Soil Containment and Minimal Lawn Maintenance Program

Environmental Protection and Sustainable Landscape Management

1. Soil Conditions and Environmental Concerns

The park is located on historically filled land containing soil brought from various locations throughout the city. Over time, the property was affected by road construction, sewer installation, and the dumping of materials. These activities contributed to elevated levels of contaminants in the soil, primarily lead, along with other potentially hazardous substances.

Because of this history, the property is considered a brownfield, meaning that the soil contains contaminants that can complicate its use, restoration, and management.

Previous restoration projects have confirmed the challenges associated with managing this material. During work involving the adjacent marsh, excess soil and sediment could not be removed through conventional disposal channels because of elevated chemical concentrations. The material was not acceptable for disposal at the state landfill or standard solid waste facilities.

These conditions make maintaining a stable vegetative cover particularly important. Exposed soil can become airborne as dust, be carried into surrounding residential areas, or move through surface runoff. Preventing soil exposure and erosion is therefore an important environmental management priority.

2. Grass as a Protective Soil Containment System

The park's lawn serves a purpose beyond its appearance or recreational use. **It functions as a protective vegetative cover that helps contain contaminated soil and reduce the potential for human and environmental exposure.**

A healthy, continuous lawn helps stabilize the soil through its root system, while the grass and clover provide a surface barrier that limits direct contact with underlying soil. This vegetation also reduces the likelihood that contaminated particles will become airborne or be transported by stormwater into surrounding neighborhoods and nearby coastal waters.

If the lawn deteriorates, bare patches can expose the contaminated material. Maintaining a healthy grass cover is therefore an essential component of the property's environmental management.

The lawn was developed with guidance from the University of Rhode Island, whose recommendations informed the selection of grass varieties suitable for the property's environmental conditions and recreational use.

The selected lawn incorporates:

- **Tall fescue:** A durable grass known for its tolerance of foot traffic and ability to withstand demanding conditions.
- **Clover:** A nitrogen-fixing plant that naturally contributes nitrogen to the soil, reducing the need for synthetic nitrogen fertilizer.
- **A sustainable grass mixture:** Selected to maintain reliable ground coverage while limiting chemical inputs and supporting regular public use.

This combination provides a resilient vegetative cover capable of tolerating recreational activity while reducing the need for intensive lawn care.

The use of clover is especially beneficial because it reduces reliance on nitrogen fertilizers, helping limit nutrient runoff into the adjacent bay and supporting a more environmentally responsible approach to landscape management.

3. Three Seasonal Applications and Their Purposes

The park follows a limited maintenance schedule consisting of two principal lawn treatments and one seasonal soil amendment. Each application serves a specific purpose related to preserving the lawn's protective function. All products are considered safe for humans, including children, and pets.

Spring: Pre-Emergent Weed Control and Fertilization

The first treatment takes place in the spring, when the lawn begins its annual growing cycle.

An encapsulated fertilizer combined with a pre-emergent weed-control treatment is applied to encourage healthy grass growth while limiting the establishment of crabgrass and other competing weeds.

This application serves two important purposes:

1. **Promoting vigorous grass growth:** Fertilization helps the existing grass recover from winter conditions, develop healthy roots, and maintain dense coverage over the contaminated soil.
2. **Reducing competition from weeds:** Pre-emergent treatment limits the establishment of undesirable plants, particularly crabgrass, that can compete with the established turf and compromise its uniform coverage.

The treatment is scheduled in anticipation of significant rainfall, consistent with the product's application requirements. Rainfall helps activate the treatment and move nutrients into the soil.

The encapsulated formulation is intended to provide controlled delivery of the treatment.

Summer: Grub Prevention and Protection of Grass Roots

The second treatment is applied during the summer and is designed to prevent damage from grubs.

Grubs are soil-dwelling insect larvae that feed on grass roots. Significant infestations can destroy sections of lawn, leaving dead grass and exposed soil.

This is a particularly important concern at the park because the loss of grass cover can expose contaminated soil to wind, water, and direct contact.

