CITY OF IRVINE

Integrated Pest Management Program

2024 Annual Report

Introduction

The City of Irvine continues to implement the Public Works and Sustainability (PWS) Department's Integrated Pest Management (IPM) program adopted by the City Council in February 2016. This IPM policy sets forth the following goals:

Citywide Pest Management Guiding Principles

- Use of organic pesticides in all City properties.
- Limit exposure to any pesticides where children and the general public congregate.
- Incorporate additional guidance on the use of pesticides for City rights of way, facilities, and other properties, as reflected in the February 23, 2016, staff report.
- Use Environmental Protection Agency (EPA) Level pesticides in a targeted manner, and only if deemed necessary to protect public health and economic loss by a licensed pest control advisor and City staff, when pests cannot be managed by other methods.

The 2024 IPM annual report summarizes program activities and application data for the year. The IPM program applies to all City departments, although the majority of pest management responsibilities are under the guidance of the Public Works and Sustainability, Landscape Division.

Program Components

The City of Irvine IPM policy promotes environmentally sensitive pest management practices while preserving assets, and protecting the health and safety of the public, and City employees. All costs and impacts associated with pesticide use, including community and environmental health, are considered.

IPM is a decision-making process for managing pests. A monitoring system is utilized to determine pest levels and tolerance thresholds. It combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks. The monitoring system requires extensive knowledge about pests, such as infestation thresholds, life

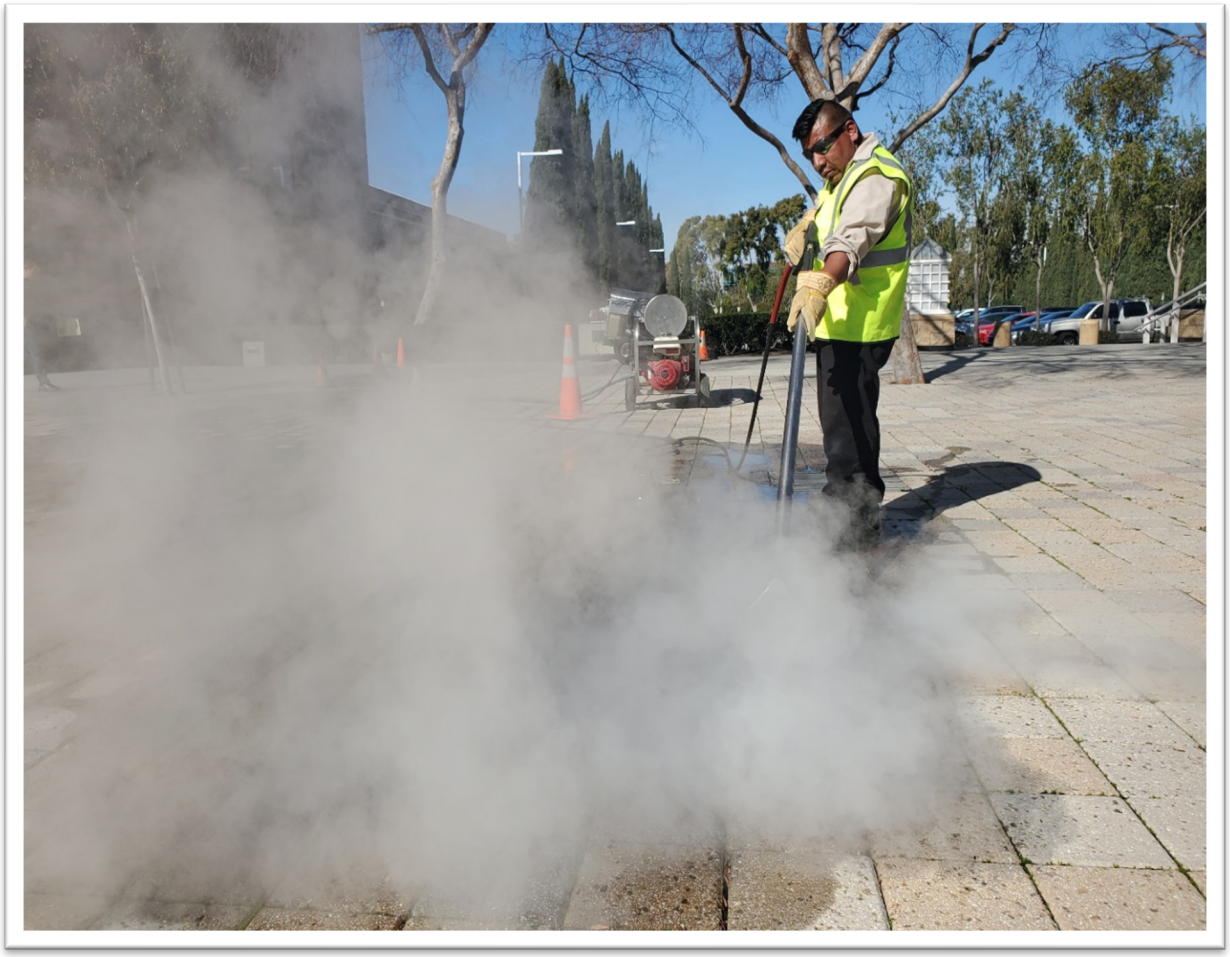
histories, environmental requirements, and natural enemies to complement and facilitate control of pests.

