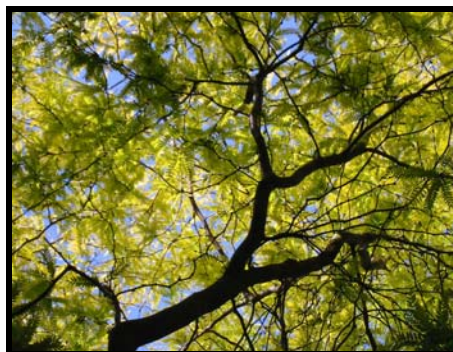




**City of Santa Barbara  
Integrated Pest Management Strategy**

**2006 Annual Report**

Prepared February 2007



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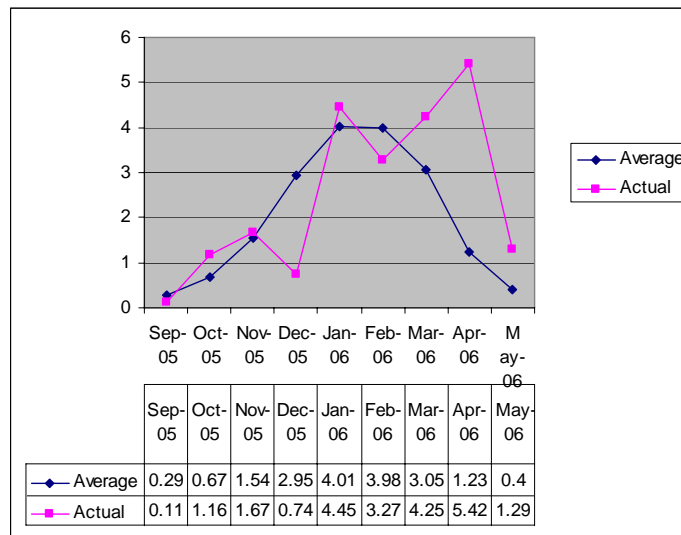
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# I. INTRODUCTION

In the third year of the IPM program, because of abnormal rain patterns which brought an unpredictable wet spring, the City saw a 64 % overall increase in pesticide use. This includes an increase of 126% in the use of Green materials, the largest amount of alternative use since the inception the IPM program. The increase was due to a predominately large mosquito population that exploded at numerous sites such as the Andrée Clarke Bird Refuge and the marshes surrounding the Airport. The increased material use was necessary to protect public health from the potential West Nile Virus. The graph below shows the significant spike in spring rainfall against the historical average. This increase caused standing water to persist later into the dry season and year-round bodies of water to swell into shallow sheltered areas suitable for mosquito breeding.

**2005 / 2006 Rainfall Chart**



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.

## Background

In January 2004, the City of Santa Barbara (City) adopted a jurisdiction-wide Integrated Pest Management (IPM) Strategy. The City’s IPM Strategy was developed to help reduce pesticide hazards on City property and promote effective pest management. This 2006 IPM Annual Report is the third Annual Report for the program.

The IPM Strategy requires the Annual Report to address each of the following areas:

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

In addition to the areas described above, the 2006 Annual Report discusses the PHAER Zone Model adopted by the City Council in February 2006.

## **Integration of the 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 January 2006 City Staff met with the Citizen IPM Advisory Committee and representatives from the Parks and Recreation Commission and City Council in a joint work session to introduce, discuss and refine a proposed Pesticide Hazard And Exposure Reduction (PHAER) Model for the City of Santa Barbara. In February 2006, the City Council adopted the PHAER Model to be incorporated into the IPM Strategy.

The PHAER model assigns Green, Yellow, or a Special Circumstance/Red Zone designation 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 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 of harm from exposure, and a broader range of “Yellow” materials are permitted. Under the PHAER Zone, Parks and Recreation has determined that 98% of the City’s parkland can be managed Green. This relates to 1,449.8 of the 1,476 acres maintained by Parks and Recreation. The change in tracking and reporting pesticide use from the Tier system (Tiers 1, 2, 3, and 4) used in the 2004 and 2005 reports, to the PHAER Zone color system (Green, Yellow, and special circumstance / red) used currently, has required some adjustments to the reporting methods used in this report.

One of the main thrusts of the PHAER Zone is the physical modification of Yellow areas to make them maintainable as Green. Such improvements are planned at Shoreline Park, Alice Keck Park Memorial Gardens, San Roqué Park, Alameda Park, Los Baños Pool, Garden Street Parking Lot, Plaza Vera Cruz and Chase Palm Park.

As a management tool in applying the PHAER Zone System, the Parks and Recreation Department assembled and equipped a dedicated crew to provide some of the labor necessary in pursuing the specific alternative practices and goals included in the PHAER Zone.

## **Citizen and Staff IPM Advisory Committees**

The Staff IPM Committee continued to work effectively with the Citizen IPM Advisory Committee to administer the IPM Strategy, and oversee pest management practices. In 2006 the Citizen IPM Advisory Committee played a key role in the development of the PHAER Zone System and went on site visits at the Airport and multiple parks to clarify and discuss particular issues. More visits are planned to other City facilities. The 2006 Citizen IPM Advisory Committee included the following representatives: Eric Cardenas from the Environmental Defense Center (EDC), Greg Chittick, community at large, Oscar Carmona, community at large, Brenton Kelly from the Pesticide Awareness and Alternative Coalition (PAAC), and Kristen LaBonte, community at large.

Department IPM Coordinators are appointed by department heads to serve on the Staff IPM Committee, with representatives from Airport, Community Development, Fire, Parks and Recreation, Public Works, and Waterfront.

## **IPM Advisory Committee Dissentions**

In 2006, there was no IPM Advisory Committee dissention. A dissention is when a vote is not unanimous.

## II. 2006 PROGRAM SUMMARY

While the City saw a 64% increase in overall units of material applied this year, there was a 126% increase in the use of Green materials, the largest increase in alternative material use since the beginning of the program. As noted in the introduction, the abnormal weather patterns of 2006 brought about an increase in mosquitoes and other pests. Materials use in all categories increased in response to these issues.

### City-Wide

- In Feb. 2006, the City Council adopted the PHAER zone model for all City facilities.
- Use of Green materials increased by 126% from 2005 to 2006 as the City focused on alternative materials before conventional materials.
- Total pesticide units applied (which includes Green, Yellow, and Red materials) increased by 64% from due predominantly to an increased mosquito population and the need to protect the public from the potential spread of the West Nile Virus.
- Use of Yellow materials increased by 84%.
- Use of Red materials increased by 217%.

