



**Native Plant  
Solutions**

A proud division of Ducks Unlimited Canada

# Providing Natural and Sustainable Solutions

Native Plant Solutions (NPS) is a consulting branch of Ducks Unlimited Canada. We draw on more than 85 years of wetland and native grassland knowledge, research and remediation experience in every project we undertake, using sound science to preserve and create sustainable landscapes.

Established by Ducks Unlimited Canada to provide science-based solutions for creating and remediating wetland and upland ecosystems across Canada, the key to our success lies in our experience in creating, researching and managing natural landscapes. The ability to do all three in-house puts NPS in the unique position to service the needs of a wide range of clients.

## Our services

- ✓ Naturalized stormwater design, construction and establishment
- ✓ Native grass upland design, site preparation and establishment
- ✓ Remediation of altered landscapes
- ✓ Reclamation of riparian areas
- ✓ Treatment wetlands for wastewater and water quality improvements
- ✓ Green roof design and installation services
- ✓ Ecological services
- ✓ Knowledge products

## Our expertise

- ✓ NPS staff are native plant specialists experienced in applying scientifically proven natural solutions.
- ✓ We specialize in upland, wetland, aquatic and environmental sciences.
- ✓ We possess expertise in wetland and native grassland ecology, agrology, soil science, environmental contaminants, weed management, site remediation, avian biology and GIS technologies.
- ✓ NPS employs cost-effective techniques that customize the appropriate results for your project's environmental goals and conditions.
- ✓ NPS expertise includes specialists in ecology, agronomy, soil science and engineering.

## Why choose Native Plant Solutions?

- ✓ NPS uses natural processes and native vegetation to create, reclaim and remediate landscapes.
- ✓ Our products and services are science-based, employing ecologically sound strategies and best management practices.
- ✓ We use adaptive management to optimize our deliverables; continually improving our products and services, as well as your bottom line.
- ✓ Our team of specialists provide high-quality results that are specially designed to succeed in variable environmental conditions.
- ✓ Our projects can provide additional benefits that include biodiversity enhancement, climate resiliency and improved watershed function and health.
- ✓ NPS staff have vast experience in habitats all across Canada.
- ✓ We can manage your project from start to finish.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



# Naturalized Stormwater Systems

Native Plant Solutions (NPS) pioneered the movement towards naturalized stormwater retention basins in Canada by creating functional and sustainable stormwater systems. From our first naturalized basin in 2002, NPS has designed and established more than 100 naturalized stormwater retention basins for clients and jurisdictions across Canada.

## Why naturalize your stormwater facility?

**Community benefits** — Naturalized stormwater retention basins create attractive and inviting community spaces that connect residents with nature.

**Ecological benefits** — Unlike conventional stormwater retention basins, naturalized basins incorporate natural biological processes designed to improve water quality and watershed health. **Ecological benefits include:**

- ✓ Improved water quality
- ✓ Climate resiliency, including increased carbon sequestration and decreased greenhouse gas emissions, as well as maintaining or enhancing local biodiversity by using native plants
- ✓ Improved biological support for species such as birds, dragonflies and other wildlife

### Economic advantages

- ✓ Rock and soil do not need to be imported
- ✓ Basin construction can occur during slower times of the year
- ✓ Future maintenance costs of the native grass uplands are much less than maintaining sod
- ✓ No maintenance required to remove/manage unwanted algal blooms or vegetation
- ✓ Data shows higher property values around naturalized retention basins



## Our services

- ✓ Site assessment, pond design, plant selection and procurement
- ✓ Tender package preparation and assistance
- ✓ On-site construction services, plant installation and establishment, and weed control
- ✓ Operational and maintenance manuals at the time of project handoff
- ✓ Communication and regulatory support for clients and their communities

## Why choose Native Plant Solutions?

NPS is the most experienced company in Canada with respect to naturalized stormwater design, construction, establishment and management. Our proven track record means that we do not need to 'experiment' with your naturalized system at your expense.

