

PEST MANAGEMENT POLICIES AND PRACTICES

FOR

EAST BAY REGIONAL PARK DISTRICT

OCTOBER 1987

Resolution NO. 1987-11-325

East Bay Regional Park District:
PEST MANAGEMENT POLICIES AND PRACTICES

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I. INTRODUCTION

In recent years, the use of chemicals within regional parkland areas has become an increasingly controversial subject for District Directors, management staff, employees, environmentalists, neighboring landowners, and park users. As a response to this controversy, the District has committed itself to implementing an Integrated Pest Management approach to controlling pests on its parklands. During the decade of the 70's, District staff attempted to limit the use of chemicals, to select chemicals with the least acute toxicity, and to seek non-chemical solutions for resolving pest problems. Therefore, we are in an ideal position to take the next logical step in developing a formal scientifically based integrated pest management program appropriate for regional parklands.

Due to recent legislation regarding the use of pesticides, the District recognizes a need to develop policies and procedures for the safe handling and application of economic poisons.

This policy section has been prepared to consolidate all relevant Board adopted policies, administrative directives, and "state-of-the-art" pest management practices authorized for implementation on lands of the East Bay Regional Park District. These policies apply to agricultural and structural uses and not to disinfectants used for bacteria control or sanitation.

BOARD MASTER PLAN – 1980 POLICY

"In accordance with the accepted principles of ecology, the District will strive to implement an integrated pest management program which eliminates the use of chemicals as much as feasible whenever alternative methods are effective."

The District should take all reasonable precautions to protect the environment and the health and safety of its employees and park users from possible ill effects of herbicides and pesticides in conformity with state laws and regulations.

Involved field personnel shall receive instruction in the following areas:

1. Instructions in the safe use of approved pesticides, herbicides and other alternative methods of control.
2. Instruction concerning protection of the environment from harmful agents.
3. Instructions for maintaining safe working conditions where pesticides and herbicides are present.

II. DISTRICT INTEGRATED PEST MANAGEMENT IMPLEMENTATION

Integrated pest management (IPM) will be used as a decision making process for determining IF pest suppression treatments are needed, WHEN they will be needed, WHERE they will be needed and WHAT strategy and mix of tactics to use. The District's IPM programs and treatments will not be made according to a predetermined calendar schedule, they will be made

only when this policy manual authorizes pest control and when monitoring has indicated that the pest will cause unacceptable safety, health, economic, or functional damage. The use of chemicals for controlling pests for solely aesthetic purposes will not be allowed.

A. THE MEANING OF INTEGRATED

There are at least four ways in which District IPM programs will be integrated. First, treatment strategies will be developed for each identified pest on a District-wide basis and then incorporated into an overall written pest management program for each parkland.

Secondly, in designing the District's IPM program, staff will take into consideration the many interactions between key pests (insects, weeds, plant pathogens, vertebrates, etc.) beneficial insects, potential pest control measures, and other living and non-living factors. A long-term resource management approach will be encouraged.

A third integration factor will be that District employees will view pest management as one aspect of ecosystem or whole system management. Social, economic, political and ecological factors affect pest management. How people feel about chemicals and pest damage also has to be considered and balanced against scientific evidence that a pest species may have reached a damaging threshold.

Finally, the fourth level of integration concerns the development of a coherent body of IPM skills that are cross-disciplinary (not bound to a particular discipline). The District's IPM program will incorporate the findings of entomologists, plant pathologists, landscape architects, agronomists, wildlife specialists, health specialists, soil scientists, etc. Education and training programs for field park employees must also provide this wide spectrum of information. Every effort will be made to extend this education effort to the park visitor as well.

B. COMPONENTS OF THE DISTRICT'S IPM PROGRAM

1. Task: Pest problem recognition and description.

Purpose: To identify legitimate pest situations, consider biological and social implications.

Responsibility: IPM Specialist, Park Supervisors, Chief, Operations and Interpretation, Pest Management Advisory Committee.

2. Task: Pest status monitoring and recordkeeping.

Purpose: Anticipation and prevention of pest problems is the best approach, and documentation of pesticide use is a high District priority.

Responsibility: Chief, Operations and Interpretation, Park Supervisors, IPM Specialist.

3. Task: Injury level.

Purpose: Consider damage and action thresholds with District priorities in mind: 1) public and employee health and safety, 2) economic or structural losses, and 3) aesthetics or cosmetics.

Responsibility: IPM Specialist and Pest Management Advisory Committee.

4. Task: Action Levels.

Purpose: Techniques to determine pest reduction activity is an ongoing effort. Thresholds for some pests are given in Appendix B (Approved Methods).

Responsibility: IPM Specialist, Pest Management Advisory Committee and Park Supervisors.

5. Task: Treatment strategies.

Purpose: Pest control methods must be the least disruptive and chemical control the least desirable technique.

Responsibility: IPM Specialist, Pest Management Advisory Committee and Park Supervisors.

6. Task: Evaluation system.

Purpose: Constant feedback is required to fine tune the IPM Program and relative costs of treatment strategies will be assessed and accounted for in future budgets.

Responsibility: Park Supervisors, IPM Specialist and Chief, Operations and Interpretation, Ecology and Pest Management Advisory Committees.

C. DEFINING PEST PROBLEMS

Webster's Dictionary defines a pest as "a plant or animal injurious to man". Within human use systems, conditions can be created which result in the appearance or spread of components of that system which are considered

undesirable. This condition may be caused as a result of abuse, in which case correction of the abuse can correct the problem. However, the condition may be caused by the structure or nature of a given use and not be a symptom of abuse or misuse at all. In such instances, abatement or control measures against undesirable conditions may be necessary or appropriate. All of the above contribute to the concept of integrated pest management.

Within the East Bay Regional Park District's priorities (public and employee health and safety, economic or structural losses and aesthetics) there are three main types of pests. These are:

1. Declared agricultural pests: certain thistles (artichoke, purple star).
2. Public health and structural hazard pests: California ground squirrels, black and Norway rats, termites, flammable "weeds" next to structures, poison oak.
3. Recreational/resource management pests: algae blooms, aquatic snail/swimmer's itch in swim areas, yellowjackets, gophers in use areas, California ground squirrels on range lands, thistles, broom, and puncture vine.

Agricultural and public health pests are generally declared as such by State or County Agricultural or health officials pursuant to State law. Some pests such as poison oak, can cause significant worker time-off and are a serious problem. Structural pests are also recognized for their potential for causing economic damage, and their control is regulated by special laws and regulations. Recreational/resource management pests are a more diverse class, depending upon the purposes of the area in question, level of pest problem, agency and public attitudes, and hazard abatement standards. For example, weeds in lawns may be tolerated or ignored, but weeds around a fire pit or barbecue grill may not. Likewise, gopher damage in a natural meadow can be tolerated, but the same damage in a golf course green cannot. The present document is intended to standardize the recognition of what constitutes a pest and provide a logical train of thought in making the decision of what, if anything, should be done.

D. POSSIBLE TREATMENT STRATEGIES

1. Human behavior changes: encouraging managers to re-evaluate conventional management practices; modification of cultural and resource management practices, such as, irrigating, fertilizing, pruning, mulching, cultivating, grazing management and waste management; and modification of aesthetic judgments regarding cosmetic damage, manicuring of landscapes, and mere visual presence of certain animal species, such as, insects. The District will also develop visitor education

component to its IPM Program to encourage visitor understanding and cooperation.

