



INTEGRATED PESTICIDE, HERBICIDE AND FERTILIZER MANAGEMENT PLAN

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City of Eureka California
Public Works Department
531 K Street
Eureka, CA 95501

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Section I: Introduction

Purpose

The purpose of the Integrated Pesticide, Herbicide and Fertilizer Management Plan is to establish policies and procedures for the management of pests in parks within a clear and easily understandable framework. The framework presented here is based on a balance among maintenance levels, environmental stewardship and pesticide / herbicide / fertilizer use that fits Eureka's goals for its parks and that reflects staffing and budget level realities. Public Works developed this IPM Plan as part of its ongoing efforts to improve the Parks Division's services, improve water quality and meet community needs.

Definition of Terms

Eureka's Parks Division uses the University of California's definition of IPM, which is:

Integrated pest management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

In terms of IPM, it is important to understand what a pesticide is. Pesticides are not just control methods for insects. The following definition of pesticide is broader and forms the basis of the IPM plan:

Any substance or mixture intended for preventing, destroying, repelling, killing, or mitigating problems caused by any insects, rodents, weeds, nematodes, fungi, or other pests; and any other substance or mixture intended for use as a plant growth regulator, defoliant, or desiccant. (UC Statewide IPM Program)

Within this document, this plan is referred to as the IPM plan, and IPM is the term used to denote the management of pesticides, herbicides and fertilizers.

Policy and Mission

Through the preparation and adoption of this plan, Eureka's Parks Division adopts the following overarching policy on pest management:

Eureka's Parks Division personnel shall use Integrated Pest Management principles in controlling pest problems.

As part of the development of the plan, the Eureka Parks Division establishes the following IPM program mission:

The mission of Eureka's Integrated Pest Management Program is to control pests that are harmful to the health or aesthetic value of park plantings, pedestrian/vehicular hardscapes, street trees, and landscape areas in a manner that is environmentally responsible, safe, and cost-effective.

Plan Organization

This plan is organized into six sections, as follows:

- I. *Introduction*: describing the purpose of the plan, defining key terms and establishing the IPM policy and mission;
- II. *Current Park Operations*: outlining current responsibilities of the Parks Division, the sites managed and maintained, the current pest management practices, and budgeting for integrated pest management;
- III. *Pest Management Strategies, Policies, and Practices*: presenting the strategies and policies the Parks Division employs when managing its lands and assets.
- IV. *Process for Selecting a Pest Control Method*: describing the decision-making process that the Parks Division uses to determine the best course of action when a pest is discovered during the monitoring process;
- V. *Pesticide Application Procedures*: identifying specific procedures Eureka will follow when it is determined that a pesticide/herbicide is the proper method;
- VI. *Specific Management Guidelines*: presenting management guidelines organized by Park Areas, Landscaped Areas, Street Trees, and Creeks/Waterways/Wetlands and Buffers.

Section II: Current Park Operations

Overview

The goal of the Parks Division of Public Works is as follows:

Provide and maintain a quality system of park and landscape facilities for the use and enjoyment of the general public.

The 2009/10 adopted City of Eureka budget allocated \$629,483 and included a total of 7.00 full time employees (FTE) to carry out the Parks Division's program. These figures represent budget and staff reductions since 2007-08, meaning that there are fewer resources to maintain the same parks and landscapes as there were previously.

Currently, maintenance resources are allocated approximately 65% to the 138 acres of parks, 25% to the 42 landscaped areas, 5% to street trees and 5% to open space. This means approximately \$410,000 is used for parks maintenance, \$157,000 goes to landscaped areas, and about \$31,000 each goes to street trees and open space respectively. Looking at the resource allocation in terms of staffing, 4.55 FTE is spent on parks maintenance, 1.75 FTE is devoted to landscaped areas, and 0.35 FTE each is allocated to street trees and open space.

Sites Managed and Maintained

Eureka's Parks Division crew is responsible for the stewardship of a wide variety of sites, including parks, pedestrian/vehicular streetscapes, publicly owned sites and buildings, landscaped beautification areas, open spaces, and street trees. The Parks Division has defined routes for its maintenance crews, and there is a detailed list of routine maintenance tasks for each site on each route.

In total, 138 park acres are maintained, including 35 acres of turf. In addition, the Parks Division's crew is responsible for maintaining 42 landscaped areas; including plazas, City Hall, and the fire stations. The same crews are also responsible for a total of 1,390 street trees, as well as open space lands (wild lands, gulch and greenway properties, etc.).

The table on the next page details the parks maintained by the Parks Division.

Table 1: Eureka Parks Maintained by the Parks Division

Park	Acreage	Turf Acreage	Comments
Ross Park	1.52	1.08	
Hammond Park	1.36	1.10	
20-30 Park	3.25	2.15	
Carson Park	3.45	2.60	
Highland Park	3.41	2.16	
Cooper Gulch	33.0	4.80	Ballfield, skatepark, forest, wetlands, creek
Sequoia Park	64.0	1.61	Site also includes a 0.5 acre garden and a 5 acre zoo, Redwood second growth forest, with some old growth.
Kennedy Park	2.51	2.5	Ballfields
Jacobs/Haney Ballfields			Ballfields
Hartman Ballfield	2.39	2.35	Ballfields
Del Norte Picnic Area	3.0	1.5	
Clara Mayberry Park and Playground	1.0	.1	Next to library
Halvorson Park (Carson Mill Park)	3.5	3.0	
Lundbar Hills Park	1.25		
Myrtle Grove Cemetery	10.6	9.79	

Based on the total of 138 acres of park land and a maintenance allocation of \$410,000 for parks, Eureka is currently spending \$2,970 per acre to maintain its park system. This is extremely low compared to other agencies. The 138 acres maintained and the 4.55 FTE allocation also translates to a total of 30 acres per FTE, a significant workload (12-14 acres per FTE is an industry standard workload for parks maintenance workers).

In northern California, city park annual maintenance costs of \$6,000 to \$7,000 per acre or more are typical for well-maintained systems. In southern Oregon, \$5,000 to \$6,000 is typical. Eureka's allocation is extremely low, and its workload per FTE is correspondingly high. For comparison purposes, the City of Shasta Lake in California spent more than \$4,500 per acre to maintain its park system in 2005; Grants Pass, Oregon spent just over \$6,000 per developed acre in 2008; and Sunnyvale, California used the 2008 figures of \$16,000 per developed park acre and \$1,000 per natural area acre to budget for maintenance of its park system. Arcata's park system is somewhat unique because of the extensive natural

areas in many of the parks. The city spends around \$4,000 per acre for park maintenance.

Current Pest Management Practices

Integrated pest management is a process that uses a wide variety of strategies to control pests, and in doing so seeks minimum negative impacts to the environment and on human health. A key aspect of IPM is “to know your pest”, and IPM is based on informed decision-making.

Within the IPM framework, Eureka uses a variety of pest management practices, including policy and management practices as well as cultural practices, physical and mechanical practices, and chemical control methods to maintain turf and vegetation quality.

Eureka’s staff routinely monitors sites through their route assignments, and personnel strive to identify problems before they become significant. When pests are identified, Eureka uses a variety of means depending on the pest and the location. For example, mowing, trimming and hand pulling of weeds is used in certain circumstances. In other circumstances, chemical controls may be used under the supervision of licensed operators. Sometimes, a combination of treatment methods may be the best solution, such as cutting followed by chemical controls for certain invasive plants. When a combination of pest control methods are used by trained personnel, the result is a program that is environmentally and economically responsible.

Eureka is committed to prevention of pests. Public Works has a tree list developed specifically for Eureka that has been designed to avoid problem trees. In addition, the crews install weedmats and mulch planting beds for weed abatement. In the past, the Parks Division crews also incorporated horticultural practices such as aeration and overseeding of turf areas. Edging is practiced and one of the routine tasks noted in the maintenance schedule. Paved parking areas are powerswept by Public Works crews.

However, the Parks Division’s crews have had to reduce their monitoring and pest preventive activities due to the budget and staffing reductions. The current low level of funding for each of the three areas of responsibility (Parks, Landscaped Areas, and Street Trees) is at a subsistence level, and hinders the ability of the division to be as proactive as it would like in its horticultural practices. For example, when staffing levels were higher, park turf was aerated and lightly fertilized twice per year and overseeded as needed.

Another aspect of the current pest management program is weed tolerance level. As resources have been reduced, the City has asked the public to increase their tolerance (or acceptance) level for weeds and pests in parks,

landscaped areas and street trees. The level of maintenance and the weed treatment level are higher for higher use areas, but the tolerance level is extremely high. Parks are prioritized higher than landscaped areas, which are considered a higher priority than street trees.

When crews do note the existence of pests and determine that removal is warranted, a variety of methods are employed. Volunteers are used to hand pull invasive species in natural areas. Some mechanical removal methods are employed where appropriate for the pest. When chemical removal is determined to be the best course of action, the policy of the Parks Division has been to use the least toxic pesticides and to focus on spot treatments using a hand pump sprayer or small electric sprayer.

The term toxicity is defined by Webster's Medical Dictionary as *the degree to which a substance can harm humans or animals*. Signal words are required by federal law on pesticide products, and indicate the level of toxicity. The words DANGER, WARNING or CAUTION, written in all capital letters, are the signal words the Environmental Protection Agency requires. Products with the signal word DANGER are the most toxic, and those with the word CAUTION are least toxic. These words mean the following:

- CAUTION means that the product is slightly toxic if eaten, absorbed through the skin or inhaled; or it causes slight eye or skin irritation upon contact.
- WARNING indicates that the product is moderately toxic if eaten, absorbed through the skin, inhaled, or that it causes moderate eye or skin irritation upon contact.
- DANGER means that that the pesticide product is highly toxic by at least one route of exposure. It may be corrosive, causing irreversible damage to the skin or eyes. Alternatively, it may be highly toxic if eaten, absorbed through the skin, or inhaled. If this is the case, then the word "POISON" must also be included in red letters on the front panel of the product label.

Eureka Park Division's operational practice has been to avoid the use of products with the signal words WARNING or DANGER. The table below details the CAUTION-rated chemicals used by the Parks Division, and indicates the purpose of each as well as the location and season used.

Table 2: CAUTION-Rated Pesticides Currently Used By the Parks Division

Pest./Herb./Fert.	Active Ingredient	Purpose	Where Used	Season of Use
KleenupEPA#34704-890G	Glyphosate,N	Broadspectrum weed abatement	Park/Landscape Areas	Spring/Fall
Element4EPA#62719-40	Triclopyr	Woody/herbaceous weed control	Park/Landscape Areas	Spring/Fall
Surflan EPA# 70506-44	Oryzalin	Preemergent weed control	Planterbeds/Cemetery	Spring/Fall
Scythe EPA#53219-7	Pelargonic Acid	Mark ballfield foulines	Ballfields	Spring
SafersoapEPA#42697-1	Potassium fatty acids	Aphid, Scale and Whitefly spot treatment	Shrubs and trees	Spring (only as required)
SnapshotEPA62719175	Trifluralin, Isoxaben	Preemergent weed control	Planterbeds	Spring/Summer/Fall
Malice EPA#34704-970	Imidacloprid	Linden Tree aphid/ant/black mold mitigation	Selected Street Trees	Spring soil drench

Budgeting for Integrated Pest Management

Because of the meager budget for park maintenance, the result today in Eureka is a park system whose appearance and condition is below the best practices standards and where weed preventive practices have had to be deferred. For example, without soil amendment and weed control, much of the turf has become overgrown with weeds. Without weed control within the cracks of hard surfaces and within the tree wells, weeds are now very prominent. Without control of insects, aphids are creating black sticky conditions underneath.

It should be noted that while a park system can withstand deferred maintenance for a short period of time, eventually the park system will fall to the point where significant costs will be needed to repair the damage. With regard to weeds and pests, Eureka’s system is now at the point where substantial inputs are needed to get the system back to a basic level of care. Under the IPM decision-making process, there are a variety of ways to address the problem of weeds. Three scenarios of pest management are described below, with cost implications for each, as each scenario represents a different level of staffing or funding for contractors. See Appendix B for IPM cost assumptions and control alternatives.

- *Status Quo:*
The status quo at the current level of funding is to conduct no weed or pest prevention. No aeration, overseeding, or soil amendment takes place. Mulching beds occurs as staff time permits, but each year only a

minimal percentage of the planting beds in the system are mulched. No arboricultural activities occurs, e.g., pruning.

The cost of the status quo is approximately \$3,000 per acre. While this approach is unsustainable in the long term, as it results in degrading of the assets and a subsequent need for major capital investment, it is cost neutral as long as the system does not grow in size and as long as the tolerance for weeds is very high. However, the status quo does not represent a true IPM program, as prevention is not being funded.

- *Basic IPM*

A basic IPM would allow adequate funding to provide preventive activities that were once practiced in Eureka's park system, including overseeding and aerating turf at least annually, application of mulch at least annually of planting beds, spot removal of weeds in planting beds and in turf, pruning of trees, and other activities described in Section III of this plan.

