

EXCERPTED FROM: CITY OF NORCROSS LANDSCAPE MAINTENANCE SPECIFICATION

2.1. Integrated Pest Management (IPM)

A. Goals

1. **An integrated pest management program shall be implemented to:**
 - **Maintain healthy, attractive plants, maximize resistance to pests and out-compete weeds**
 - **Monitor for presence of pests and to evaluate pest impact on plant health and appearance and nuisance to the public**
 - **Provide control treatments that have minimal negative effects on all but the pest and that protect air and water quality**
2. **Contractor shall assume pesticides are potentially hazardous to human and environmental health. Preference shall be given to reasonably available non-pesticide alternatives when considering the use of pesticides on City property.**

B. Insects and diseases

1. Target plants and pests

The Contractor shall identify the problematic plant species and cultivars in the landscape (target plants) and the pests that commonly cause significant harm to these plants (target pests).

2. Monitoring

The Contractor shall monitor landscape areas to identify presence of beneficial insects and pests, determine populations, life stage, and degree of damage to plants. Target plants and pests will be monitored closely during normal periods of pest activity. This information will be the basis on which pest control methods are initiated. Records of monitoring activity shall be kept.

3. Controls

Norcross Landscape Maintenance seeks to control pests without harming non-target organisms, or negatively affecting air and water quality and public health. It relies on IPM which uses a range of cultural, mechanical, physical, and biological control methods **before using pesticides**. Chemical controls are applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control is applied.

Pesticides are not to be applied on a prescheduled basis.

a. Cultural/mechanical/physical methods

A number of maintenance practices or modifications of them can make the environment unfavorable for pest reproduction, movement, or survival. Often simply modifying an existing maintenance practice, such as timing of pruning or fertilization, can produce positive results. Other mechanical or physical practices may specifically combat plant pests or increase host resistance. Key treatments include:

- Fostering a healthy soil, judicious fertilization only when needed, and managing irrigation appropriately
- Pruning to remove infected or infested branches and shoots; time pruning to avoid periods of insect infestation, for example prune pines in the winter (December-February) when bark beetles and borers are inactive
- Removing fallen twigs, leaves, and fruit that contains disease inoculums
- Mulching soil surface to reduce weeds and to reduce splashing and the drops of mud that would protect spores deposited on plant surfaces
- Trapping insects using sticky surfaces (also used for monitoring); using mechanical traps to control rodents
- Bringing to attention of Representative 'target plants' that are disease or insect prone and suggesting resistant plant replacements or those better suited to the site and microclimate

b. Biological methods

Biological controls are pesticides of natural origin that have limited or no adverse effects on the environment or beneficial organisms. Determining the effective biological control and proper timing of application are critical to success in pest control. The Contractor shall consider the following biological control methods when cultural/mechanical/physical methods are not adequate to lower pest populations to the target level.

- Bacillus thuringiensis (bt)
- Parasitic nematodes
- Pheromone traps
- Beneficial insect release and conservation

c. Pesticides

The term pesticide applies to insecticides, fungicides, and other substances used to control pests. Antimicrobial agents are not included in this definition of pesticides.

- 1) Pesticides shall not be applied within one hour of the start of operating hours for businesses at the site. In the event that it is not possible to complete the application by one hour prior to business hours (ie; 24 hour operations), applications shall be made at times when customer presence is minimal. Areas to be treated shall be blocked off and warning signs posted.
- 2) The Contractor shall take precautions to keep persons away from pesticide and herbicide-treated areas until the applied material is fully dry and the treated area is safe for entry. Follow the recommendations of the pesticide manufacturer and all applicable governmental and industry regulations.
- 3) Least toxic pesticides
When cultural, mechanical, physical and biological controls have provided inadequate pest control, the Contractor may select and apply an appropriate least-toxic pesticide as a last resort. **Least-toxic pesticides have a high LD-50, low residual and narrow range of toxicity.** Application must be timed to the appropriate life stage of the pest. Examples are:
 - Insecticidal soaps
 - Horticultural oils
 - Herbicidal soaps
 - Neem
 - Pyriproxyfen insect growth regulator (e.g. Distance IGR)
- 4) **Restricted chemicals**
Organophosphate-containing pesticides have been found to persist in the environment and cause water quality impairment of some creeks, streams, and rivers. They are restricted from use. Examples include:
 - diazinon (trade names Spectracide®, Knox-out®)
 - chlorpyrifos (trade names Dursban®, Pageant®)
 - malathion and carbaryl (trade name Sevin®)
- 5) Water quality agencies recommend against using pyrethroids and pyrethrins containing piperonyl butoxide (PBO). These chemicals are restricted from use. Pyrethrins are toxic to birds, fish, and beneficial insects, should be used only as a last resort, and carefully applied to avoid runoff and contact with non-target plants
- 6) **Contractor shall not apply any Toxicity Category I or II Pesticide Product, any pesticide containing a chemical identified by the State of Georgia as a chemical known to the State to cause cancer or reproductive toxicity and any pesticide classified as a human carcinogen, probable human carcinogen or possible human carcinogen by the United States Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances.**
- 7) All chemical applications shall be performed by a licensed, trained technician. The Contractor (or subcontractor) must be a licensed Pest

Control Operator as required by the State of Georgia, and strictly adhere to all laws.

