

# Planning for Wetland Function and Reclamation Success in Road Design

Terry Osko

CIRCLE CONSULTING  
Box 339 • Vegreville • Alberta • T9C 1R3

## Introduction

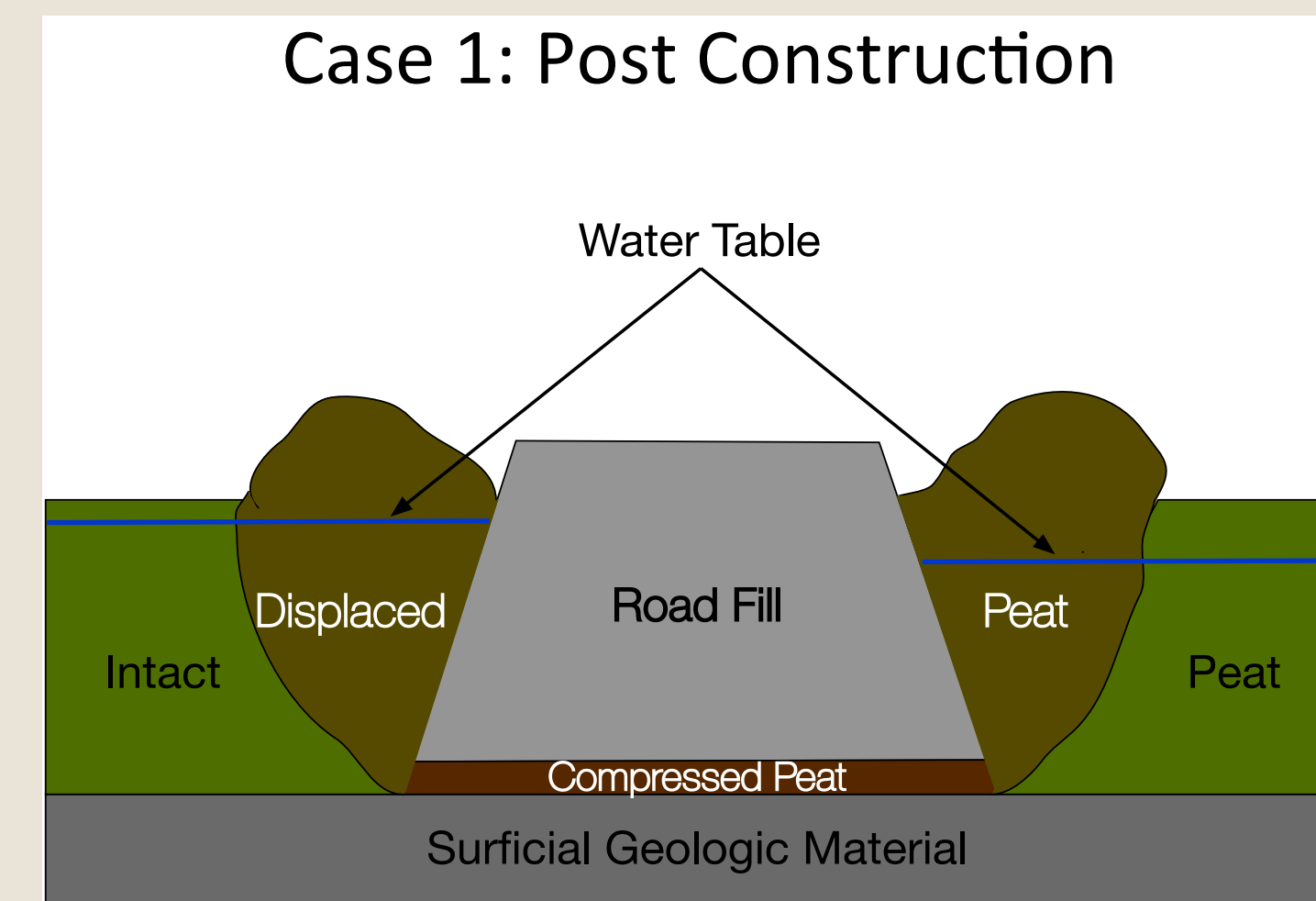
- Ecologists and restoration specialists often focus on industrial features in terms of how to reclaim or restore them as they are encountered
- However, opportunity exists to minimize industrial effects and increase restorability as the footprint expands
- Understanding peatland characteristics and behaviour under load can aid construction decisions
  - where and how to build roads on peatlands to retain peatland function and make reclamation easier