Instituting basic IPM in Eureka's park system would require a budget increase of at least 30%, or about \$1,000 per acre. This translates to an annual budget increase of \$138,000. This level of funding would result in a mix of hand, mechanical, and chemical removal methods, as well as the reinstatement of preventive horticultural practices, following the decision-making protocols described in Section III of this plan. Because the system has had underfunded maintenance for several years, the first few years of a basic IPM program will likely require a focus on weed and pest removal to regain control.

- *Pesticide Free Parks*

A pesticide free park represents the highest level of cost because all weed removal must be done by hand. In Eureka, where weed prevention has been cut from the budget, getting the weed problem under control without chemicals will require a major effort for several years and the City will need to be committed to adequately staffing the weed removal effort.

In terms of the cost of going pesticide free, different maintenance tasks have different costs. For example, handweeding of planting beds is estimated to cost approximately three times the cost of burning or spot chemical application due to the increased staff time required. A Nature Conservancy publication compares the cost of broom removal methods, indicating that \$2,000 per acre should be allocated for hand removal, \$250 to \$500 per acre for mowing (not including equipment cost), and \$300 per acre for chemical treatment (including chemical costs). For

invasive weeds such as Japanese knotweed or Scotch broom, organizations such as the Nature Conservancy do not recommend hand removal or cutting and use herbicide (usually spot) treatments to reduce impacts to natural areas.

Based on the estimated costs of the different maintenance tasks that are required in Eureka's park system, basic IPM is approximately 65% less than pesticide free parks. This means that an additional \$90,000 above the budget for basic IPM, or a total of \$228,000 more than what is budgeted today. As noted, costs may be higher for several years to get the weed problems currently present in the system under control.

The above costs are based on maintenance management time tasks and the current pay rates/ worker positions in Eureka's Park Division. Because the Division has seen such substantial staff reductions, if a change in maintenance regime is instituted, the City should collect data on the time requirements for new tasks or tasks that have not been undertaken for several years and adjust cost planning annually.

Section III: Pest Management Strategies, Policies and Practices

The purpose of this section is to formally document the Eureka Parks Division's strategies, policies and practices.

A. Pest Management Strategies

There are five general categories of pest management strategies in IPM: prevention, establishment of tolerance levels, monitoring, addressing pest problems, and evaluation. While it is important to control pests when they become a problem, Eureka's approach to pest management is to avoid pest problems wherever possible. For this reason, Eureka's Parks Division generally prioritizes its pest management strategies in the following manner:

Priority 1: Prevention

Pest prevention activities are the first pest management priority for Eureka's Parks Division. As this plan shows, Eureka implements pest prevention activities in a number of ways, ranging from facility design and plant selection to horticultural practices such as mulching to mechanical/physical practices such as mowing, trimming, hoeing by hand, edging and sweeping. Prevention activities are a key component of the IPM plan, because these avoid, eliminate, or reduce pest problems.

Priority 2: Monitoring and Evaluation

Monitoring and evaluation are the second highest priorities. Through monitoring, Parks Division personnel can identify potential problems before they become large-scale or persistent. Monitoring helps employees to arrive at the best solution for controlling a pest problem. Monitoring also provides time for the staff to identify unusual pest problems and seek outside expertise, such as private laboratories, the UC Statewide IPM Program, the California Department of Pesticide Regulation, the Humboldt County Agricultural Commissioner, or the UC Cooperative Extension Service.

Through evaluation, Parks Division personnel can judge the success of pest prevention, management, and control methods. This is a key part of the informed decision-making process that is central to IPM.

Priority 3: Establishing Tolerance Levels and Addressing Pest Problems

The Parks Division establishes tolerance levels for pests so there are thresholds for treatment. Although Eureka seeks to avoid or minimize pest problems through prevention and monitoring, at times pests will reach the tolerance level and should be addressed before the problem is exacerbated. When pests exceed

the tolerance level, Eureka's Parks Division addresses the pest problem by carefully evaluating options to produce the best solution.

B. Pest Management Policies and Practices

The following section describes the policies pertaining to pest management in Eureka, as well as practices and procedures. Through its ongoing evaluation and education practices, Eureka's Parks Division may modify or revise this list to reflect current best professional practices.

Management and Planning Policies

There are four specific management policies, described in detail below.

IPM-1: Designating an IPM Coordinator

Eureka designates an IPM Coordinator as part of its Integrated Pest Management plan. The IPM Coordinator is responsible for overseeing implementation of the IPM plan, making decisions on policy changes, and keeping current on new developments in pest management techniques, as well as other responsibilities outlined within this plan. The IPM Coordinator will be responsible for making sound and responsible decisions about pest management based on the best available science. Unless otherwise designated, the IPM Coordinator is the Parks & Maintenance Manager.

IPM-2: Requiring certification and continuing education

Eureka's policy is that only licensed pesticide applicators (Qualified Applicator license holders) may oversee the application of pesticides in the park system. This is above the California Department of Pesticide Regulation's requirement, which only requires licensure for those applying "restricted" category pesticides. None of the chemicals currently used by Eureka Parks Division staff are on the restricted list. The licensing program requires applicants to pass a test on laws and safety, turf and ornamental weed control, ornamental insect and disease control, and other topics. The program also requires license holders to complete continuing education to maintain licensure.

IPM-3: Preventing pests through site design and plant selection

Many pest problems can be avoided or minimized through thoughtful site design and proper plant selection. Some of the activities that Eureka supports to accomplish this include:

- Use of disease or pest resistant/tolerant species and varieties (with priority given to native species).
- Selection of appropriate plants for the site and avoidance of invasive weed species.
- Replacement or removal of pest-susceptible plants.

- Establishment of over-story, groundcovers and other planting design techniques that benefit the establishment of plants and the reduction of weed control efforts.
- Proper and adequate spacing of plant material to reduce insect and disease problems.
- Promotion of species diversity and reduction of monocultures in plantings.
- Elimination of disease host plants.
- Installation of weedmat/mulch where appropriate.
- Providing mow bands and hardscapes where warranted to eliminate problem areas.

This requires ongoing research and consultation with nurseries and plant experts, as well as review and oversight of new park designs.

Operations Guidelines

Eureka's Parks Division personnel recognize the Operations Guidelines described below and use them to guide their decisions.

IPM-4: Recognizing levels of care

Where it has been determined to be appropriate for a given park site, the landscape can be left alone or can receive a reduced level of care. This can serve the dual purpose of reducing or eliminating pest control measures and reducing maintenance costs. Care must be exercised when considering managing park lands in this fashion, as issues such as public safety, increased vandalism, establishment of invasive plants, and loss of public use may arise.

IPM-5: Establishing levels of tolerance for pests

The acceptable level of tolerance and thresholds for action will vary according to plant, pest, and site. Different park areas have different standards of acceptable care and appearance. Determining whether a particular park area requires control of pests and the level of that control must take these differences into account. Careful attention to public use needs must be part of this prioritization. Action thresholds will be made on a case-by-case basis. Once a tolerance level is reached, the most appropriate control method is selected using the criteria outlined in Section 4.

IPM-6: Preventing pest through elimination of problem areas

Prevention can occur through elimination of known problem areas at existing park sites, thus eliminating the need for weed control. For example, permeable hard surfaces can be established underneath park fixtures or concrete mow bands can be provided underneath fences.

Operations Practices

Operations Practices are organized into the following categories: cultural practices, mechanical and physical practices, biological controls, and chemical controls. These are practices that the Parks Division may employ when preventing or removing pests.

Cultural Practices

Cultural practices are landscape horticultural methods, which promote plant health and reduce susceptibility to pests.

- **Using horticultural knowledge**

The IPM Coordinator and Parks Division personnel should use their knowledge of the culture of individual plant genera or species to provide proper conditions for optimum plant health and pest resistance. The Parks Division should seek to increase horticultural knowledge among its staff through training and continuing education.

- **Preparing sites properly**

Sites should be adequately prepared before plantings are installed. Preparation techniques will vary depending on the site, but can include use of clean weed-free soil, soil improvements, pruning of surrounding vegetation, soil grade adjustments, use of permeable hardscape surfaces, drainage improvements, and installation of automatic irrigation systems.

- **Using irrigation properly**

Use of proper irrigation methods and application rates will reduce the need for pesticide use. This means that irrigation should be timed correctly to promote plant health and eliminate drought and flood stress. Plants stressed from too much or too little water are susceptible to pests.

- **Creating healthy soil**

The appropriate use of compost and other natural amendments can create healthy soil, which promotes plant health. Clean weed-free soil should be used in planters.

- **Using appropriate turf management techniques**

Using proper turf cutting heights and mulching with grass clippings (not raking up clippings) helps maintain healthy turf. Periodic aeration, thatching, and/or overseeding of turf and compacted areas improve turf health.

- **Using weedmat and mulch where appropriate**

Use of weedmat and mulch can reduce weeds, help planting beds retain moisture, and protect planting beds during winter months. Mulching with gravel along hard surface trails can help reduce weed growth, thus reducing the need

for pest control in these areas. While mulching is generally beneficial, there are circumstances where use of mulches can encourage weed establishment. In some cases, mulching in tree rings (such as under mature Douglas firs) provides a medium for weed growth, when the tree canopy previously shaded and kept the tree ring area dry and unfavorable to weeds.

- **Using cover crops**

The use of cover crops can improve soil structure and reduce soil erosion, and should be considered where appropriate, such as in areas under periodic cultivation.

Mechanical and Physical Practices

Mechanical and physical practices include pulling, cutting, or otherwise damaging or removing potential pests. These practices may or may not involve the use of hand tools or power tools.

- **Mechanical edging of turf**

Where trimmed edges are desired, mechanical edging of turf can maintain a neat edge and reduce the need for pesticide use.

- **Proper pruning of trees and shrubs**

Proper pruning of trees and shrubs increases air circulation and light penetration for healthier plant growth, reducing susceptibility to disease and insect problems.

- **Removal of diseased, damaged, or deadwood from plants**

Removal of diseased, damaged, or deadwood from the plants, or complete removal of diseased trees, reduces the susceptibility to disease and insect problems.

- **Removal of spent flowers**

Removal of spent flowers on shrubs and annuals can reduce the susceptibility to disease and insect problems.

- **Power sweeping of paved areas**

Power sweeping of paved areas reduces debris and the potential for weed growth.

- **Hand weeding in shrub and flower beds**

Hand weeding can be an appropriate pest removal technique in shrub and flower beds. Hand weeding may or may not involve the use of hand tools, such as hoes or other devices.

- **Hand clearing in rough areas**

Hand clearing can be an appropriate technique in rough areas for vegetation control. This can include use of hula-hoes and other hand tools.

- **Mowing of rough areas**

Mowing of rough areas can be an appropriate technique for weed seed and vegetation control. Timing of mowing is important to ensure that weed seeds are not dispersed, rather than controlled.

- **Mechanical control of unwanted vegetation**

Mechanical controls, such as string trimming, rotary mowing and flail mowing, can be an appropriate technique for control of unwanted vegetation in larger open areas.

- **Use of traps**

The use of traps such as yellow sticky boards or traps for mammalian pests can reduce pest problems. The use of a licensed trapper is another alternative.

Biological Controls

Biological controls include the beneficial action of predators, parasites, pathogens, and competitors in controlling pests and their damage. There may be appropriate biological solutions for specific pest situations. The IPM Coordinator should maintain awareness of research or new developments in biological controls and determine whether specific methods are applicable to Eureka's park system, landscaped areas and street trees.

Pesticide Controls

Pesticide controls include pheromone traps, naturally derived pesticides, and synthetically derived pesticides. Specific policies and procedures addressing the use of chemical controls are included in Section 5.

Section IV: Process for Selecting a Pest Control Method

Method Selection Considerations

It is important to recognize that IPM is based on using a wide array of practices, and that control of pests often requires the use of a combination of control methods. For example, manual cutting followed by application of herbicide has been found to be successful for removing some invasive species. When selecting pest control methods, all available options should be considered: mechanical and physical, biological, and chemical. Each option will have advantages and disadvantages, and these should be evaluated to determine the best method for the situation.

The pest control method(s) should be selected based on the following considerations:

Table 3: Considerations for Pest Control Selection

Risks to humans and non-target organisms
Environmental effects
Labor requirements and constraints
Costs/financial impacts
Aesthetic issues/level of service
Long-term effectiveness

The diagram on the next page outlines the process for selecting the appropriate pest control method(s), and the considerations that go into the decision.

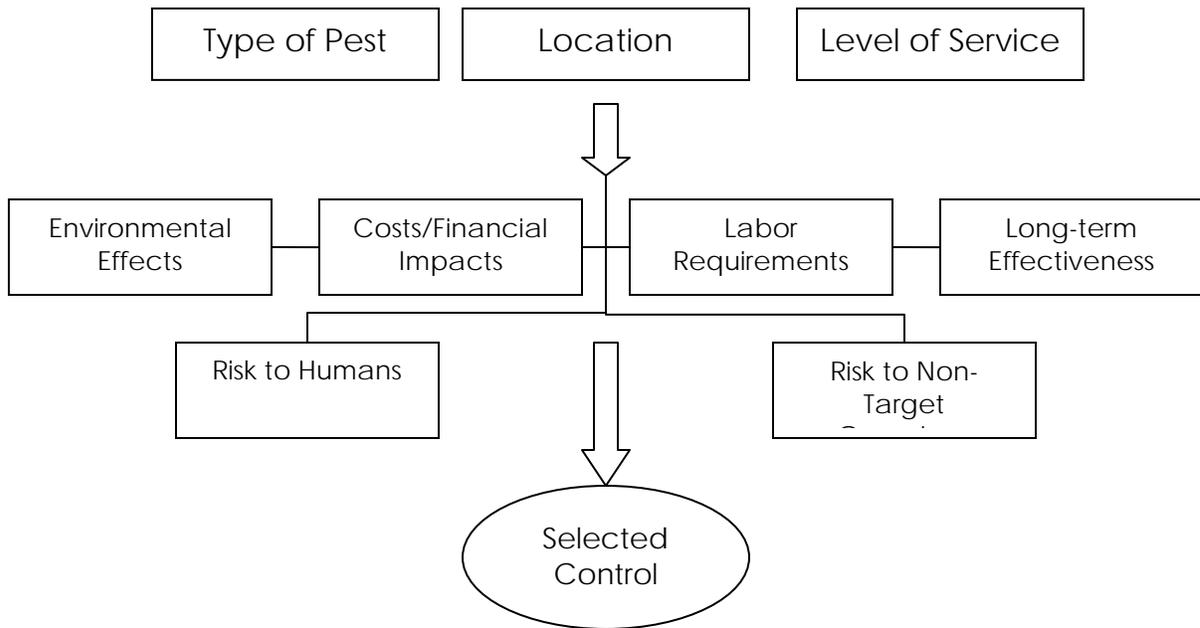


Figure 1: Control Method Decision Process

Pesticide Selection Considerations

It is important to keep in mind that pesticide use may or may not be negative in its effects. There is no automatic trade-off between environmental responsibility versus pesticide use or the safety/risk of no pesticide use versus the safety/risk of other techniques. In fact, at times a pesticide may be more environmentally responsible than other methods. For example, The Nature Conservancy has conducted extensive research into the best management techniques for weeds in natural areas, and has identified certain pesticides as the most environmentally responsible and most effective method in some cases, particularly for certain invasive weeds such as knotweed. See The Nature Conservancy's informational handbook entitled *Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas* is available on the web at <http://www.invasive.org/gist/products/handbook/methods-handbook.pdf> and provides excellent guidance.

Although pesticide use may sometimes be the best control method, implementation of IPM philosophy and techniques typically does result in less pesticide use as long as there is adequate staffing to conduct prevention and monitoring activities. It is also important to point out that in addition to typically reducing the need for pesticides, IPM also often results in better pesticide selection protocols. This ultimately results in the use of products that have reduced impacts or other favorable characteristics.

When the best pest management technique is determined to be a pesticide, Eureka can avoid or minimize risks by careful selection and application of the chemical. Specific properties of the pesticide products should be evaluated. These are outlined below.

Table 4: Product Properties to Consider in Pesticide Selection

Residual effect and length, decomposition rates, and breakdown products
Volatility at different temperatures
Product / package size and form (ease of storage and cleanup)
Leachability: solubility, surface, and soil bonding capability
Flammability of the product
Ease of cleaning equipment after use

There are a variety of other factors that should be considered when selecting a pesticide product. The table below contains a list of additional considerations that should be evaluated when selecting a particular pesticide. Many of the considerations in Table 5 relate to specific knowledge or awareness of pesticides, best management practices, and case studies. It is the responsibility of the IPM Coordinator to keep current on these topics, and to share that knowledge with Parks Division personnel.

Table 5: Additional Considerations for Pesticide Selection

Site use	The types of use a given area might receive, including likely visitors and activities
Available application equipment	Compare available equipment with recommended product application method
Weather conditions	Current and anticipated, including wind, rain, and temperature
Site conditions	Soil type, slope, drainage patterns, and presence of open or seasonal water
Previous pesticide applications	Previous pesticide applications to the site and the interval between treatments.
Development of pest resistance to particular control methods	Rotation of control methods, such as alternating pesticide products, can minimize the risk of resistance in some cases.
Residual buildup of pesticides in soil, water, or target site	The cumulative effect of repeated applications may need to be taken into account.
Positive and negative synergistic effects of combining pesticides	Compatibility of different pesticides may be of concern both regarding their physical traits, as well as their effects on the target pest or beneficial organisms.

Section V: Pesticide Application Policies

To minimize risks, Eureka has adopted specific policies regarding chemical applications. These policies are intended to provide guidance for Parks Division personnel. The policies are numbered PA (Pesticide Application)-1 through PA-13, and address a variety of aspects of pesticide applications.

PA-1: Pesticides Approved For Use By Eureka's Parks Division

Eureka shall maintain a list of pesticides approved for use by Parks Division personnel on park property, public facilities or street rights-of-way.

The Approved Pesticide List is contained in Appendix A of this plan. This policy also defines the process of adding to or deleting from the Approved Pesticide List. Parks and recreation experience has shown that it is more desirable to have a specialized selection of products that target specific pests, rather than a smaller number of general-purpose pesticides. This practice confines the effects of the control on the target pest only, and it reduces the number of resistant pests that may arise from continued use of a small number of controls. In addition, it typically leads to an overall reduction of pesticide usage.

The IPM Coordinator is responsible for review of the Approved Pesticide List, and may approve additions or deletions to the list. The Approved Pesticide List should be reviewed annually to ensure it remains current, even if no additions or deletions have been proposed.

The process for additions or deletions is outlined below:

- A. Parks Division staff may make requests to add or delete a pesticide by contacting the IPM Coordinator.
- B. The IPM Coordinator will be responsible for review of the pesticide list on at least an annual basis to determine whether additions or deletions are warranted.
- C. The IPM Coordinator is responsible for collection of background data on the request and review of best available science.
- D. Based on initial review about the effectiveness, public health and safety risks, potential environmental effects, parks management needs and other issues, the IPM Coordinator will make a determination on whether to add or delete pesticides from the approved list.

PA-2: Required Certification and Continuing Education

All Eureka Parks Division staff who supervise the purchase, handling or application of pesticides shall be certified with the appropriate California Department of Pesticide Regulation (DPR) license.

- Eureka’s Parks Division full-time permanent management and supervision employees are required to obtain a “Qualified Applicator Certificate” or QAC. Eureka’s certification requirement exceeds DPR regulations, which only require certification for the use of state and federally restricted pesticides.
- DPR requires specific exams for a Qualified Applicator Certificate, including a laws and regulations exam as well as exams specifically designed for seventeen different pest control categories. To obtain a certificate, an applicant must receive a passing grade of 70% on the exams taken. Only some of the pest control categories are applicable to Eureka Parks Division, such as Landscape Maintenance.
- Pesticide operator certificates must be renewed, and continuing education is required to maintain the certificate. Approved continuing education opportunities are listed on the DPR website. The amount of continuing education depends on the pest control categories and whether the licensee is renewing the certificate. Recertification requires continuing education in the areas of pesticide law and safety and within the licensee’s pest control specialties or retesting.

PA-3: Storage of Pesticides

Eureka’s Parks Division personnel shall keep pesticides or pesticide containers in secure and safe locations in accordance with existing laws.

To implement this policy, Eureka’s guidelines on storage are:

- Pesticides or pesticide containers should be kept locked up in a sheltered, well-ventilated area.
- Areas used for storage should be labeled as such.
- Pesticides should be safeguarded from environmental damage (freezing, vaporizing, photodecomposition or moisture).
- All pesticides in stock should be inventoried regularly and, if necessary, rotated on the shelf to assure the oldest dated items are used first.
- Pesticides being transported should be appropriately and safely secured in the vehicle. Only trained applicators should transport pesticides. An appropriate spill kit should be immediately available that is suitable for the materials being transported.
- Pesticides should not be transported in passenger cabs of vehicles.

The following are examples of secure storage enclosures:

- Closed vehicle
- Closed trailer
- Building or room or fenced area with a fence at least six feet high
- Foot locker or other container which can be locked
- Unattended trucks or trailers that have solid sideracks and a secured tailgate at least six feet above ground, ramp or platform level
- Bulk storage containers 50 gallons and larger with tight screw-type bungs and/or secured or locked valves.

PA-4: Distribution of Material Safety Data Sheets

Material Safety Data Sheets (MSDS) shall be kept readily available to personnel.

MSDS for all pesticide products used by the Parks Division should be contained in a binder at the following locations.

- Park Maintenance Employee Room.

When new MSDS are received, they should be distributed as follows:

- One copy to the shop location noted above.
- One copy to Parks & Maintenance Manager for filing purposes.

PA-5: Use of Protective Clothing and Equipment

Eureka's Parks Division personnel engaged in any way with the contact of pesticides shall follow all clothing and equipment requirements listed on the pesticide label for the appropriate pesticide. Documented violation of this policy shall result in disciplinary action.

The City of Eureka is responsible for providing personal protective equipment and clothing for pesticide use as per specific labeling instructions. This includes, but is not limited to, safety glasses/goggles, coveralls, rain gear, appropriately chemically resistant boots and gloves, hats, ear protectors for noise, and barrier creams. Time will be made available to wash up before lunch and at the end of the day. The applicator is responsible for cleaning, storing, and maintaining spray clothing and equipment in a safe manner.

When personal protective equipment is not required on the product label, Eureka's policy is that staff should wear at minimum the following protective equipment:

- Impermeable and unlined gloves
- Eye protection
- Chemically resistant boots

PA-6: Pesticide Application Procedures

Employees of the Eureka Parks Division shall apply pesticides in a safe and legal manner on City property or street rights-of-way and adhere strictly to all requirements for their safe use.

The following guidelines are intended to implement this policy:

- In accordance with PA-1, only those pesticides on the Approved Pesticide List should be used in Eureka's parks and landscape areas.
- Pesticides should be applied only when appropriate weather conditions exist.
- Pesticides must be used according to the label. The pesticide must be used only on plants, animals, or sites specified by the label. Higher dosages, higher concentrations, or more frequent applications are not permitted. Directions for use, safety, mixing, diluting, storage, and disposal, as well as restrictions on re-entry and days to harvest, must be met.

The procedure outlined below should be followed by Parks Division personnel when applying pesticides.

- A. Applicator should check weather conditions. Applications should be done with minimal wind conditions to prevent drift. Adjustments should be made for droplet size and pressure if marginal conditions exist. No application should be done where there is unacceptable drift.
- B. Applicator should call the Parks Supervisor and notify them of the following:
 - Type of pesticide being applied
 - Name of pesticide
 - Location of pesticide application
- C. Applicator should prepare pesticide mixtures (if necessary) in accordance with product label instructions.
 - Applicator should review MSDS.
 - Applicator should check and calibrate application equipment for safety and efficiency.
 - Applicator should prepare only the amount of pesticide anticipated for the specified use and location. See PA-9 for additional guidance.
- D. Applicator should take the following items to the pesticide application site:
 - Copy of Material Safety Data Sheet. This is for reference, and can be provided to the public if requested.

- Public advisory signs.
 - Personal protective equipment specified in the MSDS, or at minimum:
 - Impermeable and unlined gloves
 - Eye protection
 - Chemically resistant boots
 - Spill response materials as described in PA-11.
- E. Applicator is required to follow existing pesticide application laws and safety requirements by California Department of Pesticide Regulation and the Environmental Protection Agency.
- F. Applicator should be aware of public in the area slated for pesticide application.
- G. Applicator should post appropriate signage in accordance with existing laws.
- H. Applicator should complete the required pesticide application records and submit to supervisor to be kept on file in accordance with record-keeping requirements and policies.
- I. When appropriate, applicator should retrieve required public advisory signage after the required notification period.

PA-7: Pesticide Use Records

Eureka's Parks Division personnel shall record all pesticide applications and keep records in compliance with State of California regulations. A master copy file of these records shall be maintained by the IPM Coordinator and retained in the Park Maintenance Employee Room.

Each operating unit should keep a file of records related to pesticide application by their own personnel. These records shall be retained for no less than two years.

Records are to be updated on the same day that a pesticide is applied. The application records must include the following information:

- Name - The full name and address of the person or agency for which the pesticide was applied.
- Location - The exact location and/or address of the land where the pesticide was applied.
- Date and Time - The year, month and day of the application.