Past experience has demonstrated the importance of this treatment. When grub prevention was omitted, substantial areas of lawn were damaged, requiring extensive reseeding to restore the protective vegetative cover.

The summer application therefore serves as a preventive measure to preserve the lawn's root system, maintain continuous ground coverage, and avoid the more disruptive and costly process of repairing damaged turf.

Fall: Lime Application and Soil Conditioning

The third seasonal application generally takes place in the fall and consists of applying agricultural lime.

Lime is used to adjust soil acidity when needed, helping maintain conditions favorable for healthy grass growth and nutrient availability.

The purpose of the fall application is to support the long-term health and resilience of the established lawn, particularly as it prepares for winter dormancy and the following spring's growing season. Maintaining suitable soil pH can also influence the mobility and availability of certain contaminants.

Together, the spring, summer, and fall applications address the primary threats to maintaining continuous, healthy vegetation.

4. Minimal Maintenance as an Environmental Protection Strategy

A conventional residential or commercial lawn may receive five or more chemical treatments during a growing season. In contrast, the park's maintenance program uses only two principal lawn treatments annually, supplemented by a fall lime application when appropriate.

This reduced treatment schedule is an intentional strategy designed to maintain the minimum level of intervention necessary to preserve the lawn's protective soil-containment function.

The program minimizes chemical and fertilizer use while addressing the specific conditions that could cause the lawn to deteriorate.

Several factors make this reduced maintenance approach possible.

First, the selection of traffic-tolerant tall fescue helps the lawn withstand regular public use without requiring frequent reseeding or intensive care.

Second, the incorporation of clover provides a natural source of nitrogen, reducing the need for additional synthetic fertilizers and helping minimize nutrient runoff into the adjacent bay.

Third, the limited seasonal applications are targeted toward preventing the most significant threats to continuous grass coverage: weed competition in the spring, root damage from grubs during the summer, and unfavorable soil conditions that may affect long-term turf health.

Finally, treatments are scheduled with attention to weather conditions and the application requirements of the selected products, helping improve their effectiveness and avoid unnecessary applications.

The goal is not to maintain a perfectly manicured lawn. Rather, it is to preserve a durable, healthy, and continuous vegetative barrier over soil known to contain elevated contaminant levels.

5. Historical Restoration and Sustainable Management

The current lawn-management strategy developed in part from the park's restoration following Hurricane Sandy.

During that period, storm damage and the movement of heavy equipment through the property significantly affected the landscape. Restoration required repairing damaged lawn areas and establishing a more resilient vegetative system.

As part of that process, the park sought guidance from the University of Rhode Island regarding grass varieties capable of tolerating heavy traffic while requiring relatively little nitrogen fertilizer.

These recommendations helped establish the present mixture of durable turfgrass and clover.

The restoration work was also connected to grant funding and efforts to secure historic recognition for the property. The park's landscape restoration was distinguished as the only landscape project funded through the referenced grant program.

The resulting approach reflects a commitment to preserving the park's historic landscape, protecting the surrounding environment, and maintaining its use as a public recreational space.

6. Conclusion

The park's lawn is an important environmental safeguard, not simply an aesthetic landscape feature.

Because the underlying fill contains elevated concentrations of lead and other contaminants, maintaining continuous vegetative coverage contains contaminated soil keeping it from becoming exposed, airborne, or transported into surrounding areas.

The carefully selected combination of tall fescue and clover provides a durable, low-nitrogen lawn capable of tolerating public use while reducing dependence on conventional fertilizers.

The three seasonal applications—spring pre-emergent weed control and fertilization, summer grub prevention, and fall lime treatment—are designed to address the principal threats to the continued health of that protective grass cover.

This program represents a minimal, targeted approach to lawn maintenance that prioritizes environmental protection, soil stabilization, and long-term sustainability over cosmetic lawn care.

Maintaining the grass is therefore not optional landscaping maintenance. It is an ongoing protective measure intended to help keep contaminated soil in place, reduce potential exposure, and preserve the park as a safe and usable public landscape.