



CITY OF SANTA BARBARA

COUNCIL AGENDA REPORT

AGENDA DATE: May 19, 2015

TO: Mayor and Councilmembers

FROM: Parks Division, Parks and Recreation Department

SUBJECT: Integrated Pest Management 2014 Annual Report

RECOMMENDATION:

That Council accept the Integrated Pest Management (IPM) 2014 Annual Report that addresses the use of pesticides and alternatives to control weeds or eliminate pests on City property.

DISCUSSION:

Background

The City of Santa Barbara adopted an IPM Strategy on January 26, 2004, to provide an ongoing specific program to further reduce the amount and toxicity of pesticides used on City property and, where feasible, to eliminate pesticide use in public areas using alternative methods. The City had been informally identifying and employing the least toxic alternatives since the 1990s. The City's IPM Strategy formalized this effort, and requires an annual program report to be presented to the IPM Advisory Committee, Parks and Recreation Commission, Airport Commission, and City Council.

In addition to reviewing annual program implementation, the 2014 Report discusses the Pesticide Hazard And Exposure Reduction (PHAER) Zone Model adopted by the City Council on February 14, 2006, and improvements to City facilities to reduce pesticide use. The IPM Strategy required the development of a "Zone System" tied to the IPM Approved Materials List to limit pesticide use based on potential human exposure.

The PHAER Zone model assigns Green, Yellow, or Red/Special Circumstances Zone designations to sites, or portions of sites, based upon the potential for exposure by humans and sensitive habitat to hazardous pesticides and allows use of carefully screened materials by zone designation. For example, Green Zones are areas of high human exposure potential and only pesticides designated as "Green", which show very limited human and environmental impacts may be used. Yellow Zones are areas with moderate human or environmental hazard. Red/Special Circumstances Zones are areas where high hazard pesticides for highly challenging pest management problems are needed to control pests. Overall, the Zone Model provides for incremental and measurable

expansion of risk-reduction efforts, along with communicating clearly to the public the general potential for pesticide exposure.

2014 Annual Report

The IPM 2014 Annual Report (Attachment 1) addresses the following:

- Types of pest problems encountered by each department
- Types and quantities of pesticides used by each department
- Exemptions currently in place and granted the past year
- Alternative pest management practices
- Effectiveness of alternative practices
- Proposed changes to pest management practices

IPM 2014 Program Highlights

As shown in the table below, the use of Green materials decreased from 2,339 units in 2013 to 867 units in 2014. The use of Yellow materials increased from 1,159 units to 1,896 units. The use of Red materials decreased from 28 units to 9 units. Overall pesticide use decreased from 3,525 units to 2,772 units. City-wide pesticide use overall decreased 21% in 2014, primarily due to another low rainfall year that has resulted in fewer pests.

It is important to note that because pesticide use will vary from year to year, an increase or decrease from the previous year does not necessarily indicate a long-term trend. Many factors affect the amount of pesticides applied in any one year.

City-wide tracked hours of non-chemical IPM alternative practices increased 45% from 10,485 hours in 2013 to 15,247 hours in 2014. A number of factors influence time spent on using alternative practices including the number of staff available to perform alternative methods, departmental priorities, and severity of pest outbreaks. As has been the case since IPM tracking began, the majority of tracked time is spent hand weeding and weed whipping. In general, most alternative pest management practices are more labor intensive and costly, and not as effective as the use of Yellow and Red classified pesticides. Most Green materials and practices provide only moderate control of pest populations.

| Department / Division | Material Tier Category | | | | 2013 Total Pesticide Use | Percent Change |
|-----------------------|------------------------|----------------|-------------|----------------|--------------------------|----------------|
| | Green | Yellow | Red | Total | | |
| Airport Dept | 720 | 1,282.2 | 0 | 2,002.2 | 3,172.85 | -37% |
| Golf Division | 1.55 | 3.32 | 8.51 | 13.38 | 29.19 | -54% |
| Parks Division | 0.27 | 11.961 | 0 | 12.231 | 24.20 | -49% |
| Public Works Dept. | 145.52 | 598.57 | 0 | 744.09 | 298.86 | +149% |
| 2014 Total | 867.34 | 1,896.1 | 8.51 | 2,771.9 | 3,525.10 | -21% |
| 2013 Total | 2,338.78 | 1,158.65 | 27.67 | 3,525.10 | | |
| Percent Change | -63% | 63% | -69% | -21% | - | - |

IPM Advisory Committee and Parks and Recreation Commission Recommendation

At a special meeting held April 13, 2015, the IPM Advisory Committee reviewed and approved the IPM 2014 Annual Report and recommended that the report be forwarded to the Parks and Recreation Commission, Airport Commission, and City Council for review and approval. A memo from Greg Chittick, Chair, on behalf of the IPM Advisory Committee is attached (Attachment 2).

On April 22, 2015, the Parks and Recreation Commission voted unanimously to accept the IPM 2014 Annual Report and forward the report to City Council.

The Airport Commission is scheduled to review the 2014 IPM Annual Report on May 20, 2014.

SUSTAINABILITY IMPACT:

Under the City's sustainability program, the City's goals of Source Reduction and Toxics Reduction are met through the IPM Program. The Parks and Recreation Department uses recycler mowers to reduce green waste and reduce the need for fertilizer. Additionally, all City staff continues to use IPM methods at City parks and facilities in lieu of pesticide use.

ATTACHMENT(S): 1. IPM 2014 Annual Report
2. Memo from IPM Advisory Committee

PREPARED BY: Santos Escobar, Parks Manager

SUBMITTED BY: Nancy L. Rapp, Parks and Recreation Director

APPROVED BY: City Administrator's Office



**City of Santa Barbara
Integrated Pest Management Strategy**

DRAFT 2014 Annual Report

Prepared April 2015



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I. BACKGROUND

In January 2004, the City of Santa Barbara (City) adopted a City-wide Integrated Pest Management (IPM) Strategy to reduce pesticide hazards on City property and promote effective pest management.

The IPM Strategy contains the mission and purpose, assigns responsibilities, and outlines pest management processes, among other things. In addition, The Strategy requires an annual report be prepared that addresses the following:

- Types of pest problems encountered by each Department
- Types and quantities of pesticides used by each Department
- Exemptions in place and granted during the past year
- Alternatives used for phased out pesticides
- Alternatives proposed for use within the next 12 months
- Effectiveness of any changes in practices implemented
- Planned changes to pest management practices

PHAER Zone System

The IPM Strategy required the development of a “Zone System” tied to the IPM Approved Materials List to limit pesticide use based on potential human exposure. In February 2006, the City Council approved the PHAER Zone system to be incorporated into the IPM Strategy.

The PHAER Zone system assigns a Green, Yellow, or Special Circumstance/Red Zone designation to each site, or portions of sites, based upon the potential for exposure by humans and sensitive habitat to hazardous pesticides, and allows the use of carefully screened materials by zone designation. For example, Green Zones are areas of high exposure potential, and only pesticides designated as “Green”, which show very limited human and environmental impacts, may be used. Yellow Zones are areas with less potential for harm from exposure, and a broader range of “Yellow” materials are permitted under the PHAER Zone system.

Citizen and Staff IPM Advisory Committees

The City Council established the 5 member Citizen IPM Advisory Committee by Resolution No. 06-008. The members of the Committee are appointed by the Parks and Recreation Commission to serve two-year terms. The purpose of the Committee is to review and advise on the implementation of the City’s Integrated Pest Management Strategy. The 2014 Citizen IPM Advisory Committee included the following representatives:

- Greg Chittick, Community at large
- Larry Saltzman, Pesticide Awareness and Alternative Coalition
- Kristen LaBonte, Community at large

The Citizen IPM Advisory Committee has had two positions that have remained unfilled for the past year due to a lack of applicants.