Our naturalized pond services are science-based, employing ecologically sound and scientifically proven approaches based on our knowledge of wetland plant and upland native grass ecology, seed/plant selection, and plant establishment in wet and temporarily flooded environments.

We employ cost-effective designs and techniques that provide the highest quality habitat possible based on your project's requirements.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



# Native Grass Uplands

Native species are the clear choice for environmental stewardship. Being naturally adapted to the climatic and environmental conditions they grow in makes them a truly sustainable choice for your landscape.

## Why native uplands?

**Adaptability** — Native grasses provide long-lived, low maintenance and aesthetically-pleasing ground cover. Each stand of grasses is customized, so there will always be vegetative cover on your land as growing conditions change from season to season. Certain native species are better suited to cool, moist periods of spring and fall while others tolerate the drier, hotter summer period. When domesticated grass species (like turf and sod) are dormant during hot summers, your native upland plants will still be green.

**Water conservation** — Native grasses are deep-rooted, making them tolerant to drought, as they can access water found deep in the soil. Due to these deep roots, they require no additional watering during drought or dry summers. They also conserve water by improving water infiltration deep into the soil. Certain native species also perform well in areas susceptible to seasonal flooding due to their ability to tolerate short periods of inundation.

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

**Biodiversity** — Native grasses provide habitat and food resources for a diverse community of birds, insects and wildlife.

## Our services

- ✓ Site assessment, design, plant selection, and procurement
- ✓ Site preparation and on-site construction services
- ✓ Native grass seeding
- ✓ Weed suppression strategies and weed control
- ✓ Post-planting management
- ✓ Operational and maintenance manuals at the time of project handoff
- ✓ Communication and regulatory support for clients and their clientele

## Why choose Native Plant Solutions?

NPS is the most experienced company in Canada in designing and establishing native grasslands. We have planted thousands of acres of native grasslands across Canada in urban and rural environments. Our native grassland services are science-based, employing ecologically sound and proven approaches based on our knowledge of native grass species, native grass ecology and plant establishment.

Every landscape has many micro-environments that require different combinations of native plant species. We provide strategies and designs that reflect that environmental variability. Our techniques provide high-quality results that can withstand a variety of weather conditions and provide immediate ecological benefits.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



# Ecological Services

To proceed with confidence that your project will meet expectations and regulatory requirements, Native Plant Solutions (NPS) can support your company by providing pre- and post-project completion ecological information, field data collection, data interpretation and data analysis. NPS brings you peace of mind in knowing you took a scientifically defensible approach to development.

## Our services

**Ecological surveys, monitoring and research** — Ecological investigations can be designed to inventory biota in an area, identify regions of high biodiversity and assess habitat types. They can be structured to collect data on sensitive species or capture more rigorous data on habitat variables that support ecosystem functions in an area. Ecological surveys provide base-line data prior to landscape and development projects. They help direct activities to minimize adverse environmental effects and ensure proper steps are taken to preserve, mitigate or recreate habitats. They can also monitor a suite of habitat variables and fauna once development has occurred. **NPS ecological services include:**

- ✓ Water and soil sampling, testing and interpretation of results
- ✓ Water and land mapping and inventory
- ✓ Habitat assessments including vegetation and rare species inventories
- ✓ Wildlife surveys, inventories and identification
- ✓ Research project design and sampling strategies
- ✓ Data interpretation, statistical analysis and report writing
- ✓ State of knowledge reports and literature reviews
- ✓ Geo-spatial mapping and analysis
- ✓ Best management practices recommendations and strategies

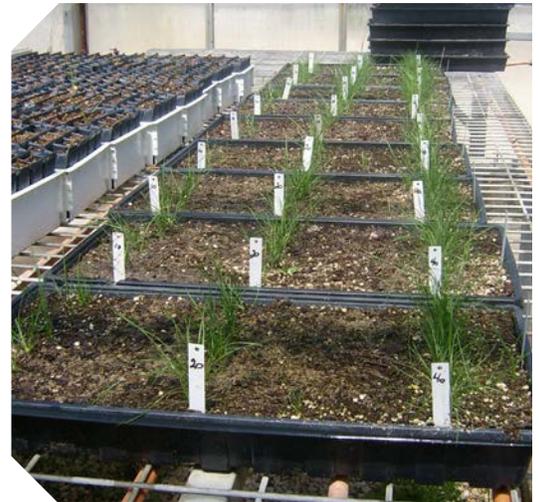
**Quality assurance and environmental audits** — NPS can provide third-party verification and site inspections for clients to support reporting and regulatory requirements.