- Pesticide - The product name used on the registered label and the U.S. Environmental Protection Agency or state registration number of the pesticide that was applied.
- Amount - The total amount of pesticide applied such as pounds, gallons, ounces, etc.
- Area - The number of acres, or other appropriate measure, to which the pesticide was applied.
- Pests - The pests to be controlled.
- Weather conditions - The direction from which any light breeze was blowing. This does not apply to applications of baits in bait stations and pesticide applications within structures.
- Rate - The amount of pesticide applied (pounds or gallons) per acre or other appropriate measure.
- Concentration - The concentration of pesticide that was applied. Liquid applications may be recorded as the amount of product per one hundred gallons of liquid spray or other appropriate measure.
- Applicator's name - The trained applicator's full name, license number, address, and telephone number and the name and license number(s) of the individual or individuals making the application.

PA-8: Notification of Pesticide Use at the Site

Eureka's Parks Division personnel shall provide public advisory signage of pesticide use at a site in accordance with existing regulations.

The pesticide applicator is responsible for placing the public advisory signage when pesticides are applied. The applicator is also responsible for sign removal, which occurs after applied material is dry on the surface or 24 hours after application unless a longer interval is specified on the product label. The City of Eureka is responsible for providing signs that meet state regulations for use by Parks Division personnel.

PA-9: Rinse Procedures and Procedures to Minimize Disposal of Pesticides

The policy of Eureka's Parks Division is to conduct pesticide operations in a manner that disposal of material is not necessary. Pesticide solutions and rinses are applied according to the label, and to legal target areas so there are no remaining pesticides. This shall be accomplished by accurately gauging the amount of pesticide needed for the job.

As part of the implementation of this policy, Eureka's Parks Division also promotes the use of advance planning to minimize the number of times it is necessary to switch pesticides in spray equipment. In order to reduce the amount of excess rinsate, it is the policy of Eureka's Parks Division to rinse equipment only at the end of the spray cycle, or when changing to pesticides that are incompatible with those in the tank.

The procedures outlined below are intended provide guidelines for complying with PA- 9.

Determining Appropriate Quantities

Eureka's Parks Division personnel should take the following into consideration when making a determination on how much pesticide is needed to complete the job:

- Weather conditions and predictions.
- Acreage/square footage of the job site.
- Calendar: special events, mowing, irrigation, etc.
- Type and size of the equipment appropriate to do the job.

When to Rinse Equipment

Equipment should be rinsed and emptied if the following conditions apply:

- It is necessary to use a pesticide incompatible with that previously used.
- It is the end of a spraying cycle.
- Prior to seasonal equipment storage.

How to Rinse Equipment and Dispose of Rinsate

Eureka's Parks Division personnel should follow the procedure outlined below to rinse equipment and safely dispose of the rinsate.

- A. Read the pesticide label. The following should not conflict with label information or State or Federal regulations. Contact your supervisor if you see a conflict or have questions.
- B. Wear protective clothing, as listed on the product label or in the Material Safety Data Sheets. If no protective clothing or equipment is specified, the following should be worn, at minimum:
 - Unlined rubber gloves
 - Eye protection
 - Chemically resistant boots
- C. Do not rinse equipment within 300 yards of a well, creek, pond, lake, drainage ditch, or storm drain. Fill the spray equipment approximately one-quarter (1/4) full with clean water. Add a neutralizing agent if the pesticide label recommends one. Shake or agitate so that all inside surfaces are washed. If possible, use the spray hose to rinse the inside surface of the tank. These procedures should be consistent with all product labels.

- D. Spray the rinse water out of the spray equipment onto an approved target area. Rinse water should be run through all hoses, booms, etc. Filters should be cleaned. Due to the diluted nature of the pesticide in the rinse water, a coarse spray can be used and is recommended to save time. Do not "pond" or saturate the soil. Alternate the rinsate target site so that buildup does not occur.
- E. If the tank is to be stored, repeat steps C and D above, without a neutralizing agent.

PA-10: Disposal of Empty Pesticide Containers and Unusable Pesticides

The Eureka Parks Division shall dispose of pesticides and empty pesticide containers in accordance with all State and Federal regulations and product label recommendations.

Eureka's Parks Division considers proper disposal of pesticides and pesticide containers of the utmost importance to the safety and well-being of employees and the public. The disposal of these materials requires care in handling and use of all necessary protective equipment.

The procedures outlined below are intended to provide guidelines for complying with PA-10.

- A. In all cases, read the product label. The steps outlined below should not conflict with label information or state and federal regulations. Contact your supervisor if you see a conflict or have questions.
- B. Wear appropriate protective clothing when handling pesticides or pesticide containers, as listed on the label or in the Material Safety Data Sheet.

For Non-rigid Containers (Bags, Sacks, and Boxes)

- A. Empty pesticide material into application equipment to the greatest extent possible by physical agitation of the container.
- B. Visually verify that residues have been removed.
- C. Multiple-rinse non-rigid containers such as paper lined with plastic or foil.
- D. Crush or flatten the container when empty.
- E. Place in a plastic bag immediately and mark the contents on the bag.

For Rigid Containers (Plastic, Glass, or Metal)

- A. Empty pesticide material into application equipment to the greatest extent possible by pouring.
- B. Visually verify that the residues have been removed.
- C. Triple rinse or pressure rinse the container with clean water. Pour the contaminated rinse water into the application equipment.
- D. Empty the pesticide and all rinses into the sprayer before the full amount of diluting water is added to the spray equipment.

Storage of Containers

- A. Containers must be stored in plastic bags in a locked cabinet until they can be properly disposed of.

Disposal of Unusable Pesticides

Unusable pesticides are those that:

- Are damaged through vaporization, freezing, photo decomposition, or infiltration of moisture to containers;
- Have exceeded their shelf life; or
- Have visually changed their composition or structure in some manner.

The IPM Coordinator should be informed of unusable pesticides. When informed of unusable pesticides, the IPM Coordinator is responsible for determining the appropriate course of action through use of the following guidelines:

- A. Contacting the manufacturer or dealer and/or a licensed consultant and find out if the product is still usable.
- B. Following the recommendations of the dealer, manufacturer, or licensed consultant and use procedures in this policy as they apply if the pesticide has less activity due to long storage, moisture, or freeze damage.
- C. Deciding the material should be applied, realizing that full control is not achievable using the damaged pesticide.
- D. If Option C cannot be followed legally, following the recommendations of the dealer or manufacturer or licensed consultant. It is not legal to transfer damaged or altered pesticides to another party for use. It may be necessary to arrange for disposal of

the pesticide in a manner recommended by the Department of Pesticide Regulation.

Disposal of Pesticides with Totally or Partially Suspended Registrations Which Are Rendered Legally Unusable by the Parks Division

This is an unusual situation, which Eureka's Parks Division seeks to avoid whenever possible. The IPM Coordinator is responsible for the following:

- A. Keeping up-to-date on industry news and directing staff to be cognizant of potential banned materials and avoid their use.
- B. Following recommendations of the manufacturer or dealer in finding a legal user for the pesticide.
- C. Transferring the pesticide to legally registered bureau, agency, or group if the pesticide is unopened and/or still retains its integrity and such transfer is permitted by regulation.
- D. Ensuring disposal of the pesticide in a manner recommended by the Department of Pesticide Regulation.

PA-11: Pesticide Spill Response

Eureka's Parks Division seeks to reduce pesticide spills through prevention activities. Should an emergency release of a pesticide occur, Parks Division personnel shall respond in accordance with all governmental regulations, including those of DOT, EPA, OSHA, and DPR.

Eureka's Parks Division minimizes the possibility of spills through planning, preparation, adherence to good work practices, and increased awareness of the potential results of a spill, the possibility of a spill occurring is minimized. If a spill does occur, the Parks Division has developed emergency response guidelines (contained below) that are intended to protect employees, the public, property, and the environment.

Spill Regulations

A variety of federal and state agencies regulate hazardous materials, chemical spills, and environmental regulations. The Department of Pesticide Regulation (DPR) and Environmental Protection Agency (EPA) protect the environment through regulation concerning prevention of and response to the contamination of water, land, and air. The Occupational Safety and Health Administration (OSHA) is concerned with the proper training and protection of workers handling hazardous materials. OSHA, which is concerned with worker protection, has two regulations governing spills. One, Hazard Communication, applies to incidental spills which present a low potential of hazard to the worker,

the public and the environment. Included are small spills of dilute pesticides, spills of material with granular formulations, and lower toxicity materials. The other regulation, Emergency Response, applies to incidents with a high degree of hazard such as large spills of dilute material, pesticides with higher toxicity, and concentrates in a confined space.

An incidental spill becomes an Emergency Response when:

- A. The release or spill significantly impacts another agency's functions;
- B. The incidental spill precipitates evacuation or curtailing of work;
- C. The event causes a negative impact on neighboring facilities or the community; and
- D. The spill involves a coordinated effort by local first responders.

Only properly trained pesticide applicators can transport or apply pesticides. They will receive training and equipment that will allow them to respond to incidental spills. Spills that require an Emergency Response will be handled by a local HAZMAT team.

If a serious emergency occurs and the local fire department has been called in, or if there has been a spill that extends outside Parks facilities or could reach surface water, the National Response Center must also be called. If it exceeds the amount listed in the Code of Federal Regulations List of Hazardous Substances and Reportable Quantities, the spill must be reported to the National Response Center.

The spill need not be reported immediately if it occurs on a surface impervious to the hazardous material and is fully contained (such as within the one of the maintenance shops), and if it is completely cleaned up without further incident, including repairing the cause of the spill. In cases such as this, the IPM Coordinator will determine whether these agencies should be contacted.

A primary aim in following the procedures outlined here is to recover and reuse as much of the spilled pesticide as possible, if the product label indicates it is legal to do so. Any absorbent or other contaminated material from which the spilled pesticide cannot be recovered is hazardous waste and must be labeled, stored and disposed of properly in accordance with state and federal laws.

Prevention Methods

Parks Division personnel will employ a variety of practices to reduce the potential of a pesticide spill.

These will include the following:

Purchasing

- Ease of cleanup in the event of a spill will be considered as a factor in determining which chemical formulation to purchase.
- Packaging and formulations that may help to prevent a spill from occurring will also be considered as factors in making purchasing decisions.
- Characteristics of the pesticide, such as toxicity and reactivity that may affect the seriousness of a spill, will also be considered in purchasing decisions.

Preparation

- Risk reduction activities will include planning, training of personnel, and acquisition and maintenance of equipment and supplies. These activities will reduce the risk of a spill occurring, and will minimize damage should one occur. For example, regular preventative maintenance will be done on sprayers, so that hoses and valves are replaced before they wear out.

Work Practices

- Parks Division personnel will use practices to minimize the potential for a spill to occur, and to ease clean up in case one should occur. For example, pesticides should be placed in a leak-proof container while being transported.

Spill Response Training

Applicators who apply or transport small volumes of low to moderately toxic pesticides are responsible for responding to incidental spills. This is covered by OSHA's Hazard Communication regulation. Individuals at this level are trained to prevent spills from occurring. Should one occur, they are trained to stop the release, keep it from spreading, and do cleanup.

Individuals at this level will receive training in pesticide use, along with hazard communication and respiratory protection training. They must exhibit competency in the following areas:

- Familiarity with activities that promote spill prevention.
- Familiarity with the Pesticide Spill Response policy, PA-11, the procedures outlined in it, and their own role in an emergency.
- Knowledge of safety and health hazards of hazardous materials in a spill.
- An understanding of basic chemical and toxicological terminology and behavior.
- Knowledge of work practices that employees can use to minimize risks from hazards.

- Selection and use of proper personal protective equipment.
- Identification of symptoms that may indicate overexposure to hazards.
- Implementation of basic decontamination procedures.
- Performance of basic control, containment, and clean-up techniques.
- Skill in determining when a spill is fully cleaned up.

IPM Coordinator Spill Responsibilities

The IPM Coordinator will go to all problem spill sites, supplying materials requested by the crew. He/She will assist in cleanup, if it has not yet been completed; ensure that the site has been cleaned up completely; help recover the pesticide and arrange for disposal. He/She will document the scene; talk to homeowners and emergency response crews; and photograph the site.

Parks Division Personnel Spill Responsibilities

If a release of pesticides occurs, Park Division personnel should follow the guidelines below. Do not clean up the spill if you are not properly trained, if you don't have proper protective equipment, or if doing so would endanger your health or safety.

I. Assess the Situation

If the release is controllable and there are no injuries, tell bystanders to remain at a safe distance. Follow the spill control procedures outlined in Section II and control the spill as soon as possible.

If the release is out of control:

- A. Tell any bystanders to remain at a safe distance.
- B. Set up traffic control measures as necessary for safety.
- C. Call 911. Describe the situation as a hazardous materials spill. If there are injured people, ask for an ambulance. If chemical injury is involved, be certain that a copy of the product label accompanies the victim in the ambulance.
- D. Assist any injured people.
- E. Determine whether there is an imminently hazardous situation that you can take steps to correct. As an example, it may be appropriate to move the truck away from a waterway or heat source.
- F. Notify your supervisor or the IPM Coordinator, and request any needed resources or assistance.

- G. If the spill is on a roadway, set up DOT reflectors upwind of spilled materials and divert traffic if possible.
- H. Remain on site until otherwise directed by your supervisor or the IPM Coordinator.

II. Control the Spill

- A. Put on personal protective equipment.
- B. Do not allow the material to enter a drain. Establish storm drain inlet protection. Survey the area to see if there is a need to place a dam to protect a sewer drain, storm sewer, or waterway. If the pesticide does enter a drain, reduce the flow as much as possible, and notify the IPM Coordinator. The IPM Coordinator will call the appropriate agencies.
- C. Stop the flow of the chemical.
 - If the spill is from a leaky container, position the container to prevent additional spillage.
 - If the spill is from a leaky valve, isolate the valve and depressurize the tank.
 - If the spill is from a broken hose shut-off valve or pump, it may help to loop the hose back into the tank.
 - If there is a rupture, use duct tape or any other material (such as rags or a patch) to stop the flow of a chemical.
- D. Contain the spill using absorbent material. Call your supervisor to request additional supplies, resources, and assistance if needed.
- E. Change or add to your protective equipment as necessary. Put contaminated protective equipment in a plastic bag to transport to your work unit for cleaning. Follow proper decontamination procedures for protective equipment.

III. Clean Up the Spill

- A. Clean up the spill to the extent possible.
 - For dry material, sweep up the pesticide.
 - For a liquid spill, remove material using a wet vacuum where possible. Other useful materials include dry absorbents, absorbent dikes, pillows, and towels.
 - For concentrate spills on pavement, after picking up as much as possible, contain the area and spot mop the pavement with a small amount of water. Absorb or vacuum this diluted pesticide and reclaim it.

- B. If the soil has been contaminated, contact your supervisor. The IPM Coordinator, your supervisor, and you will determine to what degree cleanup should proceed using Parks Division staff. You may be asked to remove the contaminated soil. If so, scoop up enough soil to completely remove the pesticide. Place unusable material in a container labeled "Hazardous Waste". The IPM Coordinator may sample the soil on site to determine if it has been sufficiently cleaned up, or may hire outside expertise to do sampling or clean-up.

IV. Reclaim the Pesticide

- A. Reclaim the chemical on site if possible. Sift dried material to remove debris and return it to its proper packaging. Reclaim liquid material that has been absorbed through rinsing the absorbent material. Use the rinsate on a target site, or properly label and store it for future application.

- B. Any pesticide recovered but not reclaimed on site will be processed at the work unit base. The absorbent material will be dried and reused.

- C. Hazardous waste must be stored in a labeled container at the work unit headquarters. It will be transported to a waste management facility for disposal, arranged for by the IPM Coordinator.

V. Document the Incident

- A. Complete a Pesticide Spill Incident Report.

- B. File one copy of the report with the IPM Coordinator, one copy with your unit headquarters, and one copy for your personal records.

- A. All Pesticide Spill Incident Reports will be reviewed by the IPM Coordinator.

Pesticide Spill Response Equipment and Materials

The following items should be immediately available to all persons applying or transporting pesticides:

- A. The following materials, either in a binder or on a clipboard:
- Chemical labels for materials being transported
 - MSDS for chemicals being transported
 - Shipping papers when necessary
 - Pesticide Spill Response Procedures and Incident Report
 - A DOT Emergency Response Guidebook
 - Emergency phone numbers

During transportation and application, the MSDS for all pesticides should be clipped onto the front of the binder or clipboard to make pesticide identification easy for outside agencies in the case of an emergency.

- B. A cellular phone or radio, if there is the potential of a spill occurring that would require assistance.
- C. Personal protective equipment appropriate for emergency handling of the pesticides being applied or transported.
- D. An eyewash either on the truck or on site and immediately available in case of an emergency.
- E. Tools and supplies to make emergency repairs to the application equipment and to stop leaks.
- F. A means of picking up spilled material. Depending on the pesticide formulation this may include absorbent material, broom and dustpan, shovel, or wet vacuum.
- G. Plastic recovery bags and ties for any waste material and for contaminated personal protective equipment.
- H. At least one (1) gallon of clean water and detergent.

Following is a list of equipment and supplies that may be necessary to carry depending on the type of pesticide and its volume:

- An extra protective suit
- Extra gloves
- An extra set of clothing
- Waterless soap

- Absorbent dikes, pillows and towels
- Squeegee
- Whisk broom
- Dust pan
- Hard bristle brush to loosen material
- Duct tape for temporary repair
- Patching material
- Irrigation system quick coupler and hose
- Two (2) freestanding signs warning of danger
- Warning tape
- Emergency reflectors or flares
- Strainers
- Bucket
- Flat and pointed shovels

It is the responsibility of the applicator or transporter to ensure that he/she is carrying the items necessary should there be a spill.

PA-12: Accidental Pesticide Exposure

The Eureka Parks Division shall keep employees who apply pesticides informed of proper procedures to be taken in case of pesticide exposure, or suspected cases of pesticide exposure.

The Parks Division seeks to avoid accidental pesticide exposure through the work practices of its personnel. In the event of an accidental pesticide exposure to staff, Eureka has developed the following emergency response guidelines:

- Anyone inquiring about pesticide exposure will be referred to the designated medical facilities for work related injuries and illnesses and the Poison Control Center. Appendix C contains a list of emergency phone numbers that can be used for reference. The City of Eureka Personnel Department will also be notified.
- Material Safety Data Sheet information is available to all personnel for their own use. This information includes symptoms, and procedures for handling overexposure to individual pesticides. If symptoms of illness occur during or shortly after applying pesticides, Parks Division personnel should call the Poison Control Center or seek medical attention immediately.
- Non-emergency questions received by Parks Division personnel should be referred to the IPM Coordinator, who is responsible for referring the questioner to the appropriate individuals or sources for more information.

Eureka's Parks Division seeks to avoid emergencies through planning and preparation, including the following:

- The IPM Coordinator researches symptoms and problems of each pesticide to be used through Material Safety Data Sheets to be aware of thresholds.
- Personnel are required to use all safety procedures and protective gear as recommended on the product label or in the MSDS.
- Personnel are required to have a copy of the appropriate label available, while applying or transporting pesticides both concentrated and dilute.

Procedures for Parks Division Personnel for Suspected Cases of Pesticide Exposure

- A. Provide first aid for any emergency situation.
- B. Call for emergency backup if necessary.
- C. Refer to the Poison Control Center.
- D. If necessary to leave the site, bring a product label or MSDS for use by medical personnel at designated medical facilities for work related injuries and illnesses.
- E. Inform your supervisor and Personnel Department as soon as possible.
- F. Inform the IPM Coordinator as soon as possible.

Procedures for Parks Division Personnel in Response to a Non-Emergency Inquiry

- A. Personnel should respond to simple, direct questions if able to do so.
- B. Detailed or technical questions should be referred to the IPM Coordinator.
- C. Inform your supervisor when a non-emergency inquiry occurs.

PA-13: Pesticide Application By Outside Contractors

The policy of the Parks Division is that work completed by outside contractors in the Eureka parks system shall be consistent with Eureka's Integrated Pest Management Plan.

When outside contractors are hired, IPM techniques and methods should be encouraged through the contracting procedures and specifications. In addition, pesticide applications that are carried out by personnel other than Parks Division employees, such as those done by private contractors, should undergo a preliminary approval process before the work begins to ensure that proposed activities are consistent with the Integrated Pest Management Plan.

Contractors anticipating pesticide use are required to notify the IPM Coordinator in writing of intent to apply pesticides. Contractors should provide:

- Commercial operators and applicators license numbers.
- Name of the pesticide
- Methods for application
- Equipment to be used
- Purpose of the pesticide application
- Description of the on-site notification procedures that will be used.

Contractors are also required to meet all of the additional city contractual language pertaining to pesticide applications, including safety precautions, liability issues, and responsibilities.

After receiving the contractor proposal, the IPM Coordinator will review the proposal and approve or deny the request based on the principles of the policy. The same criteria for determining the best method of pest control for Eureka's Parks Division should be applied to the evaluation of contractor proposals.

Section VI: Specific Management Guidelines

Specific management guidelines are organized by the Parks Division major areas of responsibility: Parks, Landscaped Areas, and Street Trees. An additional section addresses natural areas. In some cases, standards are provided for certain types of features or lands.

Parks

Parks contain a variety of features. Guidelines are provided for features common in Eureka's parks.

Playground Areas

Description:

Playground areas include those areas with play equipment such as play structures, swings, and slides that require safety surfacing.

Guidelines:

- When installing new equipment or renovating existing playgrounds, ensure adequate site preparation to prevent pest problems.

Standards:

- No pesticides shall be applied to safety surfacing materials as part of routine maintenance.
- Renovation or construction of playground areas is subject to the standards and guidelines for site preparation/construction.

Turf

Description:

Turf includes lawn areas designed for open recreation that are regularly maintained.

Guidelines:

- Determine level of tolerance for pests. This is typically expressed as a percentage of weeds permitted.
- Determine level of care. Within some parks, there may be areas that can receive a reduced level of care, such as an allowance of more weeds. A lower level of care may be appropriate for low use or low visibility areas.
- Preparation of new turf areas. Proper preparation is the key to healthy, well-established turf. Prior to seeding or laying sod, any existing vegetation should

be removed. If weeds are expected to be a problem, the site should be irrigated before seeding or sodding and the weeds should be allowed to germinate. The weeds should then be removed through the best method for that particular weed, such as by shallow cultivation or an application of a nonselective herbicide such as glyphosate.

- Soil amendments for new turf areas. Turf grows best in soil that is well-draining, but that also can retain water. Soils with a high clay content or sandy may need to be amended for optimal turf conditions. Amendments such as compost or nutrients can improve drainage in tightly compacted clay soils or improve the water-holding capacity in sandy soils. If topsoil is added, it should be high quality and free of weed seeds. It may be advisable in some situations (such as for large turf plantings) to have soil testing done.
- Proper use of irrigation. For most turf grasses, deep, infrequent irrigation will promote the healthiest root growth and provide the best conditions. Frequent watering is needed for new turf, but frequent light watering of established turf encourages shallow-rooting and provides opportunities for weed growth. Some guidelines suggest that turf should be irrigated deep enough to penetrate the soil to a depth of 6 to 8 inches, with the soil being permitted to dry out between waterings. Generally, turf should be irrigated deeply, but infrequently. Irrigation should occur early in the morning to minimize evaporation and disease risk. Only enough water should be applied as can be infiltrated into the soil. Runoff should not occur when the irrigation system is in operation.

If the turf is irrigated, the irrigation system should be checked periodically to make sure it is providing the right amount of water and that the heads are functioning properly. Besides potentially providing the wrong amount of water, poorly maintained sprinklers can unevenly water turf so that some areas are overwatered and other areas are under watered. In addition, correcting problems (tilted heads, overwatering, etc.) can significantly reduce water use, while maintaining healthier turf.

- Proper mowing practices. To maintain healthy turf, proper cutting heights and “grasscycling” (mulching with grass clippings / not raking clippings) should be standard practices. Each species of turf grass has optimal mowing height ranges. For the types of grasses commonly used in Eureka, these typically range from 1.5 to 2.5 inches. Mowing heights should be established to meet the optimal requirements for the grass species, season, and use of the turf area. If turf is mowed too short, it can be stressed and weeds have an opportunity to invade. However, if some grasses are left too long, thatch can build up to unhealthy levels and weaken the turf.

Mower blades should be kept sharp to reduce injury to the turf. As a general guideline, no more than one-third of grass height should be removed at one time. If mowers are used on weedy areas, blades should be washed before moving to another non-weedy area to minimize transport of weed seeds. Where possible, mowing should be avoided when the soil is wet, because this can increase soil compaction.

- Proper turf cultural practices. Periodic aeration, overseeding, thatching, and top-dressing should be used to improve turf health. Thatch is a layer of organic material that builds up between turf and the soil surface. While some thatch is beneficial, a heavy layer will impede turf health. Regular thatch removal will help keep turfgrass healthy and competitive with weeds.

Soil compaction restricts the flow of water and oxygen to the roots of turf, impeding its growth and health. Periodic aeration will alleviate soil compaction. Ideally, aeration should occur when turf is actively growing to obtain the greatest benefits, although this may not always be possible. Aeration needs vary depending on the level of traffic on a turf area, and the type of soil present. Lawns on heavy clay soils or lawns with heavy foot or equipment traffic may need to be aerated several times a year while lawns with little activity may only need to be aerated once a year or less.

- Combining cultural practices with weed control. Turf aeration and overseeding should occur along with any application of broadleaf weed control to help eliminate the cause of the problem, and therefore the need for repeated applications.

Sports Fields

Description:

Sports fields are designed for athletic play, including football, soccer, softball, and baseball. Sports fields include the actual field as well as associated support facilities, such as bleachers, and dugouts. Sports fields undergo demanding use that puts a lot of wear and tear on the turf, and that often require more maintenance than other turf areas.

Guidelines:

- Determine levels of care. Not all sport fields will necessarily need to be maintained to the same level. Depending on the type of field, the maintenance level may vary. For example, there may be a higher level of care for fields used for tournaments, with a lower level of care for fields used only for practice.