Department IPM Coordinators are representatives appointed by Department Directors to serve on the Staff IPM Committee. Department representatives include: Jeff McKee from the Airport, Sue Gray from Community Development, Joe Poire from Fire, James Dewey from Public Works, Judd Conley from the Waterfront, and Santos Escobar from Parks and Recreation. The Staff IPM Committee continued to work effectively with the Citizen IPM Advisory Committee to

administer the IPM Strategy and oversee pest management practices. The Parks and Recreation Department coordinates both the Citizen and Staff IPM Committees and oversees the implementation of the City's IPM Program.

II. IPM 2014 STRATEGY RESULTS

1. Citizen IPM Advisory Committee Actions

The Citizen IPM Advisory Committee met three (3) times in 2014 to review 26 requests for exemptions, consult with staff on current pest issues and applicable IPM practices, and approve the 2013 IPM Report. The Committee approved all 26 requests and denied zero (0).

2. Pests Encountered

A variety of pests were encountered on City properties in 2014 as outlined in Table 1. Departments ranked their top three pest problems with the numbers 1, 2 and 3. Other pest problems encountered are asterisked (*). Footnote annotations reference additional information including names of plant diseases, weeds, grasses, and specific insects. Due to the low rainfall, the overall abundance of these pests was down as compared to other years.

Table 1. Pest Problems Encountered by Department/Division

| Pest Category | Specific Pest | Airport | Creeks | Golf | Parks | Parking | Public Works | Waterfront |
|---------------|------------------------------|----------|--------|-----------------------|-----------------------|----------|--------------|------------|
| Plant pests | Giant whitefly | * | | | * | * | * | |
| | Misc. plant insects | | | * | * ³ | 3 | * | |
| | Disease | * | | 1 ¹ | * ⁴ | * | | |
| Tree Pests | Oak Worm | | | | * | 2 | * | |
| | Psyllids | | | | * | | | |
| | Various Pine Bark Beetle sp. | | | | * | | | |
| Weeds | Invasives | * | * | 3 ² | 1 ⁵ | | | |
| | General weeds | 3 | * | * | 1 | 1 | * | 3 |
| | Perennial grasses | * | * | * | 1 ⁶ | | * | * |
| Vertebrates | Gopher | 2 | * | 1 | 2 | | * | * |
| | Ground Squirrel | * | * | 1 | * | | | * |
| | Gulls/ nuisance birds | * | | | * | * | | 2 |
| | Moles | | | 1 | * | | | |
| | Raccoons | * | | 2 | | | | |
| | Skunks | * | | 2 | | | | |
| Human Health | Poison Oak | * | | | * | | | |
| | Bees, yellow jackets, etc. | * | | * | 3 | * | 2 | |
| | Rats/ mice | * | | * | * | * | 3 | 1 |
| | Mosquitoes | 1 | | * | * | | 1 | |
| Other | Termites | * | | | | | * | |
| | Roaches | | | | | | * | |
| | Ants | * | | | | * | * | |

1. Golf reported these plant diseases (fungus): Dollar Spot, Pink Snow Mold, Anthracnose, Rhizoctonia Patch, Waitea patch, Take-All patch, and Rapid blight
2. Golf reported these invasive weeds: Clover, Creeping Woodsorrell, English Daisy, and Dandelion.
3. Parks reported these plant insects: Lerp Psyllids, Mites, Oak Moths, Thrips, Aphids, Snails, Slugs, and Ants.
4. Parks reported these plant diseases: Leaf Spot, Mildew, Blight, Pink Bud Rot, Sooty Mold, Pythium, Armillaria, and Phytothora.
5. Parks reported these invasive weeds: Arrundo, Nutgrass, Kikuyu Grass, Clover, Oxalis, Malva, Foxtail, Spurge, Dandelion, Milkweed, Sow Thistle, Poa annua, Puncture Vine, Johnson Grass, and Poison Oak.
6. Parks reported the following perennial grasses: Crab, and Bermuda.

3. City-wide Pesticide Use

City Departments that applied pesticides, or contracted with pesticide applicators, also prepared monthly pesticide and alternative use reports, and participated in the preparation of this Annual Report. The monthly reports form the basis of the Annual Report and are available at the main offices of each Department.

Table 2 below provides a summary of total pesticide use (gallons and pounds) for 2014, including any increase or decrease in use from 2013. City-wide pesticide use overall decreased 21% in 2014, primarily due to another low water year that has resulted in fewer pests. The use of Green materials decreased 63% from 2,339 units to 867 units, while use of Yellow material increased 63% from 1,159 units to 1,896 units. Use of Red materials decreased 69% from 28 units in 2013 to 8.5 units in 2014. The control of mosquitoes accounted for 69% of all the pesticide use in 2014.

At the Department level, the Airport reduced its use of all categories of pesticides by 37%. A combination of factors influenced this decrease including the Goleta slough being open to the ocean and low rainfall leading to lower mosquito management. Both the Parks and Golf Divisions reduced their use of pesticides 49% and 54% respectively. The Public Works Water Resources Division increased use of pesticides by 149% from 2013. This increase was due to treatment of sanitary sewer mains with an herbicide that kills tree roots. Prior to use, Water Resources staff conducted small scale experiments alongside the City Arborist to confirm that larger scale use of the herbicide would not impact healthy trees. Root intrusion in sewer mains has caused sewage overflows.

Table 2. 2014 Pesticide Use by Department and Tier

| Department / Division | Material Tier Category | | | | 2013 Total Pesticide Use | Percent Change |
|-----------------------|------------------------|----------------|-------------|----------------|--------------------------|----------------|
| | Green | Yellow | Red | Total | | |
| Airport Dept | 720 | 1,282.2 | 0 | 2,002.2 | 3,172.85 | -37% |
| Golf Division | 1.55 | 3.32 | 8.51 | 13.38 | 29.19 | -54% |
| Parks Division | 0.27 | 11.961 | 0 | 12.231 | 24.20 | -49% |
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| 2014 Total | 867.34 | 1,896.1 | 8.51 | 2,771.9 | 3,525.10 | -21% |
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| Percent Change | -63% | 63% | -69% | -21% | - | - |

Table 3 presents a more in depth look at pesticide use by Department/Division, including: pesticide tier and name, active ingredient, class of pesticide, units and number of applications. Pesticides are reported in either pounds or gallons depending on whether they are dry or liquid. Vectobac G was the most frequently applied insecticide, at 64 times, while Altosid Xr-B was the most applied by weight (roughly 1,200 pounds). Both are for the control of mosquitoes. Other highly used materials include:

- Roundup, an herbicide used to treat weeds and grasses was applied a total of 19 times. 15 applications by the Airport Department and 2 applications by the Parks and Golf Divisions.
- Razorooter and Vaporooter, two herbicides applied by the Public Works Department 165 and 192 times respectively to kill roots within sewer systems.
- Surflan, another herbicide used by the Airport Department as weed and grass control on the runway.

Red materials, though not used in large quantities, include 4 different fungicides used by the Golf Division to control fungus on the greens. A total of 8.51 gallons were used over 13 applications.

One product, Pointer-Imidacloprid, was injected into the bark of the Historic Italian Stone Pines along East Anapamu Street to treat pine bark beetles. While this product has been shown in research to disrupt bee populations, the treatment was fully enclosed within the tree bark and is not anticipated to reach the pollen of the tree.