As part of an IPM program, pesticides are be used when pest thresholds get too high. A pesticide is any substance, or the mixture of substances, used for defoliating plants, regulating plant growth, or preventing, destroying, repelling, or mitigating any pest, which may be detrimental to vegetation, humans, or animals. Regardless of the pesticide being organic or synthetic, the goal is to rid the pest, and caution should be taken when applying the product.

To ensure the IPM program continues to be an adequate tool to meet the City's pest challenges while upholding the program goals adopted by the City Council, staff shall continuously examine and evaluate components of the program's effectiveness. In addition, all contractors that apply pesticides on the City's behalf are required to adhere to the IPM Policy.

Alternative Pest Control Methods for Landscape Maintenance

The Landscape Division employs alternative methods for weed control, such as using steam and mechanical removal. Other non-pesticide weed control measures include applying three inches of mulch in landscape planter areas to minimize weed growth. City contract services manually remove cattails in drainage facilities to ensure proper water flow. In addition, Smart Irrigation Controllers apply the proper amount of water to City landscapes, which minimizes disease and weed growth, thus limiting pesticide use.



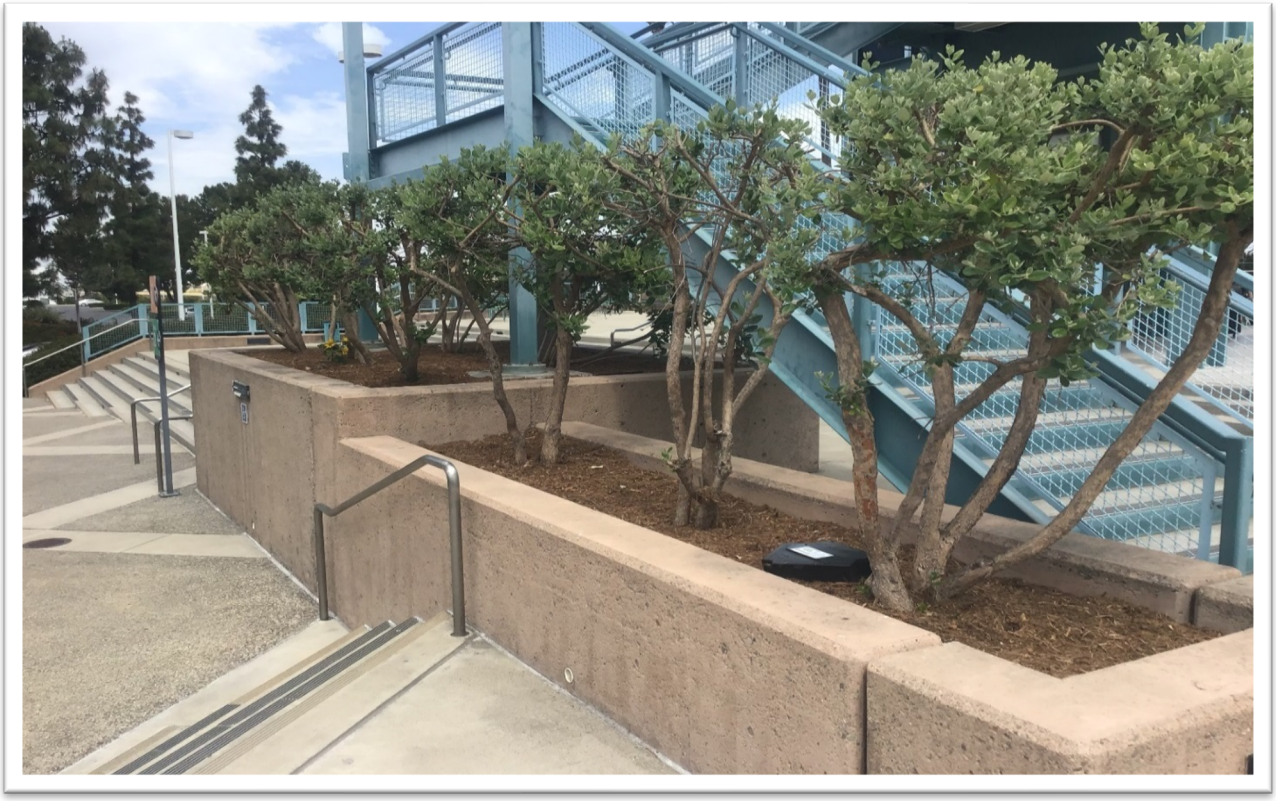
Example of a landscape contractor using steam to eradicate weeds in hardscapes.

The City is responsible for maintenance of 100 acres of fuel modification zones in the Village of Turtle Rock. The City works with the Orange County Fire Authority to remove vegetation in these zones through mechanical means to avoid the use of pesticides.

The Landscape Division also used biological control to reduce pest populations. Biological control uses organisms often referred to as beneficials, natural enemies, or biocontrols. The biological controls act to keep pest populations low enough to prevent significant economic damage. The most common organism types used for biological control in landscapes to combat pest populations are predators and parasites.

Example of beneficial insects about to be released in a City park.

