

City of San Diego

Parks and Recreation Department

INTEGRATED PEST MANAGEMENT OVERVIEW OF TAILGATE TRAINING

DEFINITION

Integrated Pest Management (IPM) is a strategy that focuses on the long term prevention of pests and their damage through a combination of techniques such as cultural practices, biological controls, plant selection, and habitat modification. Pesticides are used only after monitoring indicates they are needed. All pesticide applications are made with the goal of removing only the target organism. Chemicals are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment.

HISTORY

In 1999, the Parks and Recreation Department initiated an IPM program into its Annual Pesticide Training. Each year since, the Department has included an updated IPM component. In calendar years 2003 and 2004, the Department embraced IPM concepts as the main method of addressing pest problems in our park landscape. During this period, the Department's efforts have included:

1. Training Parks and Recreation Department grounds maintenance staff, including supervisors, in the basic principles of IPM. This includes instructing employees how to inspect for and monitor pest infestations.
2. Assisting employees to develop specific plans to address pest problem without the use of chemicals (ex.: completing an IPM checklist when submitting a service request and consulting the IPM annual calendar).
3. Changing Department policy so that only specific employees who possess a valid State of California Qualified Applicator Certificate and who work in designated user groups are eligible to handle pesticides. The designated user groups are: the Pesticide Crew, Golf Operations Division, Mt. Hope Cemetery, Balboa Park Nursery, and some Park Ranger programs.

IPM PRINCIPLES

1. **Plant Selection:** The best way to deal with a pest problem is to prevent it in the first place, and planting the right plant in the right place is imperative in accomplishing this. Factors such as sun/shade, water requirements, mature size, soil requirements, plant compatibility, etc., should be considered prior to making decisions on plant species.
2. **Identify the Pest:** The first step in dealing with a pest problem is to identify what the pest is and then develop a strategy to control it. Chemical application is the last option. When identifying the pest, it is also important to identify any beneficial insects that might be present as this will guide your control strategy. Some resources to assist you in pest and beneficial insect identification are: the Department's Pest Management staff, University of California Cooperative Extension, and numerous internet sites, including www.ipm.ucdavis.edu.
3. **Monitoring:** It is very important to monitor the extent of the pest problem and establish guidelines and thresholds to be used to determine the appropriate control strategy. An efficient monitoring program will allow you to identify a potential pest problem early and initiate control measures before the problem gets out of hand.

4. **Cultural Practices:** There are many cultural practices on-site staff can use to control and minimize pest problems in their landscape. Some of these are:
 - a. **Irrigation Management:** Irrigation should be monitored frequently to ensure that plants are not being over or under-irrigated
 - b. **Fertilization:** A fertilization schedule should be established to ensure that the plants' nutrient requirements are being addressed.
 - c. **Proper Pruning:** Routine pruning should be completed to remove dead/diseased branches and increase air circulation. Knowledge of when to prune specific plants is essential to ensure their health and pest resistance.
 - d. **Wash Off Plant Material:** Many pests can be effectively removed with a stream of high pressure water. In addition, a clean plant is more efficient at photosynthesis.
 - e. **Mulching:** Applying a layer of organic mulch around your plants will help to conserve water, moderate soil temperature, and deter weed seed germination.
 - f. **Sanitation:** Remove all diseased flowers, fruit, and branches and rake up any infected leaves and debris.
5. **Chemical Application:** Once all other options have been attempted, and monitoring indicates that the pest problem is significant enough to warrant control, the on-site staff should submit a Citywide Park Maintenance Service Request, via ManagerPlus Work Request web app: <http://vmquest/WorkRequests/Login.aspx>

IPM RESOURCES

IPM Calendar, updated to reflect changes in Department policy concerning the use of pesticides (attached).

Additional recourses are provided on each of the site specific exercise worksheets (attached).

SITE SPECIFIC EXERCISES

In the site specific tailgate exercises (attached), we will focus on three maintenance functions that are key components of an effective IPM program. These are: Mulching, Irrigation, and Monitoring.

1. **Before Beginning the Site Specific Exercises**
 - Locate and review the storm drain map for the park. Ensure that strategies for protecting the storm drains are discussed and implemented if the storm drains could be impacted by the activities below.
 - Make copies of the mulching, irrigation, and monitoring handouts (attached), and these activity sheets, and distribute to all tailgate attendees.
 - Bring clipboards and pens for staff to use during the activities.
2. **At the Conclusion of the Tailgate**
 - Turn over the results from the tailgate activities to the site staff to incorporate into their site-specific IPM program.

INTEGRATED PEST MANAGEMENT – WEEKLY CHECKLIST

- Check irrigation controller schedule and adjust as needed.
- Check irrigation system.
- Promptly repair irrigation problems, or request for repairs to <http://vmquest/WorkRequests/Login.aspx> (Managers Plus)
- Edge all hardscape (curbs, mow curbs, and sidewalks).
- