

Contra Costa County Integrated Pest Management Advisory Committee

2015 Annual IPM Program Status Report

to the

Transportation, Water, and Infrastructure Committee of the Contra Costa Board of Supervisors

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Executive Summary

Work of the IPM Advisory Committee

This year, the IPM Advisory Committee explored

- How pest management decisions are being made in the County,
- Sustainable landscaping for County buildings,
- Reducing turf around County buildings, and
- Bed bug issues in the County.

In 2012, the Committee developed a form for documenting pest management decisions. Since then, the Departments have been using this form to document decisions for various pests. This year, the Public Works Roadside and Flood Control Maintenance Division developed a document for grazing as a vegetation management tool. The Committee recommends that the Departments continue to use the form to document pest management decisions in the Departments.

In this fourth and historically worst year of drought in California, the IPM Advisory Committee made recommendations to the Board of Supervisors on increasing the use of sustainable landscaping and reducing turf around County buildings. The Grounds Division undertook a pilot turf conversion at the Pittsburg Health Center where about 70% of the turf was removed and replaced with drought-tolerant and mulched landscaping. This project is estimated to save one million gallons of water per year.

The IPM Committee researched bed bug legislation in other jurisdictions around the U.S. and drafted a County ordinance based on California Assembly Bill 551. AB 551 may be passed next year, in which case the work of the Committee will inform the implementation of the law in Contra Costa. If AB 551 fails to pass, the County will have the draft of an ordinance that can comprehensively address many of the legal questions surrounding bed bug treatment.

Pesticide Use Reduction by County Operations

Since FY 00-01, County operations have reduced their pesticide use by 72 %. During the same time period, they have reduced their use of “Bad Actor” pesticides by 84%.

Departmental IPM Programs

The Department of Agriculture has revised its noxious weed program and will be concentrating efforts on contracted work for parkland and municipalities within the County.

Because of the drought, Argentine ants were a particular problem for the Facilities Division. The lack of food and water outside forced ants indoors in large numbers. Pestec, the County’s structural IPM Contractor, used baits coupled with education for County staff to combat the ant invasions.

The Roadside and Flood Control Maintenance Division continues to incorporate grazing into its vegetation management program. This year it used goats to abate weeds on approximately 436 acres and is increasing its knowledge and experience with this management tool. Drought conditions continue to select for weedier and more difficult to control species along the roads and flood control channels. The extremely dry soil conditions have prevented the growth of some weeds, and without competition, the hardier weeds have more room and freedom to grow.

History of the IPM Advisory Committee

From 2002 to 2009, an informal IPM Task Force met to coordinate implementation of the IPM Policy that was adopted by the Board of Supervisors in November 2002. The Integrated Pest Management (IPM) Advisory Committee, a formal body, was created by the Board of Supervisors in November 2009. This report is the sixth annual status report from the IPM Coordinator and the IPM Advisory Committee.

Background on the IPM Advisory Committee

Purpose of the IPM Advisory Committee

The purpose of the Committee is to

1. Protect and enhance public health, County resources, and the environment;
2. Minimize risks and maximize benefits to the general public, staff, and the environment as a result of pest control activities conducted by County staff and contractors;
3. Promote a coordinated County-wide effort to implement IPM in the County in a manner that is consistent with the Board-adopted IPM Policy;
4. Serve as a resource to help the Agriculture and Public Works Departments and the Board of Supervisors review and improve existing pest management programs and the processes for making pest management decisions;
5. Make policy recommendations upon assessment of current pest issues and evaluation of possible IPM solutions; and
6. Provide a forum for communication and information exchange among members in an effort to identify, encourage, and stimulate the use of best or promising pest management practices.

Members of the IPM Advisory Committee

Currently the Committee has a total of 13 seats consisting of voting and non-voting members.

The 8 voting members include

- One representative from Contra Costa Health Services,
- One representative from the County Storm Water Program,
- One representative from the County Public and Environmental Health Advisory Board,
- One representative from the County Fish and Wildlife Committee,
- One representative from an environmental organization, and
- Three at-large members of the public.

The 4 non-voting members include

- A representative from the Agriculture Department,
- Two representative from the Public Works Department (Facilities Division and Maintenance Division), and
- One representative from the County's pest management contractor

The Committee also has one public member alternate who only votes if one or more of the three at-large public members, the PEHAB representative, or the Fish and Wildlife representative is absent from a meeting.

IPM Advisory Committee Priorities for 2015

The IPM Advisory Committee focused on the following three IPM program features:

- A. IPM decision-making—documenting pest management decisions in County IPM programs
- B. Grounds Division weed management and sustainable landscaping—preparing recommendations for the Board of Supervisors
- C. Bed bug management in the County—researching legislation in other jurisdictions and preparing a recommendation for the Board of Supervisors regarding a County ordinance

The Committee formed two subcommittees to work on these priorities, the Weed subcommittee and the Bed Bug subcommittee.

2015 Accomplishments of the IPM Advisory Committee and the IPM Coordinator

Accomplishments of the IPM Committee

The IPM Advisory Committee (the Committee) held 6 regular meetings in 2015. The subcommittees held a total of 9 meetings to address the above priorities. The IPM Coordinator serves as staff to the Committee and the two subcommittees. The accomplishments of the IPM Committee and its subcommittees are as follows:

Priority A: IPM Decision-Making

Through the work of the Weed subcommittee, the IPM Advisory Committee

1. Gained a detailed understanding of the complexities involved in making pest management decisions about grazing for weed control and the degree to which these decisions are site specific and require highly specialized experience and knowledge, and
2. Reviewed and provided suggestions for improvement to a decision-making document from Public Works Roadside and Flood Control Channel Maintenance Division on when and how to use goats for weed management.

This detailed text document follows a form devised by the IPM Coordinator and the former Decision-Making subcommittee. Decision-making documents are considered current as of the date on the document and may be updated in the future.

See Attachment A for the decision making document and see Attachment B for the Weed subcommittee's final report.

Priority B: Grounds Division Weed Management and Sustainable Landscaping

Through the work of the Weed subcommittee, the IPM Advisory Committee

1. Reviewed the workings of the Grounds Division, including funding and staffing issues, learned about problematic properties owned by the County, and heard a description of the Grounds Manager's plan to convert turf on County grounds to drought-tolerant landscaping to save water and comply with the Governor's mandate;
2. Gained an understanding of the complexities of managing County landscapes and the challenges faced by the Grounds Division; and
3. Developed the following recommendations for the Board of Supervisors
 - a. Develop a Countywide policy to convert existing turf to drought-tolerant, low-maintenance landscaping;
 - b. Provide funding for sustainable landscaping projects;
 - c. Develop a policy that facilitates funding of projects that might save money in the future but require upfront costs; this will allow the Grounds Division to make long-range plans for County landscapes;
 - d. Make changes in the wording of the County's Landscape Standards to facilitate long-range planning and reinforce the minimal use of turf and the maximal use of drought-tolerant and native plants; and
 - e. Require landscape designs to be reviewed and approved by the Grounds Division with regard to sustainable maintenance and long-term viability of the landscape.

See Attachment B for the Weed subcommittee final report and details of the recommendations.

Priority C: Bed Bug Management in the County

Through the work of the Bed Bug subcommittee, the IPM Advisory Committee

1. Researched bed bug legislation across the country;
2. Compiled a list of the best provisions of legislation in other jurisdictions;
3. Reviewed a current bed bug bill in the California legislature; and

4. Prepared a draft ordinance for the consideration of the Supervisors in the Transportation, Water and Infrastructure Committee.

See Attachment B for the Bed Bug subcommittee's final report and draft ordinance.

Accomplishments of the IPM Coordinator

In addition to staffing the IPM Advisory Committee and working on the three subcommittees, the IPM Coordinator accomplished the following:

Bed Bugs

The common bed bug continues to be one of the most serious pests in the County, a pest that has provoked citizens to misuse pesticides to an alarming extent. Pesticides do not solve the problem, and in many cases make the problem worse. We increasingly see bed bugs affecting the citizens of Contra Costa who have the fewest resources to combat them.

Continued increase in bed bug calls

There is a sense that the bed bug problem is increasing in the County, but this is anecdotal since there is no coordinated effort in the County to collect data. The IPM Coordinator records each call for advice, but it is unclear how many calls other staff in the County are receiving that are not forwarded to the IPM Coordinator. We also have no way of knowing how many calls city staff receive. In 2015, the IPM Coordinator investigated by telephone (with the help of the Bed Bug Task Force) 73 bed bug complaints (compared to 42 last year).

A substantial number of complaints continue to come from West County. There are increasing numbers of complaints from Pittsburg and Antioch, as well as Walnut Creek, and it is generally acknowledged that there are numerous apartment complexes in Concord with severe infestations throughout the buildings. Some of these complexes have been infested for 5 or more years.

Research to help low income residents of apartment complexes

The County continues as a cooperator on the U.C. research grant to compare the efficacy of IPM methods and conventional methods of bed bug management in multi-unit dwellings. Among the collaborators in this research are the University of California Cooperative Extension, U.C. Riverside Department of Entomology, the Los Angeles and the San Francisco Housing Authorities, the Monument Impact in Concord, three pest management companies, and the Contra Costa IPM Coordinator. Two field study sites have been selected in Contra Costa County: Pestec (the County's structural IPM contractor) will be working in an apartment complex in Concord and Orkin will work in a complex in Bay Point. U.C. researchers inspected all units in each apartment complex to gather baseline data for the study. Both pest management companies have also completed inspections of all the units in their apartment complexes and have begun treatments. Each company designed its own plan for managing bed bugs in its apartment complex. At the end of the study, U.C. researchers will evaluate the effectiveness of each program.

Nati Flores of Monument Impact and U.C. Urban IPM Advisor Andrew Sutherland have provided at least one education session to tenants in the two Contra Costa apartment complexes, but the pest management companies are free to provide additional education.

To educate County staff and the public about bed bugs, the IPM Coordinator

- Continued to organize and staff the County's Bed Bug Task Force; the Task Force meets every two months and advocates for increasing public awareness of bed bug problems and for developing sound bed bug management policy throughout the County;
- Accompanied Environmental Health Inspectors on a bed bug investigations at Love a Child Mission in Pittsburg;
- Worked extensively with Supervisor Andersen's office and members of the County Mental Health Commission on a serious and long-standing bed bug infestation in Riverhouse, a senior and disabled residence in Martinez (the issues are still unresolved);

- Met with Sandy Rose, Mental Health Housing Services Coordinator, to discuss bed bug prevention measures for their offices and their staff;
- Created additional bed bug fact sheets in English and in Spanish for the County's bed bug website and made improvements to the website that were suggested by the Bed Bug subcommittee;
- Provided a bed bug awareness and prevention training in March to around 20 staff members at Shelter, Inc in Martinez; toured their facility and made suggestions about bed bug prevention;
- With Pestec staff, provided a bed bug awareness and prevention training for 23 Contra Costa Adult Protective Services (APS) staff in November; and
- Prepared fact sheets and gathered other information specifically for APS staff and their clients.

Advice and Outreach on IPM

The IPM Coordinator

- Worked with County Facilities Division staff on an unusual termite infestation in a ground floor hallway at 597 Center in Martinez (see photo at right). The termites entered through a crack in the slab and built tubes up into the air in the middle of the hallway. There was no wood for them to eat nearby, so this was an exploratory mission for the termites. The infestation was treated with spot applications of Altriset® (chlorantraniliprole) that were injected into holes drilled into the concrete slab surrounding the termite tube;
- Provided an educational session on fleas for staff at 1220 Morello;
- Provided on-going advice along with review of educational materials for IPM training in child care settings as part of a project of the Center for Environmental Research and Children's Health at U.C. Berkeley;
- Worked with the City of El Cerrito and Beth Baldwin of the Contra Costa Clean Water Program to complete a comprehensive IPM guidance document for Contra Costa municipalities (see <http://www.cccleanwater.org/wp-content/uploads/2015/08/IPM-Guidance-Manual-Final-June-2015-print-ready-w-bookmarks-blue-links.pdf>) and provided an IPM training session in June for municipal staff from around the County;
- Met with the Alameda County IPM Coordinator to provide advice on his program;
- Attended regular meetings of the Head Start Health and Nutrition Services Advisory Committee to report on IPM issues; and
- Responded to a number of requests for pest management information from County staff and citizens.



Subterranean termite tube emerging from a crack in the slab under the carpeting of a ground floor hallway at 597 Center in Martinez

Conferences and Trainings Attended

- Bed Bug Global Conference
- Two EPA bed bug webinars
- An EPA webinar on managing vertebrates
- County Advisory Body Training

2015 Department IPM Program Highlights and Challenges

General Information about the Departments

Each Department maintains an IPM Plan that covers their pest management goals, sites under management, decision making processes, key pests and best management practices, environmental stewardship, and training requirements.

In order to help new IPM Committee members understand the working of each department, the IPM Coordinator has developed Department Overviews that cover department responsibilities in general and pest management responsibilities in particular, funding sources and budget, pests under management and the methods used to manage them, and department challenges.

Each of the County's pest management programs must keep records of pesticides used and submit a report monthly to the Agriculture Department for transmission to the state Department of Pesticide Regulation. Once a year, the IPM Coordinator collates and analyzes this information for the annual report.

Agriculture Department

IPM Program Highlights

- The Department attended all Weed subcommittee meetings.
- Changes in the Department's noxious weed program
For more than 30 years, the Department has actively helped ranchers in Contra Costa County control artichoke thistle and purple starthistle on privately owned rangeland. This past season the Department began to concentrate their efforts on contracted work for parkland and municipalities within the County. The Department has successfully reduced artichoke thistle and purple starthistle to a level at which private landowners can now manage these weeds on their own. The Department continues to advise landowners who lease property to cattlemen to include noxious weed control in their lease agreements to encourage ranchers to maintain a weed management program.

The Department's noxious weed program now involves 5 target terrestrial species. This year the Department surveyed 63,663 acres and treated a total of 152 net acres.