Lastly, landscape modification and proper sanitation continues to be an effective non-chemical approach to rodent management. By removing plants away from buildings, removing understory vegetation and using closed trashcan receptacles, rodent populations are manageable.



Example of raising shrub canopies to reduce covered habitat for rodents.

Pest Control Methods for Public Facilities Maintenance

The Facilities Maintenance Division of Public Works and Sustainability has implemented an integrated and tiered approach to manage pests in compliance with the City's IPM policy. Facilities Maintenance Staff perform routine inspections to identify, report, and manage pest activity. Compliance has been achieved using monthly services provided by the City's existing pest control contractors and ongoing staff training. Staff frequently communicates with building occupants to identify pest activity and trends. Staff works closely with facility operators to improve food storage, sanitation, and waste management practices.

Exclusion methods and barriers have been deployed at several City facilities to minimize pest intrusions, and the staff is dedicating additional time to pest management research, planning, and response.

Staff addressed 218 requests for pest control service during the 2024 calendar year. Staff addressed 112 requests in 2023. Requests to address pest issues are tracked and logged using the division work order system.

Staff performs facility inspections to identify and eliminate mosquito-breeding habitats. Staff has been trained on best practices to control mosquitos around storage yards and facilities. During later part of the rainy season, staff inspects outdoor storage areas to correct situations where rainwater is trapped in containers or equipment. Staff used adhesive paper traps to control flying insects that managed to reach the interior of the facilities. Staff is documenting preventive pest-related inspections, field reports, and service requests using the division work order system. Improvements in tracking and managing pest related requests and complaints, and improvements to the process of issuing work orders to the pest control contractor are being made continually in the software.

The Landscape Division works closely with Facilities Maintenance to reduce the density of foliage around facilities to minimize pest activity. The effectiveness of the modified program has provided control of the rodents in most cases. The program also places an emphasis on controlling rodent, roach, and ant activity at facilities routinely serving food to the public.

Due to limited availability of compliant insecticides and rodenticides, behavioral and operational changes play a key role in maintaining tolerable pest control under the IPM Policy. The overall pest program in Facilities Maintenance focuses towards improving seasonal planning, preventive control measures, monitoring, and reporting.

Pest Control Methods for Open Space Maintenance

The new Irvine Ranch Conservancy Contract effective July 1, 2024 has exempted itself from the City's 2016 IPM Policy with the following language:

1.10 Use of Herbicides.

City and Conservancy acknowledge that conservation management, restoration and enhancement of natural open space preserves occasionally require the use of herbicides to control non-native plants. The City has an Integrated Pest Management ("IPM") policy that describes an integrated management approach to use of herbicides on City property. As of the date of this Agreement, the City's IPM policy does not explicitly consider open space management and restoration as a category of use nor provide guidance on use of herbicides in Open Space Lands. To ensure that the management, restoration and enhancement of City's Open Space Preserve follows accepted best practices and protocols, Conservancy shall be required to adhere to the document "Best Practices for the Implementation of Invasive Plant Control for Resource Management" published by the Natural Communities Coalition, the coordinating entity for the Orange County Central/Coastal NCCP/HCP (Part VII).

Priority invasive plant species were removed/treated across approximately 95 acres, of which 72 were within Natural Community Conservation Plan (NCCP) Reserve boundaries. Artichoke thistle continues to be a major target species due to past effort invested and the ability of this species to rebound without control. Efforts continue to include other species, such as North African knapweed, Sahara mustard, crown daisy, tree tobacco, Fountain grass, and castor bean. With support from the Natural Communities Coalition, North African knapweed in the Irvine Open Space Preserve was treated for the sixth year. It was first detected bordering Quail Hill along University Drive and the 405 freeway in May 2019 as part of the preserve-wide early detection/rapid response (EDRR) program.

IRC completed restoration work at most of the 4.2-acre East Fork restoration site but continues to treat invasive weeds and facilitate passive restoration through spot mowing and manual removal.

Site preparation of the 9.8-acre Bommer Meadow site was completed in fall 2024 with seeding planned for early 2025. Esplanade 200SC and Garlon 4 Ultra were applied to successfully control the weeds including horseweed and Russian thistle. Small remaining weed populations were controlled with manual and mechanical methods.

Site preparation activities continued at the 49-acre Fire Prevention, Fuel Modification, and Restoration project within Bommer Canyon. Restoration areas were mowed and cleared in fall 2023, and received one treatment of Esplanade 200SC which suppressed most weeds throughout the growing season of 2024. In July, an herbicide treatment of Garlon 4 Ultra was conducted targeting field bindweed and wild lettuce. A large-scale container planting event began in December 2024 and the site will be ready for direct seeding in fall 2025.

Monitoring for Invasive Shot Hole Borer (ISHB) was initiated in September and completed in October. IRC conducted surveys in Quail Hill, Bommer Canyon, and Shady Canyon. In 2024, 400 trees were surveyed. It was found that 20 were actively infested, 28 were unconfirmed “maybes” and the remaining 352 were un-infested. All infested trees surveyed were of low-to-moderate severity without dieback and so did not warrant treatment.

Manual/mechanical methods were used when deemed appropriate for the site, conditions, size of the population, or phenology of the targeted weed. Most annual species, including Sahara mustard, were pulled by hand. Most perennial species cannot be controlled with organic herbicides and must be dug out of the ground. In particular, mature artichoke thistle is nearly impossible to hand pull and must be removed by shovel to destroy the tap root and prevent seeding. However, this approach causes soil disturbance and is largely ineffective due to the size of the tap root and re-sprouting. The magnitude and threat of the North African knapweed population necessitated repeated mechanical cutting followed by bagging and removal of mature seed.