4. Notice of pesticide use
 - a. Signs shall be posted at time of application of the pesticide product.
 - 1) Signs shall be posted (i) at every entry point where the pesticide is applied if the pesticide is applied in an enclosed area, and (ii) in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.
 - 2) Signs shall be of a standardized design that is easily recognizable to the public and workers.
 - 3) Signs shall contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the date for re-entry to the area treated, and the name and contact number for the City department responsible for the application.
 - b. The Contractor shall not be required to post signs in right-of-way locations that the general public does not use for recreational purposes. However, the Contractor shall notify the Representative in writing (7) seven days prior to pesticide applications in the right-of-way areas.
 - c. The Contractor may obtain authorization from the Representative to apply a pesticide without providing a (7) seven-day advance notification in the event of a public health emergency or to comply with worker safety requirements.
 5. Recordkeeping and reporting
 - a. The Contractor shall maintain records of all pest management activities. Each record shall include the following information:
 - Target pest
 - Type and quantity of pesticide used
 - Site of the pesticide application
 - Date the pesticide was used
 - Name of the pesticide applicator
 - Application equipment used
 - Prevention and other non-chemical methods of control used
 - b. The Contractor shall submit the pest management record to the Representative with the triannual checklist.
- C. Weed management
1. Landscapes shall be maintained in a healthy and attractive manner using Norcross Landscape Maintenance methods. Weeds in planted areas, sidewalks, curbs, gutters, or pavement shall be removed or killed weekly as the weeds emerge. Weeds shall be removed (not just killed) if they are larger than 2 inches (5 cm) in height or diameter. Dispose of weeds off-site.
 2. Identify key weeds.

The Contractor shall identify target weeds (pests) present and plan a weed management program to target those species.
 3. Invasive and poisonous plants.

Invasive and poisonous plant species may have been included in the plantings inadvertently. Seedlings and/or suckers from those plants shall be removed by the Contractor. Refer to <http://www.gainvasives.org/> for a list of invasive species. Remove all invasive and poisonous plants not planted intentionally as noted below in Section 2.5.C.4. When invasive and poisonous plants are an intended part of the landscape the Contractor shall notify the Representative and propose a replacement option.
 4. Controls
 - a. Cultural/mechanical/physical methods shall be used as the first choice in weed management.
 - 1) Monitor planting areas frequently to identify and eradicate weeds early in the growth stage prior to their setting seed.
 - 2) Cut or pull weeds using hand operated equipment where possible.

- 3) Mow large areas to reduce weed growth, and eliminate species that are not tolerant of mowing. Mowing is especially effective when done prior to seed set. Mowing also reduces fire hazard in open space.
 - 4) Mulches shall be maintained at all times over soil surface that is not covered by vegetation.
 - 5) Propane-fueled flamers may be used in winter and spring with required permits and approval by the Fire Marshall to kill early-season, non-grass weeds by heating the cells until they burst. The weed quickly wilts and dies.
- b. Least toxic herbicides may be employed by the Contractor as a last resort. Examples are:
 - Fatty acid potassium salts (herbicidal soaps), e.g. Safer's Superfast Weed and Grass Killer® and Dr. Bronner's Peppermint Anti-Bacterial Soap
 - Acetic and citric acids, e.g. Nature's Glory Weed and Grass Killer RTU®
 - Clove, citrus, mint and thyme oil, e.g. Matran II®, Xpress®
 - Corn gluten
 - Low-toxic, low-residual herbicide, e.g. glyphosate (Round-up®), glufosinate-ammonium (Finale®), or pelargonic acid (Scythe®)
 - c. Restricted herbicides that may not be used because they have been identified as ground water contaminants are:
 - Atrazine (Aatrex)
 - Simazine (Princep)
 - Bromacil (Hyvar, Krovar)
 - Prometon (Basagran)
 - Bentazon (Basagran)
 - Norflurazon (Soliacam, Predict, Zorial)
 - d. Restricted herbicides that may not be used because they have been identified as a compost contaminant are.
 - Picloram
 - Clopyralid
 - e. Pre-emergent herbicides – **In no case will soil pre-emergent or other types of weed killers be permitted without prior approval of the Representative.**
- D. Vertebrate pests
1. Identify key pests that significantly affect plant health and appearance. Accurate identification is critical to appropriate control. Common vertebrate pests are:
 - Rodents including rats, mice, voles, moles, gophers
 - Rabbits
 2. Controls
 - a. Mechanical/physical/cultural methods shall be implemented as a first course of action. Preferred treatments include:
 - Exclusion – Protect plants from damage by grazing animals with fences or cages
 - Habitat modification – Reduce cover at the periphery of the project as needed to solve problem
 - Application of repellents that are suitable for use in public areas
 - Traps may be used where mechanical/physical/cultural methods have been insufficient to control moles, voles, gophers, rats and mice
 - Encouragement of predators e.g. installing owl boxes
 - b. Least toxic rodenticides.