2. Habitat modification: reduce pest harborage, food or other requirements; enhancement of the environment required by the pest's predators, parasitoids and diseases; and redesigning of the system so that pest problems are prevented or avoided.
3. Physical control: manual picking and weeding; barriers, traps; and mechanical action.
4. Plant selection: suitable low maintenance plants should be used which are resistant to pests or which can tolerate damage. This can be time consuming and costly but is the long-range solution to many weed management problems.
5. Biological control: A broad range of techniques may be available, however, a thorough understanding of the park ecosystem is required. Strategies include: conservation of natural enemies, augmentation or reintroduction of natural enemies, use of disease to depress populations, and introduction of imported host-specific natural enemies for exotic pests.
6. Chemical control: only registered effective materials with the least acute toxicity and potential environmental effects shall be employed. No pesticide with documented evidence of chronic effects, such as cancer, mutations, or birth defects shall be employed. Exceptions may be made with Board approval for pesticides used to control a public health pest for which the benefits outweigh potential risks and no alternatives exist. Potential pesticides should be reviewed for their effects on surface and groundwaters as well. Only certified or licensed applicators shall use pesticides on District lands.

E. BOARD AND STAFF ROLE

This policy document contains a number of assignments and responsibilities which require a careful review and implementation by District staff. This section does not attempt to single out each area of responsibility which is contained within the policy. However, the following responsibilities are highlighted for clarification and emphasis:

1. Board

Reviews and approves all modifications of this manual submitted by the Pest Management Advisory Committee and staff.

- a. Appoints at least two Board members to serve on the Ecology Committee.
- b. Resolves disagreements coming from Board appointed advisory committees and staff.
- c. Considers and acts on emergency (sudden and unforeseen) pest control practices not contained in the manual when presented by the Pest Management Advisory Committee or staff.

2. Staff

- a. The District's General Manager will assume responsibility for overall program development with the Chief of Operations and Interpretation to be responsible for day-to-day implementation of the policies and practices contained within this document.
- b. General Manager to appoint two management employees to serve on the Ecology Committee (Union to appoint two Local 2428 members).
- c. General Manager to resolve disagreements at staff level covering interpretation of policies and practices contained in this document.

3. IPM Specialist

- a. Develop District-wide IPM treatment strategies for the Park Operations, Golf Course, Botanic Garden Pest Management, Range Management, Fuel Break, and Farming Integrated Pest Management programs and offer suggestions for improving the effectiveness of these existing programs.
- b. Assist unit managers and park supervisors in developing an IPM Pest Management Plan for each District parkland.
- c. Provide staff assistance to the Ecology Committee and the Pest Management Advisory Committee.
- d. Approve requisitions for chemicals from District Central Stores and outside vendors prior to purchase and delivery.
- e. Receive and analyze IPM checklists and formulate recommendations for improving ongoing IPM Programs based on checklist data.

- f. Develop objective standards for injury levels and decisions for use of chemicals on District parklands.
- g. Assist the Chief of Operations and Interpretation in developing an inventory of chemicals stored on District lands.

F. ADVISORY COMMITTEES

The Board of Directors recognizes two advisory committees to assist the District in full implementation of its pest management program. The Pest Management Advisory Committee is a Board appointed committee whereas the Ecology Committee is a union negotiated committee.

1. Pest Management Advisory Committee (PMAC)

A five-member professional advisory committee has been appointed by the Board, and will: 1) oversee program effectiveness, 2) suggest and plan experiments, and 3) develop a long-term pest management program for pest species consistent with District goals, accepted agricultural practices and land uses, and reasonable cost and environmental constraints. The committee will review pesticide uses which may impact endangered species and make recommendations for alternatives to the Ecology Committee. It is expected that findings of the advisory committee would be available for publication in the scientific literature. The advisory committee shall have the opportunity to review IPM checklists and Pesticide Use Reports for all restricted chemicals and suggest alternative efforts, timing or other features prior to implementation. District staff will accommodate such suggestions. Disagreements will be referred to the General Manager's office for resolution. Further disagreements shall be resolved by the Board of Directors.

The advisory committee shall be comprised of recognized experts in such fields as range science, integrated pest management and toxicology, worker safety; representing agencies, such as, University of California, State Department of Health Services, and State Departments of Food and Agriculture. This committee meets at a minimum four times per year.

2. Ecology Committee¹

A joint Union-Management Ecology Committee has also been established comprised of two (2) representatives appointed by the Union and two (2) representatives appointed by the District management staff and at least two (2) Board members. The Committee shall discuss ecological and

¹ Article 8.1 – 8.3 of 1986 Memorandum of Understanding between EBRPD and Regional Park employees, Local 2428.

resource conservation issues related to District operations, including matters related to education concerning such issues and training.

The function of the Committee is advisory through recommendation to the District Board, Pest Management Advisory Committee or staff. If disputes arise within the Committee, Committee members may present separate recommendations. Committee meetings shall be scheduled every other month on District time and shall not exceed 3 hours per meeting on District time.

In February of each year the Ecology Committee and two Board members or their designees will meet to review the District's use of pesticides and other appropriate items.

III. PROGRAMS

Currently the District has nine specific and somewhat individual pest management programs in operation on District parklands which are tracked through the process. Early consultation is mandatory (i.e., Park Planner, Supervisor, IPM Specialist) as part of setting up individual integrated pest management programs.

The District's IPM "Decision Table" (Appendix A) serves as a convenient guide for park personnel in the procedural use of the District's IPM Policies and Practices.

Specific pest problems and control approaches will be addressed through the "Approved Methods for Control of Weed, Insect, and Animal Pests" in Appendix B of this document. This table is the District's IPM decision/action tree. "Pest Problems" are listed on the left, "Action Threshold" are indicated in the center (when available) and "Recommended Actions" are listed on the right as Prevention and Specific Action.

A. PARK OPERATIONS

The uniqueness of each park unit requires specific IPM planning. The plans are currently being developed for eventual inclusion within each unit's Park Operation Manual. Often long-range budget projections and allocations will be required as part of this planning process.

The IPM checklist can be used to cover one year's program, with adequate documentation (IV, C). Please refer to the "IPM Checklist Pesticide Use Report, Instruction Memo" for detailed instructions (Appendix C),

Recent District conducted research has assisted in the development of the IPM Program. For example, a monitoring method, alternative control strategies, and pest threshold criteria should prove helpful in yellowjacket control. Alternatives to hazardous pesticides have been developed as a result of District research.

B. RANGE MANAGEMENT

This program is in a state of transition and as such is directly tied to the range management IPM Program. Both the amount of leased acreage and the specific areas or parks may change in the future. The expectations for pest management could be altered as a result. Therefore, flexibility in administering the range management IPM program is in order. Coordination between program administrators, park supervisors and the IPM Specialist is essential.

District sponsored research has contributed to a better understanding of the relationship between humans, cattle and plants. The California ground squirrel studies being conducted at Sunol and Del Valle may lead to more cost effective control in rangelands throughout the area. The habitat modification techniques targeted at squirrel colonies coupled with an efficient monitoring system shows great promise. In addition, the impact of squirrels on cattle grazing may not be as significant as commonly accepted.

The major pests recognized for the rangelands are: the artichoke thistle, and the purple star thistle. However, other species may be recognized as pests under specific situations. California ground squirrel, poison hemlock, poison oak, fennel and yellow-star thistle are examples. The desired "maintenance level" of pest management can be achieved with appropriate changes of the District's Range Management Policies.

C. FUEL BREAK

The Board commitment to a fuel break program includes an integrated pest management approach toward vegetation management. Mechanical techniques have been coupled with biological controls (goats and cattle), and chemical controls (Amate X-NI and Roundup) to form the core of an IPM program.