Pesticide Application

The City's contractors are all licensed by the State of California to use organic and synthetic pesticides, as required by their contracts with the City. As the party responsible to the State for the application of any pesticide, the City's maintenance contractors researched available organic products approved for use in the State of California. All products used were reviewed by the City's Maintenance Superintendents or Department Managers and approved prior to use. Due to the high acidity of the organic weed control products, applicators must use protective equipment to shield their eyes and skin which can sometimes give the public the perception the pesticide being applied is toxic.

Table 1 provides the organic pesticides used in 2024.

Pesticides Usage in Parks and Public Facilities for Weed Control

Since the IPM policy implementation, the City has continued the practice of not using "Speedzone" (2, 4-D) and "Round-Up" (glyphosate) pesticides. With 61 parks and the Great Park, the use of pesticides was necessary to keep up with effective pest control in the parks. Synthetic herbicides are used to control weeds and disease on the high-profile athletic fields.

Table 2 lists the products used for pest control in citywide parks and open space. Table 3 lists the products used for pest control in the Great Park.

Pesticides Usage in Parks and Public Facilities for Insect Control

Fire ants continue to be a problem throughout City parks. The use of the organic product Entrust SC provided adequate control after three consecutive daily treatments if the fire ants were detected early on in mound formation. The three consecutive treatments are labor intensive and costly, but the practice is an example of the City's commitment to the organic first approach to pest management. For large scale infestations, staff worked with Orange County Vector Control (OCVC) to apply synthetic baits to protect the public

health. Cypress Grove Neighborhood Park and Oak Creek Community Park required OCVC to make treatments to control the fire ant infestations.

Table 5 lists the products used for insect control in parks and City right of way.

Pesticides Usage in Parks and Public Facilities for Rodent Control

Carbon dioxide remains the preferred method by the pest control contractor to control gophers. The organic products ContraPest and Terad3 were used to provide adequate control for rats and ground squirrels.

Table 4 lists the products used for rodent control in parks and City right of way.

Pesticides Usage in the Right-of-Way for Weed Control

For approximately 945 acres of landscaped medians and parkways, manual hand weeding and organic herbicides still remains the primary practice. The presence of perennial weeds, nutsedge, field bindweed, and Bermuda grass equates to a small percentage of the weed population not successfully controlled by the current maintenance practice. These weeds have extensive vegetative root systems that require systemic activity to control not only the top growth, but the aggressive underground roots as well. Selective and systemic synthetic products were applied to adequately control perennial weeds in limited areas not readily accessible to the public, primarily street medians. Selective and systemic weed killer products only affect the weed and not the desirable plant material surrounding the weed. The weed killer enters the plant through the leaf and moves throughout the weed for complete eradication. Organic products available for use at this time are neither selective nor systemic. The organic products burn down all foliage they come in contact with, including desirable plants.

Table 6 lists the pesticides used to control weeds in the right of way.

Pesticides Usage in the Right-of-Way for Insect Control

Insect work requests are difficult to manage with repeat organic treatments due to the vastness of the Citywide right-of-way landscaping exceeding 900 acres. This has modified the Landscape Division's practice to use synthetic products in medians and areas where no public interacts to control the pests more effectively without additional required treatments. This is especially targeted for ant control since they have a propensity to invade irrigation controller cabinets and cause electrical problems.

Pesticides Usage in the Right-of-Way for Rodent Control

Staff implemented the practice to use synthetic products in medians and areas where no public interacts to control the pests more effectively without the additional required treatments needed with organic products. This provides cost savings and the ability to utilize those cost savings to apply organic products where people gather like parks.

IPM Program Impacts

Alternative methods and organic pesticides require the use of more labor and product, and an increase in the frequency of applications to provide a similar result as compared to past pesticide practices. The ability to operate solely with organic products has not been possible to maintain the same high-quality landscape and athletic fields prior to the policy implementation. With that said, the organic first approach significantly reduces the City's reliance on synthetic products specifically in the areas the public uses, such as parks. City staff will continue to evaluate new non-toxic options and refine practices to provide the most effective, non-toxic solution to pests in the landscape, facilities and open space.