### Parks Division

- The use of Green materials rose 100% from 2005 to 2006
- The units of pesticide applications increased by 38%.
- The number of applications reduced by 29%.

### Public Works

- The use of Green materials rose 2,871% as alternative materials were used more frequently.
- Use of Yellow materials rose 3,339%
- Both numbers are due to an increased response by Vector Control to a record high mosquito population.

### Airport

- Began use of Green herbicides to control weeds inside and outside of the airfield fence.
- Increased hours devoted to alternative pest control efforts by 139%.
- Converted management of 2 acres of native habitat restoration areas outside the airfield fence, previously mapped as PHAER Yellow, to Green.
- Saw a 30% increase in Yellow material use and a return to some Red material use due to mosquito control from an unusually wet spring, and a greater effort to control rodents.

### Golf

- Monitored nitrogen levels in turfgrass tissue to adjust fertility program to avoid summertime diseases.
- Continued refining the consistent use of compost tea and effective microorganisms to combat disease pressure on golf greens.
- Material use increased 11%, with a 2.6% decrease of Red materials and a 272% increase in Yellow materials. The increase was due predominantly to an increase in funguses on the greens from an overly wet spring.

### III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2006 as reviewed in the table below. Departments ranked their top three pest problems represented by the numbers 1, 2 and 3. Other pest problems encountered are checked (✓). Footnote annotations reference additional information which is provided below the table. Due to the abnormally long wet season this year, many pests thrived and required a greater commitment by Departments to control them. Mosquitoes in particular are a major issue for Parks and Recreation, Airport, and Public Works Vector Control because of the potential for spreading the West Nile Virus.

**Pest Problems Encountered Table**

		Airport	Creeks	Golf	Parking	Parks	Public Works
Plant pests	Giant whitefly			✓	✓	✓	✓
	Misc. plant insects			2 <sup>1</sup>	3	✓ <sup>4</sup>	
	Disease			1 <sup>2</sup>	✓	✓ <sup>5</sup>	
Specimen Tree Pests	Oak Worm			✓	2	✓	
	Psyllids			✓		✓	
Weeds	Invasives	✓		3 <sup>3</sup>		1 <sup>6</sup>	
	General weeds	3			1	1	
	Perennial grasses	✓	✓			1 <sup>7</sup>	
Vertebrates	Gopher	2		✓		2	✓
	Ground Squirrel	✓		✓		1	
	Gulls/ nuisance birds	✓		✓	✓	✓	
	Moles			✓		✓	
	Raccoons			✓			
	Skunks			✓			
Human Health	Poison Oak	✓				✓	
	Bees, yellow jackets, etc.			✓	✓	3	2
	Rats/ mice	✓		✓	✓	✓	3
	Mosquitoes	1				1	1
Other	Termites						✓
	Roaches						✓
	Pigeons						✓
	Crows			✓			
	Ants	✓					

1. Golf reported these insect pests: Black Turfgrass Ataenius Beetle (Grubs).
2. Golf reported these plant diseases (fungus): Dollar Spot, Pink Snow Mold, Anthracnose, Summer Patch, and Yellow Patch.
3. Golf reported these invasive weeds: Clover.
4. Parks reported these plant insects: Lerp Psyllids, Mites, Oak Moths, Thrips, Aphids, Snails, Slugs, and Ants.
5. Parks reported these plant diseases: Leaf Spot, Mildew, Blight, Pink Bud Rot, Sooty Mold, Pythium, Armillaria, and Phytothora.
6. 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.
7. Parks reported the following perennial grasses: Crab, and Bermuda.

## IV. TOTAL PESTICIDE USE

City-wide, the number of pesticide applications increased from 2005 to 2006 by 64% due almost entirely to the acute increase in the mosquito population throughout the year. Large concentrations of mosquitoes breed in any long-lasting still water such as the Andrée Clarke Bird Refuge and the marshes surrounding the Airport.

Base data for City-wide pesticide application was obtained in 2004. However, data is available for the Golf Division for the last 5 years and for the Parks Division for the last 8 years. This data is plotted in the graphs on subsequent pages which depict the various increases and reductions in pesticide use by Department. On the page following each graph, some narrative is provided as to the specific issues the Department faced.

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.

It should also be noted that due to the change from the Tier system to the PHAER system of pesticide classification, the graphs will show an expanded data list beneath each chart. The new data list is based on the PHAER model of pesticide classification and is valid for the 2006 column only. The Tier system is included for prior years to provide historical data.

As the program continues into its fourth year, it is important to remember that the volume of pesticides applied will continue to increase as more Green materials, which require higher application levels for the same results, are substituted for high risk pesticides. At the same time, overall risk continues to decrease.



## Total Pesticide Use Table

The table below provides a summary of the pesticides applied on City property in 2006. It was compiled from data in the Monthly Pesticide Use Reports prepared by City departments. Pesticides are reported in either pounds or gallons depending on if they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and Rodenticide.

City Departments who applied pesticides or contracted with pesticide applicators 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. The data used to generate the total overall pesticide use is based upon total units (gallons or pounds) of all materials.

