

**IN THE MATTER OF THE ENGINEERS AND GEOSCIENTISTS ACT
R.S.B.C. 1996, CHAPTER 116, and THE PROFESSIONAL GOVERNANCE ACT
S.B.C. 2018, CHAPTER 47**

and

IN THE MATTER OF TODD MARTIN

EGBC File No. T-15-048 (B)

CONSENT ORDER

Background

1. On September 26, 2018, the Association of Professional Engineers of the Province of British Columbia doing business as Engineers and Geoscientists BC (“**EGBC**”) issued a Notice of Inquiry to Todd Martin (“**Mr. Martin**”). The Notice of Inquiry has since been amended, most recently on January 5, 2022 (the “Further Amended Notice of Inquiry”).
2. The Further Amended Notice of Inquiry concerns aspects of Mr. Martin’s engineering work in connection with the Tailings Storage Facility (the “**TSF**”) at the Mount Polley Mine (the “**Mine**”) located approximately 11 kilometers from Likely, British Columbia. The Mine is a copper and gold mine which discharged mine tailings in the form of a slurry into the TSF.
3. Mount Polley Mining Corporation (“**MPMC**”) owned and operated the Mine. Effective January 28, 2011 MPMC contracted with AMEC Earth & Environmental Limited, a division of AMEC Americas Limited (which entity was later reorganized into AMEC Foster Wheeler Americas Limited) (“**AMEC**”), to provide specified geotechnical engineering services in connection with the TSF.
4. From March 2011 to December 2012, Mr. Martin was the Senior Geotechnical Engineer at AMEC responsible for the geotechnical engineering in connection with the TSF.
5. The TSF is bounded by a U-shaped dam comprised of three contiguous embankments: the Main Embankment, the South Embankment, and the Perimeter Embankment (the “**Embankments**”). To the west, the TSF is bounded by a natural slope. The Embankments are made of earth and rock, built on a foundation of glacial soils.
6. The Embankments increased in size over time. Each Embankment raise was referred to as a “Stage”. Construction of Stage 1 began in 1996. AMEC’s

responsibility for the geotechnical engineering work on the project did not commence until March, 2011 at which time the Stage 7 raise was being planned and designed. AMEC was responsible for designing Stages 7, 8 and 9 of the Embankments. Stage 7 raise design and construction was completed in 2011. Stage 8 design and construction was completed in 2012. Stage 9 design began in December 2012 and was issued in spring 2013, while Stage 9 construction occurred in 2013 and 2014. Mr. Martin ceased working at AMEC at the end of 2012.

7. In 2011, AMEC engaged in geotechnical site investigations in the vicinity of the TSF, in recognition of a need for an improved characterization of foundation soil conditions, pore water pressures and potential movements within foundation glaciolacustrine soils ("GLU"). Mr. Martin was the geotechnical engineer responsible for AMEC's site investigation work.
8. As part of its site investigation work in 2011, AMEC installed 5 piezometers into native soils in three locations downstream of the Perimeter Embankment. A piezometer is a device that measures pore water pressure within soil layers, including pore water pressure responses to changes in loading or seepage.
9. References in this Consent Order to "hole GW96-1A" are references to a borehole drilled in 1996 for groundwater monitoring purposes. Hole GW96-1A was located approximately 140 meters downstream of the toe of the Perimeter Embankment, and the borehole log for the hole indicated the presence of GLU of relatively low shear strength approximately 6 meters below surface.
10. On August 4, 2014, there was a breach of a portion of the Perimeter Embankment leading to the discharge of tailings from the TSF into the local environment (the "Embankment Failure"). The Further Amended Notice of Inquiry does not address the cause of the Embankment Failure. The Further Amended Notice of Inquiry contains no allegation that Mr. Martin's conduct caused or contributed to the Embankment Failure.
11. Mr. Martin is retired. He has not been practising engineering since August 1, 2018 and resigned as a registrant of EGBC on January 2, 2020.
12. EGBC and Mr. Martin wish to resolve the allegations in the Further Amended Notice of Inquiry by consent to avoid the need for a contested disciplinary hearing and to conclude all outstanding matters within the Further Amended Notice of Inquiry. The admissions stated herein (paragraphs 17-21) are the only admissions made by Mr. Martin in relation to the allegations in the Further Amended Notice of Inquiry and are made for the purpose of this proceeding only.

