

Remediation and Restoration of Altered Landscapes

Why Native Plants?



When properly introduced to an environment that has been changed significantly, native plants provide a viable and cost effective alternative for remediating and restoring degraded or contaminated sites.

Phytoremediation is the use of plants to remove, contain or render harmless environmental contaminants. It provides an attractive alternative to more expensive and labor-intensive engineering approaches to treat contaminated or degraded soils, and altered habitats.

Native species are the clear choice for environmental stewardship. As indigenous species they naturally adapt to the climatic and environmental conditions they grow in, making them a truly sustainable choice.

Native grasses provide long-lived, low maintenance and aesthetically pleasing ground cover. Each stand of native species is customized so there is always vegetative cover on the land as growing conditions change with the seasons. Certain species are better suited to the cool, moist periods of spring and fall while others tolerate the drier, hotter summer period.

Once established, native uplands are low maintenance. They require, on average, rejuvenation once every five years through various management techniques. This means lower maintenance costs over the long-term.



Economic Benefits

- ✓ Low maintenance: no need to water or fertilize
- ✓ Minimal mowing/thatch management

Environmental Benefits

- ✓ Native plants promote the removal of pollutants through processes such as uptake and concentration, transformation, stabilization and rhizosphere degradation.
- ✓ Native species are resilient against the establishment of weedy and invasive species. They possess better defense systems against pests and diseases than non-native species.
- ✓ Their deep roots can sequester significant amounts of atmospheric carbon.
- ✓ Native plants provide exceptional habitat and shelter from the elements for wildlife.
- ✓ Their structure both above and below the soil surface aid in managing wind, water and soil erosion.

Applications

- ✓ Parking lots and transportation rights of way (ROWs)
- ✓ Mine tailings reclamation
- ✓ Brownfield reclamation
- ✓ Erosion-prone sites



Why Native Plant Solutions?



In order to ensure successful remediation with native species, an understanding of ecological systems and their biological/chemical processes is required. Native Plant Solutions (NPS) is the most experienced company in Canada when it comes to remediation with native species and creating sustainable landscapes. We have remediated thousands of acres in western Canada ranging from industrial urban sites to natural settings.

A healthy landscape has many micro-environments that support different combinations of native plant species. Based on our years of experience, we provide planting designs that reflect our understanding of the physical environment and unique plant characteristics. Each site plan is based on sound scientific practices.

A detailed step-wise plan, from pre-seeding to post-establishment, is crucial for successful remediation with native species. NPS provides you with concepts and on-the-ground products that work.



Our Expertise

- ✓ NPS staff are specialists in upland, wetland, aquatic and environmental sciences.
- ✓ We employ cost-effective techniques that match the appropriate native species with your site's environmental conditions.
- ✓ Our techniques deliver high quality results that provide immediate ecological benefits.
- ✓ Our plantings are designed to withstand a variety of site conditions.
- ✓ Our breadth of experience allows us to provide you with sound strategies for both short and long-term site management that significantly reduce your maintenance costs.

We offer...

- ✓ Site assessment
- ✓ Plant selection and procurement
- ✓ On-site supervision
- ✓ Post-planting management
- ✓ Supporting research
- ✓ Design
- ✓ Site preparation
- ✓ Installation of selected plant material
- ✓ Ongoing consultation



Manibridge Mine Revegetation



Project proponent: AMEC
Location: near Thompson, Manitoba

Project description: Remediation of a 20-hectare mine site that was decommissioned for over 30 years. The un-amended tailings medium was highly saline and considered toxic to plants. NPS conducted an initial inventory of vegetation on-site and in the surrounding area, and performed analysis and evaluation of soil (tailings) samples. A series of greenhouse studies and field trials were designed, installed, conducted and data analyzed to evaluate re-vegetation options. Successful establishment of permanent vegetation was realized on the tailings area.



Assiniboine Forest

Project proponent: Charleswood Rotary Group/City of Winnipeg
Location: Assiniboine Forest, Winnipeg, Manitoba

Project description: Brownfield reclamation of an abandoned landfill. Native NPS selected grass and forb species for the site, oversaw site preparation and seeded the five-hectare area.

Niverville Lagoon System: *An investigation of an alternative approach to bioremediation*



Project proponent: Town of Niverville
Location: Niverville, Manitoba

Project description: The intention of Niverville was to decommission their traditional wastewater treatment lagoon in an environmentally friendly, sustainable and economic manner. NPS proposed *in situ* treatment of bio-solids (sludge) using phyto- and bio-remediation and worked with both Niverville and the Manitoba Government to undertake this exciting new option for lagoon decommissioning.

Decommissioning lagoons through bio- or phyto-remediation had never been undertaken in Canada. As project managers, NPS conducted the wetland design and commissioning, as well as oversaw construction and installation of this ground-breaking study. In order to ensure delivery of scientifically-defensible results, NPS also partnered with researchers and graduate students at the University of Manitoba to conduct a series of greenhouse experiments and field trials.



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NativePlantSolutions.com

Phone: 1-800-665-3825

Email: nps@ducks.ca

Native Plant Solutions is a consulting branch of Ducks Unlimited Canada and draws on over 70 years of wetland and native grassland knowledge, research and restoration experience. We use sound science to restore and create sustainable landscapes.