It is important to note that because pesticide use will vary from year to year, an increase or decrease from the previous year does not necessarily indicate a long-term trend. Many factors affect the amount of pesticides applied in any one year. This topic is further discussed in Section 7.

Table 3. Pesticide Use by Department/Division

| Pesticide Name | Active Ingredient | Class | Amount of Pesticide Applied | | | | | | | | | | | | |
|--------------------------|------------------------|-------------|-----------------------------|----------------|-------------------------|----------|----------------------|----------|-------------------------|---------------|--------------|-----------|----------------------|--------------|----|
| | | | Airport | | Golf | | Parks and Recreation | | Public Works | | Applications | | | | |
| | | | Gallons | Pounds | Gallons | Pounds | Gallons | Pounds | Gallons | Pounds | Airport | Golf | Parks and Recreation | Public Works | |
| Acelepryn | Chlorantraniliprole | Insecticide | | | 0.19 | | | | | | | | 1 | | |
| Conserve | Spinosad | Larvicide | | | | | 0.25 | | | | | | | 1 | |
| Primo Maxx | Trinexapac-ethyl | Regulator | | | 1.36 | | | | | | | | 16 | | |
| Safer | K salts of fatty acids | Insecticide | | | | | 0.02 | | | | | | | 1 | |
| Vectobac G | Bti | Insecticide | | 640 | | | | | | 145.52 | 39 | | | | 25 |
| VectoLex CG | B. sphaericus | Insecticide | | 80 | | | | | | | 1 | | | | |
| Green Totals | | | 0 | 720 | 1.55 | 0 | 0.27 | 0 | 0 | 145.52 | 40 | 17 | 2 | 25 | |
| Advion Gel | Indoxacarb | Insecticide | | 0.39 | | | 0.02 | | 0.29 | | 9 | | 2 | 18 | |
| Altosid XR-B | Methoprene | Insecticide | | 1,203.20 | | | | | | | 6 | | | | |
| Aquamaster | Glyphosate | Herbicide | | | | | 0.97 | | | | | | 2 | | |
| Arilon | Indoxacarb | Insecticide | 0.03 | | | | 0.025 | | 0.08 | | 1 | | 1 | 19 | |
| Fore | Mancozeb | Fungicide | | | | 3 | | | | | | 1 | | | |
| Pointer | Imidacloprid | Insecticide | | | | | 0.41 | | | | | | 1 | | |
| Polaris | Imazapyr | Herbicide | | | | | 1.5 | | | | | | 14 | | |
| Razoroooter | Diquat | Herbicide | | | | | | | 136.76 | | | | | 165 | |
| Round-up Custom | Glyphosate | Herbicide | 41.08 | | 0.29 | | 7.94 | | | | 15 | 2 | 2 | | |
| Surflan | Oryzalin | Herbicide | 37.5 | | | | | | | | 5 | | | | |
| Termidor SC | Fipronil | Insecticide | 0.04 | | | | 0.006 | | 0.04 | | 1 | | 1 | 4 | |
| Trilogy | Neem Oil | Insecticide | | | | | 1.5 | | | | | | 2 | | |
| Trimmit 2SC | Pacllobutrazol | Regulator | | | 0.03 | | | | | | | 1 | | | |
| Vaporoooter | Metam Na / Dichlobenil | Herbicide | | | | | | | 461.4 | | | | | 192 | |
| Yellow Totals | | | 78.65 | 1203.59 | 0.32 | 3 | 12.371 | 0 | 0.41 | 598.16 | 37 | 4 | 25 | 398 | |
| Banner-maxx | Propiconazole | Fungicide | | | 4.57 | | | | | | | 6 | | | |
| Heritage | Azoxystrobin | Fungicide | | | 1.18 | | | | | | | 2 | | | |
| Insignia | Pyraclostrobin | Fungicide | | | 0.83 | | | | | | | 1 | | | |
| Medallion | Fludioxonil | Fungicide | | | 1.93 | | | | | | | 4 | | | |
| Red Totals | | | 0 | 0 | 8.51 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | |
| Department Totals | | | 78.65 | 1923.59 | 10.38 | 3 | 12.641 | 0 | 0.41 | 743.68 | 77 | 34 | 27 | 423 | |
| City-wide Totals: | | | Gallons 102.081 | | Pounds 2,670.270 | | | | Applications 561 | | | | | | |

4. EXEMPTIONS

Under the IPM Strategy and PHAER Zone system, exemptions may be granted when a pest outbreak poses an immediate threat to public health, employee safety, or will result in significant economic or environmental damage. Exemption requests are often made in anticipation of a particular pest and may be requested for one-time application or as a programmatic exemption for a single year. The exemption process is outlined in the IPM Strategy.

Twenty-seven (27) exemptions were requested in 2014. Table 4 provides a summary of the exemption requests by Department/Division. Of the twenty-seven (27) requests approved, twenty-six (26) were requested and approved by the IPM Committee, and one (1) was an emergency request approved by the City IPM Coordinator, Santos Escobar. This emergency request was to treat the historic Anapamu Street Stone Pines suffering from a bark beetle infestation. Of the twenty-seven (27) requests, seventeen (17) were applied and ten (10) were not implemented. A number of reasons can account for a pesticide going unused: the pest did not materialize, the product became unavailable, a green material was found, or alternative methods were utilized.

Table 4. 2014 Exemption Summary

| Exemptions | Airport | Creeks | Facilities | Golf | Parks | Public Works | Totals |
|--------------------|----------------|---------------|-------------------|-------------|--------------|---------------------|---------------|
| Emergency | | | | | 1 | | 1 |
| Proposed | 2 | 2 | 4 | 12 | 2 | 4 | 26 |
| Passed | 2 | 2 | 4 | 12 | 2 | 4 | 26 |
| Denied | - | - | - | - | - | - | - |
| Applied | | 2 | 3 | 8 | 1 | 2 | 17 |
| Not Applied | 2 | | 1 | 4 | 1 | 2 | 10 |

Tables 5a and b below provide a detailed look at pesticide exemption requests. Table 5a includes those that were requested and applied, while Table 5b includes exemptions that were requested and not applied. All exemptions were programmatic requests to use throughout the year. This can be due to an anticipation of a particular pest outbreak or because treatment of the pest requires multiple applications.

- The Airport Department made 2 exemption requests for the use of the rodenticide Fumitoxin and insecticide Vikane to control gophers and mosquitoes. Neither were applied.
- The Creeks Division made exemptions requests for Rodeo/Aquamaster and Polaris, both herbicides, for Arundo removal. Both were applied.
- The Facilities Division made 4 requests for insecticides and used all but 1. This was to control ants and roaches in and around buildings.
- At twelve, the Golf Division had the most requests for exemptions, but only applied 8. Requests included a number of fungicides and 2 regulators to control plant diseases on the greens (See Table 1).
- The Parks Division requested an emergency exemption for an insecticide to control the Bark Beetles infecting the Historic Italian Stone Pines on East Anapamu St. In addition, a herbicide was requested and used at Parma Park to reduce non-native invasives. A rodenticide was requested for use at several parks to control squirrels and rats, but was not applied.

- The Water Resources Division of Public Works Department made 4 requests. Two included the use of herbicides to control root intrusion within sewers. The other two were for herbicides to control weeds within medians, but were not applied.