Conversion to a non-chemical approach should be established as soon as possible because of the potential conflicts with urban uses and pesticides.

The existing fuel break includes lands in Tilden, Redwood, and Anthony Chabot Regional Parks, and Sibley Volcanic Regional Preserve.

The objective of providing safety to parklands and adjacent landholdings from the spread of wildfire is met by 1) maintaining low-growing cover, 2) providing an area where firefighting crews can quickly and safely establish fire lines, and 3) providing an area where control of fires is facilitated.

The vegetation along the fuel break consists of eucalyptus, Monterey pine, California bay, oaks, annual grasslands, and various species of brush.

The principles guiding fuel break treatments are: 1) reduce total fuel load, 2) rearrange spacing of fuels, and 3) reduce the flammability of fuels. Six types of treatments used to maintain the fuel break are biological, chemical, mechanical, hand labor, prescribed burning, and compatible land uses.

D. GOLF COURSE²

By January 1, 1987, toxicity Category I pesticides were no longer permitted for use on the District golf courses. The proposed IPM plan will focus on alternative methods of plant pest management and address the suitability and use of Category II or less materials. The goal is to reduce measurably the current number and kinds of approved pesticides.

E. BOTANIC GARDEN

The Tilden Botanic Garden presents a unique pest control problem because of the larger number of valuable native plants clustered together in less than 10 acres of parkland. District staff will develop a written IPM program for the Botanic Garden for the Pest Management Advisory Committee and Board review. This effort should begin soon because of proposed additions to the Botanic Garden. Long-range IPM planning should be built into the facility. This will be the final step in eliminating the use of pesticides at the Garden.

F. FARMING

Orchards at Garin, Briones, and Ardenwood Regional Preserve are covered under Park Operations (III, A). However, the District demonstration farm and the commercial contract operated farm at Ardenwood present unique circumstances which require special provisions:

1. District operated demonstration farm: any identified pest species problem must be discussed on an individual basis with the IPM Specialist. Any control strategies not covered elsewhere in these policies and which require the use of restricted materials must be reviewed by the Pest Management Advisory Committee and the Board, and all such recommendations are subject to Board approval.
2. The commercial contract operator has signed a contract restricting pesticide use to Category II or less toxic materials. In addition, the contract contains a priority decision list of procedures, list of crops to be grown and methods for pest management.

² The District has hired a turf consultant to prepare an IPM plan for the Tilden Golf Course. It should serve as a model for other such facilities.

G. CONCESSIONAIRES

The IPM Specialist and Contract Officer will annually review the terms and stipulations of those contracts which permit the contractor to use pesticides. The purpose is to establish the level of conformance to Board approved IPM policy and practices. The Chief of Operations and Interpretation will be kept informed as to the results of this annual audit.

- H. Any contemplated acquisition, planning or design project should, ideally, be reviewed by the IPM Specialist for early input. Many pest problems can be prevented by not building in or providing suitable conditions for insects, rodents and weeds. Careful consideration of actual or potential pest management costs (artichoke, purple star thistle) should be a part of the acquisition process. IPM evaluations and recommendations should be a part of the review.

Design decisions and recommendations on land use should focus on strategies that delimit serious pest problems. The "Approved Methods" (Appendix B) should serve as a valuable guide in pest problem identification, prevention and control in such settings. Selection of plant/structural materials that are resistant to pests, supportive to material controls, modification of the habitat and direct suppression through various physical means (weeding, mowing, mulching for ornamentals and caulking, screening and barriers in structures) are some of the pest management techniques integral to IPM.

I. RIGHT OF WAY, UTILITY CORRIDORS AND EASEMENTS

This is a special management unit within the EBRPD in that existing use has been established through a variety of legal instruments (fee titles, licenses). Use permits typically include a maintenance clause and provisions for pest abatement. Vegetation management of grasses, broadleaf and woody plants along these rights-of-ways and easements is the predominant pest management concern. Fire safety hazard and impeding the use and maintenance of roadways, ditch banks and utility structures are stated reasons for weed control. Each licensee should be provided a copy of the EBRPD IPM Policy and Practices referencing the "Approved Method" (Appendix B) as the District's pest management guide. Developing a cooperative working relationship should assist in planning strategies least harmful to the environment and to that of the surrounding area. Pest abatement sections of new licenses or renewal permits should be reviewed with the purpose of incorporating Board approved IPM practices.

IV. MAJOR IMPLEMENTATION COMPONENTS

A. MONITORING PROGRAM

Monitoring means paying close attention to specific animal, plant or microbial populations. Not only must the population size and life stage of

key pests and their natural enemies be recorded, but other potential pest populations and their natural enemies may also need to be observed regularly. Park employees should be observant "ecologists". Understanding the park unit's ecological setting and pest prevention are very important aspects of any IPM program.

Monitoring temperature continues to be important in the use of models that correlate temperature with pest population growth. The rate of growth of insects, plant pathogens, nematodes, mites and plants is dependent upon temperature. Each organism has some temperature threshold at which growth begins. The District should consider developing a day-degree management program for some park units. This management tool can help supervisors prepare in advance for potential pest problems.

The Chief of Operations and Interpretation, in cooperation with the District's IPM Specialist, will be responsible for implementing an effective monitoring program for appropriate parks. The following guidelines will be used to develop the monitoring and record keeping system: determine the PURPOSE of the monitoring, determine WHICH POPULATIONS are to be sampled, decide on the FREQUENCY of the visits, decide WHICH SITES should be inspected, determine the NUMBER of plants or locations to be sampled at each site, decide upon a PRECISE SAMPLING METHOD, devise a RECORD KEEPING SYSTEM that is easy to use in the field, develop a system of DISPLAYING the field data for ease in decision making, EVALUATE the IPM system, and MAKE CORRECTIONS in the overall process.

B. PRIOR AUTHORIZATION

Prior authorization will be required for use of any chemical controls applied by District employees and/or contractors. This concept was initiated in 1984 to ensure that chemical pesticides will only be used in those authorized situations where other alternative methods are not effective. The approved methods must be reviewed (Appendix B) and an IPM Checklist and Pesticide Use Report must be prepared. The instruction memo should be consulted (Appendix C). Any use of chemical controls must be justified and approved (prior to use) by the Park District employee proposing its use in the following manner: If it is concluded that chemical control measures must be used; it must be approved by the IPM Specialist or the PMAC. A decision may be appealed as described in Section II, E (1) and F (1) of this document.

The only Category I material approved by these policies is copper sulfate for aquatic algae and snail control. This program is monitored and supervised by the State Department of Health Services.

C. IPM CHECKLIST AND PESTICIDE USE REPORTS (APPENDIX D & E)

Prior to implementation of any pest management action authorized by this policy manual, the park supervisor undertaking the pest control action will fill out the IPM Checklist (Appendix D), forward the completed checklist to the District's IPM Specialist as prescribed in the Decision Table (Appendix A) and the instruction memo (Appendix C). In cases where a pesticide is to be used a Pesticide Use Report (PUR) must be completed (Appendix E). All pesticide applications on District lands must be done by a qualified applicator.

Yearly inventory, mapping and assessment for continued need or maintenance level control of specific pest problems by individual parks can constitute adequate annual documentation and should be viewed as the initial step in that parks preparation of an IPM plan.

The acquired information from the checklist and pesticide use reports are analyzed to develop an accurate picture of overall District pest management practices and to focus advisory and management attention on ongoing problem areas.