Treatment involved hand removal, mechanical removal and targeted treatment with low toxicity herbicides. With rare exception, pesticide treatment involved highly focused spot spraying using backpack sprayers. Approximately 40-50% of staff time was spent in surveying and monitoring, with the remainder being spent on treatment actions.

- Artichoke Thistle (*Cynara cardunculus*)
The Department surveys and treats properties under contract for East Bay Regional Park District and Contra Costa Water District. This year staff surveyed 61,547 acres and treated 113 net acres for artichoke thistle at 56 sites.

Artichoke thistle is a highly invasive, non-native perennial weed that displaces herbaceous plants and annual grasses, decreasing the value of agricultural land, open space, and wildlands. Horses and cattle will not consume this thistle, and at high densities, the formidable spines on the leaves and stems and on the bracts around the flowers make it impossible for animals or people to walk through stands of the weed.

In 1979 Contra Costa County was identified as one of the most heavily infested counties in the state. At that time, at least 100,000 acres of land were infested with artichoke thistle to one degree or another. In that year, the Department began their management program in cooperation with property owners by using ground rigs and helicopters to spray large swaths of land. The artichoke thistle infestation has been



Rangeland infested with artichoke thistle

reduced so much that staff primarily spot treat individual plants using a backpack sprayer. Because seedlings form deep, fleshy taproots within the first year, mechanical or hand removal (digging out the plants) is cost-effective only in a very limited area with a small number of very young plants. Mowing and burning are neither practical nor effective.

- Japanese dodder (*Cuscuta japonica*)
Staff surveyed 32 historically infested sites and hand removed Japanese dodder from one site.

Japanese dodder is an aggressive parasitic plant that has the potential to severely alter the composition and function of riparian areas. It also affects ornamental plantings and agricultural crops. Japanese dodder is native to Southeast Asia and was first discovered in the county in 2005.

- Red sesbania (*Sesbania punicea*)
This was the tenth year of red sesbania removal at the



First Japanese dodder find in CCC, 2005

Red Sesbania



primary infestation site of Kirker Creek, Dow Wetlands. Staff surveyed 10 acres there and removed 475 plants by hand.

Red sesbania is a small tree that has a high potential for environmental damage by displacing native plants and wildlife in riparian areas. Red sesbania is native to South America and is poisonous to humans, livestock, and many native vertebrates. It is invading riparian areas locally, and in the American River Parkway in Sacramento County, about \$300,000 has been dedicated to its control. Red sesbania was first detected in California about ten years ago.

- Purple starthistle (*Centaurea calcitrapa*)
Under contract to the East Bay Regional Park District, the Department surveyed 2,086 acres and treated 35 acres for purple starthistle at 15 sites.

This weed is a highly invasive non-native biennial that displaces annual grasses, desirable vegetation, and wildlife and decreases the production value of agricultural land. The plant also has allelopathic properties, which means it produces chemicals that inhibit the growth of other vegetation. Its large spines and high densities can form an impenetrable barrier to wildlife and livestock in open rangeland as well as to horses and hikers in parkland. Seed can remain viable in the soil for ten or more years.

Purple starthistle in Contra Costa County is not as widespread as artichoke thistle. However, being a prolific seed producer, it has the potential to become as large scale a problem as artichoke thistle. Early identification and eradication of isolated populations is key to preventing its establishment in uninfested agricultural lands.



Purple Starthistle

- Russian knapweed (*Acroptilon repens*)

Under contract, the Department surveyed 30 acres of East Bay Regional Park land and treated 4 acres at one site.



Russian knapweed at Discovery Bay

Russian Knapweed can grow in very dense monocultures. It displaces native vegetation and takes rangeland out of production. The root system is extensive and aggressive, and small root fragments can sprout to form new plants. Seed is short-lived and does not appear to be viable for more than three or four years. Russian knapweed is poisonous to horses causing “chewing disease” and liver failure. Hand removal is ineffective.

- Critical infrastructure protection

The Department continues to protect critical infrastructure including levees, earthen dams, railroad beds, and roadways from damage by ground squirrels. This is a management program, and the Department is not seeking to eradicate ground squirrels from Contra Costa County. The goal is to maintain a 100 foot wide buffer around the infrastructure, including along sections of road, by treating a swath about 15 feet wide. Ground squirrel burrowing is the single biggest threat to California

levees. Burrowing can compromise earthen embankments and create pathways for water leakage that can undermine the structural integrity of levees, as well as earthen dams and railroad embankments. Burrowing and the resulting pathways for water erosion can also cause damage to, or sudden failure of, roadsides and other structures.

The Department continues to use its modified ground squirrel treatment procedure. Staff work in teams of two for safety and efficiency. They apply untreated rolled oats on a Friday to areas that have been treated in the past and to areas around infrastructure where there is suitable habitat. Over the weekend, ground squirrels find and begin to eat the untreated grain. On Monday when staff return to the pre-baited areas, it is obvious where ground squirrels are actually foraging. Only those areas are treated with poison grain. One staff member drives while the other operates the bait spreader to apply bait more precisely and only where ground squirrel activity is observed. On Wednesday the team returns to treat a second time, and on Friday they survey treated areas again and remove any ground squirrels that have died above ground. It is rare that the Department finds carcasses above ground, something that has been confirmed by research and other ground squirrel baiting programs.

In Fiscal Year 2014-15, the Department surveyed and treated a total of 137 sites, 62 of which are owned by the County. The total amount of untreated grain used was 10,500 lbs, and 6,365 lbs was used on County property. The Department used a total of 27,369 lbs of diphacinone treated grain, of which 15,370 lbs were used on County sites. The grain contains either 0.005% or 0.01% diphacinone, a first generation anticoagulant. The Agriculture Department used a total 2.72 lbs of the active ingredient diphacinone throughout the County.

- Exotic pest prevention

The Agriculture Department is the County’s first line of defense against invading pests including insects, plants, and plant diseases. Every day staff perform inspections on incoming shipments at destination points, including nurseries, the post office, and express carriers (UPS, FedEx and others) to look for quarantined plants as well as pests that can hitchhike unnoticed on plant material and other items such as household goods.

In 2006, the Department was the first in the state to incorporate dog teams into parcel inspection. Since then a number of other counties have followed Contra Costa’s lead. The dogs greatly speed inspections and have significantly increased detections of quarantined plants and exotic pests. The dog teams are a shared resource with other Bay Area counties that do not have the expertise or resources to maintain an active surveillance program; therefore, as a result of Contra Costa’s initiative, pest detections in those counties have increased.

This year the Department inspected 47,556 shipments and rejected 245 after finding various pests.

The Department also deploys and services numerous traps for the purpose of early detection of more than 17 different serious insect pests. This year the Department deployed 5,417 traps, and staff serviced those traps 60,817 times.

- Pesticide use reporting

This year the Department has changed the way it reports pesticide use. Since the Department acts primarily as a contractor to apply pesticide for other County departments, park districts, and municipalities, the Department has issued a permit number or operator identification number (OID) to those entities. On the Pesticide Use Reports, the Agriculture Department will be listed as the applicator and the pesticide use will be entered under the permit number or OID number for the entity.

Agriculture Department Challenges

- Ground squirrel control alternatives

The department continues to search for alternatives to treated grain bait. Unfortunately, raptor perches and live trapping of ground squirrels have proved to be ineffective and/or too costly. Ground squirrels are native to this area and will never be eradicated. Since the Department aims to create a fairly narrow buffer zone around infrastructure, it is inevitable that in areas with ground squirrels pressure outside of the 100 ft buffer, ground squirrels will eventually move back into the burrows left vacant by the squirrels that have been killed, although this happens quite slowly. This leads to a yearly management program. Altering the environment to prevent ground squirrel burrowing is difficult because the squirrels favor human-built infrastructure as sites for their burrows.

- Noxious weed control on private land

The Department will work with landowners over the next few years to help them transition to managing their own noxious weeds instead of relying on the County.

Public Works Facilities Division

IPM Program Highlights

- A representative from Pestec sat on the Bed Bug subcommittee and the County's Bed Bug Task Force.

- Rodent-proofing at the Martinez Detention Facility

In April of 2014, Pestec installed metal flashing to the exterior of the loading dock where there was a large gap near the wall. Roof rats were suspected of entering the building there and traveling up into the ceiling above the medical units. There had also been rat sightings in the kitchen, and Pestec was removing rats from snap traps and glue boards weekly. (Glue boards were used in the kitchen because inmates work there, and the Sheriff will not allow snap traps where inmates have access to them.)

Since April 2014, rodent activity has completely ceased inside the building. Pestec has removed all glue boards from inside the building because they are no longer needed.

- No pests at Contra Costa Regional Medical Center

No pests have been found at the hospital for many months. When Pestec began working for the County in 2010, there were rats on a number of floors, but because of Pestec's successful trapping program, rodent activity in the buildings has ceased.

- Increased ant infestations in County buildings

Dry soil and cut backs in irrigation forced ants into buildings to look for both food and water. A number of County buildings experienced serious and repeated Argentine ant infestations, especially in the late summer and early fall. At the West County Detention Facility, the persistent invasions required granular baits around the exterior of the building, gel baits in the cracks on the interior, and large liquid boric acid bait stations on the perimeter of some of the buildings where inmates had no access. These bait stations were constructed from covered buckets that were stuffed with a matrix for the ants to crawl on and filled

with a sugar solution containing 1% boric acid. The buckets had holes near the lids for ants to access the bait, and the buckets were buried in the ground up to the holes. These large bait stations pulled in huge numbers of ants from the surrounding area, so colonies were wiped out for some distance from the Detention Facility buildings.

- Drain flies at Contra Costa Regional Medical Center
When the floor around a drain in the kitchen was opened for repairs, numerous small flies began appearing in the kitchen. Soil was exposed when portions of the concrete floor were removed, and most likely there had been a leak in the drain, and flies had been breeding in the soil that was contaminated with the drain water. To solve the problem, Pestec used InVade® Bio Foam, a product that contains microbes that consume organic scum that grows in and around drains, and they also sealed off the drain area until the concrete was replaced.
- Serious flea infestation at 1220 Morello in Martinez
Early in the year, many staff members at 1220 Morello were complaining of flea bites. Pestec followed their standard protocol of inspecting the offices, educating staff about the problem, monitoring with flea traps, and treating with a cedar oil that kills fleas on contact and with an insect growth regulator that prevents flea larvae from maturing into adult fleas. It could not be determined definitively where the fleas were coming from, but Pestec believed they could have been coming in on rats. After the pesticide treatment, Pestec closed a hole in the exterior, and the building staff had no further complaints.
- Structural IPM program pesticide use
In FY 14-15, 15.8 lbs of pesticide active ingredients were used in approximately 2.75 million square feet of County buildings. This is 10 lbs more than last fiscal year and is entirely due to the severity of the ant infestations in the County. The pesticides used by Pestec are primarily deployed as baits in bait stations or in cracks and crevices. Pestec continues to successfully manage rats and mice exclusively with traps, sanitation, and pest proofing.
- Bed bugs in County buildings
Because of staff and client vigilance, a strict intake protocol, and special cleaning procedures, neither the Concord nor the Brookside homeless shelter has experienced a bed bug infestation this year. The chances of new introductions of bed bugs to a shelter are very high with the daily influx of clients who sleep at the facility, but with alert staff, any new introductions will be quickly found. Strict adherence to the prevention procedures will make it unlikely that either shelter will experience a large or prolonged infestation.

Other County buildings, such as the hospital and offices with waiting rooms, are at risk for bed bug infestations, and County staff must continue to be vigilant. Over the past several years staff at a few County buildings have reported seeing bed bugs. Pestec was called and the areas carefully inspected but none were found. To date we have not found evidence of bed bugs at any building except the Concord Homeless Shelter.
- Bed bug training for Adult Protective Services staff
In November, Pestec and the IPM Coordinator provided a workshop on bed bug awareness for Adult Protective Services (APS). APS staff are encountering more and more bed bug problems among the population they serve, and they want to know how best to help their clients. 23 number of people attended the training. Pestec and the IPM Coordinator met with the APS acting manager to discuss informational aids for staff including a fact sheet tailored to APS clients.

Facilities Division Challenges

- Pest exclusion in County buildings
This continues to be a challenge, but the Facilities Division is doing what they can with their staffing and schedule. As we saw this year at the Martinez Detention Facility, pest proofing has a significant impact on reducing pest problems.

- Bed bugs in County buildings

Bed bugs are particularly difficult and costly to control. As bed bugs become more prevalent, it becomes more likely that people will bring bed bugs into County buildings. At this point, awareness, education, and prevention are critical.

Public Works Grounds Division

IPM Program Highlights

- The Division participated in the work undertaken by the Weed subcommittee of the IPM Advisory Committee

The Grounds Division provided research, information, and analysis to the committee on funding issues for the Division and the limitations that the funding structure places on making long term investments in sustainable landscaping around County buildings. Grounds Division staff also provided information to the committee on turf conversion in the County and feedback on the committee's sustainable landscaping recommendations to the Board of Supervisors.

- Turf conversion projects around County buildings

This is the fourth and most severe year of drought in California. The continuing drought presents the perfect opportunity to convince departments to convert their lawns to drought-tolerant landscaping with widely spaced plants surrounded by wood chip mulch. Turf conversion

- Saves water;
- Allows the County to be an example for its citizens;
- Saves on maintenance costs since turf requires a high level of maintenance;
- Allows maintenance staff to spend the time saved on turf on other crucial maintenance tasks including managing weeds by physical means, such as hand pulling, as opposed to herbicide applications;
- Reduces herbicide use in the landscape since reduced irrigation and mulch will greatly suppress weed growth;
- Reduces other pesticide use since turf is susceptible to many pests and diseases;
- Reduces the possibility of citizen exposure to pesticides since the risk of exposure is greater in landscaping than for example, along roadsides;
- Reduces greenhouse gas emissions from turf maintenance equipment and from pumping water to irrigate the turf; and
- Moves County landscapes in the direction of greater sustainability.

The Grounds Division chose the Pittsburg Health Center at 2311 Loveridge in Pittsburg as the pilot project. About 70% of the turf was removed and replaced with drought-tolerant landscaping and mulch. The conversion is projected to save one million gallons of water per year.