Table 5 a. Applied Exemptions Requests

| Dept. / Div. | Material | Class | Type | Site |
|--------------|------------------|-------------|------|--------------------------|
| Creeks | Round-Up Pro Max | Herbicide | | Hidden Valley Open Space |
| Creeks | Polaris | Herbicide | | Hidden Valley Open Space |
| Facilities | Termidor | Insecticide | | Buildings |
| Facilities | Advion | Insecticide | | Buildings |
| Facilities | Arilon | Insecticide | | Buildings |
| Golf | Heritage | Fungicide | | Greens |
| Golf | Acelepryn | Fungicide | | Greens |
| Golf | Banner-Maxx | Fungicide | | Greens |
| Golf | Fore | Fungicide | | Greens |
| Golf | Insignia | Fungicide | | Greens |
| Golf | Medallion | Fungicide | | Greens |
| Golf | Primo Maxx | Regulator | | Greens |
| Golf | Trimmit | Regulator | | Greens |
| Parks | Round-Up Custom | Herbicide | | Parma Park |
| Parks | Pointer | Insecticide | | Anapamu Stone Pines |
| Public Works | Vaporooter | Herbicide | | Sewers |
| Public Works | Razorooter | Herbicide | | Sewers |

Table 5b. Not Applied Exemption Requests

| Dept. / Div. | Material | Class | Type | Site |
|--------------|-----------------|-------------|------|--|
| Airport | Fumitoxin | Rodenticide | | Airfield |
| Airport | Vikane | Insecticide | | Buildings |
| Facilities | Timbor | Insecticide | | Buildings |
| Golf | Affirm | Fungicide | | Greens |
| Golf | Daconil | Fungicide | | Greens |
| Golf | Prostar | Fungicide | | Greens |
| Golf | Proxy | Regulator | | Greens |
| Parks | Diphacinone | Rodenticide | | Shoreline, Leadbetter, Chase Palm, MacKenzie Parks |
| Public Works | Round-Up Custom | Herbicide | | Medians |
| Public Works | Surflan | Herbicide | | Medians |

Roughly an equal number of exemption requests were made between 2013 and 2014 (Table 6).

Table 6. Comparison of Exemptions for 2013 and 2014

| Exemptions | 2013 | 2014 |
|---|------|------|
| Number of Exemption Requests (total) | 22 | 27 |
| Number of Exemption Requests Approved | 22 | 26 |
| Number of Approved Exemption Requests Applied | 16 | 17 |
| Number of Approved Exemption Requests Not Applied | 6 | 10 |

5. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2014

The use of non-chemical IPM alternatives are emphasized over pesticide applications. Hours reported for the total year are from the *Monthly Alternative Use Reports* prepared by each Department. Non-chemical pest management alternatives are presented in Table 7 and vary from year to year. A check (✓) indicates the alternative was used, but time was not tracked. City Departments track time using a variety of methods. Some Departments track Alternative Management Practices by issuing Work Orders, while some track time by having their staff fill out reports on their daily activities. Additionally, when time has been spent on Alternative Management Practices by contractors, they usually report the time spent to the Department that oversees the contract. Table 7 below is a combination of staff time and contractor time when reported.

Total tracked hours for City-wide alternative practices increased 45% from 10,485 hours in 2013 to 15,247 hours in 2014. Figure 1 illustrates a downward trend in hours spent using alternative practices since 2008. A number of factors influence time spent on alternative practices including the number of staff available to perform alternative methods, department priorities, and severity of pest outbreak. As has been the case since IPM tracking began, the majority of tracked time is spent hand weeding and weed whipping.

Table 7. Staff Time Using Alternative Management Practices (hours)

| PEST | Alternative | Airport | Golf | Public Works | Parks | Citywide Hours |
|------------------------|---------------------------|----------------|--------------|----------------|--------------|----------------|
| WEEDS | Mulch & wood chips | ✓ | 82 | ✓ | 342 | 424 |
| | Weed fabric | | | | ✓ | 0 |
| | Propane flame weeder | | | | ✓ | 0 |
| | Hand weeding | 3,868 | 240 | 55 | 2,154 | 6,317 |
| | Weed whip | 411 | 1,628 | 54 | 4,310 | 6,403 |
| | Habitat modification | | | | ✓ | 0 |
| | Irrigation Mgmt. | ✓ | ✓ | ✓ | ✓ | 0 |
| | Host plants squeeze out | | | | | 0 |
| PLANT PESTS | Irrigation Mgmt. | ✓ | ✓ | ✓ | ✓ | 0 |
| | Compost tea/microbial in. | | ✓ | | | 0 |
| | Enhance plant health | | ✓ | | ✓ | 0 |
| | Worm castings | | | | ✓ | 0 |
| | Effective micro-organisms | | ✓ | | | 0 |
| | Wash off plants | | | | ✓ | 0 |
| | Remove plant/tree | | | | ✓ | 0 |
| GOPHERS | Traps | 69 | 103 | ✓ | 650 | 822 |
| SQUIRRELS | Traps | | 206 | | 121 | 327 |
| RATS & MICE | Mechanical traps | 3 | | 800 | ✓ | 803 |
| | Cat | | | | ✓ | 0 |
| MOSQUITOES | Mosquito fish | | | | ✓ | 0 |
| | Remove stagnant water | | | | ✓ | 0 |
| BEES | Bee Keepers | | | 151 | ✓ | 151 |
| OTHER | Glue traps/roaches | | | ✓ | | 0 |
| | Heat Treatment | | | ✓ | | 0 |
| Total Hours | | 4,351.0 | 2,259 | 1,060.0 | 7,577 | 15,247 |

Figure 1. Trend in Alternative Management Practices (in hours)

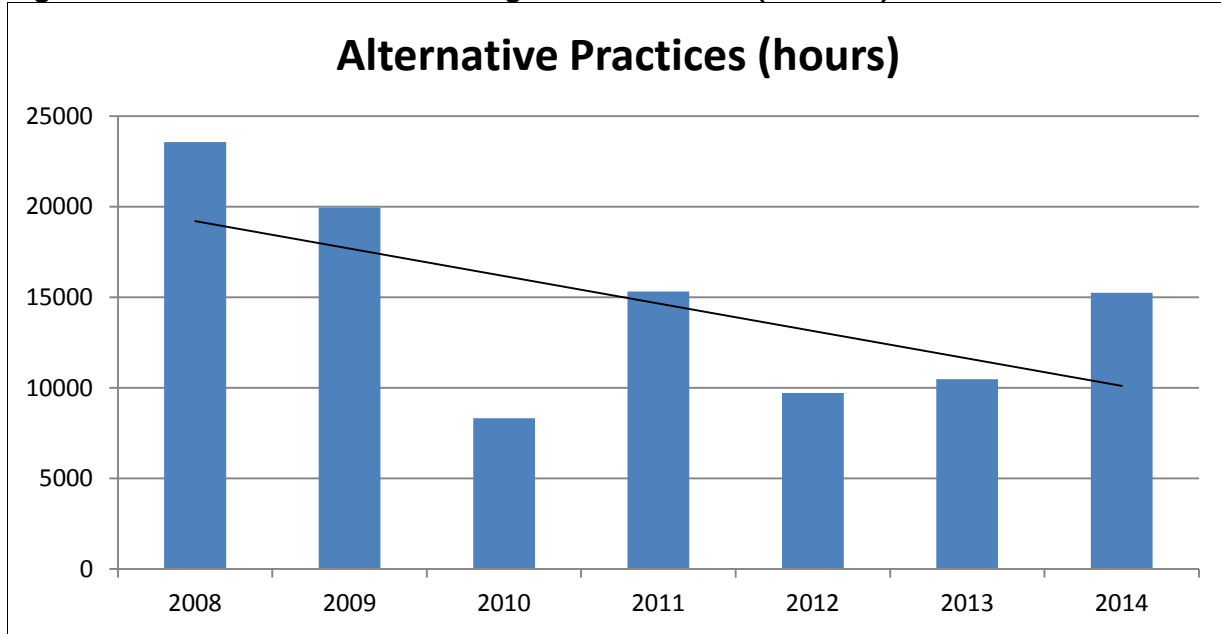


Figure 2 compares the level of effort (in hours) between the 6 alternative methods tracked in 2014. As a whole, maintaining weeds through mulching, hand weeding and weed whipping accounts for 13,144 hours (86%) of the total time tracked. While mulch is one method of weed and grass control, the use of mulch has dropped significantly since 2012. This is primarily due to past years of over-mulching sites and the problems associated with over-mulching (mounding, rot, fungus). The use of mechanical traps for gopher, squirrels, rats and mice control accounted for nearly 13% of total tracked time, or 1,952 hours. Time spent for bee control accounted for 151 hours or 1% of total time tracked using IPM alternative methods. Much of the City's rodent trapping and bee control are done by contractor.