The IPM Specialist will prepare an annual report to the Pest Management Advisor Committee, and following their review to the Board of Directors on all pest management activities, including chemical use in the District during the past year. The report will identify problems to be solved, the success/failure of the District in developing and implementing effective non-chemical pest control solutions.

The IPM Specialist will prepare an annual report to the Ecology Committee analyzing District-wide pesticide use listing kinds, trade names and amounts used by Department or unit of operation. Comparative annual figures of pesticide use are included to provide a slide rule measure of overall District commitment to non-chemical pest management solutions. The results of all pertinent pest control efforts are also included.

D. NOTIFICATION AND POSTING

The public and park employees should be advised that a chemical has been applied in an area. Notices of a chemical application shall be posted prominently by the park supervisor or other responsible individual at locations exterior to the treated area but at sites that typically would be considered entrances to that treated area (Appendix F – Pesticide Application Notice).

The use and safety requirements associated with any chemical pesticide shall be in compliance with all state and federal regulations.

E. GENERAL CHEMICAL SAFETY AND ENVIRONMENTAL CONCERNS

The major concerns with the use of chemicals in pest control are 1) risk to the applicator and to the public; 2) biological accumulation in the environment, 3) other effects on non-target species; and 4) consideration of alternatives.

Pesticides shall be used only by a qualified applicator. Special training is required with District personnel who wish to be certified to use pesticides on District lands (CDFA requirement #6724). The District policies regarding pesticide application and precautions are found in Section 2.9.9 of the District Safety Manual (pp. 83-89), and the District approved Respirator Program.

Each Park Supervisor shall keep such records as specified by the District's IPM Specialist of all chemical applications administered by staff or contractors (refer to Section IV B and Appendix E). All such records shall be made available for public inspection and shall be reviewed periodically by the Pest Management Advisory Committee to ensure compliance with relevant rules and regulations. Units which employ the use of chemicals shall maintain records of public pest and/or pest control related complaints, which shall also be sent to the District's IPM Specialist.

In order to manage the future use of chemicals, an inventory of all chemical pesticides currently in use and in storage in the District will be maintained by the Chief of Operations and Interpretation in consultation with the IPM Specialist. All chemical pesticides will be identified by name, amount, location, purpose and toxicity category.

Both Operations and Interpretation and Planning and Design Department shall consider pest maintenance techniques and use of resistant vegetation to reduce pesticide and other maintenance needs in the process of planning future parks and replacing vegetation at existing facilities. Preventing a potential pest problem is the District's best plan of action for the future.

F. INTEGRATED PEST MANAGEMENT TRAINING

The concepts of and the methods for implementation of the District's adopted IPM Program will be made available to all personnel as needed in future years to keep District employees up to date on new advances and approved practices.

A "hands-on" ecological pest management pilot program will be developed by the Chief of Operations and Interpretation with the assistance of the IPM Specialist which will be implemented to train park rangers in dealing with the major pest problems in the District upon approval by the Pest Management Advisory Committee. The first of these pilot programs will be conducted in the spring of 1988. Training on the recognition of pest species and management strategies for specific problems will be developed. Field training programs will be emphasized.

APPENDIX

- A. IPM POLICIES AND PRACTICES – DECISION TABLE
- B. APPROVED METHODS – EBRPD 1987 – 1988
- C. IPM CHECKLIST AND PESTICIDE USE REPORT,
INSTRUCTION MEMO, 1987 – 1988
- D. IPM CHECKLIST
- E. PESTICIDE USE REPORT
- F. PESTICIDE APPLICATION NOTICE
- G. LIST OF APPROVED PESTICIDES FOR USE ON DISTRICT LANDS (2004)

APPENDIX A

IPM POLICIES AND PRACTICES
DECISION TABLE

<u>KEY ASSESSMENT PROCEDURES</u>	<u>WHO</u> takes action	<u>WHAT</u> should be done
<u>SUSPECTED PEST IDENTIFICATION</u>	District staff agencies, neighboring properties, park visitors, professional expert.	Sample of suspected damage (soil, water, leaves, stems, fruit, etc.). Field notes on location (a map may be required) and abundance of suspected species, ecological setting, use areas.
<u>POTENTIAL PEST STATUS</u>	Park supervisors, IPM Specialist, PMAC.	Determine damage significance, and whether agent is a pest (if damage is significant, and a pest species has been ID'd).
<u>ACTION NOT REQUIRED</u>	If Supervisor and IPM Specialist convinced no damage level could be reached and suspected species cannot be justified as being a pest.	An IPM checklist should be filled out if the supervisor or IPM Specialist feels the suspected pest might recur elsewhere (in that or another parkland). Additional sightings should be noted by the Supervisor.
<u>ACTION REQUIRED</u>	Supervisor prepares IPM checklist and PUR if it is indicated that action thresholds may be exceeded. Unit Managers, Chief, Operations and Interpretation notified by Supervisor. IPM Specialist notifies Chief, Land Stewardship and prepares paperwork if pesticides are indicated. (List in Appendix C.)	Appropriate action is presented in the Approved Methods (Appendix B). The actions are prioritized (see also Section II, D of this document, page 4).
<u>MONITORING STATUS</u>	Field staff and supervisors are in the best position to determine short-term results (pesticide use and control action results). The IPM Specialist is responsible for tracking overall programs (pesticide use, yellowjackets and ground squirrel management, etc. Planning, maintenance, interpretive staff, agencies and the public may assist.	Major control efforts and those requiring the use of pesticides are required to have follow-up monitoring. Field counts or chemical testing may be required on occasion.

APPENDIX A

IPM POLICIES AND PRACTICES DECISION TABLE

KEY ASSESSMENT PROCEDURES	<u>WHEN</u> to act	<u>WHERE</u> to go for assistance	<u>WHAT</u> to do next
<u>SUSPECTED PEST IDENTIFICATION</u>	Anticipate growth season. Early identification of potential pests can help prevent pest action status. Consider park ecosystems, follow process outlined in Appendix A and C.	Information – Appendix B (Approved Methods) IPM Specialist, I.D. books, Cooperative Extension.	Prevention – IPM take time – reducing future pest problems is necessary. Field workshops and information libraries for identification are needed at the park level. Individual park practices should be integrated into Park Operations Manual.
<u>POTENTIAL PEST STATUS</u>	As soon as possible. Don't wait too long because irreversible damage may be averted early on. Careful review of the Approved Methods is the first step.	Field evaluation, U.C. and other publications. Approved methods, IPM Specialist, Land Stewardship, 5707 Redwood Road, Oakland, CA 530-9650.	Suspected pests require evaluation, others may not. An annual list of potential pests will be created for circulation and review by field personnel.
<u>ACTION NOT REQUIRED</u>	As soon as a finding of "No Action Required" can be made. Subject to review by the General Manager, the PMAC and Ecology Committee.	Supervisor should put a note or IPM Checklist in the park's IPM files as to final resolution, IPM Specialist would retain original IPM checklist.	No further action is required unless the suspected pest situation persists. Such species should be placed on the annual list of potential pests.
<u>ACTION REQUIRED</u>	Enough information should be gathered to decide if an "emergency" is imminent. The pressure to take action must be assessed early on. Actions requiring large expenditures usually require a more thorough review.	At this point in the IPM Program, careful and thorough documentation is required. The IPM checklist and Pesticide Use Report are adequate documentation for all but the most unusual cases.	Once a decision has been made to take actions, appropriate committees and staff must be consulted. A decision may be appealed as described in Sections II, E (1) and F (1) of this document.
<u>MONITORING STATUS</u>	Some projects may require calendar field checks or sampling according to day/degree accumulation.	Projects and actions requiring monitoring should have written reports on status. The IPM checklist should be used as a monitoring form where possible.	Programs of major significance will usually require several years of monitoring. Monitoring may need improvement or programs may be altered.

