

Salt Affected Wellsites/Native Prairie Protocol Implementation Policy

PTAC project 15-SGRC-08 developed a scientific rationale document supporting an alternate closure protocol for salt-affected wellsites on native prairie grasslands. The alternate closure protocol used compliance with the reclamation criteria for native grasslands to demonstrate no current effect on the grassland ecosystem and a weight of evidence approach to demonstrate no likely upwards migration of salts that could generate a potential future impact on the grassland ecosystem. The weight of evidence approach used three criteria to demonstrate lack of upward migration: i) vadose zone soil modelling showing a net downward moisture flux, ii) the profile of natural sulphate in soil showing depletion, rather than accumulation at the ground surface; and iii) using the water table depth to support ruling out the potential for upward migration. This protocol was developed by a technical steering committee including regulators and industry, and was delivered to the technical steering committee in July 2016.

More recently, the regulatory community has expressed

reservations with including vadose zone modelling in the approach. Experience implementing the protocol at a range of sites has suggested that criteria ii) and iii) above are sufficient to demonstrate no upward migration with a good degree of confidence in approximately 60% of cases seen to date. However, approximately 40% of sites cannot be confidently assessed using criteria ii) and iii) only. These sites are typically cases where the natural sulphate profile shows a “bulge” indicating accumulation of sulphate at the base of the root zone that does not reach the ground surface. In such cases it can be unclear whether this “bulge” of salinity will affect plant growth and whether the sulphate profile provides sufficient evidence of downward moisture flux. These sites would benefit from a third approach contributing to the weight of evidence.

Vegetation type is an additional useful indicator of groundwater conditions. Within the native prairie vegetation community, specific plants are indicative of near surface groundwater (either high water table or groundwater discharge). The presence or absence of a community of specific plants can therefore be used as an indicator of whether or not future upwards migration of salts is a concern.

2019 Rationale Document