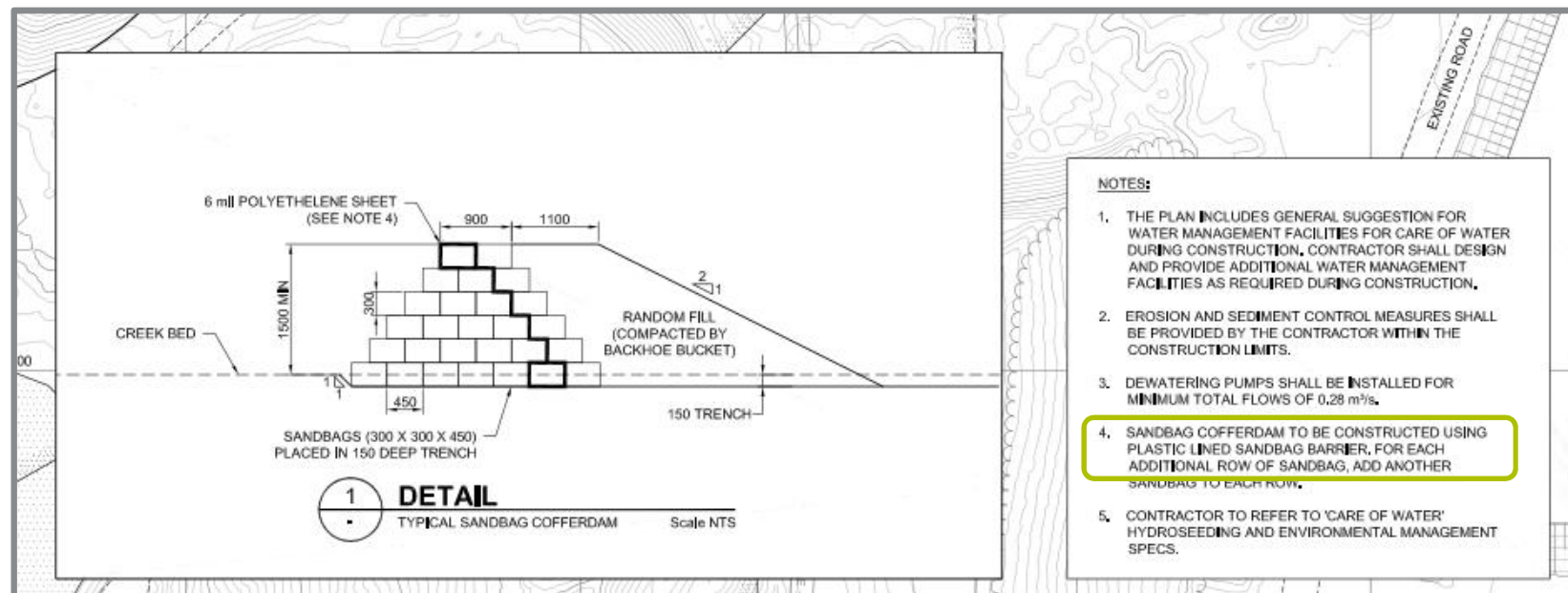
Sharing ideas and collaborating is beneficial for the industry
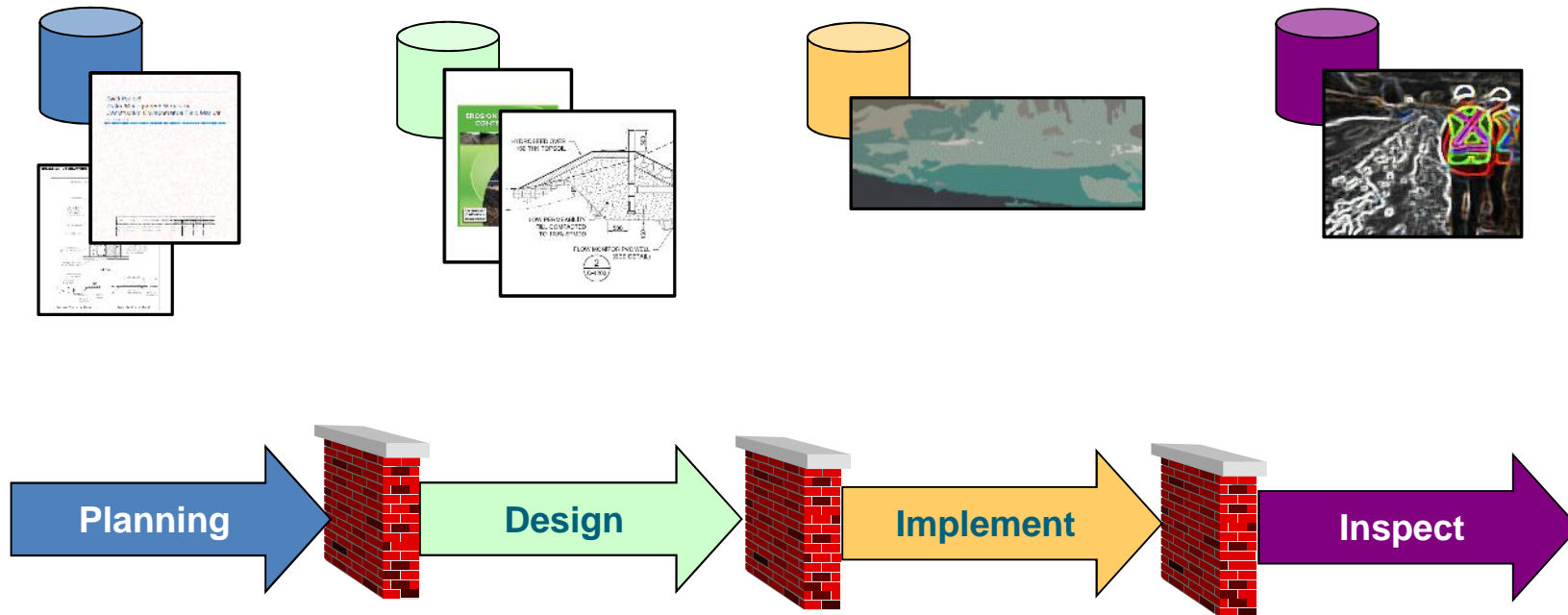
ISBN 978-3-16-148410-0

9 783161 484100

Tools for successful ESC implementation

ESC Plans are intended as a 'living document'

Breakdown barriers between Contractor and Engineer (& Owner)

Follow-up visit coincides with rainfall event (>25 mm) to observe performance of each component of the system

Gaps in ESC Implementation
Identifying the barriers

- ESC embedded in different guidance
  - Designs, Specs, Care of Water, EMP, regs (fed, provincial & local)
- Confusion between roles and responsibilities
  - Owner, Contractor, Sub-contractor, Engineer

Review of learning objectives

1 Participants leave with a better understanding of the benefits of using Change Management and 'mini failures' as feedback

2 By sharing and discussing a broad range of different ESC control measures, participants are more informed

For more information

► Matthew Graham, MSc, CPESC, CSci, MCIWEM
► Associate, Water Resources
► Matthew.graham@amecfw.com
► 604-295-6145