Legislation

13. On February 5, 2021, the *Engineers and Geoscientists Act*, R.S.B.C. 1996, c. 116 (the “**EGA**”) was repealed and replaced by the *Professional Governance Act*, S.B.C. 2018, c. 47 (the “**PGA**”).
14. The Notice of Inquiry was issued under the EGA in connection with events that took place while the EGA was in force. However, in accordance with section 36 of the *Interpretation Act*, R.S.B.C. 1996, c. 238, the procedural provisions of the PGA govern the making of a Consent Order in this proceeding.
15. The Registrar of EGBC, Mr. Martin, and the EGBC Discipline Committee, represented by the Discipline Resolution Panel, agreed to alternative complaint resolution by way of mediation, pursuant to section 74 of the PGA. The mediator was the Honourable Thomas Cromwell, former Justice of the Supreme Court of Canada.
16. This Consent Order is made pursuant to section 73(2) of the PGA.

Admissions

17. As of the beginning of Mr. Martin’s tenure as Senior Geotechnical Engineer in 2011, there were no deep drill holes, drilled to bedrock, within the footprint of the Perimeter Embankment or close to its downstream toe, apart from one 1989 condemnation drill hole from which hole the presence of GLU could not be reliably discerned. Additional site investigation commissioned by Mr. Martin in 2011 sought to further the characterization of foundation soils with additional deep drilling in three locations along the toe of the Perimeter Embankment in 2011, installing foundation piezometers and inclinometers in the process, and including one drill hole between the embankment and prior drill hole GW96-1A. This program improved foundation characterization for the Perimeter Embankment, but failed to include any deep drill holes within the embankment footprint. In addition, the three locations downstream of the embankment toe that were drilled in 2011 were widely spaced, approximately half a kilometer from one another. While there were practical constraints to drilling into the foundation soils below the existing embankment, such drilling could have been undertaken from the 2011 embankment crest. In the circumstances, including the wide spacing of deep drill holes along the toe of the Perimeter Embankment, the failure of Mr. Martin to recommend such drilling into foundation soils under the footprint of the Perimeter Embankment, so as to improve the characterization of embankment foundation soils, was not consistent with prudent engineering practice.
18. Mr. Martin failed to make a record of important field observations in 2011. In particular, during a site visit to the Perimeter Embankment in 2011, Mr. Martin made observations relating to surficial soil layers at various locations. Those observations contributed to Mr. Martin’s judgment that subsurface conditions at the

Perimeter Embankment were dissimilar to those at the location of drill hole GW96-1A. Such observations were important to the characterization of site geology, and accordingly to stability analyses and embankment design. As such, the observations should have been recorded in an additional file memorandum or report to supplement prior documentation relating to interpreted soil conditions at site. Mr. Martin's failure to record his observations constituted unprofessional conduct.

19. The agreement between AMEC and the mine operator called for one site visit to the TSF by Mr. Martin in 2011, which occurred, and a site visit by Mr. Martin in 2012 only if deemed necessary by the mine operator or AMEC's project manager. Mr. Martin did not visit the site in 2012. Others from his firm did so, with the result that junior members of Mr. Martin's firm were on site for approximately 30 days during each of the 2011 and 2012 construction seasons. Notwithstanding contractual provisions, the frequency of site visits to the TSF by senior geotechnical engineers, including by Mr. Martin, was too infrequent and not consistent with prudent engineering practice at the time.
20. In 2011, under Mr. Martin's supervision, 5 additional piezometers were installed downstream of the Perimeter Embankment in three locations. That increased the number of functioning piezometers in the Perimeter Embankment foundation soils to 6, but there remained only one functioning piezometer under the footprint of the Perimeter Embankment continuing through 2011 and 2012. Notwithstanding that there were practical constraints to installing piezometers in the foundation soils below the embankment given its configuration, there was an insufficient number of piezometers installed in the foundation soils under the footprint of the Perimeter Embankment, which was not consistent with prudent engineering practice at the time.
21. The 2011 Construction As-Built Report and Annual Review report indicated the extent of embankment crest over-building beyond the design during the 2011 construction season. AMEC accepted this overbuilding of the crest beyond the design lines on the basis that the overbuilding was interim in nature, with eventual re-grading of the slope to align with the 2H:1V "ultimate design slope" for a final dam crest elevation of 970 m. Mr. Martin failed sufficiently to notify the mine operator (who performed the construction) that embankment construction at Stage 7 took place in a manner that was not in accordance with design lines, in particular that there was overbuilding of the embankment crest and an absence of compaction of some of the rockfill placed on the downstream embankment slope, and that non-conformity with design could adversely affect embankment stability. That was not consistent with prudent engineering practice at the time. There was further overbuilding by the mine operator of part of the Perimeter Embankment crest and an absence of compaction of rockfill placed on the downstream embankment slope during construction of the Stage 8 embankment raise from approximately stations 3+900 to 4+040, to locally widen the crest to facilitate a pipeline crossing, as recorded in daily construction inspection reports. Mr. Martin

