

Site Restoration of a Remediation Excavation in a Sensitive Site Setting – Columbia National Wildlife Area, an Update

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In 2017, SLR presented on remedial works which had occurred at the Columbia National Wildlife Area (NWA) located in the Southern Rocky Mountain Trench of British Columbia, near the towns of Invermere and Radium. This NWA comprises a series of wetlands adjoining the headwaters of the Columbia River and is divided into four units which have been managed by the Canadian Wildlife Service since the 1970s. This NWA provides important breeding and resting habitat for migrating birds as they travel along the Pacific Flyway and also provides an important habitat for non-migratory wildlife, including several species at risk. Our project site is located within the Wilmer Marsh Unit of the Columbia NWA and comprises a bench-land of fine grained glaciolacustrine sediments which slopes steeply down to the marshlands of the meandering Columbia River, located 60 m below.

Prior to, and following its designation as an NWA, the subject site was used as an unofficial refuse dump for several decades. Several environmental assessments and remediation phases conducted between 2002 and present have revealed extensive refuse depositions comprising automobiles, construction materials, metal debris and general household refuse. Waste materials had been dumped within the marsh, cast down the face of the slopes, and had been buried in the upland area of the site. Car bodies had also been used as the foundations of a trail built to access the marsh from the bench. Contaminants of concern comprising metals, polycyclic aromatic hydrocarbons and petroleum hydrocarbons were encountered in the soil, sediment and surface water associated with the debris.

Various debris and soil removal programs have been completed between 1997 and 2017, removing over 9,000 tonnes of debris and associated contaminated soil. The location of this debris and contaminated soil in sensitive ecological habitat, combined with steep, unstable slopes and geotechnically sensitive soils made the execution of

remediation programs technically and logistically challenging. The various remediation programs required the bringing together a team of specialists comprising an earthworks contractor utilizing specialist earthworks equipment, biologists, geotechnical specialists, contaminated sites specialists and the responsible regulatory agencies to ensure that objective of safely removing as much debris as possible from the slopes was met; whilst also limiting disturbance of the sensitive environment

This presentation will provide delegates an update on restoration activities which have occurred since 2017. Work which has been completed over the past five years has included monitoring and adaptive management of erosion control measures, trials and lessons learned in planting of native vegetation within challenging terrain, monitoring of use by wildlife, and thoughts on what will be needed to finally close the site after over 10 years of remediation and restoration work.

Kate Lindfield

Kate Lindfield, M.Sc., P.Geo. Ms. Lindfield is a Professional Geologist in Alberta and British Columbia, with 19 years of experience in the environmental consulting industry (13 years with SLR in Canada). Ms. Lindfield has been involved with this project since 2016 and project managed the 2016/2017 remediation program and subsequent restoration.

Kalina Noel

Kalina Noel, M.E.Des., P.Biol., RPBio., is a Senior Ecologist with 16 years of experience in the environmental consulting industry (12 years with SLR). Ms. Noel has been the project environmental monitor and QEP for the project since 2011 and has been involved in the restoration works including erosion control monitoring, planting, and wildlife monitoring.