- Use of cultural techniques. Aeration, top-dressing, overseeding, and other cultural techniques for healthy turf should be completed periodically as staff resources allow.
- Use of irrigation. Irrigation should be evaluated to ensure it is being properly used. Upgrading to computerized irrigation systems should be considered for highly used, high profile areas.
- Proper mowing heights. Each species of turf grass has optimal mowing height ranges. For the types of grasses commonly used in Eureka, these typically range from 1.5 to 2.5 inches.
- Grass clippings. Grass clippings should be “grass-cycled” (not raked), unless accumulations exceed allowable standards.
- Closure of fields. If feasible, given field supply and demand for play, Eureka should consider closing fields to play when conditions are such (very wet, etc.) that play would damage the field extensively.
- Design for maintenance. Potential problem areas, such as underneath bleachers or in dug-outs, should be eliminated through paving or other design solutions.
- Treatment of bare areas. Infields and other skinned or bare areas should be dragged periodically to keep weeds down. Herbicide applications may be made if needed.
- Establishing field lines. Herbicide applications may be made to establish field lines.
- Timing of herbicide applications. Any herbicide applications should be scheduled to provide as little interference with field use as possible.

Rough Turf/Meadows

Description:

Rough turf/meadows are those areas where grasses are permitted to grow long. These are not intended for passive recreation use.

Guidelines:

- These areas should be cut at least annually, or more frequently if needed for brush and weed seed control.
- Cutting should be timed to make sure it is occurring when it will have the desired effect, and not result in the dispersal of weed seeds.

- Herbicide use may be needed to prevent weed infestations from spreading from rough turf or meadow areas to higher quality turf or higher profile park areas.
- Herbicide use may be needed to help control invasive non-native plant species.

Landscaping Beds

Description:

Landscaping beds are maintained areas that may contain groundcovers, shrubs, trees, perennial plants, or annual flowers. These occasionally include small turf areas or trees located in turf areas, and may include landscaped parking lot islands.

Guidelines:

- Prevention of pest problems. Prevent pest problems through design and plant selection. Personnel should be aware of plants that do well in Eureka's parks as well as those that are problematic, and should review new designs to make sure there are no potential problem plants.
- Replacement of pest-prone plants. Where possible, replace plants prone to pest problems. It may not always be possible to replace plants, such as the case of heritage trees or other special circumstances.
- Adequate site preparation. Ensure that sites are adequately prepared before plantings are installed. Preparation techniques will vary depending on the site, but can include soil improvements, pruning of surrounding vegetation, soil grade adjustments, drainage improvements, and installation of irrigation systems.
- Proper use of irrigation. Check irrigation to make sure systems are timed properly, and the application rate is optimal for plant health.
- Cultural techniques. Use compost and other natural amendments to create healthy soil and promote plant health.
- Use of weedmat and mulch. Use mulch to retain water and suppress weeds, if appropriate for the situation.
- Use of fertilizer. Use fertilizer properly to promote healthy plants, without over-fertilization. Not all plants require fertilizer to succeed, and fertilizer should be applied only where needed following appropriate procedures.

- Use of pre-emergent herbicides. Pre-emergent herbicides may be appropriate as a means of reducing the need for post emergent herbicides. Not every landscaped area may need such an application, but where warranted it can be vital. Pre-emergent herbicide use should be based on factors such as weed seed pressure, how well emerging seedlings naturally survive, and experiences in previous years, among others.
- Use of herbicide spot treatment. For problem weed infestation, spot treatment with herbicides may be appropriate.

Park Trees

Description:

Park trees are trees located within developed parks that are outside of landscaping beds, rights-of-way, and parking lots. Park trees are typically located within turf lawns.

Guidelines:

- No-grass area. A no-grass area should be maintained around tree trunks to prevent trunk and root flare damage. Damage caused by lawn care equipment can create wounds on trees that allow pests to become a problem. This type of damage is very preventable, and should be stopped by all means at Eureka's disposal. Mulch may or may not be appropriate for the no-grass area, depending on the situation. For example, mulch may encourage weed growth underneath Douglas firs.
- Pruning of deadwood. Trees should be pruned to remove deadwood to reduce susceptibility to disease.
- Tree preservation during construction. Tree preservation measures should be taken when construction activities will occur within the root zone of a park tree not planned for removal. At a minimum, this should consist of protective fencing to minimize compaction in root zones.
- Control of insects or disease pathogens. Control of insects or disease pathogens that do not present a long-term health impact to park trees is of low priority. For example, transitory infestations of aphids or minor occurrence of leaf spotting diseases often do little lasting damage in terms of tree health and should not merit use of pesticides. There may be cases where long-term health is jeopardized by some pests, and control may be necessary in these cases. The IPM coordinator will determine the action level for these situations.

- Use of herbicide spot treatment. For problem weed infestation, spot treatment with herbicides may be appropriate.

Landscaped Areas

Landscaped areas include public buildings, downtown plazas, right-of-way landscaping, and other non-park landscape features. Guidelines are provided for features common in Eureka's landscaped areas.

Landscaping Beds

Description:

Landscaping beds are maintained areas that may contain groundcovers, shrubs, trees, perennial plants, or annual flowers.

Guidelines:

- Prevention of pest problems. Prevent pest problems through design and plant selection. Personnel should be aware of plants that do well in Eureka's parks as well as those that are problematic, and should review new designs to make sure there are no potential problem plants.
- Replacement of pest-prone plants. Where possible, replace plants prone to pest problems. It may not always be possible to replace plants, such as the case of heritage trees or other special circumstances.
- Adequate site preparation. Ensure that sites are adequately prepared before plantings are installed. Preparation techniques will vary depending on the site, but can include soil improvements, pruning of surrounding vegetation, soil grade adjustments, drainage improvements, and installation of irrigation systems.
- Proper use of irrigation. Check irrigation to make sure systems are timed properly, and the application rate is optimal for plant health.
- Cultural techniques. Use compost and other natural amendments to create healthy soil and promote plant health.
- Use of weedmat and mulch. Use mulch to retain water and suppress weeds, if appropriate for the situation.
- Use of fertilizer. Use fertilizer properly to promote healthy plants, without over-fertilization. Not all plants require fertilizer to succeed, and fertilizer should be applied only where needed following appropriate procedures.
- Use of pre-emergent herbicides. Pre-emergent herbicides may be appropriate as a means of reducing the need for post emergent

herbicides. Not every landscaped area may need such an application, but where warranted it can be vital. Pre-emergent herbicide use should be based on factors such as weed seed pressure, how well emerging seedlings naturally survive, and experiences in previous years, among others.

- Hand weeding and clearing of landscaping beds. This can include the use of hula-hoes and other hand tools.
- Use of herbicide spot treatment. For problem weed infestation, spot treatment with herbicides may be appropriate.

Right-of-way Landscaping

Description:

Right-of-way landscaping areas are ornamental planted areas adjacent to public rights-of-way. They may contain turf, groundcovers, shrubs, trees, perennial plants, or annual flowers, and are typically highly visible due to their location and intended aesthetic appearance. Frequently, the location also makes access difficult or dangerous for maintenance personnel.

Guidelines:

- Level of tolerance. Establish a level of tolerance for pests. The tolerance may be higher than for landscaped beds in parks and plazas or at public buildings, because right-of-way landscaping is often viewed from a distance, or from a moving vehicle. Right-of-way landscaping typically requires less intensive maintenance and pest management than landscaped beds, and receive less impact from visitors.
- Proper design and plant selection. Prevent pest problems through design and plant selection. Right-of-way sites often have poor soil quality, which can lead to problems with plant health. In addition, since they may be irrigated less or not at all, the planting may be stressed and more prone to problems. Personnel should be aware of plants that do well in Eureka's streetscapes and right-of-way areas, as well as those that are problematic, and should review new designs to make sure there are no potential problem plants. The focus in right-of-way landscaping should be the use of plant materials that can withstand the stresses found in the R.O.W. environment, without added pest management.
- Replacement of pest-prone plants. Where possible, replace plants that are prone to pest problems. It may not always be possible to replace plants, such as the case of heritage trees or other special circumstances.

- Adequate site preparation. Ensure that sites are adequately prepared before plantings are installed. Preparation techniques will vary depending on the site, but can include soil improvements, pruning of surrounding vegetation, soil grade adjustments, drainage improvements, and installation of irrigation.
- Proper use of irrigation. If irrigation is present, the timing and application rates should be checked to make sure that irrigation is not providing for weed growth. Sites that are drier are less prone to weed growth during the summer months.
- Horticultural practices. Use horticultural practices, as warranted, to promote plant health. This includes use of compost and other natural amendments and mulch, if appropriate for the situation. Due to the nature of right-of-way sites, safety considerations of the crew are paramount and may not permit as high a level of horticultural care as in landscaping beds in parks and plazas.
- Use of pre-emergent herbicides. Pre-emergent herbicides may be appropriate as a means of reducing the need for post emergent herbicides. Not every landscaped area may need such an application, but where warranted it can be vital. Pre-emergent herbicide use should be based on factors such as weed seed pressure, how well emerging seedlings naturally survive, and experiences in previous years, among others.
- Use of herbicide spot treatment. For problem weed infestation, spot treatment with herbicides may be appropriate.

Paved Areas

Description:

Paved areas include plazas, walkways, sidewalks, parking lots, roadways, paved trails, and all other hard surface areas, whether pervious or impervious.

Guidelines

- Determine a level of care. Plaza areas may require a different level of care from parking lots.
- To maintain pavement integrity, weeds in pavement joints, pavement cracks and along the shoulders should be controlled.
- Sweep paved areas periodically to remove debris.
- Along paved pathways, gravel mulching should be used along pathway shoulders where deemed appropriate.

- Use of herbicide spot treatment. For problem weed infestation, spot treatment with herbicides may be appropriate.

Street Trees

Street trees are those trees planted along public rights-of-way. These are managed differently from trees in parks and landscaped areas.

Street Trees

Description:

Street trees those trees located along rights-of-way, contained in planting strips or tree wells. Tolerance for pests may be different than for park trees.

Guidelines:

- No-grass area. If trees are contained in a turf planting strip, a no-grass area should be maintained around tree trunks to prevent trunk and root flare damage. Damage caused by lawn care equipment can create wounds on trees that allow pests to become a problem.
- Pruning of deadwood. To reduce susceptibility to disease, trees should be pruned to remove deadwood and branches likely to be broken by passing vehicles.
- Tree preservation during construction. Where possible, tree preservation measures should be implemented when construction activities will impact the root zone of a street or parking lot tree not intended for removal through the construction activities.
- Use of weedmat and mulch. Use mulch to retain water and suppress weeds, if appropriate for the situation.
- Hand weeding and clearing of landscaping beds. This can include the use of hula-hoes and other hand tools.
- Use of herbicide spot treatment in tree wells. For problem weed infestation, spot treatment with herbicides may be appropriate.

Open Spaces

Open space areas include wildlands, gulches and greenways, and riparian and forested areas. These guidelines may be applied to riparian, forested or other natural areas within parks.

Open Space Trees

Description:

Open space trees are those trees contained within open space areas. These may be natural open space areas within a larger active use park, or stand-alone natural open space areas or greenways. In general, natural processes should be permitted to take their course in natural area, unless public safety or a management or restoration plan calls for a different approach.

Guidelines

- Unless otherwise specified in a management plan, open space trees should be pruned or removed for hazard abatement only, such as a limb or tree in danger of falling on a pathway.
- Unless an epidemic problem endangering an entire species or otherwise specified in a management or restoration plan, generally natural area trees should not be treated for pests or disease. In cases of invasive insect or disease infestations, such as introduced borers, gypsy moth, Sudden Oak Death, etc., the IPM Coordinator will determine the action level, which may include pesticide applications.
- Stinging insect nest removal or insecticide spot treatment may at times be necessary for public safety.

Unpaved Trails

Description:

Unpaved trails are gravel or other soft surface pathways in parks and natural areas.

Guidelines

- Vegetation should be kept clear of the pathways on an as-needed basis. The IPM coordinator will determine the action level, which may range from hand-clearing to pesticide applications.
- Stinging insect nest removal or insecticide spot treatment may at times be necessary for public safety.

Upland Natural Areas

Description:

Upland natural areas are those natural areas outside of wetlands, creeks, lakes, waterways, and required buffers.

Guidelines:

- Unless otherwise specified in a management plan, vegetation in open space areas should be pruned or removed to eliminate or reduce hazards or invasive vegetation only.
- Vegetation management may be needed for plant community establishment, rehabilitation work, or similar activities. There may even be times where native plants need to be controlled when establishing certain plant communities.

Creeks, Waterways, Lakes, and Wetlands and Associated Buffers

This section is intended to provide clear guidelines for maintenance of parks and landscaped areas that contain aquatic area. Eureka has based its policies on management around aquatic resources on those of Portland Parks & Recreation, which have been approved in the Federal 4(d) rules with regard to salmonid species protection. The buffer zone standards are those approved by NOAA Fisheries. Programs that meet 4(d) salmonid protection criteria are referenced as also providing protection for green sturgeon in the May 2009 Regulatory Impact Report.