ought to have brought this issue to the attention of the mine operator in 2012 notwithstanding that the 2012 Construction As-Built Report was prepared and issued in 2013 after Mr. Martin ceased working at AMEC.

Disposition

22. By consent, this Order is made pursuant to section 73(2) of the PGA.
23. Mr. Martin will pay a fine in the amount of \$25,000, representing the maximum fine payable under the EGA. The fine must be paid to EGBC contemporaneous with the execution of this Consent Order.
24. Mr. Martin will pay \$69,000 toward EGBC's legal costs contemporaneous with the execution of this Consent Order.
25. As Mr. Martin has been non-practising for over 3 years as of the date of this Consent Order, should he re-apply for registration his application will be governed by subsection 5.23(5) of the Bylaws of EGBC which requires that applicants provide the Credentials Committee with prescribed information, including:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a practising Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) a letter of explanation as to how the Applicant has maintained practice competency, including through the completion of continuing education;
 - (d) professional references, in number satisfactory to the Credentials Committee and whose professional relationship with the Applicant covers the total number of years since the Applicant last had status as a practising Professional Registrant and who are able to attest to the Applicant's good character, good repute, and practice competency;
 - (e) a current professional record of the Applicant's work experience;
 - (f) completion of the Professional Engineering and Geoscience Practice in BC Online Seminar, regardless of whether it or a seminar that is deemed equivalent by the Council has previously been completed by the Applicant;
 - (g) evidence of the successful completion of an examination in professional practice approved by the Council;

(h) at the discretion of the Credentials Committee, evidence of completion of

- (i) assigned experience under the Direct Supervision of a Professional Registrant for a period of time and on such terms as set by the Credentials Committee, and provision of a reference from that Professional Registrant, and
- (ii) continuing education on such terms as set by the Credentials Committee.

26. Should Mr. Martin successfully re-apply for registration with EGBC and subsequently resume the practice of professional engineering, it will be a condition of his registration that he participate, at his cost, in a practice review at dates and times to be set by the Audit and Practice Review Committee.

Consequences of the Consent Order and Execution

27. The full text of this Consent Order will be published on the EGBC website, and a summary of this Consent Order will be published in print and electronic publications including on the EGBC website.

28. This Consent Order has the same force and effect as a determination made under section 75(6) of the PGA.

29. Mr. Martin has received independent legal advice regarding the content of this Consent Order.

30. EGBC and Mr. Martin agree that this Consent Order may be executed in counterparts and may be delivered electronically.

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31. This Consent Order is approved by the EGBC Registrar, Mr. Martin, and the members of the Discipline Resolution Panel this 15th day of February, 2022.

<original signed by>

Todd Martin

Jennifer Goodrich

Name of Witness

<original signed by>

Signature of Witness

<original signed by>

Rajib Ahsan, P.Eng.
Member, Discipline Resolution Panel

<original signed by>

Roz Nielsen, P.Eng.
Member, Discipline Resolution Panel

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Denise Mullen
Member, Discipline Resolution Panel

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Mark Rigolo, P.Eng.
Acting Registrar, EGBC