## Key Peat Properties

- Wetland type and general hydrologic regime
- Peat depth and decomposition
- Peat fibre and water content
- Peat density and pore spaces
- Shear strength measurements
- Internal peatland hydrology
- Texture of underlying surficial geologic material

## Key Construction Considerations and Risks

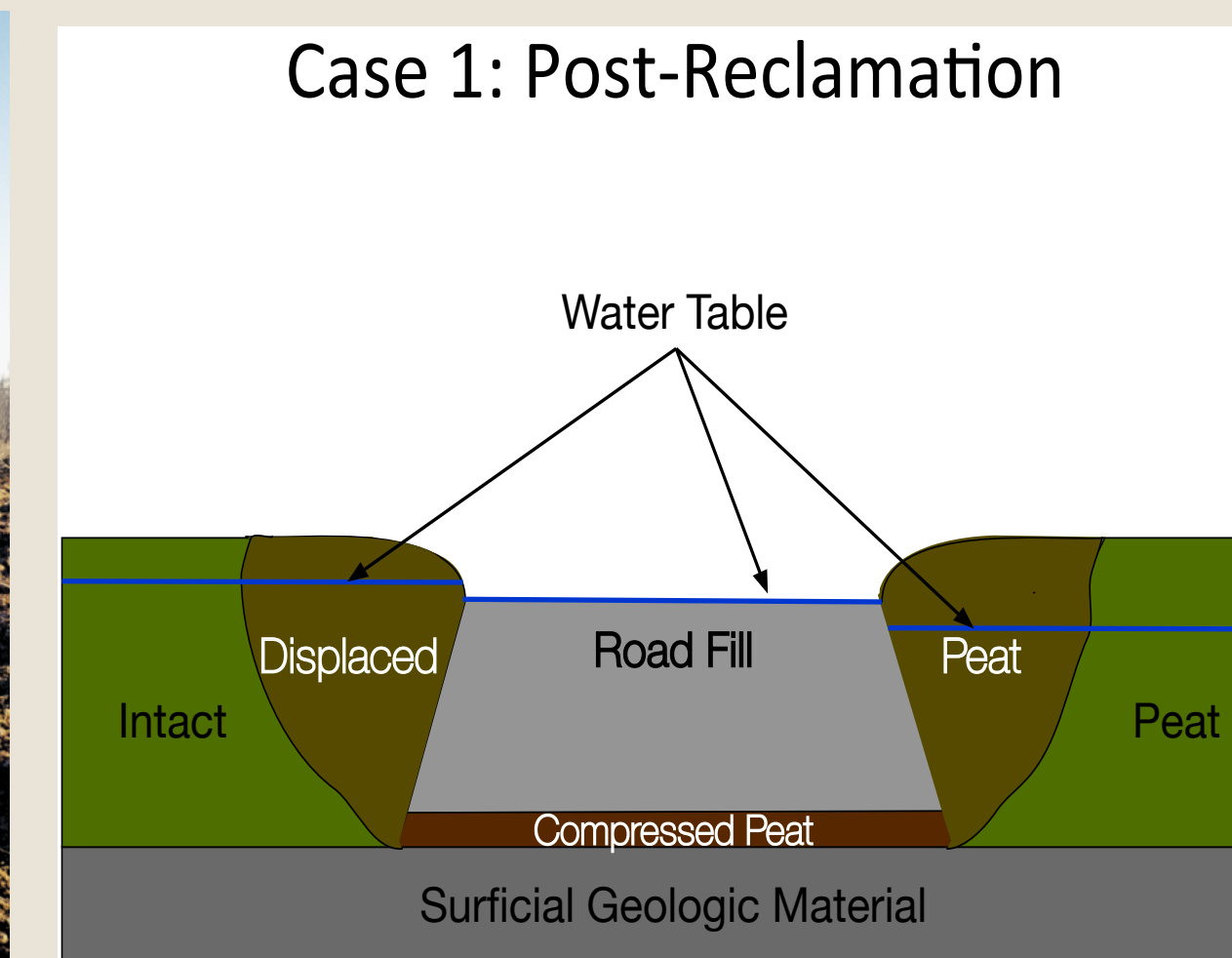
- Understanding peat quality can aid decisions
- Peat structure can gain strength under load
- Peat should be loaded in stages to allow time for consolidation
- Season of construction can influence success
- Seasoning the road (giving it time to settle) improves strength
- Peat settlement is quite predictable



Improper loading resulted in peat failure and displacement. More fill was then required. Excess fill is costly, has big borrow footprint, and is a barrier to water flow.