Pittsburg Health front lawn before turf conversion



Pittsburg health front lawn after turf conversion



After turf was removed, the ground was covered with permeable weed barrier fabric to prevent weed growth, drip irrigation lines were laid on top of the weed fabric, and plants were installed through holes cut in the weed barrier. When planting was complete, the whole area was mulched with several inches of woodchips to conserve moisture and reduce weed growth on top of the weed barrier.



"Saving Water for Contra Costa" signs were placed around the property to inform citizens and staff.

At the Pittsburg Health Center, squirrels had for years been drinking from small puddles created by the lawn sprinklers, and when the sprinklers and lawn were removed, the squirrels began chewing through the drip irrigation lines to get water. Staff arrived early one morning to find geysers shooting up in the newly landscaped areas. Lines had to be replaced and staff began setting out bowls of water so the squirrels would stop chewing on the drip lines.

The Board of Supervisors has approved two contracts with local landscaping firms for \$2 million each to install drought-tolerant landscaping around County buildings from July 1, 2015 through June 30, 2018.

- Juvenile Hall turf conversion

This spring, John Gularte in the Grounds Division worked with Juvenile Hall youth to replace 5,500 sq ft of lawn with *Festuca glauca*, a clump forming ornamental grass. This fine leafed grass can tolerate drought, neglect, and poor soils.

The Grounds staff removed the existing turf and prepared the soil. The youth then installed a weed barrier, dug 700 holes, and planted the *F. glauca* plugs. Grounds staff brought in 60 cu yds of woodchip mulch, and the kids spread the mulch over the planting area. The youth are involved in the ongoing maintenance of the newly planted area, and regularly hand pull weeds.



Festuca glauca

- Drought and water use

Two years ago, the Division met the governor's current mandate for watering only two days a week, and staff continue to fix irrigation problems, change sprinkler heads, remove excessive vegetation, and mulch as much as possible. This year when the Division cut off all water to turf areas, staff noticed that nearby ornamentals were suffering from lack of water. Although the irrigation to the ornamentals had been off for years, the plants were being sustained by the overspray from watering the turf. In order to keep the plants alive, staff had to repair the ornamental irrigation lines and begin watering the plants once a week.

The Division is finding many drought stressed plants because of the water restrictions. Trees in particular are suffering. The Division is seeing many dying trees and has been removing them and replacing them with more drought-tolerant species wherever replacement is feasible. Redwood trees all around the County are particularly vulnerable and will slowly die. Since they grow best in the fog belt, they should not be replanted outside that area.

- High quality mulch from pallets and dead trees

In June, the Grounds Division created 600 cu yds of woodchips from trees that were downed in the winter storms. The Grounds' tree removal contract includes transport back to the Grounds Corporation Yard so the logs can be easily chipped. In August, Grounds chipped pallets from the County's solar projects and logs from the Public Works tree removal program and produced 700 cu yds of premium mulch. Considering that high quality wood chips cost \$32/cu yd delivered, the Division created \$22,400 worth of mulch for the \$4200 it cost to chip the wood. The Grounds manager has arranged with Davey Tree to deliver logs to the Corporation Yard



Pallets ready for chipping



Logs ready for chipping

that are too big for Davey Tree's chipper and is working with waste haulers to divert to the County some of the pallets from their pallet routes for a continuing supply of high quality, low cost wood chips.



Pallets being ground into mulch



Finished mulch piles

- Division staffing has increased

Currently the Division has 18 full time permanent employees, and is asking for 5 temporary employees. Division staff numbers are slowly rising, which means that as funding available for landscape maintenance increases at County buildings, the Division can provide the increased maintenance that is budgeted.

- Managing gophers with CO₂

Several years ago the Division used the Rodenator to remove gophers that were beginning to undermine the foundation at the Public Works Administration building on Glacier Drive in Martinez. This device creates an explosion underground and the concussion kills any nearby gophers. This treatment worked very well and no new gophers have been seen at the Administration building. However, this device sounds like a gunshot and can be quite disturbing to building occupants and nearby County residents.

Because of understaffing and underfunding, the Division has for many years largely ignored gophers. Last year the Division hired a contractor with a device that suffocates gophers by injecting CO₂ into their burrows. This treatment worked well but cost about \$300/application; consequently, the Division

purchased its own CO₂ device, called the Eliminator, and has been using it for the past year. Its limitations are 1) it works best in moist soil so that the CO₂ doesn't leak out and 2) it does not collapse the burrows so that neighboring gophers have moved into the areas that have been cleared.



The Eliminator for managing gophers

- Pesticide use decreased in FY 14-15

Five years ago, the Grounds Division consciously decided not to use any insecticides, miticides, fungicides, or rodenticides in their work. The Division has chosen to manage arthropod pests and plant diseases in County landscapes solely with good horticultural practices. If plants are severely affected, they are removed.

Herbicides are the only pesticide used by the Division, and this year, staff used 154 fewer pounds than in FY 13-14. As noted last year, the Division is continuing to try to improve the condition of many of the County's properties in order to move away from crisis management and back to preventive maintenance. For a number of years the lack of funding made it impossible to properly manage weed problems around County buildings and in the Special Districts the Division is responsible for. This is now changing, but weeds that went unmanaged for years left huge amounts of seed that will produce large crops of weeds for many years to come.

Grounds Division Challenges

- Staffing needs

Grounds now has 18 permanent employees, which has made it possible for the Division to accomplish much more of the work they have funding for. The Division still needs 5 more temporary employees. These employees were requested in July, but have not been hired yet because understaffing at the County's Human Resources Department continues to cause hiring bottlenecks throughout out the County.

- Drought stress in the County

The Division is dealing with a large number of diseased, stressed, and dying trees. Many redwoods in the County are partially dead and it could take from 5 to 10 years for them to die completely. Unless failing trees pose a hazard, the Division will take them down over time since it will be easier aesthetically and financially. It has been challenging to try to drought-proof landscapes, but the woodchips the Division is producing play an important role.

Public Works Department Roadside and Flood Control Channel Maintenance Division

IPM Program Highlights

- The Division participated in the work undertaken by the Weed subcommittee of the IPM Advisory Committee

Staff prepared a decision-making document on when and how to use goats for weed management (see Attachment A). The subcommittee reviewed the document and made suggestions for additions and changes to the final document. This document makes the Division's goat grazing program more transparent, will serve as part of the Division's institutional memory, and can be used as a training document.

- Annual habitat assessment refresher training

This year, 51 Public Works Maintenance employees attended the annual refresher training in habitat assessment for endangered and threatened species in order to comply with the California Department of Fish and Wildlife (CDFW) Routine Maintenance Agreement (RMA). The RMA stipulates that before work can commence in an area, an assessment must be conducted to identify endangered species habitat. In FY 14-15 crews that were trained to identify potential habitat spent a total of 792 hours performing habitat assessments. As endangered species are identified, they are reported to CDFW, which then provides County staff with guidelines to move forward with work. These guidelines may include full time monitoring of the jobsite by a professional biologist.

- Flood control vegetation and erosion management using California natives

The County Flood Control District is partnering with The Restoration Trust, an Oakland-based non-profit organization promoting habitat restoration and stewardship, in a native planting experiment along Clayton Valley Drain (near Hwy 4 adjacent to Walnut Creek). The study is examining the survival of several California natives: Santa Barbara sedge, (*Carex barbarae*), common rush (*Juncus effusus*), Baltic rush (*Juncus balticus*), field sedge (*Carex praegracilis*), and creeping wild rye (*Leymus triticoides*). Planting occurred in December 2013 and December 2014. Santa Barbara sedge, common rush, Baltic rush, and field sedge were planted on the lower terrace near the creek and the creeping wild rye was planted on the slopes of the channel.



Carex barbarae

This spring, at the request of The Restoration Trust, the Division treated the area for broadleaf weeds to reduce competition and provide the native plants with an advantage.



Juncus effusus

The native species that were planted spread from underground rhizomes that anchor the soil and provide erosion control. They are perennial species that stay green year around and thus are resistant to fire. The plants are compatible with flood control objectives since they do not have woody stems, and during flood events, they lie down on the slope which reduces flow impedance. They are not sensitive to broadleaf-specific herbicides, and unlike non-native annuals, they provide carbon sequestration and remove as much as ½ ton of carbon per acre per year.

The Restoration Trust will monitor these plots until 2018 to assess native plant survival and the degree to which they compete with the non-native annual species. The County Flood Control District managed and funded watering throughout the 2013-2014 and 2014-2015 winters. Without this effort, the plants would likely have died. The Restoration Trust again monitored the area in spring and summer of 2015 and found that given the lack of rainfall, the site is still doing adequately. The creeping wild rye planted along the

channel slope is performing particularly well and has begun to spread. A normal rainfall year will bring much needed relief to the site and will allow for a better analysis of native plant survival.

- Grazing as a vegetation management tool

The Division continues to fine tune its use of grazing to improve the tool's effectiveness and economic viability. Using grazing as a management tool is complicated and very dependent on site-specific conditions. Grazing is not appropriate in all situations and could not, for instance, be used on the side of County roads without endangering both the animals and motorists. Many factors raise or lower the cost per acre for grazing, including the size of the parcel (at larger sites the cost of moving the goats in and out is spread over a number of acres), whether the animals can easily enter the site, the amount of fencing necessary, how many times the animals must be moved within the job site coupled with the ease with which that can be done, whether water is available or must be trucked in, and the season in which the animals are being used (costs are lower when demand is lower, e.g., in fall and winter).



Pine Creek (City of Walnut Creek) before grazing

- Ideal grazing situations for fire prevention

The Division has found that the following situations are ideal for meeting fire prevention standards with grazing:

1. Sensitive sites with endangered or threatened species where mowing could kill animals and where herbicides are restricted;
2. Sites where access is difficult for people or machines;
3. Sites with steep slopes or uneven terrain that would have to be mowed by hand and that present dangerous working conditions for staff; and
4. Sites that are too wet for either hand or machine mowing.



Pine Creek (City of Walnut Creek) after grazing

- Areas not suited for grazing

1. One to two acre sites are not economical because of the cost of getting the animals in and out.
2. Unfenced areas along roadsides are not appropriate because of safety issues and because of the cost of fencing off a narrow band of land and continually moving animals along the road.
3. In the winter, grazing animals cannot be used on the rain softened creek banks and the ground adjacent to the banks because of the danger of causing erosion.

- Advances in grazing strategy

The Division is taking better advantage of the time after a site has been grazed. When goats remove vegetation, staff can inspect flood control facilities much more effectively. Staff have always monitored the integrity of the slopes and the presence of invasive and other problematic weeds, but when vegetation is very low, it is much easier to see the condition of the flood control facilities and easier to spot treat for hard to control weeds. This combination of grazing and herbicides is proving very effective.

In the last few years, the Division has coordinated with the grazing contractor to use County land as staging areas for goat herds in late summer and early fall. The County contracts for grazing on a certain portion of a creek, and then the contractor is allowed to use that area and the surrounding area as needed, with the approval of the Division, to stage animals between jobs for the County or other clients. The County is central to the area covered by the grazer so that animals need not be trucked back to their farm between each job. The County gains the benefit of free grazing on various creeks or detention basins.

- Grazing costs

By using goats in the off season (late summer through winter) and allowing the grazer to use County land for staging herds, the County has been able to bring down the overall cost per acre for the year. Not all sites are appropriate for these strategies, and while late season grazing has been beneficial for both the Division and the grazer, it does not mean that just any location can be grazed in the off season at a reduced price.

Peak season grazing is used mainly for fire prevention, but off season grazing in flood control channels has goals and benefits that are somewhat different. The reduction of vegetation

1. Lessens the late-season fire danger in the channels,
2. Allows for a more thorough inspection of the channels to comply with Army Corp of Engineers maintenance standards,
3. Allows staff to more easily see and treat invasive and other problematic weeds,
4. Reduces obstacles in the channels that could impede the flow of water during a rain event, and
5. Reduces cover and thus discourages homeless encampments.

Off season grazing benefits both the County and the grazer. It is less costly for the County because demand for grazing is low in the off season, and the grazing contractor has forage for the animals, which must be fed in the off season as well.

Cost of Peak Season Grazing for Fire Prevention

Fiscal Year	Acres Grazed	Total Cost for All Acres Grazed	Cost/Acre
12-13	74	\$88,100	\$1190
13-14	113	\$123,660	\$1094
14-15	190	\$161,700	\$854

Cost of Off Season Grazing

Fiscal Year	Acres Grazed	Total Cost for All Acres Grazed	Cost/Acre
13-14	162	\$37,302	\$230
14-15	209	\$35,802	\$171
15-16	246 (estimated)	\$72,002	\$292

- Grazing a permanent tool in the IPM toolbox

Grazing is now one of the Division's established tools for vegetation management. Grazing is not appropriate in every situation, but its use by the Division has been expanding and evolving to include quite a number of different objectives. In the years to come, the Division will continue to refine the decision making process for deploying grazing in order to increase effectiveness and economy.

- Fire fuel reduction challenges in 2015

Fire prevention weed abatement is time-sensitive, and historically the deadline was July 1. If weed abatement was not completed by that date, the County could incur fines from the fire districts. In FY 13-14, the dry weather forced the deadline to mid-May through June 1. This year fire districts were requiring weed abatement to be completed in some areas by May 1. The Routine Maintenance Agreement with the state Department of Fish and Wildlife stipulates that no work can begin in Contra Costa flood control channels prior to April 15. This year it was impossible for staff to complete all the mowing in the two to four week window mandated by the fire districts. Because some areas were mowed so early in the season, crews had to return to mow them a second time because vegetation had grown back.

The unpredictable and spotty rainfall this past winter caused pre-emergent herbicides to perform poorly, which meant the Division had to spend more time and herbicide on spot treatments of weeds throughout the season. Pre-emergent herbicides are used to suppress germination of weeds so that less herbicide is needed for control the rest of the year.

