Contra Costa County
DECISION DOCUMENTATION for COMMENSAL RODENT MANAGEMENT

Date: 5/29/2013, revised 6/2/2016

Department: Facilities Division

Location: County wide

Situation: Rat and mouse management to protect food, infrastructure and human health & safety in and around County buildings

What are the management goals for the sites?	Prevent rats and mice from entering County buildings; prevent rodent complaints in County buildings, remove rodents from buildings if they get in; and comply with Health Department regulations.	
Who has jurisdiction over the areas in question?	The County has jurisdiction over the facilities in question.	
How are the sites monitored and how frequently?	All County buildings that receive regular services under the structural pest management contract are monitored by technicians from Pestec, the County's structural IPM contractor. Some locations within the County elect to have "per-call" services, only requesting services when County staff determine it necessary. It is also the responsibility of all County staff and building occupants to continually monitor and report signs of rodent activity to the Facilities Division. Monitoring is done by visual inspection. Monitoring frequency depends on the type of building and its use and can range from twice a week to monthly. As a monitoring aid, Pestec has placed rodent bait stations around various County buildings. Detex Blox® (non-toxic feeding blocks) are placed inside the bait stations along with a T-Rex® snap trap that that is not set. Pestec technicians regularly inspect the feeding blocks for evidence of rodent gnawing. When evidence of feeding is detected, the snap traps are set. (More on trapping below under physical controls.) Buildings with kitchens or food handling facilities are monitored more frequently and with closer scrutiny.	
The problem species have been identified as the following:	**Roof rat** (*Rattus rattus*); **Norway Rat** (*Rattus norvegicus*); **house mouse** (*Mus musculus*) Rats and mice can damage structures by gnawing and can cause electrical fires by chewing off insulation around electrical wires. These rodents can chew on, nest in, and excrete wastes in sensitive electronic devices. They eat human and animal food and contaminate surfaces and food with urine and feces. They also carry a number of human diseases, and house mouse urine contains a protein that can trigger severe asthma or allergic reactions in susceptible people. These rodents are carriers of ectoparasites such as fleas and mites that can bite people, and they are implicated in the transmission of 55 different human pathogens.	
What is the tolerance level for these species?	**Tolerance level**: The tolerance level outside of buildings for rats and mice varies. There is a zero tolerance for Norway Rat burrows within 500 ft from an occupied structure on County property. There is also a zero tolerance for the sighting of a roof rat during the day on County property. Mouse population tolerances outdoors are undetermined. The tolerance level for rodents inside buildings is zero. Any feeding activity on Detex Blox outside and any sightings or evidence of rodents inside County buildings justifies treatment (education, sanitation, clutter control, pest proofing, vegetation management, trapping).	
Are these sensitive sites?	Are any of the sites part of any of the court-ordered injunctions regarding threatened and endangered species? (see: https://www.epa.gov/endangered-species/interim-use-limitations-eleven-threatened-or-endangered-species-san-francisco-bay) The County does not normally use rodenticides for the control of rats or mice, but might use a rodenticide in the event of a public health emergency.	Possibly

	The injunctions exempt "The use of the Pesticides covered under Section 3 above [applicable rodenticides are brodifacoum, bromadiolone, bromethalin, cholecaliciferol, difenacoum, difethialone, and warfarin] for: "--the purpose of public health vector control when such a program is administered by public entities; or "--use by certified applicators for control of a vector pest when such control is necessary to respond to a federally or state declared public health emergency." Are there other sensitive species to be aware of? In urban areas, pets as well as birds of prey, and sometimes wild mammalian predators feed on rodents. Pets and other urban wildlife could feed directly on rodenticides if the rodenticides were not secured inside a tamper-resistant bait station.	
	Is there known or potential habitat for any endangered or threatened species at any of the sites? See also above.	Possibly
	Are any of the sites in or near an area where people walk or children play? County buildings in general are sensitive sites because people work in the buildings. Head Start facilities are especially sensitive because of the children who spend many hours of their day in the buildings. Buildings with kitchens or food handling facilities are also especially sensitive. Extra care must be taken at Head Start sites to make sure children cannot access snap traps. Inside offices, snap traps for mice are set in concealed or out-of-the way locations and occupants are informed of their location.	Yes
	Are any of the sites near a drinking water reservoir?	N/A
	Are any of the sites near a creek or flood control channel?	N/A
Which cultural controls were considered?	**Educating custodial staff and building occupants on proper sanitation and its critical role in rodent control** • Store food properly, especially at night. Proper food storage is in the refrigerator or cooler or in glass, metal or heavy plastic with a tight-fitting lid. • Limit areas for eating and storing food. Building occupants should be strongly discouraged from keeping food in their desks. • Keep eating and cooking areas clean. • In food handling and preparation areas, regularly steam clean appliances and hard-to-reach areas that may accumulate food debris. • Limit the disposal of food waste to designated garbage receptacles. • Remove all garbage from buildings at the end of the day, and store in receptacles that will prevent rodent access. • Outside, make sure all refuse goes into the proper receptacles. Do not allow any food wastes to accumulate outside of dumpsters or other garbage cans. • Keep garbage can and dumpster lids closed. • Regularly clean waste receptacles and dumpsters. **Preventing rodent access to structures** • Educate Facilities maintenance personnel about the importance of and reasons for rodent proofing. • Make general building repairs and seal large and small holes in structures, both inside and out. Mice can squeeze through a hole that a pencil can fit in, and rats can enlarge that size hole by gnawing until they can fit through also. • Seal vents with ¼" hardware cloth. • Seal gaps where pipes and wiring enter the structure.	