## Total Pesticide Use Table

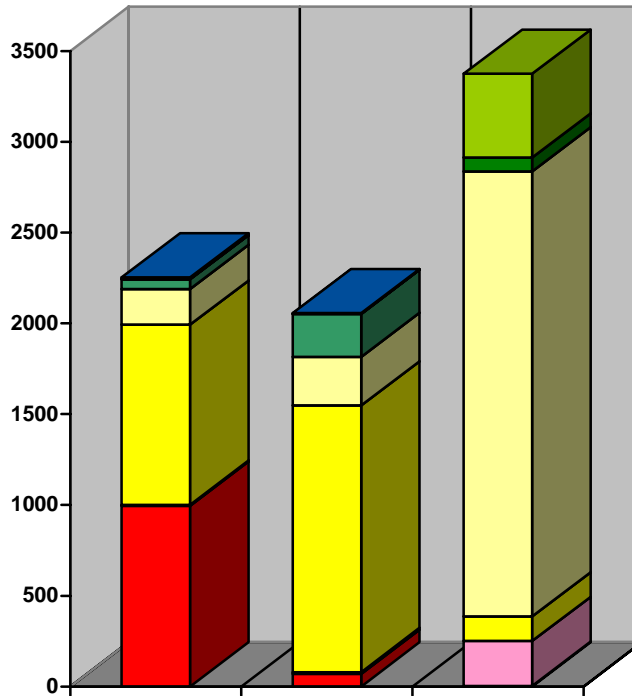
Pesticide	Type	Amount of Pesticide Applied										Number of Applications					
		Airport		Golf		Parks		Public Works		Waterfront		Airport	Golf	Parks	Public Works	Waterfront	
		Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds						
Alldown	Herbicide	4.5											1				
Bti Dipel	Insecticide					1			1						5	1	
Bti Summit	Insecticide								449.55							33	
Bti Vectobac	Insecticide		28.5										6				
Burnout II	Herbicide	37.5										4					
Lime Sulfur	Fungicide					5									2		
Matran	Herbicide					0.5									1		
Sluggo	Molluscicide						10								1		
<b>Green Totals</b>		42	28.5	0	0	6.5	10	0	450.55	0	0	11	0	9	34	0	
Aliette	Fungicide						2								1		
Altosid	Indecticide		1,959.00						228.6				17			4	
Aquamaster - Rodeo	Herbicide	9.28				3							5		1		
Ditrac	Rodenticide		148.31								105	60					12
M-Pede	Indecticide					0.06		0.31							1	7	
Neem Oil	Fungicide					0.63									3		
Round-up Pro	Herbicide	53.33		2.31		3.74							11	4	18		
Surflan	Herbicide	63											8				
Wilco Squirrel Bait	Rodenticide				7									3			
<b>Yellow Totals</b>		125.61	2107.31	2.31	7	7.43	2	0.31	228.6	0	105	101	7	24	11	12	
Banner Maxx	Fungicide			1										1			
Daconil	Fungicide			2.5										1			
Fumitoxin	Rodenticide		231.93										8				
Medallion	Fungicide				15									5			
Subdue	Fungicide					0.25									3		
<b>Red Totals</b>		0	231.93	3.5	15	0.25	0	0	0	0	0	8	7	3	0	0	
<b>Department Totals</b>		167.61	2367.74	5.81	22	14.18	12	0.31	679.15	0	105	120	14	36	45	12	
<b>City-wide Totals</b>		Gallons 187.91					Pounds 3185.89					Applications 227					

## **City-wide Pesticide Use**

Because of abnormal rain patterns which brought an unpredictable wet spring, the City saw an increase in pesticide use. There was an increase of 126% in the use of Green materials, the largest amount of alternative use since the inception the IPM program. There was a 64% increase in overall materials applied this year as well. The increase was due to a predominately large mosquito population that exploded at numerous sites such as the Andrée Clarke Bird Refuge and the marshes surrounding the Airport. The increased material use was necessary to protect public health from the potential West Nile Virus. The graph below shows the significant spike in spring rainfall against the historical average. This increase caused standing water to persist longer and year-round bodies of water to swell into shallow sheltered areas suitable for mosquito breeding.

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 Pesticide Use



	2004	2005	2006
<b>PHAER</b>			
Green Pounds			489.05
Green Gallons			48.5
Yellow Pounds			2449.91
Yellow Gallons			135.65
Red Pounds			246.93
Red Gallons			3.75
<b>History</b>			
Tier 4 Gallons			
Tier 4 Pound	9	3.4	
Tier 3 Gallons	1.1	1.25	
Tier 3 Pounds	54	236.54	
Tier 2 Gallons	195.5	267.04	
Tier 2 Pounds	992	1469.03	
Tier 1 Gallons	5.5	9	
Tier 1 Pounds	995.9	70	
<b>Totals</b>	<b>2253</b>	<b>2056.26</b>	<b>3373.79</b>
<b>Percentage</b>		Up 64%	

## **Parks Division Pesticide Use**

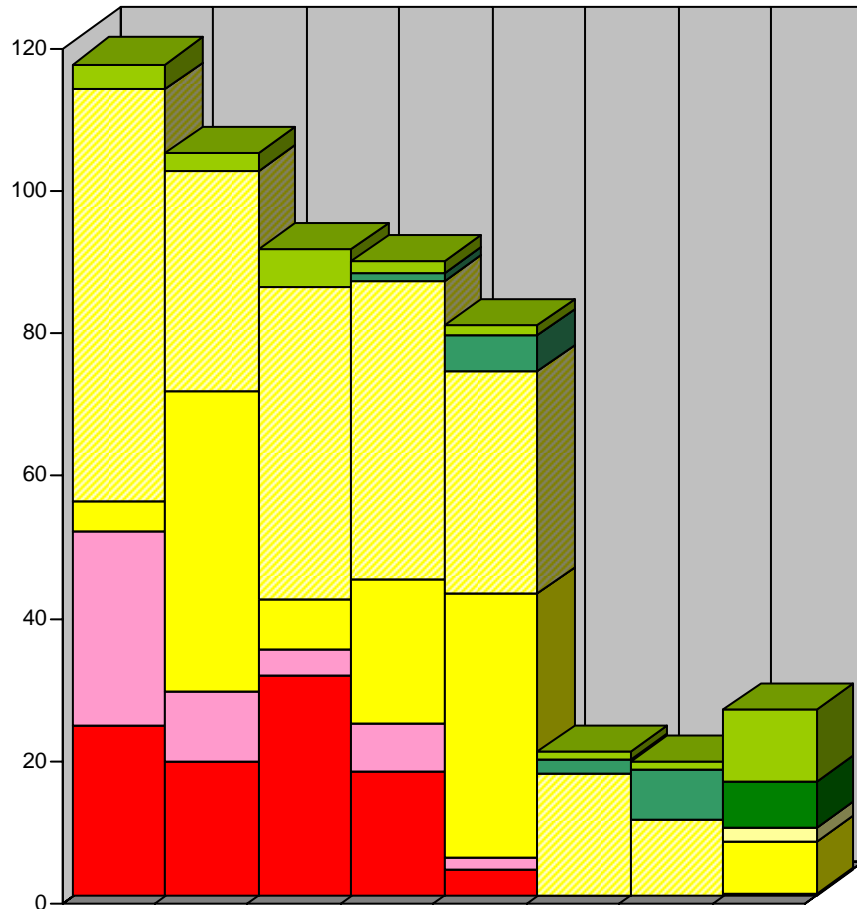
The Parks Division saw a 38% overall increase in materials used over 2005, with a 100% increase in Green materials and a 12% decrease in Yellow materials. A small amount of Red materials were used this year to treat the Moreton Bay Fig Tree for root fungus.

## **Alternatives Used**

The Parks Division used a number of Green materials as alternatives to Yellow or Red classified chemicals. Sluggo was used in place of the traditional Metaldehyde at Alice Keck Park Memorial Gardens for snail and slug control. Lime sulfur was applied as a dormant spray to the A.C. Postel Memorial Rose Garden. *Bacillus thuringiensis* var. *israelensis* (Bti) was applied for Oak Moth Worm instead of the traditional Sevin or Thiodan.