TABLE 1 ORGANIC PESTICIDES USED IN 2024			
PRODUCT	**ACTIVE INGREDIENT**	**TARGET PEST**	**EPA CATEGORY**
Finalsan	Ammoniated soap of fatty acids	Weeds	Warning
Suppress EC	Caprylic acid	Weeds	Warning
Fireworxx	Caprylic acid	Weeds	Caution
Solentra	Cholecalciferol	Rodents	Caution
ContraPest	4-Vinylcyclohexene diepoxide- 0.09604% Triptolide- 0.00118%	Rodents	Caution
Carbon dioxide	Carbon Dioxide	Gophers	N/A
Eco Via EC	Thyme oil, rosemary oil, 2 phenethyl proprionate	Insects	Caution
Entrust SC	Spinosad A & B	Insects	Caution

TABLE 2 PRODUCTS USED IN CITY PARKS AND OPEN SPACE						
PRODUCT	**PEST**	**TOTAL USE IN 2020**	**TOTAL USE IN 2021**	**TOTAL USE IN 2022**	**TOTAL USE IN 2023**	**TOTAL USE IN 2024**
Fiesta*	Weeds	0	0	0	0	925 oz.
Arrow 2EC	Weeds	0	0	0	1,205 oz.	1,005 oz.
Suppress*	Weeds	0	3,019 oz.	30,046 oz.	17,589 oz.	22,208 oz.
Fireworxx	Weeds	0	0	0	19,665 oz.	107,826 oz.
Phycomycin	Algae	0	0	0	0	250 lb.
Revolver	Weeds	0	220 oz.	0	0	0
Aquashade	Algae	0	0	0	0	5 gal.
Stonewall 4L	Weeds	0	0	2,057 oz.	0	0
Esplanade	Weeds	0	0	33.6 oz.	127 oz.	56.3 oz.
Garlan 4 Ultra	Weeds	0	0	0	336 oz.	800 oz.
Barricade 4FL	Weeds	0	0	0	85 gal.	16 gal.
Anderson's 0.48% Barricade	Weeds	0	0	0	4,708 lb.	0
Round Up Pro Max**	Weeds	0	0	0	0	0.25 oz.
Round Up Custom**	Weeds	0	0	0	0	2.95 oz.

**Whack Out Weeds and Suppress are an organic weed killer product.*

*** Round Up was allowed for use in the Open Space per the new contract language*

TABLE 3 PRODUCTS USED AT GREAT PARK						
PRODUCT	**PEST**	**TOTAL USE IN 2020**	**TOTAL USE IN 2021**	**TOTAL USE IN 2022**	**TOTAL USE IN 2023**	**TOTAL USE IN 2024**
Actinovate*	Disease	1,422 oz.	252 oz.	54 oz.	0	0
Companion Maxx*	Disease	10,304 oz.	2,800 oz.	0	0	0
Insignia SC	Disease	200 oz.	0	0	0	0
Banner Max II	Disease	329.5 oz.	0	200 oz.	0	139.9 oz.
Clearys 3336F	Disease	1,395 oz.	2,000 oz.	0	0	0
Heritage TL	Disease	0	400 oz.	0	0	0
Chipco Signature	Disease	0	1,408 oz.	0	0	0
Arrow 2 EC	Weeds	2,830 oz.	3,763 oz.	40 oz.	0	0
Sedgehammer	Weeds	0.14 oz.	0.86 oz.	0	0	0
Phycomycin*	Algae	12,000 oz.	8,800 oz.	4,800 oz.	402 lb.	800 lbs.
Finalsan*	Weeds	26,428 oz.	20,627 oz.	0	0	0
Suppress EC*	Weeds	30,312 oz.	18,203 oz.	28,558 oz.	33,451 oz.	33,819 oz.
Scythe*	Weeds	31,416 oz.	17,079 oz.	0	0	0
Power Zone	Weeds	0	352.5 oz.	3,087 oz.	383 oz.	0
Barricade 4FL	Weeds	0	399 oz.	0	0	0
Revolver	Weeds	0	0	235 oz.	802 oz.	0
Primo Maxx	Growth Regulator	0	0	256 oz.	0	1,993 oz.
Garlan 4 Ultra	Weeds	0	0	0	0	72 oz.