	• Weather strip doors and windows, and use door sweeps, metal kick plates, or raised metal door sills to prevent rodent entry. Openings around doors should be less than ¼". • Repair broken sewer pipes. • Install threaded caps on drains, and make sure that the traps in little used drains are kept filled with water. • Make sure air conditioning units are well-sealed, especially those on the roof. • Trim tree and large shrub branches 3 to 6 feet from buildings to prevent rodents from using the branches to access upper levels of structures. **Limiting availability of shelter/harborage for rodents** • Trim bushes and ground covers at least 2 feet from the structure to decrease cover for rodent runways, to prevent hidden access to buildings, and to make inspections easier. • Remove ivy and other vines from outside walls. • Eliminate dense plantings, especially next to structures. In landscaping, break up dense plantings with pathways, stretches of lawn, or very low ground cover to decrease cover for rodent runways. • Eliminate plantings of Algerian ivy (*Hedera canariensis*) and date palms because rats can live in and feed on these plants. If it isn't possible to immediately eliminate these plantings, work toward that goal. In the meantime, shear ivy very close to the ground. • Remove rock and wood piles and construction debris. • Reduce clutter and debris that can provide hiding places for rodents. Items such as paper, cloth, carpeting, and insulation are ideal nesting materials for rodents and should be stored in rodent-proof containers if mice or rats are making use of them. • Seal holes in structures that allow rodents access to shelter or harborage in the buildings. • Keep weedy grasses trimmed low and/or eliminate them to reduce harborage and food from seeds. **CONCLUSIONS: All of these tactics are very important in reducing the number of rodents in and around structures. All of these tactics are used where appropriate in the County.**
Which physical controls were considered?	Trapping requires more time, effort, and skill than other control methods, but has several advantages: you can see your success, rodents do not die in walls or other inaccessible places and cause odor and fly problems, and no rodenticides are necessary. **Live Trapping** **Multiple catch live traps** for mice can be useful in certain situations and can save labor in setting individual traps. They do not need to be baited and can be used at any time of the year. It is important to use a sufficient number of traps to resolve the problem in a timely manner. The mice must be humanely euthanized and should not be released alive outside the building because they will return to cause more problems. **Glue boards** can successfully catch mice but are not as effective for rats. Rats may pull themselves free of the glue, and if the board is not anchored, the rat may drag it away with only a tail or a foot caught. Glue boards are generally considered inhumane because rodents caught in the glue usually die slowly and with much struggle. For rats, snap traps are much easier to use and more effective than live traps. Rats are much larger than mice and present more problems for humane euthanization **Kill trapping** **Snap traps** are effective for both rats and mice and can be used both indoors and out at any time of the year. In general, they should be baited with something that is attractive to the target animal. Indoors, traps must be placed where they will not attract attention and where children and adults will not accidentally encounter them. Trap placement is crucial for success and in general, it is important to use more, rather than fewer traps. Traps set inside a building should be inspected within one week to remove any rodents that were caught. Outdoors, when feeding is detected on a Detex Blox inside a rodent bait station, the T-Rex® trap inside the station is baited and set. Currently, Pestec feels that T-Rex traps are the best choice for use inside a bait station. The station must be large enough to accommodate the trap. Pestec uses Protecta Sidewinder® Bait Stations, but other brands that will easily accommodate the trap with its jaws open will work. The bait stations are inspected within a week to remove trapped rodents. At this point, the bait is refreshed and the traps are reset. When no more rodents are being trapped, the traps are deactivated and the technician