The Parks Division also saw an increase in spring weeds due to abnormal rainfall. Much of the resulting weed control was achieved with mulching, and manual or mechanical weeding as well as a change in maintenance standards. In addition, the clove oil based Green material Matran was used for weed control in areas that would have previously been treated with Round-Up, a Yellow material.

## Parks Division Pesticide Use



	1999	2000	2001	2002	2003	2004	2005	2006
<b>PHAER</b>								
Green Pounds								10
Green Gallons								6.5
Yellow Pounds								2
Yellow Gallons								7.43
Red Pounds								
Red Gallons								0.25
<b>History</b>								
Tier 4 Gallons								
Tier 4 Pound								
Tier 3 Gallons	3.4	2.5	5.3	1.75	1.5	1	1.25	
Tier 3 Pounds				1	5.05	2	7	
Tier 2 Gallons	58	31	44	42	31	17	10.71	
Tier 2 Pounds	4	42	7	20	37			
Tier 1 Gallons	27.3	9.8	3.6	6.7	1.7	0.22		
Tier 1 Pounds	24	18.9	30.91	17.6	3.8			
<b>Totals</b>	<b>116.7</b>	<b>104.2</b>	<b>90.81</b>	<b>89.05</b>	<b>80.05</b>	<b>20.22</b>	<b>18.96</b>	<b>26.18</b>
<b>Percentage</b>							Up 38%	

## **Golf Division Pesticide Use**

The Golf Division saw an overall increase of 11% in material use over 2005, with a 2.6% decrease of Red materials and a 272% increase in Yellow materials. The increase was due predominantly to an increase in funguses on the greens resulting from an uncharacteristically wet spring.

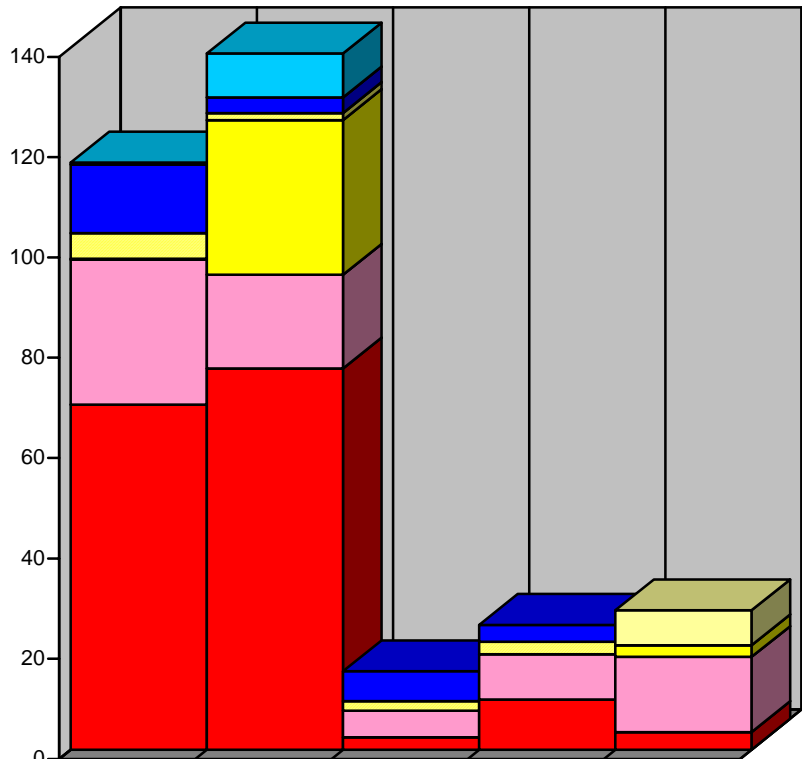
## **Alternatives Used**

While no categorical Green materials were used at the Municipal Golf Course, many non-traditional materials were applied experimentally toward the goal of pesticide reduction.

As an example, the Golf Course has seen significant success with the application of effective microorganisms to the greens. The Golf Course has applied 3,360 gallons of material containing effective microorganisms in 2006. There are many microorganisms that foster a beneficial balance in the soil and turf. The Golf Course produces their own material by making a compost tea and applying it to the greens, as well as purchasing material from a manufacturer that is mixed with water and applied. Promoting a beneficial micro-ecology in the soil improves nutrition, soil structure, drainage, and water retention of the root zone and makes the turf better able to fight off funguses and recover from insect damage.

The Golf Course also applied 300 pounds of corn gluten to the golf greens. Corn gluten is a common product in food and feed and when applied to an established turf can impede invasive weed growth.

## Golf Division Pesticide Use



	2002	2003	2004	2005	2006
<b>PHAER</b>					
<b>Green Pounds</b>					
<b>Green Gallons</b>					
<b>Yellow Pounds</b>					7
<b>Yellow Gallons</b>					2.31
<b>Red Pounds</b>					15
<b>Red Gallons</b>					3.5
<b>History</b>					
<b>Tier 4 Gallons</b>	0.04	8.75			
<b>Tier 4 Pound</b>	13.7	3.13	6	3.4	
<b>Tier 3 Gallons</b>					
<b>Tier 3 Pounds</b>					
<b>Tier 2 Gallons</b>	5.1	1.4	1.9	2.5	
<b>Tier 2 Pounds</b>	0.19	30.84			
<b>Tier 1 Gallons</b>	28.9	18.7	5.3	9	
<b>Tier 1 Pounds</b>	68.8	76	2.45	10	
<b>Totals</b>	<b>116.73</b>	<b>138.82</b>	<b>15.65</b>	<b>24.9</b>	<b>27.81</b>
<b>Percentage</b>				Up 11%	

## **Airport Pesticide Use**

The Airport saw an overall rise in material use of 38%, with a 30% increase in Yellow materials and a return to some Red materials.

Airport pesticide applications are concentrated on three types of pests: mosquitoes, rodents and weeds. The weather cycle directly impacts production of weeds and mosquitoes. In 2006 a late wet spring, followed by a dry fall increased the duration mosquito habitat was available and limited fall weed production on the airfield. These conditions are reflected in the Airport's pesticide application rates.

### Mosquitoes

The Airport teams with the Mosquito and Vector Management District of Santa Barbara County to manage mosquito populations on Airport property.