**Geographic Information Systems (GIS) products** — NPS has extensive experience in digitizing, classifying, analyzing and managing wetland and upland geo-spatial land products. We understand the importance of GIS products in project planning and delivery.

## Why choose Native Plant Solutions?

NPS staff have experience in Canadian ecological landscapes across the country. Whether it is terrestrial or aquatic zones in the Arctic, our boreal forests, prairies or on the coast, NPS has designed and conducted research studies, constructed and managed wetlands and planted native grass uplands in every region of the country.

Our network of contacts in the scientific and technical community allows us to bring the most effective skill set and knowledge base to your project. Through partnerships and collaboration, we present the best information so you can act with confidence.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://www.nativeplantsolutions.ca)



Native Plant  
Solutions

# Treatment Wetlands

Treatment wetlands are human-made, engineered systems that use natural wetland elements like plants, algae, microbes, light, water and soils to improve water quality. The benefit of these systems is that they can provide high-efficiency water quality treatment with very low operator input.

Combining the benefit of low operations and maintenance with high treatment efficiency has led to their application in systems such as stormwater and Low Impact Development (LID) facilities, municipal wastewater lagoons, mining operations, landfills, agricultural and livestock operations.

## Why consider treatment wetlands?

**A sustainable choice** — Treatment wetlands utilize biotic and abiotic mechanisms to render contaminants innocuous via natural processes such as sorption, uptake, transformation, translocation, microbial degradation and photolysis. Once the system is established, the wetland does the work for you — no need to add additional chemicals or mechanical processes to reach your water quality targets.

**Economic advantage** — Native plant species are naturally adapted to our climate and environmental conditions. This makes them a truly sustainable, low-cost option for treatment purposes. They provide a long-lived and low-maintenance solution that will help reach your treatment targets every year, and offer a low-cost decommissioning option at the end of their lifespan. When designed properly, no vegetation harvesting is required.

**Ecological benefits** — Our research shows the water quality flowing from our treatment wetlands is often better than the receiving waterbody. This ensures your receiving environment is always accepting the best water possible.

As living systems, treatment wetlands provide habitat for many species of insects, birds, amphibians and other wildlife, with their plants and soils sequestering significant amounts of atmospheric carbon as well.

## Our services

- Site design, plant selection, procurement and plant establishment
- Site preparation and on-site construction services
- Post-planting management and site commissioning
- Water and soil testing, and interpretation of the results
- Operational and maintenance manuals at the time of project handoff
- Regulatory support for our clients, including project reporting

## Why choose Native Plant Solutions?

NPS is the country's leader in the design, construction and commissioning of treatment wetlands. We are proud of our reputation for delivering projects to our clients that are environmentally and financially sustainable. We can provide you with the specialized team these projects require: plant specialists, engineering, water and soil experts and environmental contaminant specialists.

The key to successful treatment using wetlands is to ensure the amount of vegetation required for treatment is matched with treatment needs based on flow inputs and the contaminants of concern. This important relationship drives wetland cell design and sizing, and it is often overlooked in wetland designs.

To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



Native Plant  
Solutions



## Green Roofs

Green roofs are sprouting up in cities across Canada. They inject a spot of green into urban landscapes and take nature to new heights.

### Why choose a green roof?

**Water conservation** — Because they can retain much more rainfall than conventional roofs, green roofs improve the water quality and reduce the volume of stormwater runoff into our sewer systems.

**Economic advantage** — Green roofs improve energy consumption by acting as building insulators to reduce heating costs in winter and by lowering cooling costs in the summer, thereby moderating the 'heat island effect'. They can also form a protective layer extending the life of a roof membrane.