Figure 2. 2014 Citywide Tracked Alternative Methods

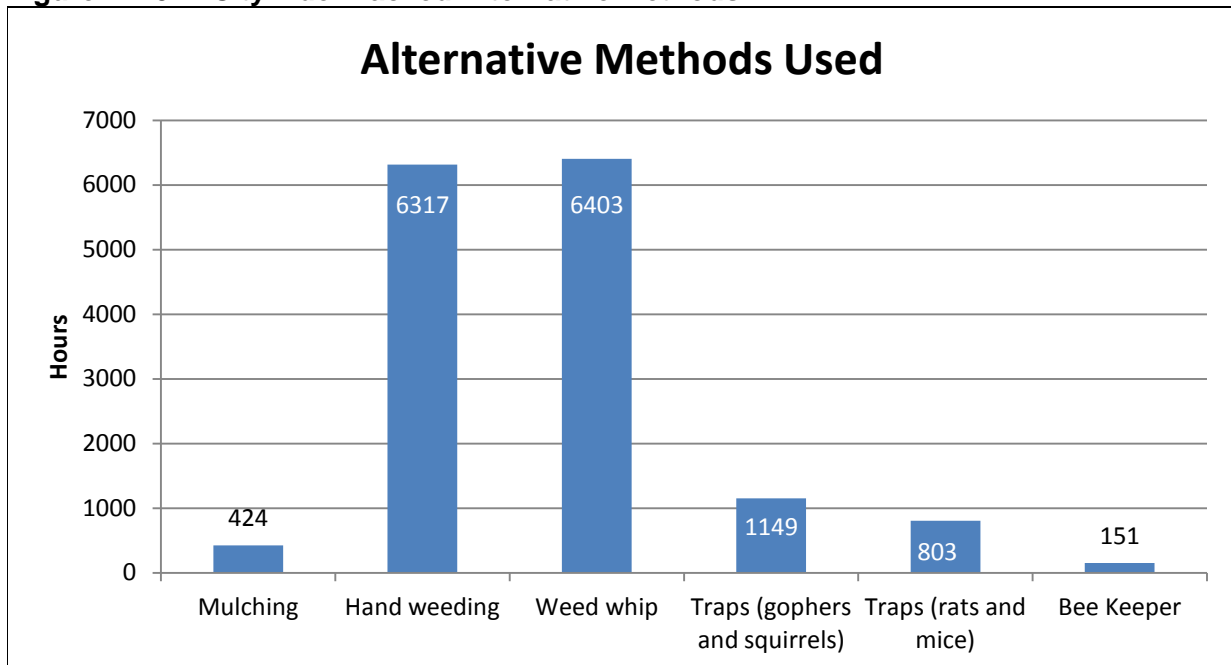
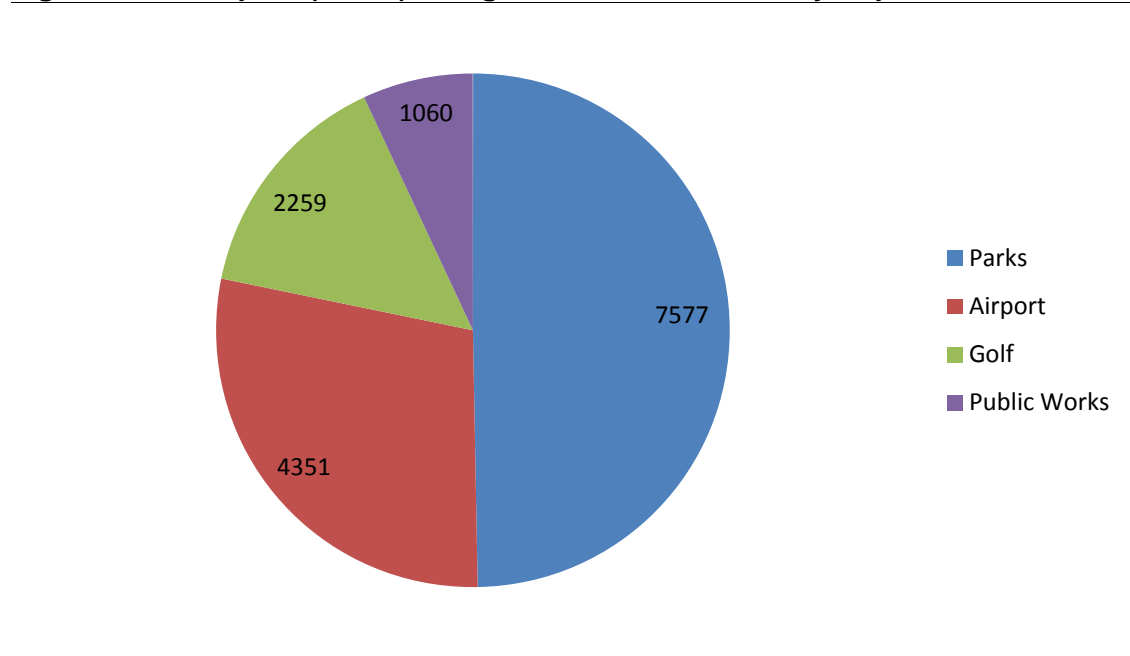


Figure 3 below compares the use of alternative methods (in hours) by Department/Division. Of the total 15,247 hours spent using alternative methods, the Parks Division accounted for 7,577 hours, or 50% of total time, the Airport accounted for 4,351 hours, or 29% of total time, Public Works accounted for 1060 hours, or 7% of total time, and the Golf Division accounted for 2259 hours, or 15%.

Figure 3. Time Spent (hours) Using Alternative Methods by Department/Division



6. EFFECTIVENESS OF ALTERNATIVE PRACTICES IMPLEMENTED

In general, most alternative pest management practices are more labor intensive and costly, and not as effective as the use of Yellow and Red classified pesticides. While most Green materials and practices provide only moderate control of pest populations, there have been some successes.

As the program completed its eleventh year, the impact of reduced reliance on pesticides, particularly herbicides, is becoming noticeable in areas, such as the weed population at Alice Keck Park Memorial Garden and other landscape areas throughout the City. The effectiveness of alternatives for the biggest pest problems encountered in an average year is reviewed below.

