

## Agronomic Receptor Evaluation for Direct Soil Contact

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### Low Probability Receptor – Overview and Net Environmental Benefit - Ian Mitchell & Janice Paslawski

The Low Probability Receptor (LPR) initiative is focused on reducing environmental liability while also reducing greenhouse gas emissions and activities that cause human health/environmental impacts, while maintaining or increasing environmental protection. During the early stages of the initiative, it was determined that remediation to protect a receptor that does not occur during the lifespan of the contamination always results in a net negative environmental outcome. Therefore, remediating to protect a receptor that is extremely unlikely to occur will almost always result in a net negative environmental outcome.

The LPR project is fundamentally aligned with net environmental benefit, including the reduction of greenhouse gas emissions and reduction of unnecessary habitat damage among other benefits. However, the benefits can be increased further when LPR is combined with beneficial reuse of sites.

Key challenges with the LPR initiative include how to address the small number of sites where a low probability receptor does occur in the future, as well as how to integrate the process with current regulatory frameworks. A demonstration project was initiated in 2021 in collaboration with CAPP, industry and regulators to apply LPR at real-world sites in Alberta, Saskatchewan and British Columbia and further assess approaches for integrating LPR approaches into western Canadian environmental frameworks.

### Low Probability Receptor – Application at Demonstration Sites - Andre Christensen & Cory Kartz

The LPR approach has been applied to several demonstration sites in Saskatchewan and Alberta. The process involved reviewing portfolios of sites provided by industry to identify candidates where LPR is beneficial, with criteria including:

- Whether chemicals of potential concern were expected to attenuate over time
- Whether critical receptors were currently present, and if not the probability of future occurrence
- Whether application of LPR would provide environmental and economic benefit.

Additionally, several sites were assessed for potential solar redevelopment, and specifically whether there is an opportunity to either use a combination of existing sites or set up a land compensation agreement to establish an economic solar facility.

A web-based tool for assessing sites using an LPR methodology will be demonstrated as part of the presentation.

### Ian Mitchell

Ian Mitchell has over 25 years of experience focused on contaminated sites risk assessment and environmental guideline development. He was involved in the development of the Alberta Tier 1 and Tier 2 guidelines, the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, and the CCME protocols for soil, groundwater and soil vapour guidelines. Recently he has been focused on applied research initiatives aimed at modernizing risk-based approaches for contaminated sites and removing barriers to site closure.

### Andre Christensen

Andre Christensen has 10 years of experience in environmental risk assessment, data modelling, and site assessment, with a focus on environmental data collection, automation and analytics. He is currently the Product Development Manager at Millennium, where he is overseeing the development and implementation of web-based applications from backend design to frontend data analytics and visualization outputs.

### Janice Paslawski

Janice Paslawski has over 30 years of experience as an environmental engineer, with a focus on human health and ecological risk assessments for contaminated sites and environmental releases. She has provided support to several provincial and national regulatory agencies establishing and implementing risk-based standards and guidelines and developed models for emerging environmental contaminants. Since 2008, she has conducted research and provided critical evaluation of research proposals for the University of Saskatchewan and McGill University.

### Cory Kartz

Cory Kartz has a background in soil physics and over 10 years of contaminated sites investigation, risk assessment and risk management experience. He has experience with environmental fate and exposure modelling; soil, vegetation and wildlife surveys; and development of site-specific guidelines and risk-based management strategies to minimize remedial cost and liability while ensuring risks to human health and the environment are managed.