- Use of mulching has increased

Winter storms and drought killed or injured many trees this year. The Division chips prunings and dead trees into mulch that is being used more extensively along fencelines above flood control channels and in empty County parcels. Logs that are too large for the Division's chipper go to the Grounds Division for chipping and use on County landscapes.

- Buffer zones for certain pesticides enjoined by the courts

Several lawsuits brought by environmental organizations against the EPA have been temporarily settled by the delineation of buffer zones in and around habitat for a number of endangered or threatened species in the Bay Area. The Department continues to work within the guidelines of the injunctions to assess work sites and implement buffer zones before using any of the enjoined pesticides.

Roadside and Flood Control Maintenance Division Challenges

- Results of four years of drought

Drought conditions continue to select for the tougher and weedier species along the roads and flood control channels. The extremely dry soil conditions have prevented the growth of some weeds, and without competition, the hardier weeds have more room and freedom to grow. Crews are seeing an increase in stinkwort (*Dittrichia graveolens*), Russian thistle (*Salsola* spp.), and mare's tail (*Conyza canadensis*), all weeds that are difficult to control.

- Cost implications of regulations

Compliance with RMA requirements has considerable effect on the cost of operations. As mentioned above, work within CDFW jurisdiction requires a habitat assessment prior to start of work so that endangered species are not harmed. Crews again identified endangered species at a couple of job sites and consultation with CDFW resulted in using alternative work methods that were more costly.

- Cost implications of various management techniques

In FY 14-15, 69% of the Division's expenditures on vegetation management was spent on non-chemical treatment methods, while the number of acres treated non-chemically was 39% of the total acres treated (see the chart below for details).

Chemical treatments for creek banks in FY 14-15 were \$523/acre compared to \$176/acre last year. This is because the majority of the FY 14-15 treatments were spot applications, which are considerably more costly.

This year the safety requirements for mowing have increased. These measures will help prevent fires and injuries to workers but will increase the cost of mowing. The following are the new safety mandates from CalFire:

1. Crews must have access to a water truck or a 5 gallon backpack type water fire extinguisher.
2. A worker trained in using the fire-fighting equipment on the truck must be added to a mowing crew to continuously monitor the weather and serve as a lookout.
3. If the height of the vegetation requires that a worker scout the ground ahead of the mower, a separate person must be assigned to perform that function.
4. If the ambient air temperature reaches 80° F, the relative humidity is 30% or lower, or if wind speeds reach 10 mph or higher, mowing cannot begin or must stop immediately.

A Cost* Comparison of Vegetation Management Methods for Roadsides and Flood Control Channels Fiscal Year 2014-2015

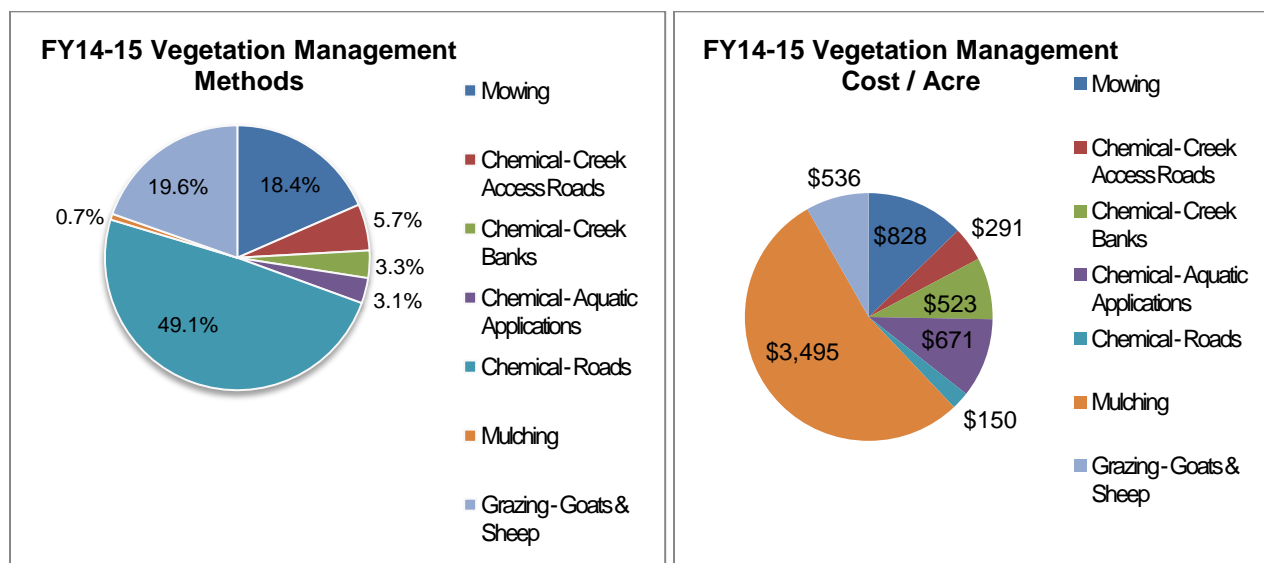
Vegetation Management Method	Acres Treated	% of Total Acres Treated	Total Cost for all acres treated	Cost/Acre	% of Total Cost for all acres treated
Chemical Treatment - Roads	1091	49%	\$163,322	\$150	18%
Right of Way Mowing	410	18%	\$339,516	\$828**	37%
Chemical Treatment – Creek Access Roads	126	6%	\$36,695	\$291	4%
Chemical Treatment – Creek Banks	57	3%	\$38,851	\$523 [§]	4%
Grazing – Peak and Off Season	436	20%	\$233,702	\$536	26%
Chemical Treatment - Aquatic Applications	69	3%	\$46,318	\$671	5%
Mulching	16	1%	\$55,917	\$3,495	6%
Totals	2222		\$914,321		

* The cost figures above for each method include labor, materials, equipment costs, contract costs (for grazing), and overhead, which includes training, permit costs, and habitat assessment costs. Licensing costs for staff members are paid by the individual and not by the County. The cost of the Vegetation Management Supervisor when he supervises work is not included in any of the figures, but is comparable among the various methods.

** The cost of right of way mowing increased this year due to the new fire prevention regulations (FY13-14=\$762/A; FY14-15=\$828/A).

[§] The cost per acre for chemical treatment on creek banks is far greater this year than last (\$523 vs \$176) because the majority of the work was spot treatments, which are much more costly.

With limited budget, staff, and equipment, the Division must make strategic decisions about where to deploy their resources in order to meet their mandates of managing vegetation for fire and flood prevention and for road safety. The Division is managing weeds in a biological system, and factors such as weather, rainfall, weed growth patterns, timing for optimum weed susceptibility to the treatment method, and threatened and endangered species issues must also be factored into management decisions. The pie charts below further illustrate the cost of various management techniques and show how the Division has allocated resources.



Note: The legend to the right of each pie chart identifies slices starting from 12 o'clock and continuing clockwise.

- Weather**

Mowing, as well as the application of herbicides, is highly dependent upon weather conditions. Weather can affect when herbicides can or must be applied and can also affect when mowing can or should occur. Weather can substantially alter the size and type of the weed load or its distribution over time and space.

The Department has a limited capacity to use mowing because of a number of factors including vacancies in vegetation management staff, the Department's limited budget for weed abatement, and the limited number of tractor mowers (two). The Department faces a continued challenge of balancing the use of herbicides to control weed growth with the Department's capacity to mow or to graze with goats or sheep within the confines of the budget and the timeline to prevent fires.

Using mowers during hot, dry weather also poses a hazard of its own: sparks caused by the metal mower blades striking rocks or metal debris can ignite tinder-dry grass.

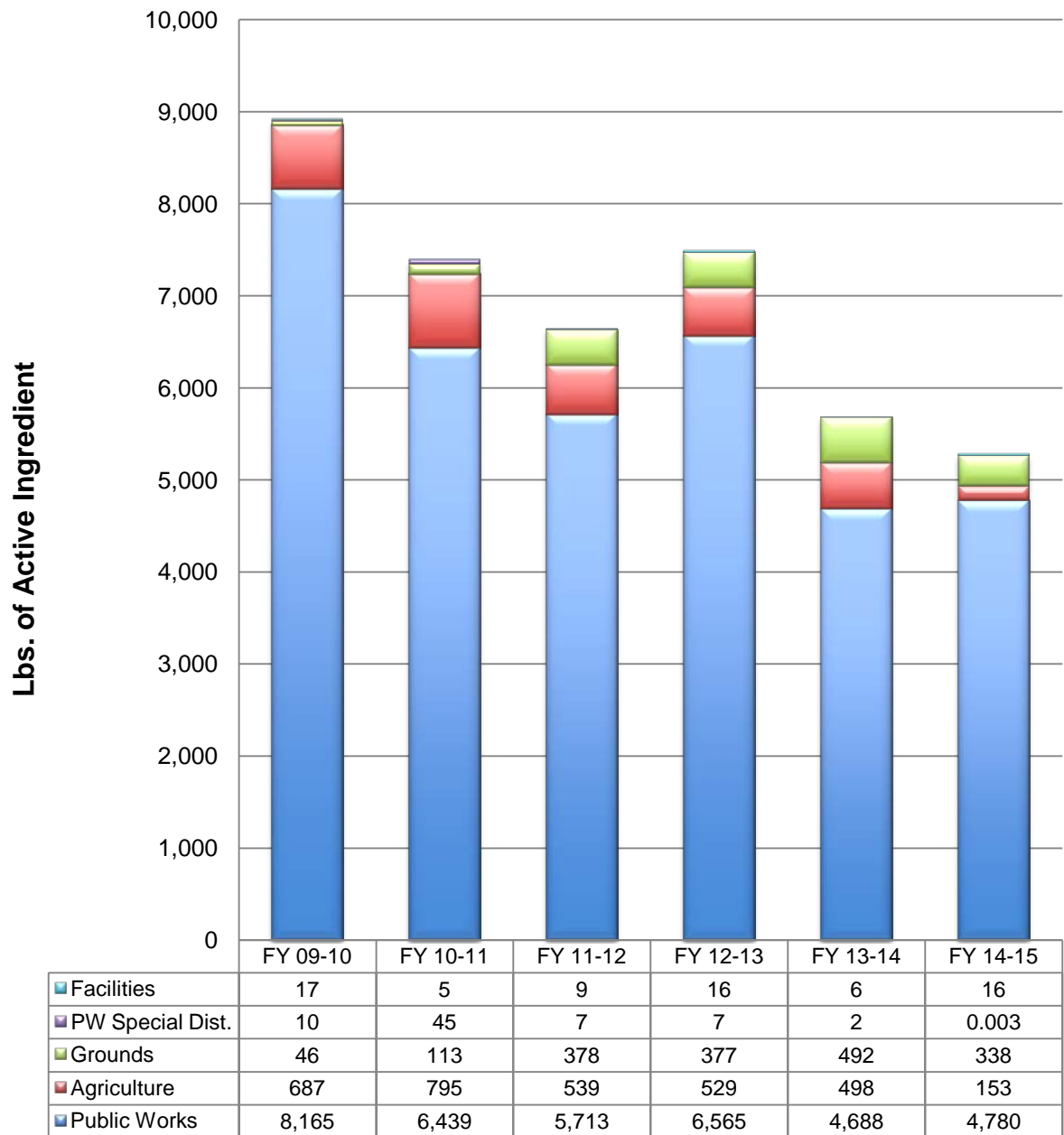
- Staffing

The Vegetation Management crew is still understaffed with only three personnel as compared to a staff of six in 2009.

Pesticide Use by Contra Costa County Operations

Starting in FY 00-01, the IPM Task Force annually reported pesticide use data to the Transportation, Water, and Infrastructure Committee for the County departments involved in pest management. The IPM Coordinator has continued this task. Below is a bar chart of pesticide use over the last 6 years. For information on pesticide use reporting and for more detailed pesticide use data including total product use, see Attachment C and the separate County Pesticide Use Spreadsheet.

CCC Operations Pesticide Use by Program



Increase in Pesticide Use by the Facilities Division

In FY 14-15 Pestec used 10 more pounds of active ingredients in and around County building due to the numerous Argentine ant infestations. Argentine ants feed on honeydew produced by insects such as aphids and scales. The sustained drought has reduced the vegetation that harbors these insects, and watering restrictions have eliminated much of the soil moisture available in the summer. These two factors forced Argentine ants indoors earlier in the year and more often as they searched for food and water.