APPENDIX B

EAST BAY REGIONAL PARK DISTRICT
Approved Methods During 1987 and 1988
for control of disease, weed, insect and animal pests for use on District parklands

(NOTE: This list will sunset on June 30, 1988 to be replaced by an updated version to be developed by staff, IPM Specialist and the Pest Management Advisory Committee.)

All Central Stores or outside vendor requisitions for the listed pesticides must be approved by the District's IPM Specialist before delivery (Appendix E)

<u>PROBLEMS</u>	<u>D. THRESHOLDS</u> (preliminary)	<u>RECOMMENDED ACTION</u>
I. PARK OPERATIONS, FUEL BREAK, RANGE AND WATER PEST MANAGEMENT PROGRAMS:		
A. Wood destroying organisms		
1) Wood rot, interior structures:	Presence of organisms or their work. Case by case review may include advice from licensed Pest Control Operator (interior buildings, etc.)	PREVENTION: Eliminate conditions contributing to wood degradation (moisture, untreated or unisolated ground contact). Regular inspection of structural members. Specific Action: Replace member or infested portion. Chemical treatment by licensed PCCO, under direction of IPM Specialist (only copper naphthenate compounds may be used).
2) Exterior facilities (i.e., fungus, insects). Structural safety and property damage.	Identification of damage and causative organism. IPM Specialist/can make determination	PREVENTION: Preclude ground contact. Exterior wood products should be put in concrete. Appropriately pressure treated wood (copper naphthenate) or other suitable material. Alternative materials to wood products (i.e., concrete or metal posts or poles). Specific Action: Remove and replace infested material with a non-ground contact member. Pretreated wood replacement. Treatment on site (requires approval of the IPM Specialist and application by qualified applicator).
B. Algal blooms.	Concurrence of Park Supervisor, Water Management Specialist that turbidity or odor levels are unacceptable.	PREVENTION: Specific Action: Reduce inflows carrying nutrient compounds (nitrates, phosphates, etc.). Reduce turbidity impacts (i.e., inflow sedimentation traps). Modify habitat (manage shoreline for steepness and vegetation control). Specific Action: Discourage use during heavy outbreaks. Copper sulfate may be used or less toxic algicide (Category III).
C. Plant diseases.	Transmittable disease may require action.	PREVENTION: Plants should be in good health (irrigation, fertilization, etc.). Consider replacing disease-susceptible cultivars with resistant varieties. Modify habitat to reduce stress and to eliminate disease reservoirs in non-cultivated plants. Specific Action: Prune out. Specific identification of disease species. Consult plant pathologist.

PROBLEMS

THRESHOLDS (preliminary)

RECOMMENDED ACTION

- D. "Swimmer's Itch" organism causes discomfort to swimmers, potential health hazard.

State Health sets monthly count thresholds. Decision to treat is based on temperature and snail conditions. Supervisor should coordinate lake management with Water Management and IPM Specialist.

PREVENTION: Determine suitability of site for swimming uses. Consider closure during high outbreak periods. Relocation of swim facilities to areas least likely to be affected. Redesign substrate or repopulate lakes or ponds with organisms which feed on schistosomes and/or snails (i.e., redeared sunfish).

Specific Action: Physical removal of aquatic weeds which contribute to snail production. Apply Citco copper sulfate (if deemed necessary by DOHS staff).

E. Vegetation Management

- 1) Weeds along barriers, fences, roadways, trails, buildings, benches, tables, and barbecue pits. Obstruction of fences, barriers, shoulders and trails, fire hazard may occur

Park Supervisor and IPM Specialist to review each park program to determine acceptable levels of control (species identified). Example: Annual grasses and broadleaf weeds (Filares, mustard, thistle, nutsedge) are common undesirable turf plants which can be tolerated (15% - 25% non-desirable to desirable turf plants per square meter) with proper mowing or periodic hand removal, however, the pressure of these same annual grasses and broadleaf weedy plant species around barbecue grills and fire pits cannot be tolerated.

PREVENTION: Facility design should include preventive measures (use natural and synthetic mulches to discourage weeds). Design plans should include provision for competitive plants. Select for an "acceptable weed" environment.

Specific Action: Mow. Hoe and remove by hand. Habitat modification (i.e., mulch or competitive planting). Apply chemical (Appendix G).

NOTE: If an IPM plan has been prepared and persistent weedy plant species have been removed, spot treatment with herbicide(s) may be used to prevent reestablishment of weeds for an extended control period. Prevent washing of material into adjacent areas by proper application.

PREVENTION: Residual seeds, sproutable roots, etc. should be removed within an area to be paved, an approved pre-emergent chemical should be used prior to placement of gravel, paving, etc.

Specific Action: Remove by hand (small areas only). Repave area. Treat with pre-emergent herbicide.

- 2) Weeds in path, roads, sidewalks, etc.

Breaking pavement, lifting concrete curbs (species identified).

- 3) Weeds in plants bed, parking lot islands, and other landscaped shrub areas. Desired plantings being choked, unaesthetic appeal.

Growth of desired planting obscured. Known large seed bed will out-compete plants to be established (potential species should be identified). University of California Growers Guide to California Weeds should be consulted.

PREVENTION: Seed and weed-free soil should be used for beds, plastic, fiber, or organic mulches should be laid down. Rhizomes, roots, etc. of plants should be eliminated. Ground covers should be incorporated into design and planting programs to reduce growth of undesirable species.

Specific Action: Apply mulch to prevent weed growth at time of planting. Mow. Hoe and remove by hand when practical. Apply herbicides to enhance competitive edge for desirable species.

PROBLEMS

THRESHOLDS (preliminary)

RECOMMENDED ACTION

- 4) Priority weeds: Poison oak, artichoke thistle, purple star thistle, yellow-star thistle, puncture vine. Encroaching into trails or use areas. Fire hazard reduction needed. Undesirable spread into grassland areas. Spread into native growth. Hazard to cyclists and/or hikers.

Identification as a park or resource pest. Agreement by Range Management Specialist and IPM Specialist. Approval of Park Supervisor.

PREVENTION: Identify seedlings early in the spring (use U.C. Growers Weed Handbook). Populations of priority weeds be removed early before they spread. Report findings to IPM Specialist. Consult experts.

Specific Action: If employee immunity is assured, OK to remove by cutting and hoeing when effort is not a major requirement (poison oak). Weed species may be controlled by grazing, mechanical means, or by hand removal. Chemical application to control poison oak in public use areas and along trails.

- 5) Range weeds: Artichoke thistle, purple star thistle, and other weed species complete with natural vegetation. Reduce agricultural/recreational uses/values.

Artichoke thistle: 1,500 plants per park. Purple star thistle: 7,500 plants per park. (for chemical treatment)

PREVENTION: Grazing programs should be reviewed periodically to maximize the opportunity to manage toward desirable vegetation (i.e., use cattle, goats, etc. to selectively manipulate vegetation). Use conservation crews to manage certain plant populations.

Specific Action: Grazing (including goats, sheep and elk). Mechanical. Prescription burn. Pesticides may be used. (Consult Appendix G.)

- 6) Eucalyptus sprouts and seedlings: fuel break maintenance, reduction and encroachment into desirable natural areas.

Each fuel break zone will have a specific action level and IPM will be considered for any management prescription. The fuel break plan is currently being revised.