Description:

Aquatic habitat areas, such as creeks, waterways, lakes, and wetlands, are generally environmentally sensitive and are subject to a variety of regulations designed to protect them.

Guidelines:

- The intent of Eureka's Integrated Pest Management Plan is to provide protection of Eureka's aquatic resources. Personnel should keep this intent foremost in their minds when undertaking maintenance and management activities in aquatic areas.
- Specific management plans may be developed for some of Eureka's open space areas. Recommendations contained within management plans may provide guidance for specific sites.
- Pest prevention should be the priority in aquatic areas, as in the rest of the park system.

- When pests become a problem, biological methods of vegetation and pest control will be considered before chemical means.
- Naturally derived and synthetic pesticides will be used only when no other feasible methods exist.

Standards:

- Buffer for pest management activities. A 25' buffer is required from all creeks, waterways, and lakes for pest management activities. Measurement of the pest management buffer zone begins at the edge of the water line at the time of application. When considering buffer zones, anticipated seasonal or weather related changes affecting water level will be included in the decision-making process. The high waterline as defined in this section refers to the highest possible water level that would be expected in a given body of water during a 5-year period.
- Pesticide delivery. If pesticides are required within a buffer area, pesticide delivery will be carried out by hand with directed, low volume, single wand sprayers, wiping, daubing and painting equipment, injections systems, or drop spreaders. Typically, this would be done by backpack sprayers, but may also be done using sprayers with larger fill tanks as long as the same kinds of hand application methods are used. These specified methods of delivery result in low volume applications and low pressure spraying, which minimize the formation of fine mists that might be carried off target. These practices ensure that applied materials will reach targeted plants or targeted soil surfaces.
- Protection of surface water. Great care will be exercised when applications of pesticides are being made within the buffer zone to protect surface water. Equipment used in the application shall employ all necessary methods to limit drift. Nozzle size, pressure regulation, droplet size, and height of spray wand all can be modified to reduce unwanted drift of pesticides.
- Spray application limitations. Spray pesticide applications are not permitted in the buffer area when:
 - Wind speed is above 5 mph.
 - Wind direction or activity would carry pesticides toward, or deposit them upon open water.
- Additional record-keeping requirements. Additional record-keeping is required for pesticide applications within the buffer zone or for aquatic

situations. A National Pollution Discharge Elimination System (NPDES) permit is required for aquatic applications. When pesticides are applied within the buffer zone or for aquatic situations, a note must be made on the record referenced in policy PA-7, in addition to other required records. The IPM Coordinator will monitor and keep separate data on pesticide applications in buffer zones and aquatic areas. An annual report will be prepared, and will be made available to agencies such as NOAA Fisheries Services.

Standards for Available Pesticides

A more limited list of pesticides is available for use in buffers and aquatic sites than the Eureka Parks Division Approved Pesticides List. Only the pesticides specifically listed within this section may be used within buffer zones or waterways. The decision-making process takes into account any possible effects on aquatic life as well as tendencies to move in the environment.

Trees within the buffer zone will not be sprayed with pesticides. In the rare event a pest or disease threatens the health of important and valuable trees within a buffer zone, there may be a need to treat them. However, in these special cases, the use of injectable pesticides may be employed when necessary, with the following limitations:

- The pesticide applied must be delivered by methods that inject or otherwise distribute the material entirely within interior tree tissues.
- Pesticides will not be injected into the soil surrounding the tree. Tree surfaces will not be sprayed or treated with pesticides.
- The insecticides and fungicides used in these injection systems shall be approved by the IPM Coordinator. The intent and limit of this exception to the approved buffer zone pesticide list is to allow only the insecticides or fungicides necessary to combat direct threats to the health of valuable trees.

Materials for All Other Areas:

Pesticides on Eureka's Approved Pesticides List may be used outside the waterway and buffer zones, unless otherwise prohibited.

Classification of Buffer Zone Landscapes Near Creeks, Waterways, and Lakes

The buffer zones within park landscapes near waterways, lakes and ponds are divided into four classifications (A, B, C, and D) that describe their current features, as well as define the differing objectives and maintenance rationales of their care. There may be multiple buffer zone classifications within a single park.

A. Highly Managed Areas

This type of waterway buffer zone is developed for park and recreation uses, but may include other areas with a lower level of care.

Features of Highly Managed Areas:

- Ornamental landscape
- Public access and activity
- High public use
- Mowing of turf, sometimes to edge of waterway
- May have facilities adjacent to water or wetland
- May have highly modified stream banks/shorelines

Objectives for Highly Managed Areas:

- Healthy plants and turf
- Maintain ability to handle high use
- Minimize need for chemical intervention
- Control invasive plants
- Safe access
- No bare soil areas
- Low tolerance for weeds
- May have high expectation for aesthetics in general

B. Intermediate Managed Areas

This type of buffer area is less developed and receives less management and use than highly managed areas, and may include other areas with a lower level of care.

Features of Intermediate Managed Areas:

- Stream banks have predominately native vegetation buffers.
- Some impacts from use and park development apparent on water resources
- Managed landscapes may be nearby
- Stream bank erosion may be occurring due to use

Objectives for Intermediate Managed Areas:

- Maintain healthy plant buffers
- Minimize need for chemical intervention
- Control invasive plants where feasible
- Minimize impact on buffer
- No bare soil areas
- Tolerance for natural appearance and weeds

C. Impacted Natural Areas

This type of buffer area does not include active use, but may be located in conjunction with highly managed or intermediate managed areas.

Features of Impacted Natural Areas:

- Stream banks have buffering with predominately native plants
- Limited impacts from use and park development

Objectives for Impacted Areas:

- Maintain healthy plant buffers
- Minimize need for chemical intervention
- Lower tolerance of invasive plants, non-natives
- Minimize any impacts on buffer
- No bare soil areas

D. Intact Natural Areas

Intact natural areas are open space areas not degraded by humans. There are very rare instances of intact natural areas within Eureka's system of parks and open spaces.

Features of Intact Natural Areas:

- Very limited visitor impact
- Native plant communities exist
- No nearby developed park areas

Objectives for Intact Natural Areas:

- Maintain healthy plant buffers
- No tolerance of invasive plants, non-natives
- Minimize any impacts from human activities

Management Practices for Buffer Zones of Waterways, Lakes and Ponds

The following matrix gives specific guidelines for use of pesticides and fertilizers in the buffer zones of waterways based on the management classifications outlined above. Use of pesticides and fertilizers also vary depending on whether they are being used for routine maintenance or for restoration and construction projects. This table is taken from the Portland Parks and Recreation Pest Management Program, which received approval from NOAA Fisheries as providing protection for endangered salmonid species.

Table 6: Use of Pesticides and Fertilizers Within Pesticide Buffer Zones

Chemical or Fertilizer	Activity	Classification			
		A	B	C	D
Pre-Emergent Herbicide	Routine Maintenance	Only in shrub beds above high water line	No	No	No
	Restoration/Construction	Only in shrub beds above high water line	No	No	No
Glyphosate	Routine Maintenance	Spot spray and broadcast spray	Spot spray and broadcast spray	Spot spray and broadcast spray	Spot spray for target invasive vegetation only ¹
	Restoration/Construction	Spot spray and broadcast spray	Spot spray and broadcast spray	Spot spray and broadcast spray	Spot spray and broadcast spray for non-natives ¹
Triclopyr	Routine Maintenance	Cut and treat stems. Spot spray	Cut and treat stems.	Cut and treat stems.	No
	Restoration/Construction	Cut and treat stems. Broadcast spray ¹	Cut and treat stems. Spot spray. Broadcast spray ¹	Cut and treat stems. Spot spray/broadcast to establish monocots ¹	No
Slow release fertilizer	Routine Maintenance	Directed application to shrub beds if no flooding possible	No	No	No
	Restoration/Construction	Directed application if no flooding possible	Directed application if no flooding possible	Directed application if no flooding possible	Directed application if no flooding possible

¹ Requires approval of the IPM Coordinator

Use of Mulches

Mulches and other ground coverings are often employed during the installation and restoration of landscapes as well as their ongoing maintenance. They are utilized for a variety of reasons. Mulches suppress weeds, help to retain moisture around plants, reduce possible erosion, and provide visual enhancement. Use of landscape mulches in buffer areas should take into account any possible impacts to the buffer as well as nearby waterways.

These impacts may include:

- Inadvertent introduction of non-native weeds to the site
- Leaching of substances such as tannins from the mulch into nearby waterways
- Migration of mulch material into waterways
- Nutrient leaching into waterways

Choices of mulches should take these concerns into account. Routine maintenance in A, B, and C class area buffers should minimize the use of mulches. Class D area buffers should use mulches only as a part of restoration activity. Mulching in areas below typical high water lines is discouraged in any buffer areas. Seeding of cover crops for erosion control is allowed in buffer zones. Use of cover crops in class D areas should never introduce any persistent non-native plant species.

Management Practices Within Bodies of Water, Bio-filters and Wetlands

An NPDES permit is required for aquatic applications. The following describes specific practices that may be used within the actual bodies of water, if approved through the permitting process.

Within Streams and Creeks

In the rare need for control of noxious weeds and invasive non-native plants, within a stream itself, mechanical and biological means will be utilized where possible. When these methods are not feasible, emergent weeds only may be controlled with Rodeo and an approved surfactant if needed. Although rare, control of noxious and invasive weeds such as Japanese polygonum (knotweed), yellow iris, and purple loosestrife may be needed to maintain a healthy environment. These treatments will take place at mid-summer. Frequency of these treatments shall not exceed once a year even in the worst of infestations. Applicable permits from appropriate outside agencies will be obtained before this kind of treatment takes place. Submerged weeds will not be controlled by chemical means in streams and rivers or other moving waters.

Within Lake Areas

Within the pond or lake itself, herbicides will be used only for the control of noxious weeds and non-natives that threaten the health of the habitat. A list of these potential target weed species shall be developed by the IPM Coordinator. When chemical methods are necessary within the pond itself, only Rodeo (glyphosate) and an approved aquatic surfactant shall be employed.

In the event an emergency situation arises where habitat is endangered by non-native invasive submerged weeds in ponds and lakes, the IPM Coordinator may approve the use of an appropriate herbicide for control as a last resort. This will only be allowed where there is no direct outflow of the treated water to fish bearing streams or waterways. Applicable permits from appropriate outside agencies will be obtained before treatment takes place. The herbicide utilized shall be of very low toxicity to aquatic organisms, and be applied in such a way that there are no appreciable negative effects on the health of the aquatic environment.

Within Wetland Areas

Within the wetland itself, herbicides will be used only for the control of noxious weeds, and non-natives that threaten the health of the habitat. A list of these potential target weed species shall be developed by the IPM Coordinator. When chemical methods are necessary within the wetland itself, only Rodeo (glyphosate) and an approved aquatic surfactant shall be employed.

Within Biofilters and Pollution Reduction Facilities

Biofilters and Pollution Reduction Facilities (PRF) intercept stormwater run-off before it reaches the wastewater system or other drainages. Pre-emergent herbicides will be allowed where necessary only in shrub beds above the high water line. For post-emergent applications, 25' buffers will be established from the PRF or biofilter and will be treated as a class B (intermediate managed) buffer.

Within Bioswales

Bioswales are planted areas consisting primarily of grasses that act as a filter for run-off water moving towards a body of water or drainage system. If bioswales lie within the buffer area of any of the above listed waterways, they will have the same maintenance restrictions upon them as any other buffer zone. If the bioswale has an outlet to any surface water, treatments within the bioswale itself will follow the same restrictions as a class B (intermediate managed) buffer. If there is no outlet to surface water, the buffer may receive the same treatment as general park lands.

Appendix A
Approved Pesticide List

Approved Pesticide List

The following is a list of pesticides approved for particular uses by Eureka Park Operations. Many of the pesticides on this list are not necessarily used in a typical year, and if used, are used in a minor way. A successful IPM approach allows for a range of choices, or for managing pest resistance with rotations of different products. Pesticide application occurs only after other strategies have been employed or considered. The majority of Eureka's pest management practices never involve the use of pesticides, and most park or landscaped area acreage never receives pesticide applications.

The pesticides on the approved list were included only after a review process that examines the individual characteristics of the product and the appropriateness of it for use in Eureka. Adjuvants can be utilized only when included as a component of the pesticide product.

Over time, Park Operations may find there is a need to add or delete pesticides from the approved list. The IPM Coordinator will be responsible for these decisions, as outlined in Policy PA-1.

General Parks

These pesticides may be used in parks, landscaped areas, and for street trees. They may also be used in developed areas of other types of parks, such as trails or parking lots within natural open space parks.

Herbicides (Pre-Emergent)

Gallery 75 DF (isoxaben) Used on shrub beds, tree circles, and other areas. Can be used in combination or rotation with oryzalin to broaden the spectrum of weeds prevented.