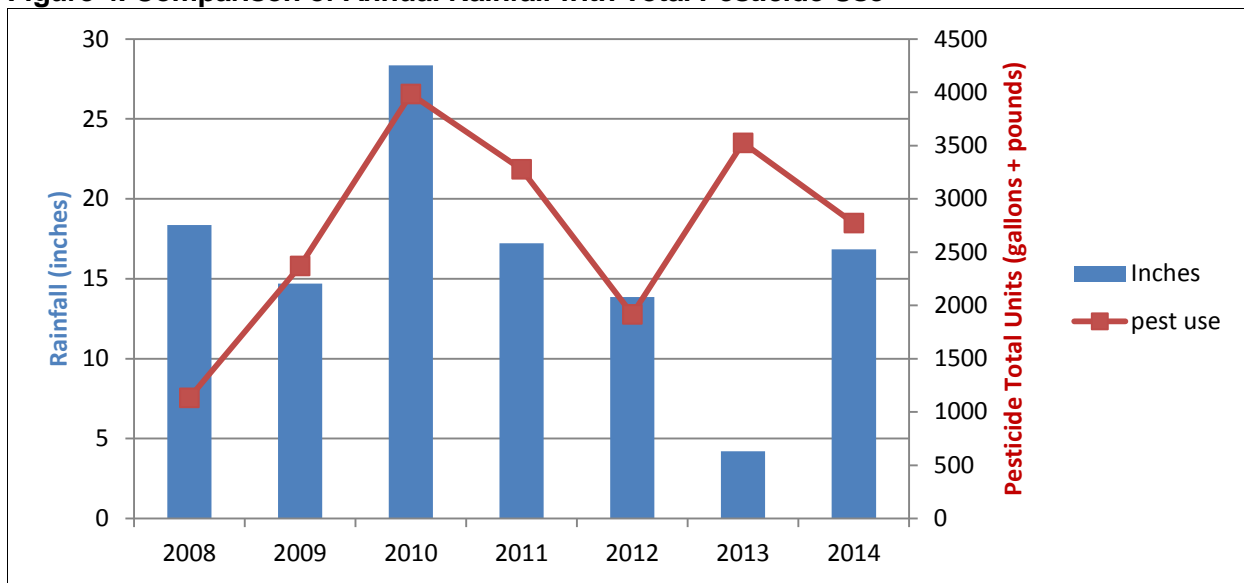
- **Weeds:** A variety of alternatives provide moderate effectiveness and control including: weeding, weed whipping, mulching, mowing, and a flame torch in designated safe areas. These alternatives are significantly more labor and cost intensive and not as effective as Yellow materials such as Glyphosate. Alternative chemicals, such as clove oil or acid based herbicides, have not proven effective. This has resulted in a notable increase in weed populations, predominantly on parkland, that continues to have a negative effect on aesthetics and landscape health.
- **Insects / Mollusks:** Results are mixed for combating insects and mollusks. For some insects, there are no known effective alternatives. Some alternatives can be very effective but expensive, such as removing non-resistant plants and replacing them with resistant varieties. However, the following alternatives have proven successful against insects and mollusks:
 - Sluggo for snails and slugs
 - Worm castings for white fly
 - Insecticidal soap for aphids
 - Neem oil as a dormant spray
 - Bti for mosquitoes
 - Acelepryn for beetles
- **Disease:** No effective alternative has been found for most diseases. Where possible, staff focuses on preventative treatments to enhance plant health. Once disease strikes, a plant may be removed and replaced with a less susceptible plant. If a plant cannot be removed, pesticides are generally required to combat the disease.
- **Gophers:** For the most part, mechanical traps are being used City-wide. Traps have been found to be moderately effective and are more expensive than rodenticides due to higher costs of purchasing, installing, monitoring, and cleaning out traps.
- **Ground Squirrels:** Mechanical trapping, using snap traps, is the primary method of control at this time. This method is moderately effective at controlling populations. Both trapping and baiting have proven very labor intensive.
- **Mice / Rats:** At this time, traps are the primary way of controlling this population. Traps have been found to be effective depending on population size and location and available food sources. Positive public perception seems to far outweigh the costs of using traps. Traps are very effective in controlling rodents on downtown State Street and at Coast Village Road.
- **Termites:** Building Maintenance uses heat treatments to control drywood termites where appropriate. Heat was found to be equally effective as pesticides on smaller buildings with drywood termites. However, costs are 50% higher at this time, and heat is not effective on large structures or with subterranean termites.

7. CONCLUSION

Many factors contribute to the use of pesticides as well as the tier of pesticides used. These include weather patterns (unseasonably dry or wet weather), introduction of new, or changes to existing pest populations, effectiveness of alternative methods as well as the effectiveness and availability of certain pesticide materials. Such variances are, and will continue to be, a normal occurrence.

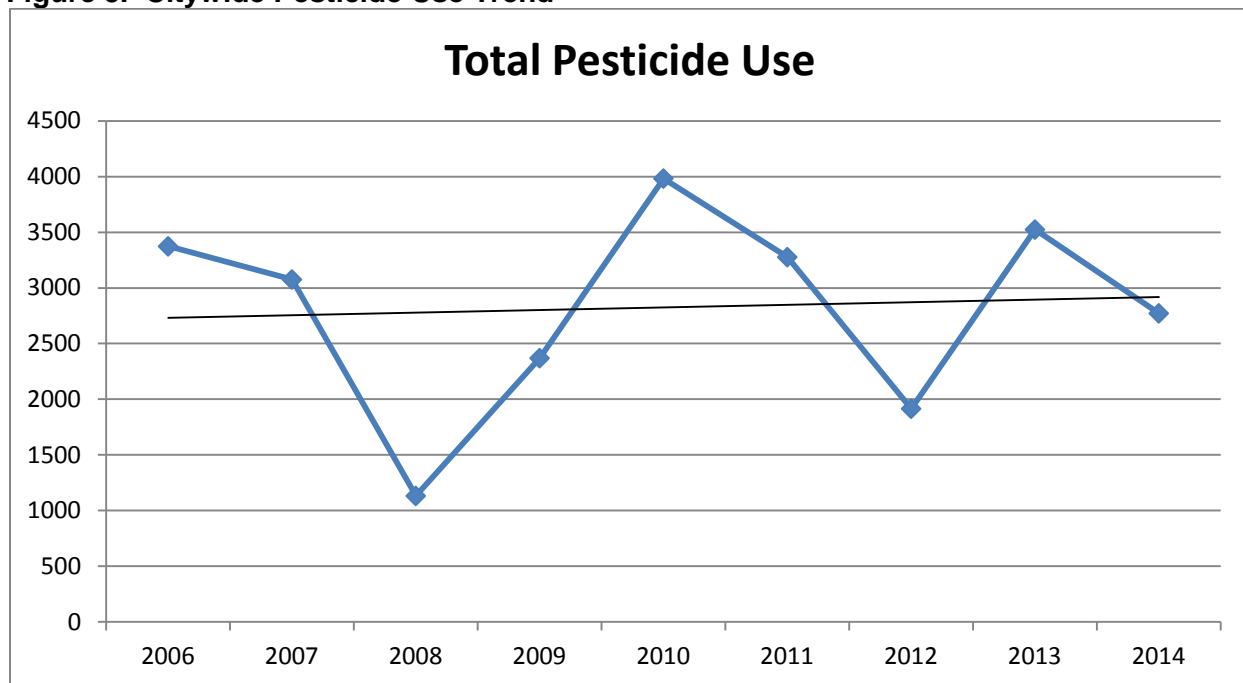
One of the main factors that determine pest populations is rainfall. More rain generally amounts to a greater population of insects and weeds, thus more pesticide use. Figure 4 compares annual rainfall with total pesticide use. With the exception of 2013, the data indicates a greater use of pesticides during wetter years. 2013 pesticide use was influenced by the Goleta Slough being closed leading to an increased mosquito population in Airport creeks.