PREVENTION: The fuel break should be converted to desirable low-risk vegetation and management programs. Select fuel break area to maximize control of weeds.

Specific Action: Hand. Goat grazing. Mechanical. Prescriptive burn. Chemicals may be used as follow-up, under specific conditions.

- F. Stinging insects: yellowjackets, bees, etc.) in use areas (campgrounds, picnic areas, concessionaries, food service). Health and safety (review stinging reaction recommendation). Depletion of park setting and enjoyment level (educational pamphlet available).

Action levels based on the number of insects recovered per trap day. Five traps are set out for four hours per week/park.

PREVENTION: Holes in buildings, trees, cavities, etc. which could be attractive to social Hymenoptera should be closed in use areas. Eliminate potential food sources/attraction (refuse, dumpsters, etc.) with active (2-3X a day) trash removal program.

Specific Action: Cultural control (waste management, etc.) Trapping. Location of nests (physical or mechanical destruction). Location of nests, chemical control. Nests in working fuel breaks, under tables or along trails in use area; waspicides (Appendix G) may be used for emergency situations.

PREVENTION: Screens on building doors and windows will reduce annoyance. Frequent removal of manure at stables.

- G. Fly control: house, stable, and other flies – potential health threat, high nuisance level.

Standard bottle traps should indicate populations high enough for parasite release in stable areas.

Specific Action: Food source reduction (waste management, etc.). Bottle-fly traps. Parasitoid releases. Flypaper.

PROBLEMS

- H. Oak moth or tent caterpillar: Nuisance near picnic tables (getting into food), defoliation (considered unsightly; however, native trees are seldom irreversibly damaged).

THRESHOLDS (preliminary)

Annoyance at picnic tables could indicate control warranted. IPM Specialist to review individual cases.

RECOMMENDED ACTIONS

PREVENTION: Oak moth outbreaks are cyclic and little can be done to prevent large population numbers. Individual, highly visible trees may require intensive management to reduce defoliation. Frequent use of high pressure water sprays and encouraging insectivorous birds can help.

Specific Action: Trees above tables can be sprayed with water under high pressure. Caterpillar "tents" can be pruned out. Apply bacterial insecticide under the direction of the IPM Specialist.

PREVENTION: The food source, harborage and nest sites should be eliminated where possible. Encouraging predatory animals can help reduce populations (i.e., encouraging raptors with perch sites, trained house cats can discourage gophers).

Specific Action: Food source reduction (waste management). Modify habitat to discourage pest. Trap. Rodenticides may be used (including sulfur gas cartridges and anticoagulants) under specific direction of IPM Specialist.

PREVENTION: Orchard sites should be carefully selected to reduce impacts of rodents from adjacent areas. Orchards could be designed with wire barriers to discourage invasion.

Specific Action: Apply plastic wrap or "stikem" to prevent girdling. Remove vegetation to discourage pest presence at base of plant. Use of commercial "live capture" traps. Educate public to obtain their understanding and support in solving problem.

PREVENTION: California ground squirrels can be discouraged in use areas but seldom eliminated. Foundation and building floor design can help reduce invasion and food sources should be eliminated. Park workers and visitors should be discouraged from feeding squirrels. Colony establishment of rangeland squirrels can be discouraged through habitat modification and grazing practices.

Specific Action: Modify habitat to discourage squirrels. Trap. Chemicals (sulfur gas cartridges, use anticoagulant under supervision of IPM Specialist and PMAC).

- I. Rodents (fox squirrels, rats, mice, gophers): in and around buildings, storage areas, lawns, rip-rap, or other high use areas. Health and safety, economic losses and aesthetic should all be considered.

Presence in food service areas may require control action. Action to be determined on a case by case basis by IPM Specialist.

- J. Rodents: girdling young trees and shrubs can result in severe damage to orchard and ornamental plantings.

A single rabbit can damage a few trees. Action to be determined on a case by case basis by IPM Specialist.

K. California ground squirrel

- 1) In use areas – health hazard (picnic, campground areas) and safety hazards (roads, trails).
- 2) On rangelands – reduction of agricultural/recreation uses/values, maintain sufficient populations to support predators.

Threshold criteria to be developed for parks with identified pest populations (i.e., Del Valle, Sunol). Establish colony size criteria and protection maintenance zone widths. Specific monitoring thresholds are being developed. Lack of seeds on thistles may indicate the presence of squirrels.

PROBLEMS

THRESHOLDS (preliminary)

RECOMMENDED ACTIONS

II. GOLF COURSE OPERATIONS PEST MANAGEMENT PROGRAM

- A. Weed, fungus and insect problem in turf areas: economic damage, long-term damage to fairways, potential residue and deposition of chemicals may result.

Specific action levels and procedures will be developed.

PREVENTION: A model IPM golf course is in preparation. The new plan will include preventive measures which will be written into the individual concessionaire contract for implementation.

Specific Action: Golf course operators to submit list of proposed pest management strategies for review and approval by the Pest Management Advisory Committee. The golf course plan will be used as technical guide to complete this program.

III. FARMING PEST MANAGEMENT PROGRAM

- A. Weed, fungus, and insect problem in croplands.

Interpretive crops: damage level to reflect purpose of crop (education and demonstration). Commercial U-pick and market concession: damage levels to reflect purpose of crop (contract agreement to specify pest treatment threshold). No Category I pesticides to be used without specific Board approval.

PREVENTION: Completion of a comprehensive Ardenwood IPM plan will include specific preventive measures for each segment (i.e., orchards, row crops, grounds, stables, gardens). An IPM plan for the commercial operations should be completed and preventive measures included in the contract agreement.

IV. BOTANIC GARDEN PEST MANAGEMENT PROGRAM

- A. Weed, fungus, insect, snails, disease control within the Botanic Garden. Prevent loss of or damage to valuable plant specimens, maintenance of a "natural" environment (relatively free of introduced weedy species which may compete with desired planting or cultivated plants entering undesirable areas).

Each pest problem will be reviewed on a case-by-case basis by IPM Specialist. Pest action levels may be developed for certain species.

Specific Action: IPM Plan for the Ardenwood orchard is in preparation. The remainder will be prepared in 1987 and 1988 (gardens, row crops, stables, etc). IPM Plan for commercial operation at Ardenwood includes a list of Category II or less pesticides which can be used for each crop to be grown. Concession contract includes specific methods for compliance with District policies. Dormant oil may be used on District orchards.

- A. IPM plan is in preparation. Emphasis will be on prevention. Goal of a pesticide-free management program by the end of 1987.

- B. Specific budget provisions for an IPM program for 1988 should be anticipated.

V. CONCESSIONAIRES PEST MANAGEMENT PROGRAM

- A. Weed, rodent, insect control in structures and on grounds which are contracted by private commercial Pest Control Operators.

Each concessionaire contract will be reviewed for compliance with the District's IPM Policies for each pest (i.e., ants, roaches and mice). Contracts will be revised as necessary. Action levels will be specified in each contract.

PREVENTION: New contract with concessionaires will have preventive actions incorporated into the operations of each site.

Specific Action: Food source reduction. Habitat modification to discourage harborage. Trap (i.e., snap or sticky). Attractants to bait stations. Category II (Round-up, anticoagulants and pyrethrins) or less toxic chemicals may be used with the specific approval of the IPM Specialist.

PROBLEMS

THRESHOLDS (preliminary)

RECOMMENDED ACTIONS

VI. PLANNING, ACQUISITION AND DESIGN

- A. Some pest problems can be prevented. Parking lots, use areas, and access design can contribute to future pest problems.

