Cite this article
Di Battista V (2023)
Editorial.
Environmental Geotechnics **10(5)**: 289,
https://doi.org/10.1680/jenge.2023.10.5.289

Editorial

Environmental Geotechnics

Editorial

Vanessa Di Battista PhD
Assistant Professor, Département de génie civil et génie du bâtiment, Université de Sherbrooke

As I read through the articles in this issue, I find it interesting to note that a theme of waste reuse was present in several of the articles. I wholeheartedly agree with the notion that waste reuse should be a priority over waste management. It also goes without saying that humans need to consume less and the order of the three Rs (Reduce, Reuse, Recycle) was not an accident.

In the geotechnical engineering sphere, we can participate in this second R by finding new ways to use waste as fill or other geotechnical applications. My personal experience with the reuse of contaminated materials in engineering design has been limited to a unique case in Antarctica where it was necessary to remediate soils for reuse as foundation materials. Due to the sensitive nature of the environment, it was paramount to assure that soils were completely remediated before reuse. This was out of necessity due lack of other suitable building materials, but once finished, we had completed the first remediation of contaminated soil for re-use as foundation material on the Antarctic continent (McWatters *et al*., 2016).

However, there's a delicate balance to strike. If we propose to reuse a material in a novel way, we need to assess long-term performance to avoid any unintended consequences. One example of this is contamination, as seen in the featured article by Roque and Monteiro (2023), which examines the site reclamation of hazardous waste rock, where the initial design for the waste reuse plan did not include environmental or geotechnical consideration. This article provides a study of the hazardous waste, the unlined initial containment area, and the eventual reclamation of the site.

The geoenvironmental field (and the people working in it) is diverse and varied, so it is not surprising that a project with initial goals of reducing waste and pollution had the opposite effect by excluding some type of expertise. These diverse perspectives are truly valuable and can help us identify blind spots in our work that we did not know existed. To me, this highlights the importance of interaction, networking and collaboration with varying disciplines. Connecting with a broad group and varying viewpoints will allow the identification of major issues or the hidden solutions for whatever complex problems that face us. I think this particularly important as often our problem scope now includes complex social issues in addition to technical concerns.

The valorization slag features predominantly in this issue, where two articles, including one of our featured articles, examine the use of slag as an additive in cement binder for contaminated soils.

The second featured article by Feng *et al*. (2023) demonstrates the benefits of using a basic oxygen furnace slag activated with monopotassium phosphate as a means of stabilization for contaminated sites. The study results are promising for the reuse of materials, which can benefit three problems: contaminated site management, reduction of CO_2 from concrete and valorization of waste.

Continuing with the theme of waste reuse, the third article by Evans *et al*. (2023) of this issue studies the use of slag as an additive in slurry trench cut-off walls. The authors investigated the fate of bentonite in these structures and found interesting results regarding the transformation products and the long-term fate of the bentonite in the cut-off walls. I found this article interesting, as a take-away message for me was the importance of the service-environment when using slag-cement-bentonite slurry trench walls and a reminder that not every tool is appropriate for every application.

As a geotechnical engineer, I am often focused on the soil and its properties (and how I can use those properties to my advantage). However, a major part of the soil that can often be ignored is the interaction between root systems and the unsaturated characteristics of the soil. The final article by Capobianco *et al*. (2023) investigates the wetting and drying before incorporated with the evapotranspiration process, and the findings show how root systems change the wetting and drying behaviour of a soil.

REFERENCES

Capobianco V, Cascini L, Cuomo S and Foresta V (2023) Wetting–drying response of an unsaturated pyroclastic soil vegetated with long-root grass. *Environmental Geotechnics* **10(5)**: 332–350, https://doi.org/10.1680/jenge.19.00207.

Evans JC, Larrahondo JM and Yeboah NNN (2023) Fate of bentonite in slag–cement–bentonite slurry trench cut-off walls for polluted sites. *Environmental Geotechnics* **10(5)**: 319–331, https://doi.org/10.1680/jenge.20.00111.

Feng YS, Zhou SJ, Xia WY and Du YJ (2023) Solidify/stabilise a heavy metal-contaminated soil using a novel steel slag-based binder. *Environmental Geotechnics* **10(5)**: 303–318, https://doi.org/10.1680/jenge.19.00226.

McWatters RS, Wilkins D, Spedding T *et al.* (2016) On site remediation of a fuel spill and soil reuse in Antarctica. *Science of the Total Environment* **571**: 963–973.

Roque AJ and Monteiro V (2023) Hazardous waste on waste rock of São Pedro da Cova coal mine (Portugal): site reclamation. *Environmental Geotechnics* **10(5)**: 290–302, https://doi.org/10.1680/jenge.20.00013.