Typically mosquitoes are controlled at the Airport with a pretreatment of the extended release larvicide Altosid, applied prior to the wet season. The product is effective for approximately 180 days after it is activated by the first rains of the season. In cases where impounded water continues to provide mosquito habitat beyond the 180 day effective life of the larvicide, the District manages remaining, typically shrinking, mosquito populations using additional spot applications of Altosid or Vectobac G. Because of the late rains in the spring of 2006, most mosquito habitat did not evaporate within the effective life of the larvicide and a second application of Altosid was recommended and applied.

### Weeds

The Airport's chemical weed abatement program is focused on the Airfield. Weeds on the Airfield may obstruct views of lighting and signage for pilots using Airport runways and taxiways and may eventually damage runway and taxiway surfaces. FAA safety regulations require that lights and signs not be obstructed. An abnormally dry fall in 2006 contributed to a substantial decrease in herbicides used to control weeds on the Airfield.

### Rodents

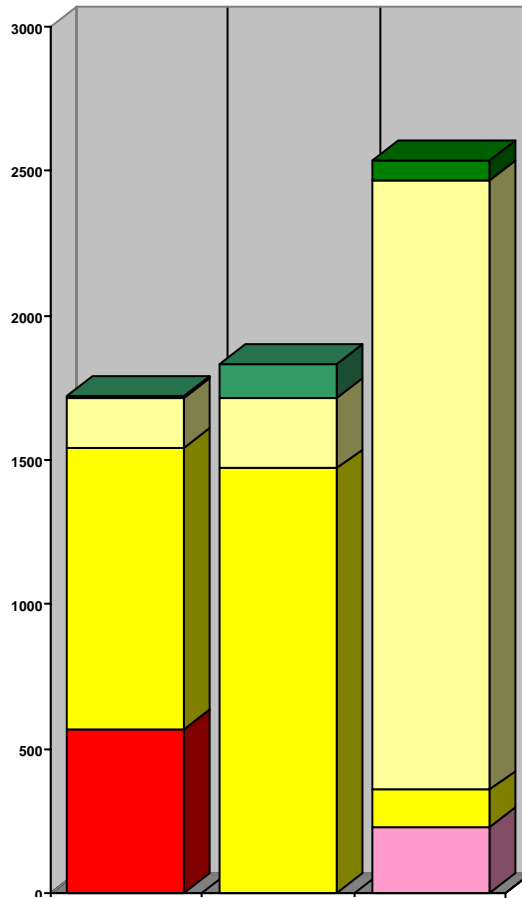
The Airport substantially increased rodent control efforts in 2006 in comparison with 2005. Rodents damage airfield safety areas and attract predatory birds that may be involved in aircraft strikes. Airport department used fumitoxin, a Red material, to control gophers on the Airfield. In addition, Airport used Ditrac, a Yellow material, to control rodents in and around Airport buildings.

## **Alternatives Used**

Over 3,000 hours were devoted to manual weed control at the Airport in 2006. A majority of those efforts were associated with maintenance of Airport Green Zones outside the airfield fence and maintenance of native habitat restoration areas. As Airport native habitat restoration projects are completed, the effort needed for maintenance will also increase. In addition to direct weed control, Airport staff and contractors applied mulch to suppress weed growth at several areas around the Airport. In areas where landscaping was replaced, Airport staff selected low maintenance plant varieties and installed weed block fabric as part of the project. Staff also used mechanical methods to control gophers in Airport Green Zones.



## Airport Pesticide Use



	2004	2005	2006
<b>PHAER</b>			
Green Pounds			28.5
Green Gallons			42
Yellow Pounds			2107.31
Yellow Gallons			125.61
Red Pounds			231.93
Red Gallons			
<b>History</b>			
Tier 4 Gallons			
Tier 4 Pound			
Tier 3 Gallons			
Tier 3 Pounds	12.5	115.4	
Tier 2 Gallons	170.9	247.2	
Tier 2 Pounds	972.3	1469	
Tier 1 Gallons			
Tier 1 Pounds	568		
<b>Totals</b>	<b>1723.7</b>	<b>1831.6</b>	<b>2535.35</b>
<b>Percentage</b>		Up 38%	

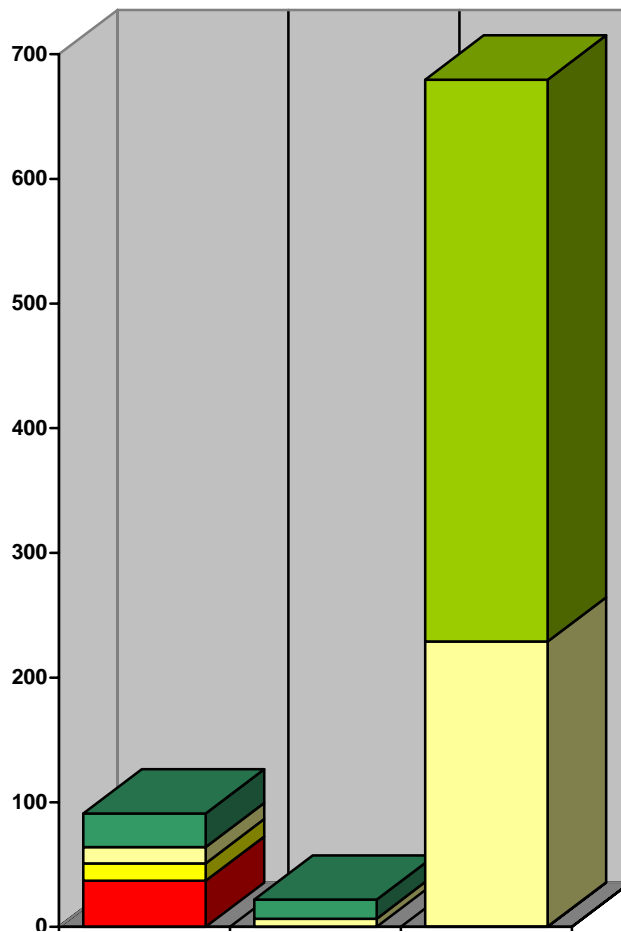
## Public Works Pesticide Use

Public Works, particularly Vector Control, saw an increase in material use of 3,014%, due almost entirely to mosquito control to prevent the potential spread of the West Nile virus. Of the material applied, 66% was Green resulting in an increase of 2,871% in Green material use. Among other sites, mosquito controls were applied at the Andrée Clarke Bird Refuge, and Lighthouse Creek.