	goes back to monitoring the station for feeding activity. **Electronic traps** are also available for rats and mice. These electrocute the rodent and need batteries to operate. They are also 7 to 8 times more expensive than a T-Rex trap. Pestec is testing the various brands for use in the County. **CONCLUSIONS: Trapping is very effective and is the only method of direct control used in the County, barring a public health emergency. Pestec has experimented with 2 brands of multiple catch traps (Victor® Tin Cat and Kness® Ketch-All) for mice along with various set ups for the traps. They have not found them as effective as snap traps, but continue to test multiple catch traps.**
Which biological controls were considered?	**Biological controls available:** There are a number of animals that prey on rats and mice, including cats and owls Predators can prune rat and mouse populations, but they cannot provide the degree of control necessary in the specific locations. Cats and dogs are often found living in close association with an infestation of rats or mice. **CONCLUSIONS**: **There are no biological controls that can effectively manage the County's rat and mouse populations in specific areas; however, natural predators can aid the County's efforts considerably. Owls living on the roof of the County Administration Building at 651 Pine in Martinez have left a huge number of rodent bones on the roof.**
Which chemical controls were considered?	The County does not use rodenticides to control rats and mice in and around buildings. Repellents will be considered for rat and mouse control when trapping and exclusion are insufficient. Repellents may include DeTour, an EPA exempt pesticide, or other repellents that are tested and found to be more efficacious and still within Pestec's IPM certification guidelines. **CONCLUSIONS:** **In the event of a public health emergency, the County would use all available means to control rats and/or mice, including rodenticides, if necessary.** **A first generation anticoagulant, such as warfarin, would be chosen. Warfarin is readily accepted by both rats and mice, it effectively kills these rodents, and it has a wide margin of safety because it requires multiple daily sequential feedings for toxicosis, and it has a readily available and easily administered antidote (Vitamin K). First generation anticoagulants also pose less of a secondary poisoning risk.** **If rodenticides must be used, they will be used according to the Greenshield IPM Certification Standards as follows:** i.) used only after reasonable measures are taken to correct conducive conditions including preventing access to water, food or garbage; removing clutter; sealing cracks or holes in foundations, sidewalks; removing tall weeds; and trimming shrubs to expose ground and discourage rat burrowing; and ii.) in bait-block form and placed in a locked, distinctively marked, tamper-resistant container designed specifically for holding baits and constructed of metal or heavy duty plastic and securely attached to the ground, fences, floors, walls or weighted bases, etc. such that the container cannot be easily moved/removed; and iii.) baits are secured (e.g., on a rod) in the baffle-protected feeding chamber of the bait container and not in the station's runway; and iv.) in loose pellet formulation or loose meal formulation (i.e., not within packets) placed deep into burrows (i.e., at least two feet into the burrow from the burrow's main entrance) to reduce potential for rejection or access by non-target animals. Neither bait blocks nor baits still enclosed within packets are to be used for direct burrow baiting.
Which application methods are available for this rodenticide?	Applications around buildings must be made in tamper-resistant bait stations situated along walls or other external parts of buildings (e.g., doorways, ramps and loading docks) where rats or mice might seek to gain entrance. Indoors, rodenticides must be used in tamper-resistant bait stations. **CONCLUSIONS: Rodenticide would first be deployed in tamper-resistant bait stations that would be anchored to the substrate.** **Tamper-resistant bait stations are of durable fabrication and meet the following criteria:** **1. resistant to weather** **2. strong enough to prohibit entry by large non-target species**

	3. equipped with a locking lid and/or secured rebaiting hatches **4. equipped with entrances that readily allow target animals access to baits while denying access to larger non-target species** **5. capable of being anchored easily and securely to resist efforts to move the container or to displace its contents** **6. equipped with an internal structure for securely containing baits** **7. made in such a way as not to be an attractive nuisance** **8. capable of displaying proper precautionary statements in a prominent location.** **In an emergency, if control of burrowing rats is not achieved with mechanical means or repellents, then burrow baiting to the Green Shield IPM Certification specifications (see above) will be employed.**
What factors were considered in choosing the pesticide application method?	Safety to the applicator, the environment, and nontarget species; endangered species considerations, the effectiveness of the method, and the cost to the Division.
What weather concerns must be checked prior to application?	Since the rodenticide would be protected inside a bait station, weather would not be a concern.