Figure 4. Comparison of Annual Rainfall with Total Pesticide Use



Because the number of factors that affect pesticide use can vary greatly from year to year, it is difficult to look at past pest management practices to predict future pesticide use. In addition, prior to implementing IPM and the PHAER Zone, pesticide use was not analyzed, and thought to be used at higher frequencies and in larger quantities¹. That said, the general trend of the City since 2006 appears to be less hours spent on alternative practices (Figure 1) and a level trend in pesticide use (Figure 5).

Figure 5. Citywide Pesticide Use Trend

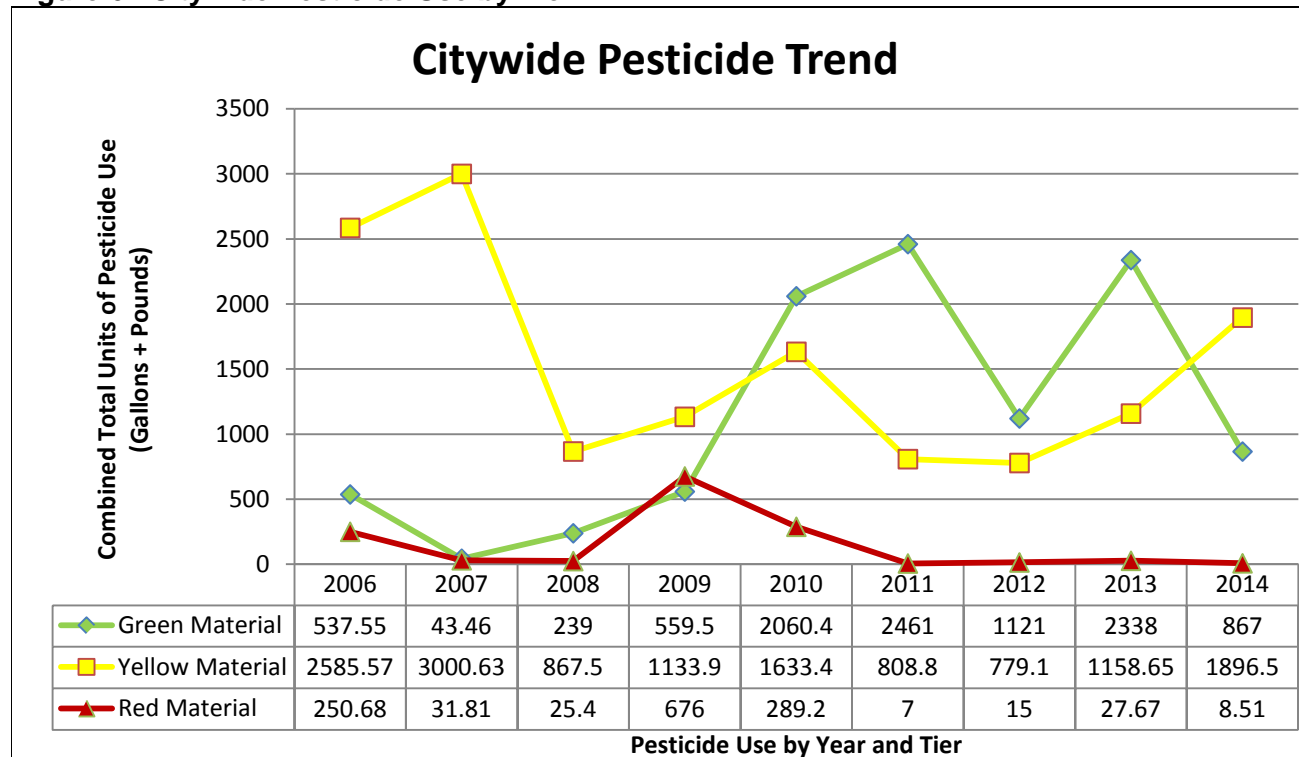


In addition, it should be noted that the amount of pesticides used and the number of applications are not necessarily accurate indicators of the extent of pesticide use or, conversely, the extent of use of reduced-risk pest management methods and alternative practices. For example, staff may apply several hundred small-scale "spot" applications targeted at problem areas rather than a few treatments of a large area. Further, staff may replace a more toxic pesticide used at a smaller quantity with a less hazardous compound that must be applied at a much larger quantity.

¹ Information based on staff and IPM Advisory Committee knowledge.

Figure 6 looks at the City's pesticide use by tier since 2006. The data indicates that an increase in Yellow and Red materials generally amounts to less Green material, though this is not always the case. 2010, for example, saw a higher than average use of both Red and Yellow material, while still using a significant amount of Green material. The *2010 Annual Report* indicates that 80% of all pesticide use in 2010 was for mosquito control. In fact, mosquito control accounts for the majority of pesticide use in any given year.

Figure 6. Citywide Pesticide Use by Tier



In order to have a more informed discussion on City pesticide use, as well as to better understand and/or compare year to year data, the following can be considered:

- Continue to track hours spent applying pesticides.
- Assess the overall asset by Department/Division to determine the extent of pesticides actually being applied
- Discuss cultural practices used that reduce pesticide use.
- Improve reporting contractor hours related to pesticide use and alternative practices.

The above considerations must be weighed against the resource needs to acquire the information. In addition, tools and staff training may be required in order to help facilitate data gathering.

It is always important for City staff to find cost effective, low risk, viable alternatives to reduce pesticide hazards and to increase the overall efficiency of IPM practices. Additionally, changes in maintenance standards and expectations may be necessary if more Green materials are employed.

Also critical to reducing pesticide hazards in the City of Santa Barbara is the continuation of community outreach and public education. It is anticipated that with greater community outreach, the public will become more aware of low risk alternatives that they can employ at home, thus adding to the overall health of the community.

III. PLAN FOR 2015

The Parks and Recreation Department will continue to administrate and refine the IPM Strategy and proposes to address the following items:

- Increase the data collected by contractors engaged in IPM alternative practices; and
- Expand park inspections to better determine labor requirements or any necessary changes to the IPM Policy.

All Departments will continue to test any promising new materials or methods of integrated pest management as they are introduced. Departments will also continue to monitor pest populations and adjust priorities as needed. Staff and the IPM Advisory Committee will continue to monitor research regarding impacts of pesticides on humans, wildlife and native habitats as well as begin a discussion on funding and staffing options for community education and outreach to reduce pesticide use on private property.

ATTACHMENTS

ATTACHMENT A: APPROVED MATERIALS LIST

The pesticides listed on the Approved Materials List are categorized according to the pesticide screening protocol in the PHAER Zone system.