**Community and biodiversity benefits** — Green roofs reduce the visual footprint of buildings, making urban centres a more attractive place to work and live. They provide habitat for insects and birds, bringing nature closer to city dwellers. Transpiration by plants and surface evaporation also have a cooling effect in the immediate vicinity, reducing summer temperatures and turning rooftops into usable public spaces.

### Our services

NPS can manage your project from start to finish. This includes site design, plant selection and procurement, tender package preparation, construction services, native plant seeding, plant establishment services and ongoing site management. We can also provide:



- ✔ Site assessment
- ✔ Weed suppression strategies and weed control
- ✔ Post-planting management
- ✔ Operational and maintenance manuals at the time of project handoff
- ✔ Communication and marketing support for our clients and their clientele

### Why choose Native Plant Solutions?

To successfully establish a green roof, an understanding of biological systems and their processes is essential. **Key factors that determine the success of a green roof include:**

- ✔ Selection of the appropriate native plant species is based on the specific roof conditions
- ✔ An understanding of nutrient requirements for species growing in a customized growth media
- ✔ A sound establishment and maintenance plan, so seeds of unwanted weed species do not take hold

We understand the significance of these factors and incorporate them into building a successful green roof product for you. Our team consists of professionals specializing in upland plant ecology, plant establishment, soil science and engineering. We possess the solid experience required to design and establish a green roof successfully.

To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://www.nativeplantsolutions.ca)



# Riparian Reclamation

The interface, or transitional zone, between aquatic and terrestrial areas in a landscape is known as the riparian zone. These zones are rich in biodiversity and play a critical stabilizing role at this aquatic-terrestrial interface.

## Why reclaim riparian areas?

**Shoreline stability** — Shoreline and riparian vegetation lend stability and erosion protection to riverbanks and shorelines, preventing the loss of valuable waterfront habitats and supporting biodiversity in a way hard bank stabilization products cannot.

**Water quality improvement** — Riparian vegetation traps sediment and nutrients from surface water and groundwater before they reach the water's edge, improving water quality downstream and throughout a watershed.

**Flood attenuation** — Healthy riparian plant communities can mitigate the impact of flooding. During inundation events, riparian areas store water that is then released slowly during periods of lower flow. They also help to dissipate and absorb water energy during flooding and higher flow events.

**Biodiversity** — The aquatic and non-aquatic plants found in riparian zones provide vital habitat for many species of insects, birds, fish, amphibians, and other wildlife.

**Temperature** — Riparian plant communities help regulate water temperature through mechanisms like shading. This is important in nutrient cycling and critical in the productivity of certain species of freshwater fish.

## Our services

- ✓ Staff that specialize in upland, wetland and aquatic species, soil science and engineering
- ✓ Years of on-the-ground experience that allow us to develop effective and efficient techniques, providing quality results and immediate ecological benefits for your site
- ✓ Site assessment, site design, plant selection and procurement
- ✓ Tender package preparation
- ✓ Construction supervision, installation of selected plant material and post-planting establishment
- ✓ Communication and regulatory support for our clients and their clientele

## Why choose Native Plant Solutions?

NPS has pioneered various techniques in 'greening' structures used for bank stabilization, and we understand the factors that result in reclamation success. **This includes:**

- ✓ Selection of the appropriate plant species for each ecological area of a stream, river (e.g., toe, bank and overbank zones), marsh and lake (e.g., emergent and wet meadow zones)
- ✓ The correct timing of planting
- ✓ Designs that consider the nature of local hydraulic forces on plant selection, plant positioning and plant survivability



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



# Remediation of Altered Landscapes

Native plants provide a viable alternative for remediating contaminated sites. **Phytoremediation** takes advantage of native plant processes to remove, remediate or contain environmental contaminants. It provides an attractive alternative to more expensive and labour-intensive engineering approaches to treat contaminated or degraded water, soils and altered habitats.