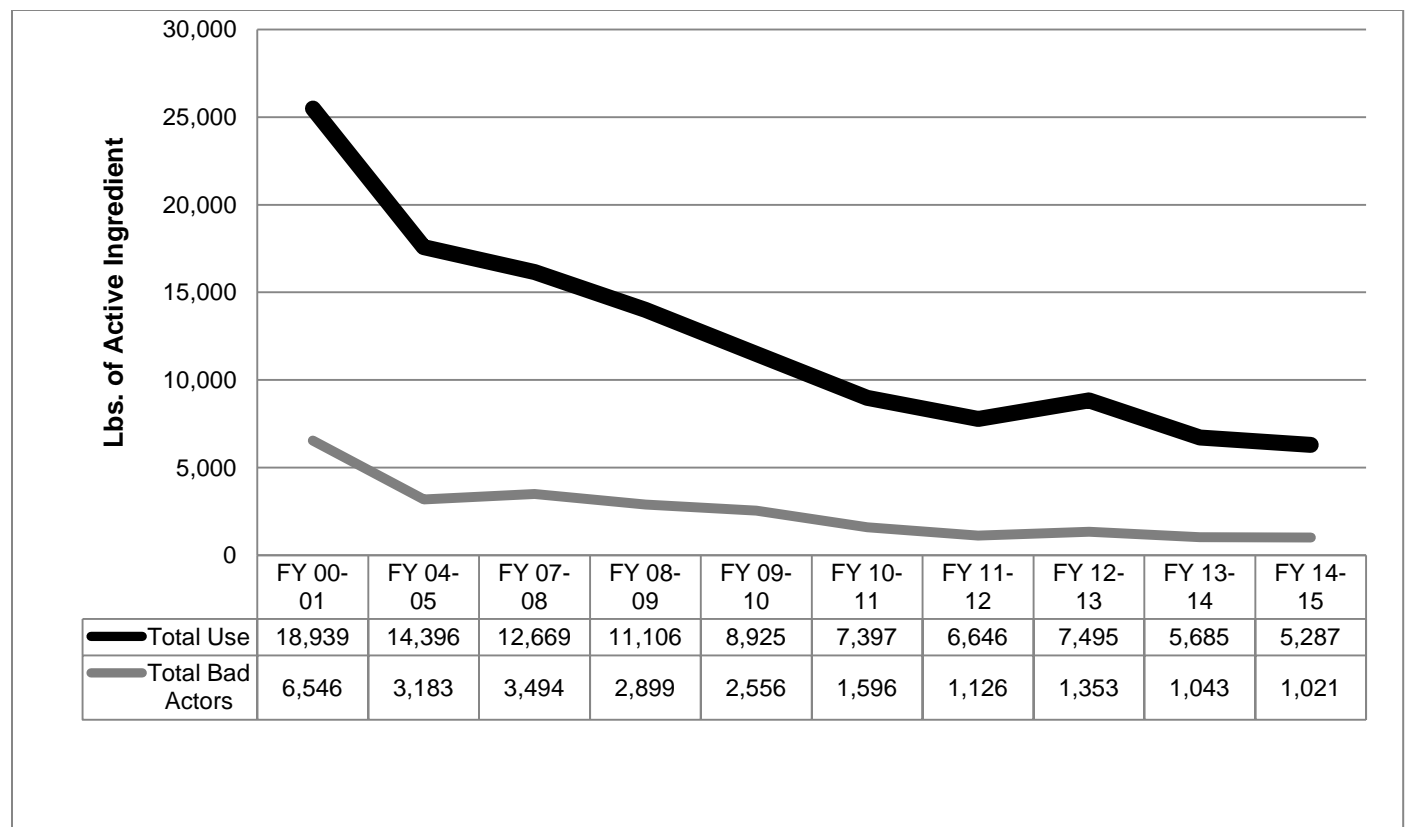
Concern about “Bad Actor” Pesticides

There has been concern among members of the public and within the County about the use of “Bad Actor” pesticides by County departments. “Bad Actor” is a term coined by the Pesticide Action Network (PAN) and Californians for Pesticide Reform to identify a “most toxic” set of pesticides. These pesticides are at least one of the following: known or probable carcinogens, reproductive or developmental toxicants, cholinesterase inhibitors, known groundwater contaminants, or pesticides with high acute toxicity.

Parents for a Safer Environment has requested that additional pesticides be reported as “Bad Actors”, but in 2013 after studying this request and consulting Dr. Susan Kegley, who was instrumental in developing the PAN pesticide database, the IPM Advisory Committee decided that the County will report as “Bad Actor” pesticides only those that are designated as such in the PAN database.

The County’s use of these particular pesticides has decreased dramatically since FY 00-01 as shown in the chart below. Of the 31 “Bad Actor” pesticides used by the County since 2000, 22 have been phased out and one more is in the process of being phased out. In addition, two other pesticides that are not designated as “Bad Actors” by the Pesticide Action Network are being phased out because the County feels they are particularly problematic.

CCC Operations Total Pesticide Use vs. ‘Bad Actor’ Use



Pesticide Applied by the Agriculture Department

Since the Department acts primarily as a contractor to apply pesticide for other County departments, park districts, and municipalities, in February 2015, the Department began separating its pesticide use by the entity that contracts the work.

The chart below shows the amounts applied for these various jurisdictions since February compared to the total amount of pesticide applied by the Department.

Pesticide (in pounds of active ingredient—"a.i.") Applied by the Agriculture Department for Other Jurisdictions

	Clarity	Milestone	Pro-Tron (Adjuvant)	Roundup Pro Concentrate	Stalker	Telar	Diphacinone 0.01%	Diphacinone 0.005%	In-Place (Drift mgmt.)	TOTALS
Jurisdiction	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.	Lbs a.i.
Mt. Diablo State Park	3.37	0.47	0.18							4.02
East Bay Regional Parks	43.46	4.74	15.42			0.56				64.18
Sky Ranch Developer	39.08	6.70	22.20						2.98	70.96
Contra Costa Water	1.26	0.15	0.57				0.10			2.08
Town of Moraga				6.27						6.27
Reclamation Districts							0.04			0.04
CCC Rights-of-Way							0.45			0.45
Totals for Separated Use (Feb to June 2015)	87.17	12.06	38.37	6.27		0.56	0.59		2.98	148.000
Total Ag Use for FY 14-15	87.31	12.07	38.38	8.49	0.001	0.79	2.71	0.01	2.98	152.74
Amt not separated (July 2014 through Jan 2015)	0.14	0	0	2.22	0.001	0.23	2.12	0.01	0	4.72

Re-evaluation of the Herbicide Glyphosate (Roundup®)

This spring, the International Agency for Research on Cancer (IARC) classified glyphosate, the active ingredient in the herbicide Roundup®, as Group 2A "probably carcinogenic to humans." IARC classifies agents, mixtures of agents, and exposures into five groups according to their potential to cause cancer:

- Group 1: Carcinogenic to humans.
- Group 2A: Probably carcinogenic to humans.
- Group 2B: Possibly carcinogenic to humans.
- Group 3: Not classifiable as to its carcinogenicity to humans.
- Group 4: Probably not carcinogenic to humans.

To place the glyphosate designation in context, examples of agents and exposures in Group 1 are arsenic, lindane, smoking, alcoholic beverages, ultraviolet radiation, and consumption of processed meats. Examples in Group 2A are malathion, emissions from high temperature frying, consumption of red meat, and burning wood in a fireplace. (Source: IARC)

IARC identifies the potential for a chemical to cause cancer but does not quantify any increased risk to people from a chemical nor does it recommend a safe level of exposure. Those designations are left up to regulatory agencies around the world. The USEPA is currently conducting a formal review of glyphosate and has said it will give "full consideration" to the IARC findings. The USEPA currently places glyphosate in Group E, Evidence of

Non-carcinogenicity for Humans. At present, it is unclear how potent a carcinogen glyphosate is; however, it is clear that people who apply glyphosate are at greatest risk for any deleterious effects and that personal protective equipment (PPE) can mitigate those effects.

In April of this year, Health Canada published its Proposed Re-evaluation Decision for glyphosate in which it proposed continuing registration of products containing glyphosate for sale and use in Canada and stated the following:

The World Health Organization's (WHO) International Agency for Research on Cancer (IARC) recently assigned a hazard classification for glyphosate as "probably carcinogenic to humans". It is important to note that a hazard classification is not a health risk assessment. The level of human exposure, which determines the actual risk, was not taken into account by WHO (IARC). Pesticides are registered for use in Canada only if the level of exposure to Canadians does not cause any harmful effects, including cancer.

On November 12, 2015, the European Food Safety Authority (EFSA) ruled that glyphosate probably does not cause cancer in humans despite IARC's finding. However, EFSA set an acute reference dose (ARfD) at 0.5 mg/kg of body weight and an acceptable daily intake (ADI) at 0.5 mg/kg of body weight per day. They set an acceptable operator exposure level (AOEL) at 0.1 mg/kg of body weight per day. The following is from the EFSA website (<http://www.efsa.europa.eu/en/press/news/151112>):

A peer review expert group made up of EFSA scientists and representatives from risk assessment bodies in EU Member States has set an acute reference dose (ARfD) for glyphosate of 0.5 mg per kg of body weight, the first time such an exposure threshold has been applied to the substance.

Jose Tarazona, head of EFSA's Pesticides Unit, said: "This has been an exhaustive process – a full assessment that has taken into account a wealth of new studies and data. By introducing an acute reference dose we are further tightening the way potential risks from glyphosate will be assessed in the future. Regarding carcinogenicity, it is unlikely that this substance is carcinogenic."

The peer review group concluded that glyphosate is unlikely to be genotoxic (i.e. damaging to DNA) or to pose a carcinogenic threat to humans. Glyphosate is not proposed to be classified as carcinogenic under the EU regulation for classification, labelling and packaging of chemical substances. In particular, all the Member State experts but one agreed that neither the epidemiological data (i.e. on humans) nor the evidence from animal studies demonstrated causality between exposure to glyphosate and the development of cancer in humans.

EFSA also considered, at the request of the European Commission, the report published by the International Agency for Research on Cancer (IARC), which classified glyphosate as probably carcinogenic to humans.

IARC's designation has raised controversy among scientists around the world, and it remains to be seen what action USEPA will take. IARC did not perform any studies on its own; the panel reviewed existing research.

Any pesticide used by the County should always be employed thoughtfully and judiciously within a comprehensive IPM program. County Departments have been reviewing their use of glyphosate in light of the new designation from IARC, and the IPM Coordinator and other County staff have participated in three meetings with Bay Area IPM Coordinators to discuss glyphosate. Because Counties around the Bay use a small part of the glyphosate reported to the Department of Pesticide Regulation, there is work to do to educate private applicators and private citizens who use pesticides in their yards.

At present the County is waiting for the USEPA's glyphosate review to be made public. At that point the County will once again re-evaluate the use of the herbicide and its alternatives. In the meantime, the County will continue using glyphosate where staff determine that non-chemical methods pose safety hazards to the public or workers or cannot provide the needed efficacy, where alternative chemicals (such as "green" herbicides) cannot provide the efficacy needed within the budget, or where alternative chemicals may pose a greater hazard than glyphosate (such as Garlon whose active ingredient is triclopyr).

Rodenticide Use

The Department of Agriculture uses rodenticide for ground squirrels whose burrowing threatens critical infrastructure in the County, such as roads, levees, earthen dams, and railroad embankments. In Special Districts rodents are managed by trapping with some use of rodenticides for gophers, moles, and voles at Livorna Park and around the playing field at Alamo School.

“First generation” vs. “second generation” anticoagulant rodenticides

Anticoagulants prevent blood from clotting and cause death by internal bleeding. In small doses they are used therapeutically in humans for a number of heart ailments. Vitamin K₁ is the antidote for anticoagulant poisoning, and is readily available. (There are some types of rodenticides for which there is no antidote.)

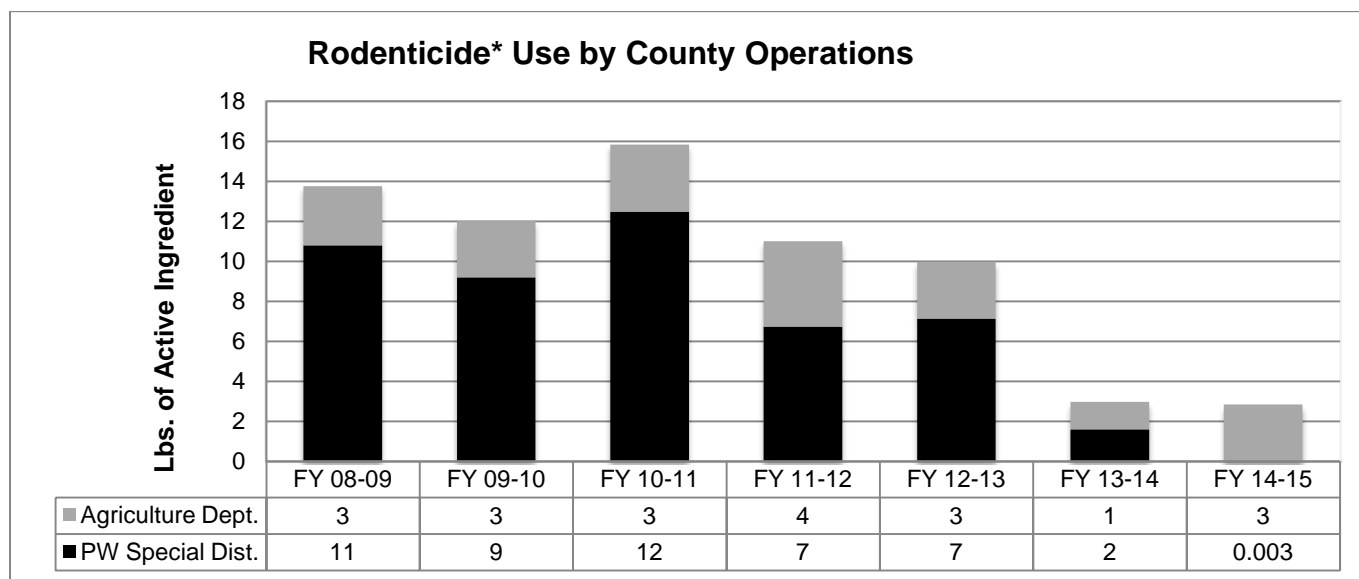
When anticoagulant rodenticides are necessary, the County uses first generation anticoagulant baits. First generation anticoagulants require multiple feedings over several days to a week to kill.

Second generation anticoagulants are designed to kill after a single feeding and pose a greater risk to animals that eat poisoned rodents. If the rodent continues to feed on a second generation anticoagulant after it eats a toxic dose at the first meal, it may build up more than a lethal dose in its body before the clotting factors run out and the animal dies. Residues of second generation anticoagulants may remain in liver tissue for many weeks. Because rodents poisoned by second generation anticoagulants can carry a heavier load of more toxic poison that persists in their bodies for a long period of time, the risk of death is increased for a predator that eats rodents poisoned by second generation anticoagulants.

The first generation materials are cleared much more rapidly from animal tissues and have a much reduced potential for secondary kill when compared to second generation materials. However, the first generation anticoagulants can also kill animals that eat poisoned rodents.

As noted earlier in this report, the Agriculture Department has revised its ground squirrel baiting procedure to reduce the amount of treated grain used. The Agriculture Department also mitigates the risk of secondary poisoning by performing carcass surveys in all areas treated with anticoagulants whether or not it is required by endangered species restrictions. In FY 14-15 ground squirrels were particularly abundant and the Department’s use increased to 2.72 lbs of diphacinone active ingredient. If the new baiting procedure had not been in place the amount used would have been much more.