The mosquito population exploded at the Andre Clark Bird Refuge in June after a very wet spring. Due to the close vicinity of the Santa Barbara Zoo, residences, beach, restaurants, and bike path, the increased use was necessary to protect public health and safety. Mosquitoes can become a major pest to humans and other vertebrates that reside near tule/cattail habitats. Mosquitoes can be very active in the day and this was causing numerous citizens and business owners to become alarmed and voice complaints for action. Considering the amount of public use in and around the Bird Refuge, it was of the utmost importance to protect public health and safety from this threat. Previously, the Green product *Bacillus thurengiensis* var. *israelensis* (Bti) had been used to control mosquitoes at this location. At the first signs of activity, Bti was used, but amounts that had controlled other types of mosquitoes in the past were proving ineffective against this particular variety. After a few applications of Bti it was obvious that something more needed to be done. Consulting with the Mosquito and Vector Management District of Santa Barbara County, and the Parks and Recreation Department, it was decided to use the approved Yellow product, Altosid. With the assistance of the Parks Division who rallied to manually remove the tule and cattails, City Vector Control Staff applied a series of both Bti and Altosid. The public health and safety threat was minimized and by mid August the population was under control.

Lighthouse Creek next to La Mesa Park, is a perennial creek that is subject to mosquito issues every season. The problem is elevated because there are many homes lining both sides of much of this creek as it flows to the ocean. The mosquito larvae-eating fish *Gambusia affinis* are a strong method of mosquito control, but are not allowed in many creeks under California Department of Fish and Game (CDFG) jurisdiction as they are an invasive species. Since this creek is short, does not provide habitat for threatened or endangered aquatic species, and is close to many dwellings, it was a feasible location to attempt a non-pesticide mosquito control effort. Approval was given by the CDFG to City Vector Control to introduce *Gambusia* to this creek. *Gambusia* were manually relocated from a desiccating pool to Lighthouse Creek in early July. Staff inspections the rest of the season showed total mosquito control and no pesticide was used.

## Public Works Pesticide Use



	2004	2005	2006
<b>PHAER</b>			
Green Pounds			
Green Gallons			450.55
Yellow Pounds			
Yellow Gallons			228.6
Red Pounds			0.31
Red Gallons			
<b>History</b>			
Tier 4 Gallons			
Tier 4 Pound			
Tier 3 Gallons			
Tier 3 Pounds	27	15.16	
Tier 2 Gallons	13	6.625	
Tier 2 Pounds	14	0.031	
Tier 1 Gallons			
Tier 1 Pounds	37		
<b>Totals</b>	<b>91</b>	<b>21.816</b>	<b>679.46</b>
<b>Percentage</b>		Up 3,014%	

## V. EXEMPTIONS

Exemptions may be granted when a pest outbreak poses an immediate threat to public health or will result in significant economic or environmental damage from failure to use a pesticide on the *Phased-Out Pesticide List* or in a designated zone that would otherwise prohibit it. Exemptions 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.

**Exemption Summary Table**

- 12 exemptions were requested in 2006 as summarized in the table to the right and as listed in the table below.
- 2 requests were for a one-time exemption and 10 were programmatic exemptions.
- Of the 12 requests approved, 9 (or 75%) were applied. Of the 9 that were applied, 8 were used only after alternatives were tried.

2006 Exemptions	Totals						
		Airport	Golf	Parks	Public Works	County	Waterfront
Proposed	12	1	5	3	1	1	1
Total passed	12	1	5	3	1	1	1
Applied:	9	1	3	3	1	0	1
Fungicide	5		3	2			
Herbicide	1			1			
Insecticide	0				1		
Rodenticide	2	1					1
Other	0						
Not applied	3		2			1	
Denied	0						
Fungicide	2						
Herbicide	1						
Insecticide	0						
Rodenticide	0						
Other	0						
Deferred	0						

**Exemption Detail Table**

Vote	Department	Material	Type	Type	Pest	Exemption Type	Used	Site
Passed	Airport	Fumitoxin	Rodenticide		Rodents	Programmatic	Yes	Airfield
Passed	Parks	Subdue	Fungicide		Fungus	One Time	Yes	Moreton Bay Fig Tree
Passed	Parks	Subdue	Fungicide		Fungus	Programmatic	Yes	Moreton Bay Fig Tree
Passed	Parks	Aquamaster	Herbicide		Arundo	Programmatic	Yes	Arroyo Burro Creek Restoration
Passed	Golf	Heritage	Fungicide		Fungus	Programmatic	No	Golf Course
Passed	Golf	Medalion	Fungicide		Fungus	Programmatic	Yes	Golf Course
Passed	Golf	Prostar	Fungicide		Fungus	Programmatic	No	Golf Course
Passed	Golf	Banner Maxx	Fungicide		Fungus	Programmatic	Yes	Golf Course
Passed	Golf	Daconil	Fungicide		Fungus	Programmatic	Yes	Golf Course
Passed	County	Aquamaster	Herbicide		Weeds	Programmatic	No	Hidden Valley Park
Passed	Waterfront	Ditrac	Rodenticide		Rodents	Programmatic	Yes	Secure areas by Marina entrances
Passed	Vector Cont.	Altosid	Insecticide		Mosquitos	One Time	Yes	Stagnant bodies of water

**Comparison of Exemptions for 2005 and 2006**

	2005	2006
Number of Exemption Requests	27	12
Number of Exemption Requests Approved	26	12
Number of Approved Exemption Requests Applied	14	9

The number of exemptions applied for in 2006 was reduced while the percentage approved rose. This is in part due to a more efficient operation of the exemption process by Staff and the IPM Advisory Committee and a greater focus on alternatives prior to exemption requests.

## VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2006

Non-chemical pest management alternatives used in 2006 are reviewed in the table below. The use of non-chemical IPM alternatives was emphasized over pesticide applications. Hours reported for the total year are from the *Monthly Alternative Use Reports*. A check (✓) indicates the alternative was used but time was not tracked for it.