## Why use native plants to remediate?

**A sustainable choice** — Native plant species are naturally adapted to our climatic conditions in Canada. This makes them a truly sustainable choice for remediation. They provide long-lived and low-maintenance ground cover. Each stand of native species can be customized to your location so there is always vegetative cover on the land throughout the remediation process, and as growing conditions change with the seasons.

**Economic advantage** — Native uplands are low maintenance. They require rejuvenation about every five years using various management techniques. This means lower maintenance costs, with no need to water or fertilize.

**Ecological benefits** — The deep rooting systems of native plants promote the remediation of pollutants through processes such as uptake and concentration, transformation, stabilization, volatilization and rhizosphere degradation. Once established, they are also resilient against nuisance and invasive species, and they possess better defence systems against pests and diseases than non-native plant species.

Their deep roots also sequester significant amounts of atmospheric carbon while their aboveground plant structures provide quality habitat for wildlife while managing the impacts of wind, water and soil erosion.



## Where to remediate?

- ✓ Parking lots and transportation rights of way (ROWs)
- ✓ Mine tailing and brownfield sites
- ✓ Contaminated soils and waters
- ✓ Erosion prone locations

## Our services

- ✓ Site assessment, site design, plant selection and procurement
- ✓ Site preparation, on-site construction services, including installation of selected plant material
- ✓ Post-planting management and weed control
- ✓ Water and soil testing, and interpretation of the results
- ✓ Regulatory support for clients, including project reporting

## Why choose Native Plant Solutions?

NPS specializes in water and soil chemistry, environmental contaminants and the fate of these contaminants when left unmanaged. Added to this is our in-depth knowledge of aquatic, riparian and upland native plants, and their potential to remediate altered soils and waters depending on the contaminants of concern.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)



# Performance Improvement Solutions

Our team understands the pressures and time constraints you face in the delivery of your work. Traditional consulting often relies on a cookie-cutter approach, but at NPS we understand that every client is unique as are the challenges they face. We are here to work with you to individualize our services so that you can be successful.

## Our services

**State of Knowledge reports** — Timely and current information allows for businesses to operate effectively and efficiently within the environmental and regulatory climate.

State of Knowledge reports are invaluable. They synthesize current scientific and environmental information and identifying key knowledge gaps and strategies for moving ahead with your project. When you identify gaps before a project is underway, you can flag areas where research, reconnaissance or recommendations from experts are needed. This puts you a step ahead of the competition.

A State of Knowledge reports helps to minimize problems on the ground, and it highlights areas that may need altering or indicate(s) the implications of actions before they occur. Reports compiled by NPS experts offer practical insights, on-the-ground experience and environmental solutions based on sound science.

**Training and workshops** — Third-party training and workshops led by NPS professionals with both scientific and on-the-ground experience can support your in-house training needs. We can assist your staff in improving their understanding of the landscapes they're working in and help them gain the knowledge they require. NPS offers one-on-one, on-site classroom and field-based training and workshops, which can be tailored to suit the information needs of your team. Our topics, from scientific and technical to general interest, are immediately applicable and include subjects such as:

- ✓ Soil development, classification and characterization in upland and wet environments
- ✓ Wetland classification, ecology, delineation and mitigation strategies
- ✓ Plant selection and plant establishment in wet environments
- ✓ Naturalized stormwater design, establishment and management needs
- ✓ Native upland plant ecology and naturalization techniques
- ✓ Weed suppression strategies and weed control methods
- ✓ Water/ land mapping using geo-spatial mapping and analysis tools
- ✓ Treatment wetlands for wastewater improvement
- ✓ Data collection, data interpretation and field survey techniques
- ✓ Phytoremediation tools for the remediation of altered landscapes

## Why choose Native Plant Solutions?

NPS staff has extensive scientific and technical expertise in wetland, upland, aquatic and wildlife sciences. Our network of contacts within the scientific and technical community allows us to stay on top of leading-edge information and environmental solutions.



To learn more about NPS, our projects and expertise, visit [nativeplantsolutions.ca](https://nativeplantsolutions.ca)