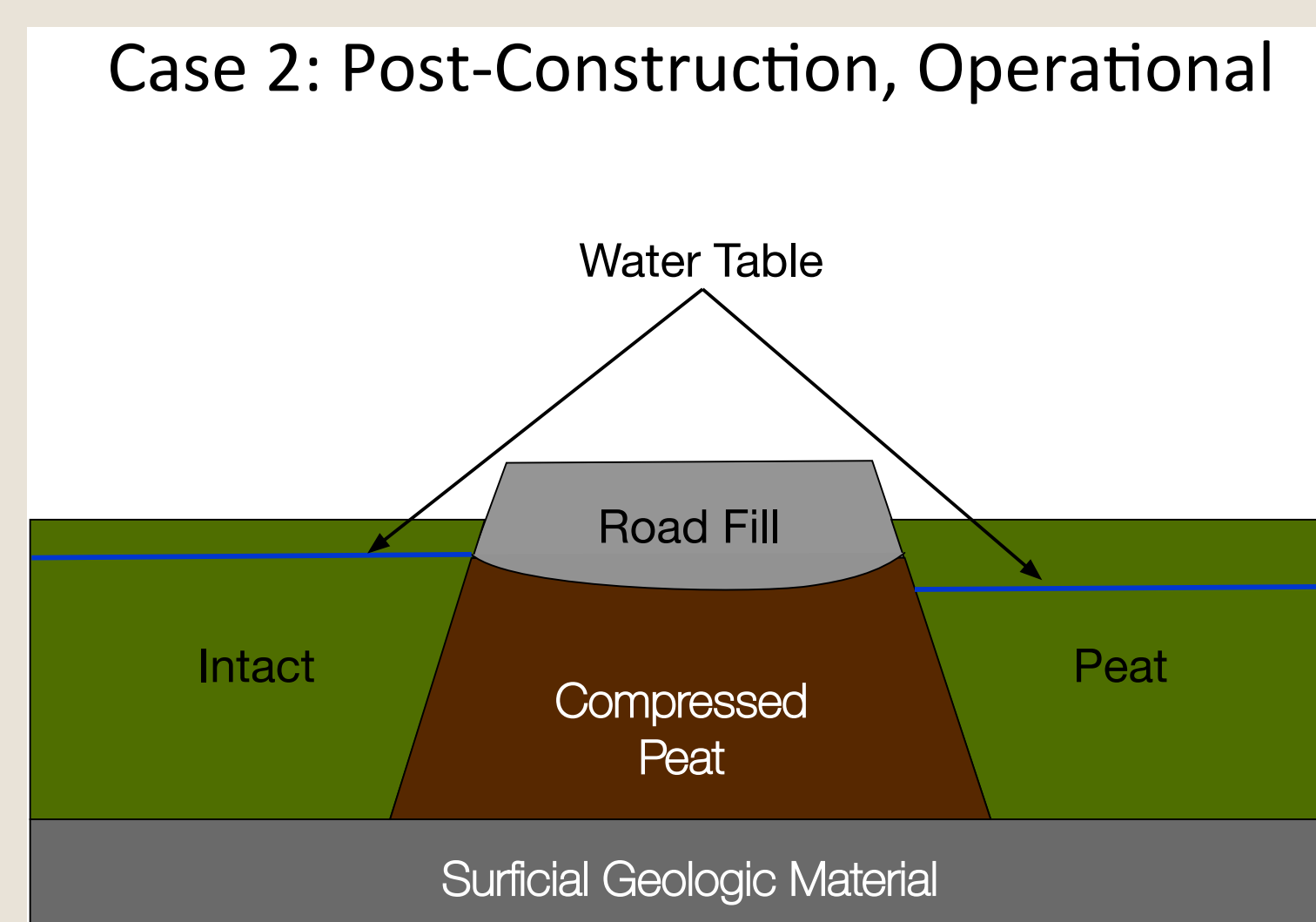
Excess peat removed, stockpiled offsite.



Total fill removal is difficult, expensive, and probably not ecologically desirable.