PEST	Alternative	Airport Hours	Golf Hours	Public Works Hours	Parks Hours	Citywide Hours
<b>WEEDS</b>	Mulch & wood chips	37.5	✓	✓	1,222	<b>1,259.5</b>
	Weed fabric	16			245	<b>261</b>
	Propane flame weeder				110	<b>110</b>
	Hot water/ steam				24	<b>24</b>
	Hand weeding	1,932.5	40	253.5	400	<b>2,626</b>
	Weed whip	1,073	796		1,355	<b>3,224</b>
	Habitat modification				400	<b>400</b>
	Irrigation Mgmt.		✓	✓	✓	✓
	Host plants squeeze out	✓				✓
	<b>PLANT PESTS</b>	Irrigation Mgmt.		610	✓	✓
Compost tea/microbial in.			48			<b>48</b>
Enhance plant health			540			<b>540</b>
Worm castings					✓	✓
Effective micro-organisms			✓			✓
Wash off plants				✓	60	<b>60</b>
Resistant varieties		✓			✓	✓
Remove plant/tree				✓	✓	✓
<b>GOPHERS</b>	Mechanical traps	21		✓	650	<b>671</b>
<b>SQUIRRELS</b>	EPA exempt bait				410	<b>410</b>
	Rat Zapper Traps				250	<b>250</b>
<b>RATS &amp; MICE</b>	Mechanical traps			✓	511	<b>511</b>
	Cat				✓	✓
<b>MOSQUITOES</b>	Mosquito fish			✓	✓	✓
	Remove stagnant water		✓		✓	✓
<b>BEES, WASPS, etc.</b>	Bee Keepers			✓	✓	✓
	Remove hives			✓	✓	✓
<b>OTHER</b>	Glue traps/roaches				✓	✓
	Raise thresholds	✓			✓	✓
<b>Total Hours</b>		<b>3,080</b>	<b>2,034</b>	<b>253.5</b>	<b>5,637</b>	<b>11,004.5</b>

The total tracked hours for City-wide alternative practices rose 66% from 6,606.5 in 2005 to 11,004.5 in 2006.

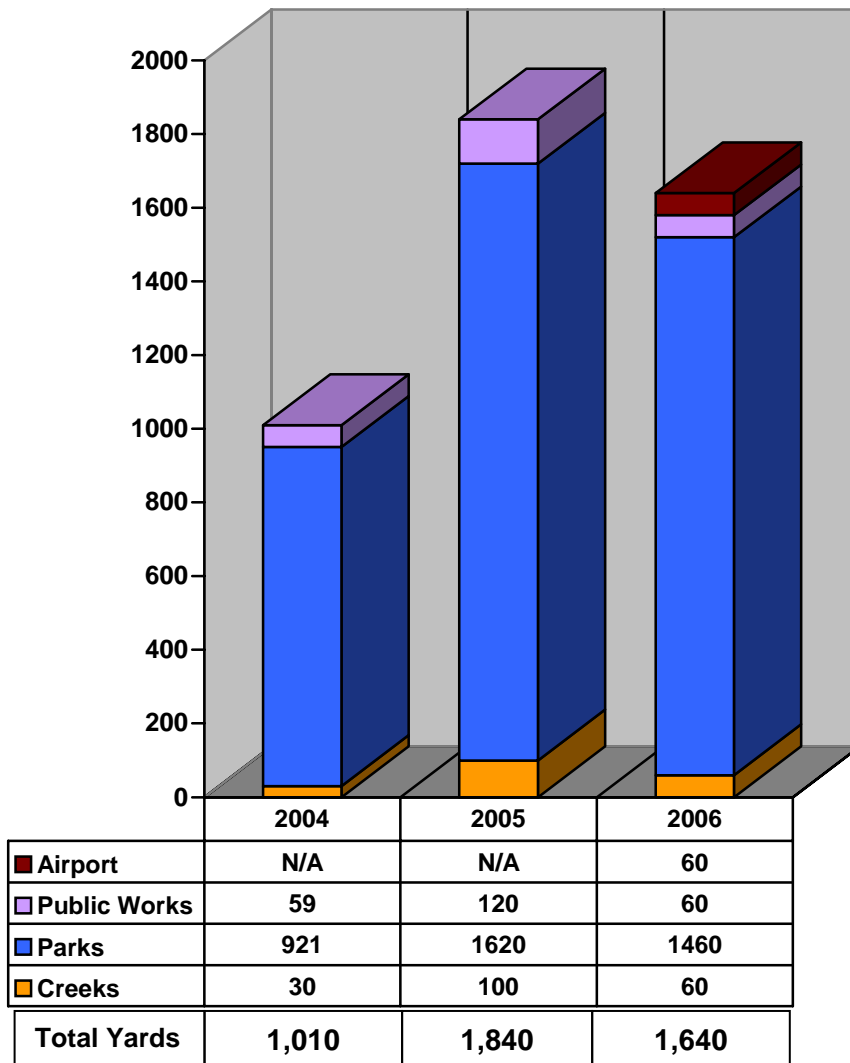
## Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied as part of the management strategies for 2006. A wet spring, which restricts park access and requires a greater commitment of staff time to vegetative fuel reduction, affected the amount of mulch that was applied in 2006.

**Mulch Use Table**

Yards of Mulch by Type	Airport	Creeks	Parks/Golf	Public Works	City Totals
Biosolids			220		<b>220</b>
Woodchips	60	60	1,240	60	<b>1,420</b>
<b>Total Yards</b>	<b>60</b>	<b>60</b>	<b>1,460</b>	<b>60</b>	<b>1,640</b>

**Mulch Use Comparison Chart**



## VII. EFFECTIVENESS OF ALTERNATIVE PRACTICES IMPLEMENTED

In general, the majority of alternative practices used are more labor intensive and costly, and not as effective as Yellow and Red classified pesticides. Most provide only moderate control of pest populations. The effectiveness of alternatives for the biggest pest problems encountered is reviewed below.

- **Weeds:** a variety of non-chemical alternatives are used to provide moderate effectiveness and control including: weeding, weed whipping, mulching, mowing, flame torch (in designated safe areas), and the Aquacide Steam Weeder. These alternatives are significantly more labor and cost intensive and not as effective as chemicals. Alternative food grade or EPA exempt chemicals have not proven effective.
- **Insects:** Results are mixed for combating insects. For some insects, there are no known effective non-chemical alternatives. Some alternatives can be very effective but expensive, such as removing non-resistant plants and replacing them with resistant varieties. Generally, non-chemical alternatives were found to be more labor intensive.
- **Disease:** No effective alternative has been found for most diseases. Where possible, staff focuses on preventative treatments to enhance plant health. Once disease strikes, pesticides are generally required to combat it.
- **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 and electrical traps is the primary method of control at this time. This method is moderately effective at controlling populations. More effective alternatives are being researched. Some control has been achieved using food grade baits. Both trapping and baits 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 moderately effective depending on population size and location and available food sources. Positive public perception seems to far outweigh the problems associated with using traps which includes: traps are much less effective than bait stations, more labor intensive, and more expensive.
- **Termites** – Building Maintenance now only uses heat treatments to control termites. Heat was found to be equally effective as pesticides and without the chemical residues. However, costs are 50% higher at this time.