Pendulum (pendimethalin) Intended for use on shrub beds, tree circles, and other areas.

Snapshot (trifluralin + isoxaben) Pre-emergent broadleaf and grassy weed control. Used on planter beds

Surflan AS (oryzalin) Liquid form used in shrub beds, tree circles, and other park and landscape areas.

XL 2G (benefin+oryzalin) Combination product for wider spectrum weed control. Granular product useful in shrub beds and where liquid products are more difficult to apply.

Herbicides (Post-Emergent)

DeMoss, Garden Safe Moss and Algae Killer, others (fatty acids) Moss control desiccant. For structures and non-vegetated surfaces. Possible sporadic use.

Garlon 3A, Lilly Miller Blackberry and Brush (triclopyr amine) Selective product for woody and difficult to control perennials. Used both in spray and cut-stem applications, also for invasives and habitat restoration.

Element 4 (triclopyr ester) Ester form of triclopyr, used for woody and herbaceous weed control.

Roundup Pro, ProDry, Rodeo, Aquamaster, Kleenup (glyphosate) Primary vegetation control product used with other control methods in shrub beds, tree circles, other park areas, controlling invasives and in habitat restoration.

Scythe (fatty acid) Non-selective liquid herbicide containing pelargonic acid. Primarily used to mark ballfield foul lines.

Insecticides

Aerosol Wasp Sprays (pyrethroids active ingredients only) Directed jet sprays used for individual wasp and hornet nest treatments posing health and safety threats to park users.

Bacillus thuringiensis Primarily for lepidopterous insects, although subspecies can be used for other targets. Insect control not usually done in general parks.

Malice, Merit (imidacloprid) Systemic product for specialty areas or for high value plant material. Minor use material intended for situations where infestations threaten the health of park plantings or street trees.

Safer Insecticidal Soap, M-Pede, others (soaps) Potassium fatty acid soaps. General soft body insect control. Used for aphid, scale and whitefly insect control only occasionally.

Sunspray, others (horticultural oils) General insect control both for dormant and growing season use. Insect control not usually done in general parks; not typically used.

Miscellaneous

Activator 90, R-11, LI 700, others (spray adjuvant) Surfactant used in solutions to enhance spray coverage and increase efficacy. Other spray adjuvants are approved for use.

Sluggo, Escargo (iron phosphate) For specialty areas susceptible to unacceptable slug damage, such as in some annual flower beds. Not typically used, but included on list for use if loss is unacceptable.

Tanglefoot (barrier product) Physical sticky barrier for crawling insect pests.

Wasp Traps (pheromone trap) Yellowjacket trap for certain areas. Not typically used.

Special Use Products

Any products not included on the above list must be approved by the IPM Coordinator prior to use.

In the event of an insect infestation or the need to prevent establishment of an insect such as gypsy moths, that requires State and County pesticide application on City land, the IPM Coordinator will cooperate with the appropriate officials to address the infestation while meeting the City's Integrated Pest Management goals.

Open Spaces/Natural Areas

Natural areas include required pesticide buffers and aquatic sites.

Herbicides (Post-Emergent)

Garlon 3A (triclopyr amine) Selective product for woody and difficult to control perennials. Used both in spray and cut-stem applications, also for invasives and habitat restoration. No Garlon will be applied within a 100-foot buffer on either side of all streams with ESA-listed fish.

Roundup Pro, ProDry, Rodeo, Aquamaster (glyphosate) Primary vegetation control product used with other control methods.

INTEGRATED PEST MANAGEMENT CONTROL COST ASSUMPTIONS

Eureka, California

Maintenance Task	Traditional Approach	Alternative Approaches	Cost Assumptions (1)	Cost
<i>Planter Bed Maintenance</i>				
Weed Control (pre emergent)	Hand cultivating	Chemical Application	20 min. (MW I) / 100 sq. ft.	\$6.95/ 100 sq. ft.
		Mulch	15 min. (MW II) / 100 sq. ft. + \$1 materials (3)	\$6.75/ 100 sq. ft.
		Fabric Application	30 min. (MW I) / 100 sq. ft. + \$5 materials (2,4)	\$15.43/ 100 sq. ft.
			15 min. (MW I) / 100 sq. ft. + \$18 materials (5)	\$18.44/ 100 sq. ft.
Weed Control (existing)	Hand Weeding	Chemical Application (spot)	30 min. (MW I) 100 sq. ft. 10 min. (MW II) / 100 sq. ft. + \$1 materials	\$10.43/ 100 sq. ft. \$4.83/ 100 sq. ft.
Pruning	Annual pruning	Reduced pruning (damage only)	30 min. (MW II) 100 sq. ft.	\$11.48/ 100 sq. ft.
			15 min. (MW II) 100 sq. ft.	\$5.74/ 100 sq. ft.
Debris Collection	Weekly pickup		15 min. (MW I) / 100 sq. ft.	\$5.23/ 100 sq. ft.
Replacement Planting		Replace with low maintenance materials	15 min. (MW I) / 100 sq. ft.	\$5.23/ 100 sq. ft.
<i>Turf Management</i>				
Mowing	7 day mowing cycle	Go to 10 day mowing cycle (20 times)	\$32/ acre/ hr x 32 times annually (9)	\$1,024/ acre
			\$32/ acre/ hr x 20 times annually (9)	\$640/ acre
Weed Control		Chemical application (spot)	45 min. (MW II) / acre + \$3 materials	\$20.25/ acre
		Increase mowing height	\$32/ acre/ hr x 32 times annually (9)	\$1,024/ acre
		Chemical Application (saturation)	30 min. (MW II) / acre. + \$3 materials & \$15 equip.	\$29.48/ acre
		Fertilization	30 min. (MW I) / acre. + materials & equipment (6)	\$31.91/ acre
		Irrigation	15 min. (MW II) acre + water cost (7)	\$25.75/ acre
<i>Hard Surface Care (tennis courts, parking lots, driveways, plazas, pathways)</i>				
Weed Removal (Spot)	Hand Removal	Chemical Application	10 min. (MW I) 100 sq. ft.	\$3.48/ 100 sq. ft.
		Burning	5 min. (MW II) / 100 sq. ft. + \$1 materials	\$2.92/ 100 sq. ft.
			5 min. (MW II) / 100 sq. ft. + \$1 materials	\$2.92/ 100 sq. ft.
<i>Tree Care</i>				
Pruning	Safety and shaping	Safety only	1.5 hr. (MWII) (5)	\$82.88/ tree
			0.75 hr. (MWII) (5)	\$34.50/ tree
Pest Control	Chemical application	General Wash	30 min. (MW II) / tree + \$20 equipment + \$5 materials	\$36.48/ tree
		Biological	30 min. (MW I) / tree + \$10 equipment	\$20.43/ tree
			15 min. (MW I) / tree + \$13 supplies (8)	\$18.23/ tree

Notes

- 1 Includes labor and materials and limited travel time
- 2 Based on Maintenance Worker I (MW) step 3 (\$14.90/ hr. + 40% benefits = \$20.86/ hour
- 3 Based on Maintenance Worker II (MW) step 3 (\$16.40/ hr. + 40% benefits = \$22.96/ hour
- 4 Assumes transportation and distribution
- 5 Includes 2 personnel
- 6 Nitrogen @ 43 lbs./ acre @ \$0.25/lb. + \$10.43 labor + \$11.48 material + \$10 equipment
- 7 includes automatic irrigation maintenance + \$20 per acre water cost
- 8 1,500 ladybugs
- 9 Based on 1.8 ac./hr; includes gang and trim mowers and travel time

INTEGRATED PEST MANAGEMENT CONTROL ALTERNATIVES
Eureka, California

Maintenance Task	Traditional Approach	Alternative Approach	Current Practice	Recommended Frequency	Cost/ Unit/ Application	Annual cost	Effectiveness of Alternative
Planter Bed Maintenance							
Weed Control (pre emergent)	Cultivating		Very little	3 times annually	\$6.95/ 100 sq. ft.	\$20.85/ 100 sq. ft.	
		Chemical Application	None	1 time annually	\$6.75/ 100 sq. ft.	\$6.75/ 100 sq. ft.	Very effective; politically sensitive
		Mulch	Annually	Annually	\$15.43/ 100 sq. ft.	\$15.43/ 100 sq. ft.	Somewhat effective
		Fabric Application	None	Once every 5 years	\$18.44/ 100 sq. ft.	\$3.69/ 100 sq. ft.	somewhat effective; gets damaged from digging in area
Weed Control (existing)	Hand Weeding		Very little	3 times annually	\$10.43 / 100 sq. ft.	\$31.29/ 100 sq. ft.	Very effective; costly on annual basis
		Chemical Application (spot)	None	2 times annually	\$4.83/ 100 sq. ft.	49.66/ 100 sq. ft.	Very effective; least costly; politically sensitive
Pruning	Hand pruning		As needed	Annually	\$11.48/ 100 sq. ft.	\$11.48/ 100 sq. ft.	
		Reduce pruning	As needed	As needed	\$5.74/ 100 sq. ft.	\$5.74/ 100 sq. ft.	Unattractive; weak plant material
Debris Collection	Raking/Collecting		As needed	2 times annually	\$5.23/ 100 sq. ft.	\$10.46/ 100 sq. ft.	
		Replace with evergreens	None	1 time annually	\$5.23/ 100 sq. ft.	\$5.23/ 100 sq. ft.	Cost does not include materials; less maintenance cost
Turf Management							
Mowing (Frequency/Height)	7 day cycle		32 times annually	32 times annually	\$32/ hr/ acre	\$1,024/ acre	
		Limit watering		20 times annually	\$32/ hr/ acre	\$640/ acre	unattractive turf in summer
Weed Control	3-4 times annually	Increase mowing height	2.5"	3.0"	\$32/ hr/ acre	\$1,024/ acre	Cost remains same; less attractive
		Chemical Application (spot)	None	2 times annually	\$20.25/ acre	\$40.50/ acre	Very effective; politically sensitive
		Chemical Application (saturation)	None	1 time annually	\$29.48/ acre	\$29.48/ acre	Most effective; more politically sensitive
		Fertilization	None	3 times annually	\$31.91/ acre	\$95.73/ acre	Somewhat effective; costly; improves appearance
		Irrigation	Yes	1.5"/ week seasonally	\$25.75/ acre	\$25.75/ acre	Increased water promotes turf growth
Fertilization				None	3-4 times annually		
Hard Surface Care (tennis courts, parking lots, driveways, plazas, pathways)							
Weed Removal (Spot)	Hand removal		As needed	8 times annually	\$3.48/ 100 sq. ft.	\$27.84/ 100 sq. ft.	
		Chemical Application	None	3 times annually	\$2.92/ 100 sq. ft.	\$8.76/ 100 sq. ft.	Very effective; reduces labor; politically sensitive
		Burning	None	3 times annually	\$2.92/ 100 sq. ft.	\$8.76/ 100 sq. ft.	Potential burning of surface
Tree Care							
Pruning	Safety and shaping		As needed	Pruned annually	\$82.88/ tree	\$82.88/ tree	
		For safety only	For safety only	As needed	\$34.50/ tree	\$34.50/ tree	Safety only
Pest Control	Chemical Application		As needed	Annual application	\$36.48/ tree	\$36.48/ tree	Very effective; high labor cost; politically sensitive
		General Wash	None	As needed	\$10.43/ tree	\$10.43/ tree	Somewhat effective; low labor cost; politically acceptable
		Biological		As needed	\$18.23/ tree	\$18.23/ tree	Somewhat effective; low labor cost; politically acceptable

Pesticide Exposure Contacts and Resource Information

The IPM Coordinator is responsible for reviewing and updating this list annually.

Cal North Adjusters (707) 443-5302

City of Eureka Fire Department (707) 441-4000

City of Eureka Public Works Department (707) 441-4203

City of Eureka Personnel Department (707) 441-4124

Humboldt County Agriculture Commissioner (707) 441-5261

California Poison Action Line (800) 222-1222

www.calpoison.org

California Department of Pesticide Regulation (916)-445-4038

www.cdpr.ca.gov

Chemtrec (Chemical Transportation Emergency Center) (800) 424-9300

An industry resource for spill information available 24 hours a day. Chemtrec is also available online at <http://www.chemtrec.com/>

EXTOXNET

The website of the EXTension TOXicology NETwork (EXTOXNET), an effort of University of California, Davis, Oregon State University, Michigan State University, Cornell University, and the University of Idaho to provide information about pesticides. www.extoxnet.orst.edu

National Response Center (800) 424-8802

Federal point of contact for reporting oil and chemical spills. Open 24 hours a day, 7 days a week, 365 days a year. Available online at www.nrc.uscg.mil/nrchp.html

NPIC - National Pesticide Information Center (800) 858-7378

Provides general information on pesticide products, including safety, health, environmental effects, clean up and disposal. 6:30 am - 4:30 pm Pacific Time, 7 days a week excluding holidays. Website available at www.npic.orst.edu