Below, rodenticide use has been plotted separately from other pesticides used by the County.



* The Agriculture Department uses primarily diphacinone treated grain bait, but in years past they also used some gas cartridges as fumigation agents.

In FY 14-15, Special Districts used only diphacinone, but in years past, their use was more than 99% aluminum phosphide, which is a fumigant and not an anticoagulant rodenticide.

Trends in Pesticide Use

A change in pesticide use from one year to the next does not necessarily indicate a long-term trend. Long-term trends are more meaningful than short-term changes. It is important to understand that pesticide use can increase and decrease depending on the pest population, the weather, the invasion of new and perhaps difficult to control pests, the use of new products that contain small percentages of active ingredient, the use of chemicals that are less hazardous but not as effective, the addition or subtraction of new pest management projects to a department's workload, and cuts to budgets or staff that make it difficult or impossible to use alternate methods of control.

The County's pesticide use trend follows a trend typical of other pollution reduction programs. Early reductions are dramatic during the period when changes that are easy to make are accomplished. When this "low-hanging fruit" has been plucked, it takes more time and effort to investigate and analyze where additional changes can be made. Since FY 00-01, the County has reduced its use of pesticide by 72%. If further reductions in pesticide use are to be made, it will require time for focused study and additional funding for implementation.

Departmental Integrated Pest Management Priorities For 2016

Agriculture Department Priorities for 2016

- Continue the County's highly effective Noxious Weed Program

The Agriculture Department will give priority to weed work under contract with local parks and municipalities. Artichoke thistle and purple starthistle will remain the primary target weeds for the 2016 season. The Department will move more toward an advisory role with private landowners and will help them develop weed management plans and encourage landowners to take the primary role for weed control on their properties.

The Department will continue to respond to any "A" rated weed that enters the county with surveys and treatment.

- Ground Squirrel Management Program

The Agricultural Department will continue to provide advice to the County, municipalities, growers and the general public on the control of ground squirrels. Without effective control measures, ground squirrels will damage crops and infrastructure, such as earthen dams, levees, and highways. The economic and environmental consequences would be substantial.

Over the years the Department has experimented with raptor perches, exclusion techniques, and live trapping as alternatives to traditional baiting. Although some of these methods could provide reasonable control with small, limited infestations of ground squirrels, all of these methods are considerably more costly and less effective on a larger scale. The Department continues to search for the most effective, least toxic, and economical solutions for controlling ground squirrels within our county by consulting with researchers, the University of California Cooperative Extension Service, the California Department of Food and Agriculture, other counties, and with industry.

Public Works Department Priorities for 2016

Facilities Division

- Continue working to fix structural deficiencies in County buildings
- Continue monitoring the bed bug situation in County buildings and providing awareness training if necessary

Grounds Division

- Continue removing hazardous trees and trees killed by the drought; where appropriate and where there is funding, trees will be replaced with drought tolerant species
- Continue to convert turf to drought tolerant landscaping throughout the County
- Continue diverting as much green waste as possible from the landfill by chipping prunings and using the material in place
- Continue to use woodchip mulch from tree companies as a weed suppressant wherever possible
- Continue to chip large logs from tree companies and Public Works Maintenance for mulch
- Continue to negotiate with waste haulers to provide Grounds with pallets for chipping
- Continue to hand weed wherever and whenever possible; using mulch facilitates hand weeding
- Continue to educate the public to help them raise their tolerance of weeds
- Continue to conserve water as much as possible
- Continue to raise the level of service on County property

Roadside and Flood Control Maintenance Division

- Explore options to reduce grazing costs

The Department will continue working with grazing contractors to develop a procedure to use goats and/or sheep during off peak seasons at a reduced cost in areas such as detention basins, flood control channels, and other secure locations.

- Continue to collect data from the two spray trucks equipped with data collectors and analyze data to ensure accuracy and usability of information.

- Continue to refine IPM practices

The Vegetation Manager will continue to refine the Department's IPM practices and investigate new methods of weed control. With the successful grazing by goats and sheep along Walnut Creek, the Vegetation Manager will explore the feasibility of reseeding with a native rye grass in an effort to choke out fire prone weeds such as wild oats.

Attachment A. Pest Management Decision Making Document

Using Grazing Animals for Vegetation Management

Contra Costa County

DECISION DOCUMENTATION for WEED MANAGEMENT: Using Grazing Animals for Vegetation Abatement

Date: 5/29/15, revised 8/18/15

Department: Public Works Vegetation Management

Location: Countywide

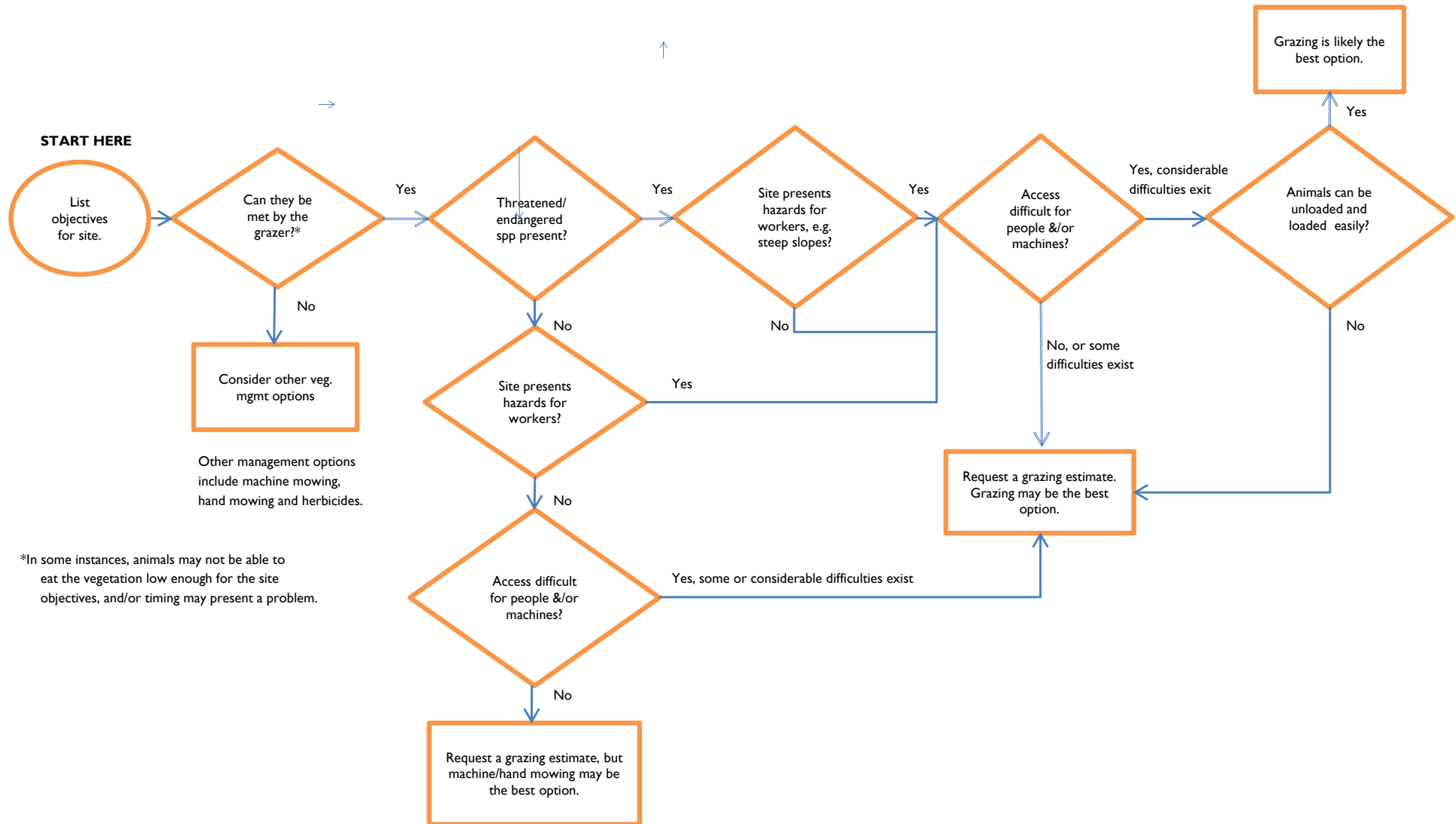
Situation: Weeds along flood control channels and in flood control detention basins

What are the management goals for the sites?	<p>The primary management goals are to maintain weeds at a suitable height for fire prevention, to prevent siltation, and to facilitate water flow in the event of a flood. The specific goals vary from site to site, and each flood control facility has its own operations and maintenance manual, which may list facility-specific vegetation management goals. The following are general vegetation management goals:</p> <ol style="list-style-type: none">1. Create firebreaks. These are mandated by the 9 fire districts and 19 cities that have jurisdiction in areas with County-maintained property. Specific stipulations, e.g., for the width of the firebreak or need for cross breaks, differ for different properties, according to the fire district with jurisdiction.<ul style="list-style-type: none">• Small properties usually need to have all the vegetation grazed to the height of 3" to 6", depending on the regulations.• Large parcels may only require a perimeter firebreak, with or without firebreaks cut through the middle or in various patterns.2. Reduce fire fuel. This is not necessarily mandated by fire regulations, but it helps the Department in their vegetation management.<ul style="list-style-type: none">• Public Works generally goes above and beyond the mandates from the fire districts to reduce fuel.• Grazing allows the Department to reduce fuel by much more than would be possible by hand or machine.3. Reduce or modify habitat.<ul style="list-style-type: none">• The Department works to expose and discourage ground squirrel colonies.• The Department works to reduce habitat for nesting birds so that crews can perform required maintenance activities without harming any birds.• The Department may also modify vegetation and/or the shape and depth of the low-flow channel to meet Contra Costa Mosquito & Vector Control District requirements.• The Department tries to reduce cover for homeless encampments.4. Reduce vegetation to improve visual inspection of flood control channels.<ul style="list-style-type: none">• The Department is looking for slumping and erosion on the slopes, for malfunctioning hardware, and for other problems.• Grazing exposes these problems and makes inspections with the Army Corps of Engineers much easier.5. Remove or reduce water flow impediments, i.e., vegetation growing in the channel.<ul style="list-style-type: none">• Vegetation growing in the channel can snag debris that is carried in the water during a flood event and could potentially cause water to overflow the banks.• Engineered channels are designed to maintain a certain flow rate. When the water slows, sediment drops out of the flowing water and falls to the bottom of the channel. This increases the maintenance needed in the channel because it reduces the carrying capacity of the channel.• The Army Corps of Engineers wants Public Works to remove sediment to keep the water flowing and to maintain the capacity of the channel, but the Department has found it very difficult to get permits from the Regional Water Quality Control Board to take out sediment. Thus it is important that the Department prevent sedimentation as much as possible.
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	Note that if Contra Costa's flood control channels are not properly maintained, they could be decertified by the Army Corps of Engineers, which would result in the property owners in many communities having to purchase very expensive flood insurance.	
For this facility's goals, is herbicide a viable option?	Note that for most of the flood control facilities and their management goals, herbicides alone are not an option.	
How often are the sites monitored?	<p>This varies from site to site.</p> <p>In the course of their other work, Vegetation Management and Flood Control Maintenance staff continually monitor weed conditions and alert the Vegetation Manager of any incipient problems. The Vegetation Manager routinely inspects all channels.</p> <p>Note that goats greatly reduce the vegetation growing in the channel which allows the Department to more easily monitor for invasive weeds and structural problems.</p>	
Weeds have been identified as the following:	Any broadleaf weeds or grasses. Trees can also be considered weeds if they are growing on the slope or in the channel of an engineered flood control channel. Note that goats will eat tree seedlings and debark larger trees. Larger trees may not be killed and must be cut and killed by painting the cut portion of the stump with herbicide. This technique is used primarily in engineered channels and not in natural stream channels.	
Are populations high enough to require control? Explain	This is determined by the Vegetation Manager using requirements from the corresponding fire district, the Army Corps of Engineers, and his knowledge and experience in order to meet the maintenance goals of the particular flood control facility.	
Is this a sensitive site?	Are any of the sites under management considered highly sensitive sites?	Yes
	Are any sites under management part of any of the court-ordered injunction?	Yes
	Are any of the sites known or potential habitat for any endangered or threatened species?	Yes
	Note that in the past the California Department of Fish and Wildlife has not had an issue with goats grazing in areas with red-legged frogs.	
	Are any of the sites on or near an area where people walk or children play?	Yes
	Are any of the sites near a drinking water reservoir?	No
	Are any of the sites near a creek or flood control channel?	Yes
	Are any of the sites near crops?	Yes
	Are any of the sites near desirable trees or landscaping?	Yes
	Are any of the sites on soil that is highly permeable, sandy, or gravelly?	Not applicable
	At any of the sites, is the ground water near the surface?	Not applicable
	Are there any well heads near the sites?	Not applicable
What factors are	See the attached decision tree for grazing.	

taken into account when considering a site for grazing?	
What factors contribute the cost of grazing?	<ol style="list-style-type: none"> 1. The size and shape of the parcel <ol style="list-style-type: none"> a. For a large parcel, the cost of moving the animals in and out is spread over a number of acres. b. A long narrow parcel could cost more because the animals might have to be moved many times. 2. The ease of access to a site for the unloading and loading of the animals 3. The amount of fencing necessary 4. The number of times the animals have to be moved within the site and the ease with which that can be done 5. The availability of water at the site for the animals (having to truck in water can increase the cost) 6. The time of year in which the parcel is grazed (grazing in fall and winter is far less expensive than when demand is high in the spring and summer)
Are special permits required to graze flood control channels? Flood control basins?	<p>No special permits are required. This activity is subject to the procedures of the Routine Maintenance Agreement (RMA) that the Department has with California Fish and Wildlife and includes a habitat assessment before work begins and follows species-specific guidelines for maintenance in the channels. Fish and Wildlife considers grazing to be the least problematic weed control technique.</p> <p>The Public Works Department reports areas being grazed in their quarterly report to the state Fish and Wildlife Department.</p>
What qualities does a good goat grazing company have?	<p>Some possible qualities:</p> <ul style="list-style-type: none"> • Availability of adequately sized herds for the jobs • Responsiveness—available within a couple of weeks of the request rather than a couple of months • Within a reasonable distance from the job sites • Ability to meet contract requirements <p>A bonus for the Department is a “no-kill” company that does not cull its herds for slaughter at the end of the season. This is a selling point for citizens who call the Department worried about the welfare of the animals.</p>
What are important requirements to have in the grazing contract?	<ol style="list-style-type: none"> 1. One shepherd trained in management of livestock in urban and suburban areas must live on site with each livestock herd. 2. The shepherd must be provided with a cellular phone or equivalent and must be in possession of the phone at all times. 3. The livestock must be contained in designated areas with a fully intact chain link or hog-wire fence connected to an electrical supply, and the fence must be maintained at all times. 4. The contractor must supply herding dogs trained to contain goats/sheep and protect goats/sheep from wild and domestic predators. 5. The contractor must supply portable sleeping, cooking, and sanitary facilities for the shepherds to be located on the Flood Control District property; the contractor may make alternate arrangements with other property owners. 6. The final determination of vegetation management services shall be at the discretion of the County, and the contractor shall meet with designated County staff to determine completion. 7. The contractor must remove livestock from the site when grazing objectives are met, or within 48 hours of completion of service, or within 24 hours, upon notification by the County.
Comments	<p>Grazing can be used in conjunction with herbicide treatments:</p> <p>First grazing is used to reduce biomass in the channels and make it easier to see invasive weeds that need to be treated. After the animals have left, crews can easily spot treat the invasive and other serious weeds with herbicide to kill them.</p>

Decision Tree for Using Grazing Animals for Vegetation Management



Attachment B. Subcommittee Reports

Weeds

Bed Bugs

Final Report from the Weed Subcommittee to the Contra Costa County IPM Committee.