## VIII. PROPOSED CHANGES TO PEST MANAGEMENT PRACTICES

### Alternative Practices Proposed for 2007

In 2007, Departments will continue to seek “least toxic” alternatives that provide higher benefit to cost ratios. Departments will also continue to use alternatives found effective in the past three years unless more cost-effective alternatives are found. Departments proposed the following for 2007:

- Parks will continue to implement the PHAER Zone model of integrated pest management and modify San Roqué Park, Garden Street Parking Lot, and Chase Palm Parking Lot to change them from Yellow to Green. Modifications will also be completed at Shoreline Park, Alice Keck Park Memorial Gardens, Alameda Park, Los Baños Pool, and Chase Palm Park.
- Golf will continue to refine and develop organic approaches and monitor turf energy levels, apply compost-tea to greens and pursue other Green alternatives.
- Airport will standardize least toxic approaches for combating specific pests and will refine their strategy for controlling weeds on the airfield.
- The IPM Strategy is being updated to include the PHAER Zone Model of material and site classification.



## **IX. CONCLUSION**

While the City saw a 64% increase in materials applied this year, at the same time there was a 126% increase in the use of Green materials, the largest increase in alternative material use since the beginning of the program. The abnormal weather patterns of 2006 brought about increased mosquitoes, rodents, weeds, and many other pests. Materials use in all categories increased to control these issues.

While this year saw a City-wide increase in use of all categories of materials due to abnormal rainfall, a number of Departments have maintained a decrease in Red and Yellow materials this year and the general trend continues in that direction. Red material use rose this year, however, it is still down 75% from 2004 and Green material use has risen 5,270% since 2004.

It is critical for City staff to continue to find low risk, cost effective, viable alternatives so that pesticide hazards may be reduced further and the overall efficiency of IPM practices may increase. Therefore, staff must be supported in continuing to receive IPM training, to collaborate with regional IPM groups, and to research and evaluate the use and effectiveness of alternative materials and methods.

Also critical to reducing pesticide hazards in the City of Santa Barbara is the continuation of community outreach and public education. As part of this community outreach, the public will become more aware of the City's greater reliance upon low risk IPM alternatives, and know that if a City staff person is seen spraying, it is with an approved material. As part of this program in 2007 the Parks and Recreation Department will be installing signs at park facilities that clearly explain and define the PHAER Zone system and how it is implemented at each facility.

## X. ATTACHMENTS

### ATTACHMENT A: APPROVED MATERIALS LIST

Product Name	Active Ingredient	ZONE	Tier	Type
AllDown	citric acid, acetic acid, garlic	Green	3	Herbicide
Bactimos Pellets	BT	Green	3	Insecticide
Bactimos Wettable	BT	Green	3	Insecticide
Bio-Weed	corn gluten	Green	3	Herbicide
BurnOut 2	clove oil	Green	3	Herbicide
Cinnamite	cinnamaldehyde	Green	3	Insect/Fung
Dipel Flowable	BT	Green	3	Insecticide
EcoExempt	Wintergreen Oil	Green	3	Herbicide
Embark	mefluidide	Green	3	Growth Regulator
Kaligreen	potassium bicarbonate	Green	3	Fungicide
Matran (EPA Registration Exempt)	clove oil	Green	3	Herbicide
Natura Weed-A-Tak	clove oil	Green	3	Herbicide
Safer Soap	potassium salts of fatty acids	Green	3	Insecticide
Sluggo	iron phosphate	Green	3	Other
Summit BTI Briquets	BT	Green	3	Insecticide
Teknar HP-D	BTI	Green	3	Insecticide
Vectobac G	B.t.i.	Green	3	Insecticide
VectoLex CG	bacillus sphaericus	Green	3	Insecticide
Agnique MMF	POE Isoocatadecanol	Yellow	2	Insecticide
Aliette	fosetyl aluminum	Yellow	2	Fungicide
Altosid B	methoprene	Yellow	2	Other
Altosid L	methoprene	Yellow	2	Other
Altosid P	methoprene	Yellow	2	Other
Altosid XR	methoprene	Yellow	2	Other
Aquamaster-Rodeo	glyphosate	Yellow	2	Herbicide
Avid	abamectin	Yellow	2	Miticide/Insecticide
Dormant	petroleum oil	Yellow	2	Insecticide
Green Light	Neem oil	Yellow	2	Insecticide/Fungicide
M-PEDE	potassium salts of fatty acids	Yellow	2	Insecticide
Prostar 70 WP	flutolanil	Yellow	2	Fungicide
Rose Defense	Neem oil	Yellow	2	Insect/Fung
Roundup Pro	glyphosate	Yellow	2	Herbicide
Safticide Oil	petroleum oil	Yellow	2	Insecticide
Stylet Oil	Petroleum distillates	Yellow	2	Insecticide
Sulf-R-Spray	Parafin oil, sulfur	Yellow	2	Fungicide
Superior Spray Oil	petroleum distillates	Yellow	2	Insecticide
Surflan	oryzalin	Yellow	2	Herbicide

Product Name	Active Ingredient	ZONE	Tier	Type
Surflan AS	oryzalin	Yellow	2	Herbicide
Triact	Neem oil	Yellow	2	Insecticide/Fungicide
Trilogy	Neem oil	Yellow	2	Insecticide/Fungicide
Wasp-Freeze	allethrin	Yellow	2	Insecticide
Wilco Ground Squirrel Bait	diphacinone	Yellow	2	Other
XL 2G	benefin; oryzalin	Yellow	2	Herbicide
<i>All Special Circumstance materials will continue to require exemptions granted by the IPM Advisory Committee, as provided in the City of Santa Barbara IPM Strategy</i>				
Bayleton	triadimafon triazole	S. C.	1	Fungicide
Conserve	spinosad	S. C.	1	Insecticide
Fumitoxin	Aluminum phosphide	S. C.	1	Rodenticide
Manage	halosulfuron methyl	S. C.	1	Herbicide
Medallion	fludioxonil	S. C.	4	Fungicide
Quick Pro	glyphosate/diquat	S. C.	1	Herbicide
Reward	diquat dibromide	S. C.	1	Herbicide
Rubigan	fenarimol	S. C.	1	Fungicide
Rubigan EC	fenarimol	S. C.	1	Fungicide
Subdue	metalaxyl	S. C.	1	Fungicide
Zp Rode	zinc phosphide	S. C.	1	Rodenticide

\* Some previously approved materials have been removed from this list at the discretion of the IPM Coordinator.