**Actinovate and Companion Maxx are organic products for disease control. Phycomycin, an organic product for control of algae in the ponds and basins. Finalsan, Suppress EC and Scythe are organic weed killer products.*

TABLE 4 CITY OF IRVINE PESTICIDE USAGE SUMMARY PARKS/CITY RIGHT OF WAY– RODENTS						
PRODUCT	**PEST**	**TOTAL USE IN 2020**	**TOTAL USE IN 2021**	**TOTAL USE IN 2022**	**TOTAL USE IN 2023**	**TOTAL USE IN 2024**
SYNTHETICS						
Fumitoxin Tablets	Rodent	93 tablets	378 tablets	921 tablets	18 tablets	3 tablets
Rat-X	Rodent	0	0	0	0	2 lb.
Aluminum phosphide	Rodent	0	0	0	0	2.5 lb.
Zinc Phosphide	Rodent	0	0	0	31 lb.	23 lb.
ORGANICS						
Selontra	Rodent	0	0	0	6,190 oz.	346.75 lb.
Uncle Ian's Gopher Repellant	Rodent	32.5 lb.	10 lb.	0	0	0
Repels-All	Rodent	0	0	2 lb.	0	0
ICI Carbon Dioxide	Rodent	45 lb.	84 lb.	94.75 lb.	0	0
Carbondioxide	Rodent	0	0	0	1,308 oz.	632.5 oz.
ContraPest	Rodent	10.08 oz.	108.24 oz.	498 oz.	1,925.6 oz.	332 oz.
Terad3 Blox	Rodent	37.86 lb.	127 lb.	196.2 lb.	11.13 lb.	0

TABLE 5 CITY OF IRVINE PESTICIDE USAGE SUMMARY PARKS/CITY RIGHT OF WAY – INSECTS						
PRODUCT	**PEST**	**TOTAL USE IN 2020**	**TOTAL USE IN 2021**	**TOTAL USE IN 2022**	**TOTAL USE IN 2023**	**TOTAL USE IN 2024**
SYNTHETICS						
Max Force Ant Bait Stations	Insects	0	0	0	0	24 ea.
ORGANICS						
EcoVia	Insects	444 oz.	157.5 oz.	277 oz.	175 oz.	97 oz.
Entrust SC	Insects	697 oz.	228.13 oz.	263oz.	268 oz.	164 OZ.

TABLE 6 PRODUCT USAGE FOR RIGHT OF WAY/STREETSCAPES						
PRODUCT	**PEST**	**TOTAL USE IN 2020**	**TOTAL USE IN 2021**	**TOTAL USE IN 2022**	**TOTAL USE IN 2023**	**TOTAL USE IN 2024**
SYNTHETICS						
Arrow 2EC	Bermuda grass	218 oz.	2,488 oz.	2,332 oz.	1,649 oz.	2133 oz.
Sedge Hammer	Nutsedge	0.3 oz.	0	64 oz.	398 gr.	755.1 gr.
Fusilade	Bermuda grass	22 oz.	158 oz.	225 oz.	0	31.5 oz.
Reward	Cattails	512 oz.	864 oz.	384 oz.	0	4,011 oz.
Envoy Plus	Weeds	0	0	0	0	142 oz.
Prodiamine 4L	Weeds	0	0	0	0	36 oz.
Garlan 4 Ultra	Weeds	0	0	0	0	3,618 oz.
Esplanade 200 SC	Weeds	0	0	0	0	31.75 oz.
Intensity One	Weeds	0	0	0	0	1210 oz.
ORGANICS						
Scythe	Weeds	7,373 oz.	4950 oz.	474 oz.	0	0
Suppress EC	Weeds	486,872 oz.	317,833 oz.	182,880 oz.	177,122 oz.	280,532 oz.
Finalsan	Weeds	64,670 oz.	65,802 oz.	8,320 oz.	70,400 oz.	754 oz.
Fireworxx	Weeds	0	0	288 oz.	189,102 oz.	4,742 oz.