Prepared by Tanya Drlik, IPM Coordinator, September 2015

Members

Doug Freier
Chad Godoy/Larry Yost
Michael Kent
Cheng Liao
Cece Sellgren, Chair

The Weed subcommittee met five times in 2015: February 17, March 10, April 21, June 9, and August 6. The subcommittee had scheduled a meeting on April 14, but due to unforeseen circumstances, several members were absent. Since the subcommittee did not have a quorum, the meeting was cancelled and rescheduled for April 21.

The Board of Supervisors had requested that the IPM Advisory Committee produce more policy recommendations for their consideration. As a consequence, the subcommittee chose as one focus to develop recommendations on funding problems in the Grounds Division and on sustainable landscaping in the County. The second focus of the subcommittee was developing another decision-making document. The subcommittee chose grazing as the topic.

Gathering Information from the Grounds Division Program

The subcommittee heard several staff reports on the state of grounds maintenance around County buildings and discussed the issue with Kevin Lachapelle, Grounds Manager. Some of the problems the Grounds Division faces are as follows:

- Funding for grounds maintenance is dynamic and beyond the control of Grounds Division staff. The amount of funding is tied to the Departments that have offices in the building. Some Departments have more money than others and/or are willing to spend more on landscape maintenance. As tenants move in and out of buildings, budgets for maintenance change while the cost of maintaining the landscape around that particular building does not. Since the recession, this has largely resulted in a lack of funds to properly maintain most County landscaping.
- Because of the way grounds maintenance is funded, it is very difficult to make long term investments in the landscaping to reduce pesticide use, water use, and maintenance costs.

Turf Conversion in the County

The subcommittee heard reports from staff on removal of turf from around County buildings.

This is the fourth and most severe year of drought in California. The continuing drought presents the perfect opportunity to convince departments to convert their lawns to drought-tolerant landscaping where plants are widely spaced and surrounded by wood chip mulch. Turf conversion

- Saves water;
- Allows the County to be an example for its citizens;
- Saves on maintenance costs since turf requires very high maintenance;
- Allows maintenance staff to spend the time saved on other crucial maintenance tasks including managing weeds by physical means, such as hand pulling, as opposed to herbicide applications;
- Reduces herbicide use in the landscape since reduced irrigation and mulch will greatly suppress weed growth;
- Reduces other pesticide use since turf is susceptible to many pests and diseases;

- Reduces the possibility of citizen exposure to pesticides since the risk of exposure is greater in landscaping than for example, along roadsides;
- Reduces greenhouse gas emissions from turf maintenance equipment and from pumping water to irrigate the turf; and
- Moves County landscapes in the direction of greater sustainability.

The Grounds Division chose the Pittsburg Health Center at 2311 Loveridge in Pittsburg as the pilot project. About 70% of the turf was removed and replaced with drought-tolerant landscaping and mulch. The conversion is projected to save one million gallons of water per year.

Recommendations to the Board of Supervisors

The subcommittee developed recommendations to address some of the Grounds Division issues. (See below.)

Decision-Making Document for Grazing on Flood Control Channels.

The subcommittee reviewed the document with the Public Works Vegetation Manager and made requests for a number of changes, clarifications, and improvements. Some of the improvements that were added are as follows:

- More specifics about management goals
- A note about grazing being considered the least problematic weed control technique by the Department of Fish and Wildlife
- A note clarifying that grazing animals may not always be able to meet the objectives of the site because they cannot eat the vegetation low enough or because timing issues may present insurmountable problems

See Attachment A for a copy of the decision-making document.

MEMO

TO: Transportation, Water and Infrastructure Committee
Supervisor Andersen, Chair
Supervisor Piepho, Vice Chair

FROM: Tanya Drlik, IPM Coordinator

SUBJECT: Recommendations on Sustainable Landscaping from the IPM Advisory Committee

DATE: August 18, 2015

BACKGROUND

This is the fourth and most severe year of drought in California. The County has an opportunity to lead the way in water conservation and provide practical examples for its citizens. Turf around County buildings is used largely for aesthetic purposes and consumes far more water than drought tolerant landscaping. Drought-tolerant landscaping can be very attractive, and demonstration projects in the County will help citizens adjust to the new aesthetic.

This summer one such project was completed in the County. Approximately 70% of the turf at the Pittsburg Health Center (2311 Loveridge, Pittsburg) was removed and replaced with drought-tolerant plants that are widely spaced and mulched with wood chips. The change at the site is projected to save one million gallons of water per year. The current funding structure for maintenance of County landscaping is not conducive to projects such as this that may require an upfront investment that will provide returns only over the long-term.

Much of the landscaping around County buildings is aging and will require renovation in the near future. This presents the opportunity to alter County landscapes so they use less water and require less time and less pesticide to maintain them adequately.

RECOMMENDATIONS FROM THE IPM ADVISORY COMMITTEE

1. Develop a Countywide policy to convert existing turf to drought tolerant, low maintenance, and low pesticide use landscaping. The exceptions to this policy would be play areas for Head Start sites and turf in parks that is used for recreation (turf areas in parks that are not used for recreation should be converted to drought tolerant landscaping). The design for any turf conversion should use the least amount of pesticide practical in the preparation of the site.
2. Provide funding for conversion to sustainable landscaping
 - a. Develop ideas for a funding structure for new landscape installation, turf conversion, and landscape maintenance and renovation that is not coupled to the particular building or the departments housed in the building in order to provide secure, long-term funding for landscape maintenance and for projects that require up-front investment.
 - b. Pursue outside funding for turf conversion but do not allow the lack of outside funding to stymie the removal of existing turf. Perhaps the position of Sustainability Coordinator, if and when it is filled, could pursue grant funding for sustainable landscaping projects.
3. Develop a County policy to take decisions about the type of landscaping around buildings out of the hands of the tenants of that building in order that long range plans and long term investments in the landscaping can be made.
4. Make the following additions to the existing County Landscape Standards under "D. Design Guidelines, 3.01. General":
 - a. Lifecycle costing will be used when landscapes are renovated or created.

[Note: This is to ensure that projects can be undertaken that require a substantial up-front investment to save money, labor, water, and pesticide in the future.]

- b. Designs for all landscaping should take into account the level of maintenance and pest management that will be required to sustain the landscape. Designs should be aesthetically pleasing, low maintenance, water conserving, and maintained using an IPM approach for pest management.
5. Make the following changes in wording to the existing County Landscape Standards under “D. Design Guidelines, 3.06. Water Conservation, part C”
 - C. Emphasis shall be placed on plants well suited to the microclimate and soil conditions at the given site and that require minimal water once established, are relatively free from pests and diseases, ~~and~~ are generally easy to maintain, are pollinator-friendly, and are native to California. Reference shall be made to currently recognized sources such as EBMUD’s *Water Conserving Plants and Landscapes for the Bay Area* or Bob Perry’s *Trees and Shrubs for Dry California Landscapes* for recommended water conserving plants.
6. Make the following addition to the existing County Landscape Standards under “D. Design Guidelines, 3.09. Turf”:

Turf shall not be proposed except in Head Start and other child care play areas and in parks where it will be used for recreation. Turf shall not be proposed for purely aesthetic purposes.
7. Develop a County policy to require that landscape designs be reviewed and approved by the Public Works Grounds Division, in addition to the other required reviews and approvals. The Grounds Division should review plans for the long-term sustainability of the landscape with regard to maintenance costs and potential pest and disease problems. Landscaping can be in place for 10 to 20 years, and poor designs and inappropriate plant choices waste County resources. The Grounds Division has considerable expertise in determining maintenance costs and recognizing future maintenance and pest problems.
8. Develop a County policy to require that the plant lists for landscape designs be reviewed by the County Department of Agriculture whose staff are the County experts on invasive plants. Many of the invasive plants that are plaguing California wildlands today were unwittingly introduced by the nursery trade into urban landscapes where they escaped to become major pests that cost Californians at least 82 million dollars every year.

RECOMMENDATIONS/NEXT STEPS

APPROVE recommendations and DIRECT County staff as appropriate.

Report from the Bed Bug Subcommittee to the Contra Costa County IPM Committee.

Prepared by Tanya Drlik, IPM Coordinator, September 2015

Members

Luis/Carlos Agurto
Susan Heckly
Marj Leeds
Patti TenBrook—Chair

The Bed Bug subcommittee met three times in 2015: April 13, June 10, and August 12.

The Board of Supervisors had requested that the IPM Advisory Committee produce more recommendation for their consideration. As a consequence, the subcommittee chose to focus on developing a bed bug ordinance for the Supervisors to consider. The subcommittee also reviewed the County's bed bug website and made suggestions for improvement.

Bed Bug Ordinance

The committee reviewed legislation from around the country and made a list of the most important provisions. The committee then became aware of AB 551 introduced by Assemblyman Adrin Nazarian, which is currently making its way through the California Legislature. This bill includes almost all of the salient points that the Bed Bug subcommittee gathered from other legislation, and according to Assemblyman Nazarian's aid, there is a good chance it will pass and go to the governor later this year.

The Bed Bug subcommittee has drafted an ordinance for Contra Costa County that is based directly on AB 551. This draft can either be used as the basis for a County ordinance or as the basis for implementing AB 551 if and when it becomes law.

The IPM Coordinator will take the draft ordinance to the Transportation, Water and Infrastructure Committee on September 8, 2015 to receive direction from Supervisors Andersen and Piepho on whether to continue working on the ordinance. The IPM Coordinator will also ask for advice on where to house enforcement for the ordinance and how to apportion costs for bed bug treatments between landlords and tenants.

Bed Bug Website

The committee reviewed the County's bed bug web pages at cchealth.org/bedbugs and suggested the following:

- Add information on the front page about bed bugs being a community problem that must be solved by the community
- Add a separate tab for pest control professionals that includes a link to the National Pest Management Association's bed bug guidelines, a template for a bed bug IPM plan, and County social service resources that they could call to help customers
- Add a tab for travelers with information on how to not bring bed bugs home
- Add a tab for homeowners, for businesses, and for schools
- Add the EPA bed bug website under Resources

MEMO

TO: Transportation, Water and Infrastructure Committee
Supervisor Andersen, Chair
Supervisor Piepho, Vice Chair

FROM: Tanya Drlik, IPM Coordinator

SUBJECT: Draft Bed Bug Ordinance

DATE: August 18, 2015

BACKGROUND

Bed bugs are a continuing problem in Contra Costa County, and they disproportionately affect low income people, the elderly and the disabled. We encounter numerous situations where the property owner refuses to control the bed bug infestation or out of ignorance implements measures that make the problem worse. Tenants lack information on their responsibilities in preventing infestations and cooperating in control, and pest control companies need guidelines for treating bed bug infestations using the best available practices. This information exists but is not collected in one document for Contra Costa County.

The IPM Advisory Committee's Bed Bug subcommittee has been discussing bed bug ordinances for several meetings and has reviewed legislation from around the U.S. with an eye to drafting an ordinance for Contra Costa that would address the issues mentioned above. The subcommittee became aware of AB 551 introduced by Assemblyman Adrin Nazarian, which is currently making its way through the California Legislature. This bill includes almost all of the salient points that the Bed Bug subcommittee gathered from other legislation, and according to Assemblyman Nazarian's aid, there is a good chance it will pass and go to the governor later this year.

The Bed Bug subcommittee has drafted an ordinance for Contra Costa County that is based directly on AB 551. This draft can either be used as the basis for a County ordinance or as the basis for implementing AB 551 if and when it becomes law.

RECOMMENDATIONS/NEXT STEPS

The Bed Bug subcommittee would like direction from the TWI Committee about whether to continue work on an ordinance for the County. It should be noted that in AB 551, the Legislature declares its intention to occupy the field with regard to this subject.

The subcommittee also requests direction on how to apportion the costs of bed bug treatment between landlord and tenant and where to house enforcement of this ordinance.

DRAFT CONTRA COSTA BED BUG ORDINANCE

[NOTE: This draft is based directly on AB 551. For clarity, responsibilities listed in AB 551 have been grouped under Landlord, Tenant, and Pest Control Operator.]