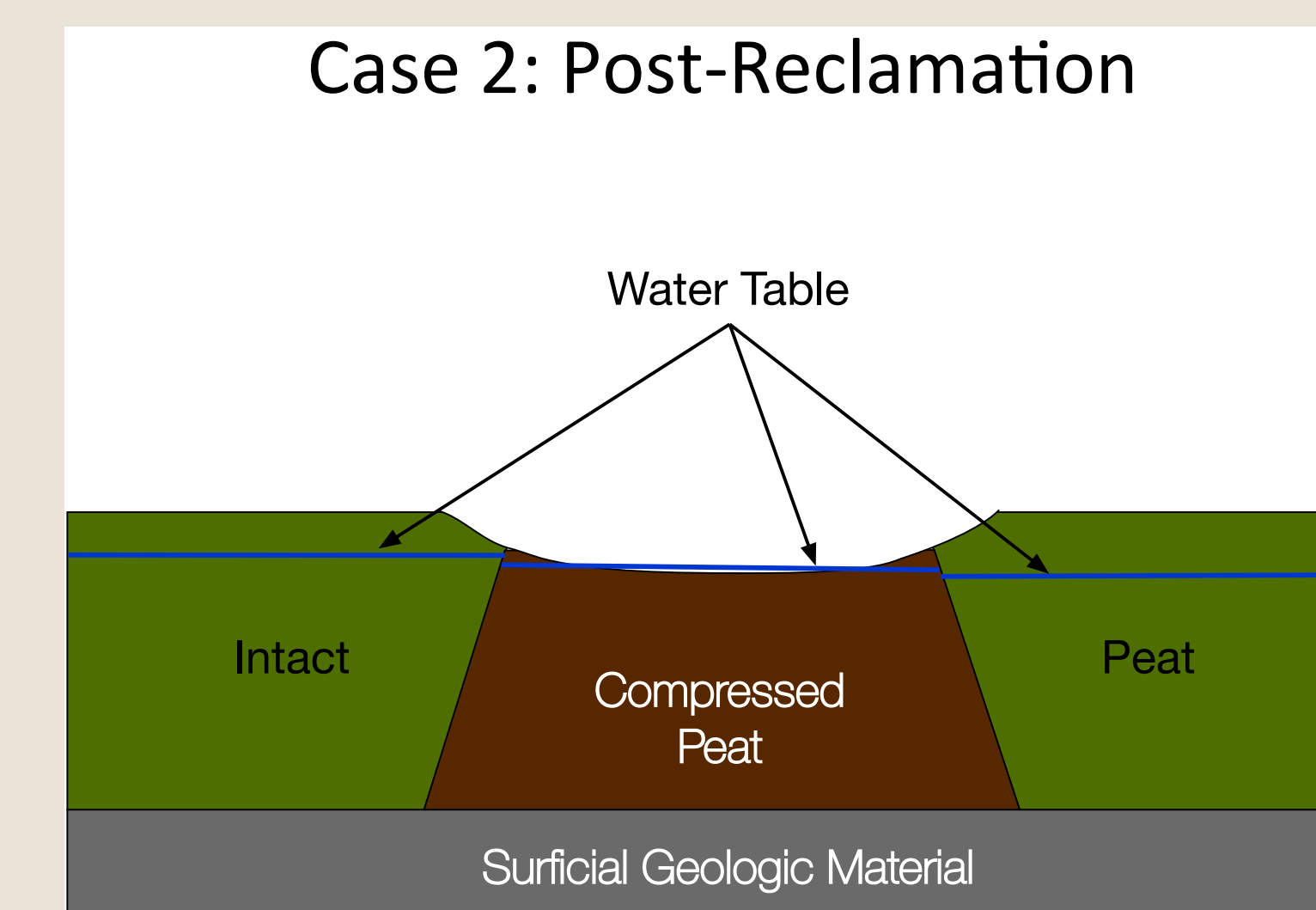
Remaining fill is difficult to revegetate with peatland species and still impedes subsurface flow.



Staged loading allowed peat to consolidate and gain strength, resisting shear. Equilibrium was achieved with the underlying peat.



Road fill was relatively easy and inexpensive to remove and was reused nearby.



Compressed peat can impede subsurface flow, but not to the degree that clay fill does. The option remains to mechanically loosen the peat if required.



While some cattails initially came in, peatland vegetation also readily colonized the site.

## Conclusions

- Peatland knowledge can aid in road planning, development, and construction
- Selected routes/locations and construction practices influence both road quality and peatland effects
- Construction practices can also influence reclaimability
- Well planned and well executed roads reduce costs and overall environmental effects
- Sufficient time should be planned to ensure the best, most cost-effective, and most peatland-friendly roads

## Acknowledgements

- Japan Canada Oil Sands
- Suncor Energy
- iFROG
- COSIA