Any contemplated acquisition, planning or design project should be reviewed by the IPM Specialist for early input. Pest management action levels will be established on a case-by-case basis.

PREVENTION: Careful consideration of potential pest management costs should be part of the acquisition process. Evaluations and recommendations will be part of the review process.

VII. RIGHTS-OF-WAY, UTILITY CORRIDORS AND EASEMENTS

- A. Weed and rodent control along rights-of-way, easements, and within utility corridors by private individuals, companies and public agencies on EBRPD land.

Weed control based on fire safety hazard, impede the use and maintenance of the rights-of-ways, easement, or utility structures. Rodent control based on surface/sub-surface damage to integrity of in-place structures (utility support platforms, bank destruction, road surface collapses). Each pest problem should be reviewed on a case-by-case basis.

Specific Action: Design decision and recommendation on land use should focus on strategies that delimit serious pest problems. Selection of plant/structural materials that are resistant to pest, supportive to natural controls, habitat modification and direct suppression through various physical means (weeding, mowing, caulking, mulching, etc.).

PREVENTION: Cooperative agreements with private individuals, companies and public agencies to incorporate principles and practices of IPM in maintenance efforts. Development of IPM education/training program for sub-contractors pest control companies

Specific Action: Weeds: mow, hoe and hand removal of weedy plant species. Use of goats to selectively manipulate vegetation. Control burns. Planting, encouraging competitive characteristics of desirable species. Spot treatment of selective herbicides may be sued as follow-up, under specific conditions.

Rodents: Modify habitat to discourage rodents. Trap. Rodenticide (sulfur gas cartridges, use anticoagulants) under supervision of IPM Specialist.

APPENDIX C

IPM Checklist and Pesticide Use Report, Instruction Memo, 1987

Using the District IPM Checklist and Pesticide Use Report

The IPM Checklist and Pesticide Use Report are two documents which the District uses to implement, monitor and refine the Policies and Practices adopted by the Board of Directors. These two forms serve different purposes: the IPM Checklist documents the IPM decision-making process, while the Pesticide Use Report is intended to track the District's use of pesticides.

I. Preparing an IPM Checklist

- a. IPM Plan or Program Status – Does the requesting park or operation have a District approved plan? Is one in preparation?
- b. Review of Policies and Practices (Approved Methods – Appendix B) – Deviations from the approved methods, including indicated priority treatment solutions, require justification and possibly the approval of the Pest Management Advisory Committee or the Board of Directors. Explain and document carefully.
- c. Treatment History and Evaluation – This section of the form provides the documentation of management strategies used in the past (if any). It also tells the District if such proposed strategies were successful. This portion of the IPM Checklist is extremely important as a guide for the District in its efforts to further reduce the use of pesticides.
- d. When is a Pesticide Use Report Required? A Pesticide Use Report is required only when a Category I, II or III pesticide is requested in the IPM Checklist. Pesticide Use Report is submitted after an approved pesticide has been applied. It must be completed and then signed by the park supervisor. The Pesticide Use Report is an integral part of the District's effort to comply with the State mandated reporting system, which is administered by local County Agriculture Commissioners. The District is required to report monthly on certain pesticide uses.

II. When Should the IPM Checklist be Prepared?

- a. Pesticide Proposed – An IPM Checklist must be prepared prior to the proposed use particularly if a pesticide is recommended. When an individual park is involved, the Checklist must be filled out and approved by the park unit supervisor. The District's management philosophy is clear – supervisors are responsible for knowing what activities take place within their unit.

- b. Emergencies – It is recognized that extenuating circumstances could occur which might constitute a threat to “public health and safety” for which exceptions to District policies may be considered with approval of the Board of Directors and on the recommendation of the Pest Management Advisory Committee or other appropriate advisory group. Examples could include elimination of cone-nose bugs from park residences or controlling fleas in squirrel burrows in plague endemic areas of the District. Last minutes requests for weed control do not constitute an “emergency”.

- c. Non-Chemical Control Proposed – IPM Checklists and map (if appropriate should be prepared once a month by parks which frequently do non-pesticide pest management activities. Parks which infrequently perform non-pesticide pest management should report such activities twice a year or as appropriate. For such situations other pest management activities within the same definable geographic area should be included on one IPM Checklist and map. If, for example, there was a gopher and yellowjacket problem in the same vicinity as the weed management activity, they could be mapped and included on one checklist. However, work hour estimates should be provided for each activity included within the IPM Checklist.

From this approach, it is anticipated that IPM plans or programs can be developed over the next several years for each park unit. District Policies and Practices clearly state that the initiation of such activities is the responsibility of staff.

III. Material to Accompany the Submitted IPM Checklist

Maps – maps should be of adequate scale to show where activity is to take place. The activity areas should be distinguishable from non-control areas. As examples, picnic areas or pathways to be managed for weed control or rodent burrows should be shown in relationship to identifiable landmarks.

IV. Pesticide Use Report

As discussed above, the primary purpose of the Pesticide Use Report is to track and document the District’s pesticide use. The need to do so has been strongly advocated by the District’s Central Safety Committee. There are safety, liability and economic reasons for accomplishing this aspect of the program.

New federal and state regulations will be putting more burden on users of pesticides, particularly public agencies in the urban environment. Pollution control and pesticide residue testing may make certain District operations more costly. We should be looking for alternatives now before there is a real emergency. Pesticide Use Reports should be completed as follows:

- a. Policies Reviewed – Complete documentation is required as discussed above. The use of a pesticide must be justified as indicated in District Policies and Practices (Approved Methods). For example, why would mowing and hand removal be eliminated as a strategy for weed control? Is there past history of lack of success? Are there significant person-hours documented for unsuccessful methods? On the other hand, it may be justifiable to use a Category II or even Category I pesticide to control an imminent public health threat, (i.e., a particular flea species present in large numbers on heavy populations of California ground squirrels in a full campground in a plague endemic area).
- b. Who May Fill Out the Pesticide Use Report – It is suggested that a qualified applicator assist in report preparation. It is imperative that only recent labels (including supplements) be used.
- c. Specific Items – Equipment must be in good operating condition, properly maintained, and calibrated. It is recommended that a frequent, regularly scheduled testing and calibration program be established within each park using such equipment, keeping records of how often the equipment is used, and where and by whom it is used. Labels must be reviewed for detailed requirements such as spray water acidity (Item 9). With some pesticides (i.e., Roundup), a few tenths of a point on the pH scale can decrease its effectiveness significantly.

Lastly, if pesticides are required from Central Stores, sufficient lead time will be necessary. It is just as important for the District to know how much pesticide will be needed for the coming year as it is to know how much as been used in the past. We now know that considerable costs (disposing of unusable pesticides) and effort (too many worker hours spent on unsuccessful control techniques and unnecessary paperwork) can be saved in the future. Central Stores staff can be prepared by having the necessary materials on hand at the cheapest price possible.

APPENDIX D

INTEGRATED PEST MANAGEMENT (IPM) CHECKLIST

Integrated Pest Management (IPM) Checklist

Return to: IPM Specialist
 Planning/Stewardship Dept.
 2950 Peralta Oaks Court
 Oakland, CA 94605

Please circle all appropriate items. If you recommend the use of a chemical, you must review the "Approved Methods for Pest Management" (Appendix B) of the District Policies and Practices and have prior approval (Text, Section IV,B).

Park _____ Zone No. _____

Date Submitted for Review _____

Location of Past Activity (Area or Site) _____

Form Prepared by _____ Date _____

When a pesticide is used, a Pesticide Use Report must be prepared and sent to IPM Specialist. Only qualified applicators may apply Category I, II or III pesticides.