The IPM Advisory Committee's Bed Bug subcommittee finds that

- Controlling bed bugs is uniquely challenging, as bed bug resistance to existing insecticidal control measures is significant. Cooperation among landlords, tenants, and pest control operators is required for successful control.
- Tenants, property owners, and pest control operators have distinct rights and responsibilities regarding bed bug infestations.
- Effective control is more likely to occur when landlords and tenants are informed of the best practices for bed bug control.
- Early detection and reporting of bed bugs is an important component required for preventing bed bug infestations. Tenants should not face retaliation for reporting a problem.
- Lack of cooperation by landlords and tenants can undermine pest control operator efforts to identify the presence of bed bugs and control an infestation. Depending on the treatment strategy, it is often critical that tenants cooperate with pest control operators by reducing clutter, washing clothes, or performing other activities. Likewise, inadequate or untimely response or planning by landlords may exacerbate an infestation.
- Specific, enforceable duties of tenants and landlords are necessary so that the failure of a tenant or landlord to cooperate fully does not prevent effective investigation, treatment, and monitoring of all infested and surrounding units.

For the purposes of this ordinance:

1. "Bed bug management plan" means a written plan prepared by a pest control operator and the landlord for a property. The plan will outline the responsibilities of the landlord and tenants and shall be consistent with the National Pest Management Association's (NPMA) best practices and tailored to the conditions at the property. The plan shall include, but is not limited to, the following:
 - a. Education of tenants to reduce the risk of introduction of bed bugs to the property and to encourage reporting. Education methods and frequency shall be based on resources of the landlord.
 - b. Housekeeping and building maintenance procedures to help prevent bed bug harborage, including recommendations from a pest control operator about correcting bed bug hiding places and entry points, for example by sealing cracks and crevices in walls, ceilings, and floors, and fixing loose moldings and peeling wallpaper.
 - c. The landlord's process for responding to complaints and a brief statement of the requirements of this ordinance.
 - d. Written documentation of any bed bug treatment program.
 - e. Use of monitoring devices on a proactive basis, routine monitoring inspections by trained employees or licensed pest control operators, if appropriate, as agreed by the pest control operator and the landlord.
 - f. A complaint log that documents compliance with this ordinance.
2. "Bed bug treatment program" means a program, based on the NPMA's best practices, for treating an infestation to remove or kill visible and accessible bed bugs and their eggs, either immediately or through residual effects. The program shall be structured to continue until the infestation is controlled.
3. "Complaint log" means part of a bed bug management plan that tracks a landlord's ongoing responses to each bed bug report over the preceding two years. The complaint log shall include, but is not limited to, records pertaining to verification inspections and inspections of adjacent units, results of inspections, records of notices provided to tenants, unit preparation inspections, treatment type, locations and dates, and follow up inspections.
4. "Inspection" means an investigation of the premises, using NPMA's best practices to confirm or rule out a bed bug infestation, to identify all infested areas, to determine treatment tactics, or to verify that an infestation has been eliminated.

5. “NPMA best practices” means best management practices for bed bugs issued by the National Pest Management Association. “NPMA best practices” does not include practices or actions that conflict with federal or state law.
6. “Pest control operator” means an individual with a Branch 2 license from the Structural Pest Control Board.
7. “Pretreatment checklist” means unit preparation requirements tailored to the treatment method, consistent with NPMA best practices, including, but not limited to, easy-to-understand instructions, pictures, and diagrams, prepared by the pest control operator and provided to tenants by the landlord or pest control operator. The checklist shall include instructions for how to treat tenant clothing, personal furnishings, and other belongings, if treatment is required, and shall provide contact information for the pest control operator to answer questions prior to treatment.

General Information Notice to Be Provided to Each Tenant

A landlord shall provide a written notice to tenants that shall include, but is not limited to the following:

- General information about bed bug identification, behavior and biology,
- The importance of cooperation for prevention and treatment
- The importance of prompt written reporting of suspected infestations to the landlord.

The County IPM Coordinator shall create a written notice, translated into several languages, that will be available on the County’s bed bug website: cchealth.org/bedbugs

This notice shall be provided to all current tenants by January 1, 2016 and to each prospective tenant thereafter.

If the landlord wishes to create his or her own notice, the information shall be substantially the same as the notice on the County’s bed bug website: cchealth.org/bedbugs

Landlord Responsibilities

1. Within five business days after a tenant or a public agency notifies a landlord of a suspected infestation, the landlord shall retain the services of a pest control operator to verify the suspected infestation and to conduct a further inspection, if determined to be necessary by the pest control operator.
2. Entry to inspect a tenant’s dwelling unit shall comply with Section 1954 of the California Civil Code. Entry to inspect any unit selected by the pest control operator and to conduct follow up inspections of surrounding units until bed bugs have been eliminated is a necessary service for the purpose of Section 1954.
3. If a pest control operator’s inspection confirms that a bed bug infestation exists:
 - a. The landlord shall notify all tenants of units identified for treatment by the pest control operator of the findings of infestation. The notification shall be in writing and made within two business days of receipt of the pest control operator’s findings. For confirmed infestations in common areas, all tenants shall be provided notice of the pest control operator’s findings.
 - b. If further inspections of the affected units or surrounding units are necessary as determined by the pest control operator, based on the NPMA best practices, subsequent notices shall include information about future inspections, unless that information was disclosed in a prior notice. Each entry shall require a notice conforming to Section 1954.
4. After an infestation is confirmed by a pest control operator, the landlord shall contract with a pest control operator to prepare and implement a bed bug treatment program to begin within a reasonable time. Beginning the treatment program within 10 calendar days after the infestation is confirmed shall be presumed as to be a reasonable time.
5. At least seven calendar days prior to treatment, the landlord shall provide to the affected tenants with the following:
 - a. A cover sheet from the landlord, in at least 10-point type, disclosing:
 - i. The date or dates of treatment, the deadline for tenant preparation of the unit, and the date, approximate hour, and length of time, if any, the tenant shall be required to be absent from the unit.

- ii. A statement that the tenant may request assistance or an extension of time to prepare the unit, to the extent required by law, to reasonably accommodate a disability.
 - iii. A statement that a tenant not entitled to a reasonable accommodation under law may also request an extension of three business days to prepare the unit.
 - iv. A statement that if the pest control operator recommends disposal of items, the tenant will follow the directions of the pest control operator to ensure that disposal does not spread bed bugs and that infested items are not re-used by others. These directions shall be in accordance with NPMA best practices.
 - b. A pretreatment checklist with information provided by the pest control operator, which shall be in accordance with NPMA best practices.
 - c. A written notice of entry pursuant to California Civil Code Section 1954 to affected tenants for all treatments and inspections.
6. If an extension of time is provided in order to reasonably accommodate a tenant required under law to receive a reasonable accommodation, or for other tenants who have requested a three business day accommodation, the landlord shall provide all affected tenants with a notice of the revised dates and times as specified in 5.a.i. above under Landlord Responsibilities, as necessary.
 7. Inspection of unit preparation and bed bug treatment and post treatment inspection and monitoring of all affected and surrounding units as recommended by the pest control operator are a necessary service for the purpose of California Civil Code Section 1954.
 8. No later than 30 calendar days after a bed bug infestation is confirmed by a pest control operator, or by a code enforcement officer or a health officer under paragraph (12) of subdivision (a) of Section 17920.3 of the California Health and Safety Code, a pest control operator and the landlord shall prepare a written bed bug management plan for the property. This plan shall be made available to tenants upon request.
 9. It is unlawful for a landlord to rent or lease, or offer to rent or lease, any vacant dwelling unit that the landlord knows or should reasonably know has a current bed bug infestation.
 10. Service of a three-day notice and filing of an unlawful detainer action to enforce tenant responsibilities under this ordinance shall not be considered unlawful retaliation under Section 1942.5 of the California Civil Code.
 11. If a landlord has received notice of an infestation and is in compliance with the requirements of this ordinance, the property shall not, with respect to bed bugs, be considered to be substandard as defined in Section 17920.3 of the California Health and Safety Code, to be untenable as defined in Section 1941.1 of the California Code of Regulations, or to be in breach of the implied warranty of habitability.
 12. A landlord shall not be liable for any damages due to delays in bed bug treatment and control that are outside the landlord's control.

Tenant Responsibilities

1. A tenant shall not bring onto a property personal furnishings or belongings that the tenant knows or reasonably should know are infested with bed bugs.
2. Within seven calendar days after a tenant finds or reasonably suspects a bed bug infestation at a property, the tenant shall notify the landlord in writing of that fact and the evidence of infestation. Evidence of infestation includes, but is not limited to, live bed bug; staining on bedding, furniture or walls; or any recurring or unexplained bites, that the tenant knows or reasonably suspects are caused by bed bugs.
3. Tenants shall cooperate with the inspection to facilitate the detection and treatment of bed bugs, including providing requested information that is necessary to facilitate the detection and treatment of bed bugs to the pest control operator.
4. The tenant shall fulfill his or her responsibilities for unit preparation before the scheduled treatment, as described in the pest control operator's pretreatment checklist. Tenants shall be responsible for the management of their belongings, including, but not limited to, clothing and personal furnishings.
5. Tenants who are not able to fulfill their unit preparation responsibilities shall promptly notify the landlord. For a tenant not entitled to a reasonable accommodation under law who requests an extension of time to prepare the unit, the landlord shall extend the preparation time by three days.
6. A tenant shall cooperate in vacating his or her unit as notified for treatment purposes and shall not reenter the unit until directed by the pest control operator to do so.

Pest Control Operator Responsibilities

1. A pest control operator shall base his or her recommendations for inspections and treatments on the NPMA best practices (available at <http://www.pestworld.org/all-things-bed-bugs/>)
2. When a pest control operator is hired by a landlord to control a bed bug infestation, the pest control operator shall prepare and implement a bed bug treatment program based on NPMA best practices to begin within a reasonable time. Beginning the treatment program within 10 calendar days after the infestation is confirmed shall be presumed as to be a reasonable time. The pest control operator must immediately provide the landlord with the dates of treatment, the deadline for tenant preparation of the unit, and the date, approximate hour, and length of time, if any, the tenant shall be required to be absent from the unit in order for the landlord to alert affected tenants at least seven calendar days prior to treatment.
3. The pest control operator shall provide the landlord with a pre-treatment checklist for tenants following NPMA best practices.
4. The pest control operator shall use NPMA best practices in determining if it is necessary to dispose of a tenant's property and shall provide directions for proper disposal according to NPMA best practices.
5. No later than 30 calendar days after a bed bug infestation is confirmed by a pest control operator, or by a code enforcement officer or a health officer under paragraph (12) of subdivision (a) of Section 17920.3 of the California Health and Safety Code, a pest control operator and the landlord shall prepare a written bed bug management plan for the property.

Disposal of Bed Bug Infested Property

A landlord or tenant, when disposing of personal property that they own or control, that is infested with bed bugs, including, but not limited to, bedding, furniture, clothing, draperies, carpeting, or padding, shall follow NPMA best practices to prevent the spread of bed bugs and prevent the re-use of personal property by others. Materials needed to safely dispose of property shall be furnished as needed to the tenant by the landowner or pest control operator.

Injunctive and Declaratory Relief

In addition to any other remedies provided by law, a landlord or tenant may sue for injunctive or declaratory relief for violations of this chapter.

Failure to comply with NPMA best practices shall not constitute a violation of this ordinance if copies of the NPMA best practices are not available to the public free of charge

For Reference:

[From AB 551, Section 1954.24]

“(a) Except as provided in subdivision (b), to the end of providing a single, uniform approach to the treatment of bed bug infestations in residential tenancies in California, it is the intent of the Legislature to occupy the field with regard to this subject. Cities, counties, and other local entities are prohibited from enacting a local law on this subject.

“(b) The comprehensive ordinances and regulations of the City and County of San Francisco regarding the treatment and control of bed bug infestations are deemed to satisfy this chapter and are not preempted.”

Attachment C. Pesticide Use Reporting

(See separate PDF for Contra Costa County Operations Pesticide Use Data Spreadsheet)

History of Pesticide Use Reporting

Since the 1950s, the State of California has required at least some kind of pesticide use reporting, but in 1990, the comprehensive reporting program we have now went into effect.

California was the first state in the nation to require full reporting of all agricultural and governmental agency pesticide use. The current reporting system exempts home use pesticides and sanitizers, such as bleach, from reporting requirements. (Sanitizers are considered pesticides.)

What does “pesticide” mean?

The California Department of Pesticide Regulation (DPR) defines pesticide as “any substance or mixture of substances intended for preventing, destroying, repelling or mitigating insects, rodents, nematodes, fungi, weeds, or other pests. In California plant growth regulators, defoliants, and desiccants, as well as adjuvants, are also regulated as pesticides.”

“Adjuvants” increase pesticide efficacy and include emulsifiers, spreaders, foam suppressants, wetting agents, and other efficacy enhancers. In FY 14-15, Contra Costa County operations used a total of 5,287 lbs. of pesticide active ingredients, which included 1,815 lbs. of spray adjuvant active ingredients that were used to prevent foaming, to reduce pesticide drift, and change the pH of local water used in spraying.

How Pesticide Use is Reported to the State

Pesticide use data is reported monthly to the County Agriculture Commissioner. The data is checked and sent on to DPR, which maintains a database of pesticide use for the entire state. Although pesticide use is reported to DPR as pounds, ounces, or gallons of pesticide product, DPR reports pesticide use in its database as pounds of active ingredient.

DPR defines active ingredient as “[a]n agent in a product primarily responsible for the intended pesticidal effects and which is shown as an active ingredient on a pesticide label.” (Since adjuvants are regulated as pesticides in California, the active ingredients of adjuvants are also included in DPR’s database.)

How Pesticide Use is Reported by Contra Costa County Operations

The attached spreadsheet records pesticide use data only for County operations and not for any other agency, entity, company, or individual in the County.

Since DPR reports California pesticide use in pounds of active ingredient, Contra Costa County does the same. The County uses the same formula for converting gallons of pesticide product into pounds of active ingredient that the state uses:

Pounds of Active Ingredient =

gallons of product used X 8.33 lbs/gallon of water X the specific gravity of the product X the % of active ingredient in the product