| Product Name | Active Ingredient | ZONE | Type |
|----------------------------------|----------------------------------|--------|------------------|
| Acelepryn | Chlorantraniliprole | Green | Insecticide |
| Advance Ant Bait | Orthoboric Acid | Green | Insecticide |
| Advion Roach Stations (enclosed) | Indoxacarb | Green* | Insecticide |
| AllDown | citric acid, acetic acid, garlic | Green | Herbicide |
| <i>Any brand name</i> | Orthoboric Acid ant bait station | Green | Insecticide |
| Avert Cockroach Bait Station | Abamectin B1 0.05% | Green* | Insecticide |
| Avert Cockroach Gel Bait | Abamectin B1 0.05% | Green | Insecticide |
| Bactimos Pellets | Bt | Green | Insecticide |
| Bactimos Wettable | Bt | Green | Insecticide |
| Bio-Weed | corn gluten | Green | Herbicide |
| Borid Turbo | Orthoboric Acid | Green | Insecticide |
| BurnOut 2 | clove oil | Green | Herbicide |
| Cease Biofungicide | B. subtilis | Green | Fungicide |
| Cinnamite | cinnamaldehyde | Green | Insect/Fung |
| Conserve | spinosad | Green | Insecticide |
| Dipel Flowable | Bt | Green | Insecticide |
| Drax Ant Kill PF | Orthoboric Acid | Green | Insecticide |
| EcoExempt | Wintergreen Oil | Green | Herbicide |
| EcoExempt D | 2-Phenethyl propionate / Euginol | Green | Insecticide |
| Embark | mefluidide | Green | Growth Regulator |
| GreenErgy | Citric, Acetic Acid | Green | Herbicide |
| Kaligreen | potassium bicarbonate | Green | Fungicide |
| Matran (EPA Registration Exempt) | clove oil | Green | Herbicide |
| Natura Weed-A-Tak | clove oil | Green | Herbicide |
| Niban | Isoboric Acid 5% | Green | Insecticide |
| Primo-Maxx | Trinexapac-Ethyl | Green | Growth Regulator |
| Proxy | Ethephon | Green | Growth Regulator |
| Safer Soap | potassium salts of fatty acids | Green | Insecticide |
| Sluggo | iron phosphate | Green | Other |
| Summit BTI Briquets | Bt | Green | Insecticide |
| Teknar HP-D | Bti | Green | Insecticide |
| Terro II | Orthoboric Acid | Green | Insecticide |
| Vectobac G | Btk | Green | Insecticide |
| VectoLex CG | bacillus sphaericus | Green | Insecticide |

| Product Name | Active Ingredient | ZONE | Type |
|-------------------------------|--|--------|-----------------------|
| Victor Wasp and Hornet Killer | Mint Oil 8% & Sodium Lauryl Sulfate 1% | Green | Insecticide |
| Advion Ant Arena | Indoxacarb | Yellow | Insecticide |
| Advion Roach Gel | Indoxacarb | Yellow | Insecticide |
| Advion Insect Granules | Indoxacarb | Yellow | Insecticide |
| Affirm | Polyoxin D zinc salt | Yellow | Fungicide |
| Agnique MMF | POE Isoocatadecanol | Yellow | Insecticide |
| Aliette | fosetyl aluminum | Yellow | Fungicide |
| Altosid Briquettes | methoprene | Yellow | Other |
| Altosid Liquid | methoprene | Yellow | Other |
| Altosid Pellets | methoprene | Yellow | Other |
| Altosid XR-B | methoprene | Yellow | Other |
| Aquamaster-Rodeo | glyphosate | Yellow | Herbicide |
| Avid | abamectin | Yellow | Miticide/Insecticide |
| Ditrac | Diphacinone | Yellow | Rodenticide |
| Dormant | petroleum oil | Yellow | Insecticide |
| Green Light | Neem oil | Yellow | Insecticide/Fungicide |
| Kop-R-Spray | Copper Oil | Yellow | Fungicide |
| M-PEDE | potassium salts of fatty acids | Yellow | Insecticide |
| Omni Oil | Mineral Oil | Yellow | Fungicide |
| Polaris | Imazapyr | Yellow | Herbicide |
| Prostar 70 WP | flutolanil | Yellow | Fungicide |
| Rose Defense | Neem oil | Yellow | Insect/Fung |
| Roundup Pro | glyphosate | Yellow | Herbicide |
| Roundup PROMAX | glyphosate | Yellow | Herbicide |
| Safticide Oil | petroleum oil | Yellow | Insecticide |
| Stylet Oil | Petroleum distillates | Yellow | Insecticide |
| Sulf-R-Spray | Parafin oil, sulfur | Yellow | Fungicide |
| Razorooteer | Diquat | Yellow | Herbicide |
| Superior Spray Oil | petroleum distillates | Yellow | Insecticide |
| Surflan | oryzalin | Yellow | Herbicide |
| Surflan AS | oryzalin | Yellow | Herbicide |
| Termidor SC | Fipronil | Yellow | Insecticide |
| Triact | Neem oil | Yellow | Insecticide/Fungicide |
| Trilogy | Neem oil | Yellow | Insecticide/Fungicide |
| Trimmit 2SC | Paclobutrazol | Yellow | Growth Regulator |
| Wasp-Freeze | allethrin | Yellow | Insecticide |
| Wilco Ground Squirrel Bait | diphacinone | Yellow | Other |
| XL 2G | benfenin; oryzalin | Yellow | Herbicide |
| Banner-maxx | Propiconazole | S.C. | Fungicide |
| Bayleton | triadimafon triazole | S. C. | Fungicide |

| Product Name | Active Ingredient | ZONE | Type |
|--------------|---------------------|-------|-------------|
| Daconil | Chlorothalonil | S.C. | Fungicide |
| Fumitoxin | Aluminum phosphide | S. C. | Rodenticide |
| Insignia | Pyraclostrobin | S.C. | Fungicide |
| Heritage | Azoxystrobin | S.C. | Fungicide |
| Manage | halosulfuron methyl | S. C. | Herbicide |
| Medallion | fludioxonil | S. C. | Fungicide |
| Quick Pro | glyphosate/diquat | S. C. | Herbicide |
| Reward | diquat dibromide | S. C. | Herbicide |
| Rubigan | fenarimol | S. C. | Fungicide |
| Rubigan EC | fenarimol | S. C. | Fungicide |
| Subdue | metalaxyl | S. C. | Fungicide |
| Turflon | Triclopyr | S.C. | Herbicide |
| Zp Rode | zinc phosphide | S. C. | Rodenticide |

* By decision of the Citizen IPM Advisory Committee, chemicals that may be classified normally as Yellow materials may be classified as Green materials if they are entirely enclosed in factory sealed bait stations.



City of Santa Barbara
Parks and Recreation Department

Memorandum

DATE: April 15, 2015

TO: City Council
Parks and Recreation Commission
Airport Commission

FROM: City IPM Advisory Committee

SUBJECT: IPM Advisory Committee Review of IPM Program in 2014 and 2014 Annual Report

The City of Santa Barbara's Integrated Pest Management (IPM) program is in its' 12th year. The Committee agrees with the analysis presented in the 2014 annual report and supports the direction and programs described therein.

Pesticide use has decreased substantially from its pre-strategy period before 2004, with the use of the most toxic materials decreasing by over 90% and green practices developed in a number of areas. Some use of toxic pesticides continues, however, due to a number of challenges, including control of fungus on golf greens, control of rodents on airport runways, mosquito control during critical periods, and control of invasive weeds. Although there is some apparent trending upwards, it is important to keep in mind the general overall substantial downward trend since before the start of the program.

Many of the City's challenges utilize green materials on a regular basis, such as mosquito control using Bti, rodent control using trapping, the use of compost tea on golf greens or the control of weeds using mechanical methods. However, often the challenges are sufficient, and the public health or resource issues substantial enough, that more toxic materials are used. The committee takes public health very seriously, and the use of more toxic materials for the control of mosquitoes (related to west nile virus) or other public health issues receive top priority. These challenges will always be present. We will continue to pursue green materials, but also protect the public's health and resources as part of this committee's mission and goals.

With the associated need for increased labor related to least toxic methods, we continue to believe that developing a well-coordinated volunteer program will help the long-term effectiveness of the IPM program. A coordinated effort to expand the existing volunteer pool would help to reduce the need for pesticide use during renovations.

The Advisory Committee will continue to work with staff, elected officials, and members of the public to ensure a quality program that protects the City's assets while not compromising human and environmental health.