I. PLANT PEST PROBLEMS	RECOMMENDED SOLUTIONS (In Order of Preference)
1. Terrestrial Management of weeds in: trails, roadway, barriers, fences, buildings, BBQ Pits, tables (fire clearance, visibility, structural damage).	a. Apply mulch b. Hoe c. Hoe and/or remove by hand d. Chemical
2. Management of weeds in plant beds, parking lot islands, other landscaped shrub areas (choking desired plantings, prevent weed seed production).	a. Mechanical control b. Grazing c. Chemical d. Remove suckers e. Hand removal f. Grazing g. Mechanical control
3. Management of poison oak and blackberries: trail/use area encroachment, rat harborage. Management of eucalyptus sprouts: fuel break, reduce competition with desirable plants.	a. Stump treatment (cut and frill) b. Foliar treatment c. Hoe and hand removal d. Mechanical control e. Shallow Plow (draw bar) f. Chemical g. Environmental management h. Mechanical i. Grazing j. Hand removal k. Chemical l. Other m. Copper sulfate (under Water Management Specialist's supervision)
4. Priority weed status Artichoke Thistle Purple Start Thistle Puncture Vine	a. Environmental management b. Mechanical c. Grazing d. Hand removal e. Chemical f. Other g. Copper sulfate (under Water Management Specialist's supervision)
5. Management of weeds in beaches and swim areas.	a. Hoe and hand removal b. Mechanical control c. Shallow Plow (draw bar) d. Chemical e. Environmental management f. Mechanical g. Grazing h. Hand removal i. Chemical j. Other k. Copper sulfate (under Water Management Specialist's supervision)
6. Priority weed status Artichoke Thistle Purple Start Thistle Puncture Vine	a. Environmental management b. Mechanical c. Grazing d. Hand removal e. Chemical f. Other g. Copper sulfate (under Water Management Specialist's supervision)
II. ANIMAL PEST PROBLEM	
A. Vertebrates 1. Rodents (primarily Norway and roof rats posing potential public health risk, economic damage); building, np-trap, storage areas.	a. Modify habitat b. Trap c. Trap d. Chemical
2. Animals girdling or eating trees or shrubs (primarily mice, rabbits, deer).	a. Plastic wrap on trunks b. Wire cages around plant c. Modify habitat d. Chemical e. Trap
3. Gophers: feeding on roots of trees or shrubs.	a. Drown b. Mechanical c. Modify habitat d. Mechanical e. Chemical

I. PLANT PEST PROBLEM

- 4. California ground squirrels: health risk, safety hazard, economic damage.

RECOMMENDED SOLUTIONS

- a. Modify habitat
- b. Trap
- c. Mechanical
- d. Chemical

- 5. Rattlesnakes: safety hazard to park visitors and workers.

- a. Habitat management
- b. Food source management
- c. County Animal Control

- B. Invertebrates
- 1. Swimmers itch (discomfort, health risks)

- a. Remove aquatic weeds from swim area
- b. Introduce red-eared sunfish
- c. Apply Cicco copper sulfate
- d. Alter swim area substrate
- e. Manage snail populations
- f. Other biological or chemical control

- 2. Snails and slugs

- a. Habitat management
- b. Trap
- c. Chemical

- 3. Yellow jackets (nuisance, health and safety threat)

- a. Source reduction (garbage can lids and covered dumpsters)
- b. Education (clean picnic and camp areas)
- c. Trap
- d. Nest destruction
- e. Chemical

- 4. Fly control (nuisance, health and safety threat).

- a. Source reduction (garbage can lids and covered dumpsters)
- b. Trap
- c. Chemical

- 5. Forest or tree pests (primarily park beetles, cypress moth, etc.)

Specific measures will be required on a case-by-case basis

- 6. Oak moth or tent caterpillar (nuisance in a high use area).

- a. Hose trees with high pressure
- b. Biocide (Bacillus thuringensis)
- c. Other

- 7. Structural pests: structural or economic damage (primarily termites, shot hole borers, etc.)

- a. Modify Habitat
- b. Discourage pest
- c. Chemical

II. GENERAL

- A. Golf Course Operations

Specific measures will be required on a case-by-case basis.

- B. Botanic Garden

Specific measures will be required on a case-by-case basis.

- C. Agricultural (i.e., Briones, Garin or Ardenwood)

Specific measures will be required on a case-by-case basis.

- D. Land Department: identification of potential pest problems

Specific measures will be required on a case-by-case basis.

- E. Planning and Design: pest prevention planning.

Specific measures will be required on a case-by-case basis.

(This section must be completed and signed)

1. Scope of Problem: _____

2. Treatment History: _____

3. Treatment Evaluation: _____

4. Person/Hours in Chemical/Non-Chemical Control Activities:

Activity	Task	Hours	Person-hours
a. _____			
b. _____			
c. _____			

5. Approved Methods for Pest Management Reviewed? Yes ___ No ___

6. Proposed Pesticide, Application Date: _____

7. Reason: _____

8. Authorized by: _____

9. Safety Gear/Respirator Available: _____

10. Reviewed by Unit Manager/Date: _____

11. Approval ___ Denial ___ IPM Specialist _____

12. Site Specific Map Submitted: Yes ___ No ___

PESTICIDE APPLICATION IN THIS AREA

LOCATION:

DATE:

CHEMICAL:

PURPOSE:

**FOR INFORMATION,
CALL**

EAST BAY REGIONAL PARK DISTRICT

APPENDIX G

APPROVED LIST OF PESTICIDES FOR EBRPD

2005

CATEGORY I – DANGER

NONE USED

CATEGORY II – WARNING

NAME	USE	DEPARTMENT
Oxadiazon* (Ronstar)	Herbicide	Tilden Golf Course*
CATEGORY III & IV - CAUTION		
NAME	USE	DEPARTMENT
Amorphous silica gel (Dri-Die)	Insecticide	Operations (including concessionaires)
Ant Traps or Stakes (Arsenic trioxide, Boric Acid)	Insecticide (ants only)	Operations (including concessionaires)
Bacillus thuringiensis (Dipel, Thuricide)	Insecticide	Operations, Botanic Garden
Hydrated lime and copper sulfate (Bordeaux Mixture)	Multi-purpose (fungicide/insecticide)	Botanic Garden, Operations (orchards)
Chlorophacinone/Diphacinone (Rozol)	Rodenticide	Operations (use areas), Range (California ground squirrel) Tilden Golf Course*
Dicamba (Banvel)	Herbicide	Range (artichoke and purple starthistle)
Dichobenil (Casoron)	Herbicide	Operations, Planning & Design
Gas Cartridges (U.S. Forest Service)	Fumigant for burrowing rodents	Operations, Range
Glyphosate (Roundup, Aquamaster)	Herbicide	Operations, Range, Fuel Break, Tilden and Willow Park Golf Courses, Botanic Garden
Insecticidal Soap (Safer)	Insecticide	Operations, Botanic Garden, Commercial farm (Ardenwood)
Metaldehyde	Molluscide	Botanic Garden
Oryzalin (Surflan)	Herbicide	Operations, Planning & Design
Pyrethrum (Pyrenone)	Insecticide	Operations (bee, wasp nests), commercial farm (Ardenwood)
Scotts Fertilizer Plus*	Fungicide	Tilden Golf Course*
Sulfur	Fungicide	Commercial farm (Ardenwood)
Triclopyr (Garlon 4) (Pathfinder II)	Herbicide	Fuel Break, Operations

* Material subject to cancellation pending completion of IPM Golf Course Plan.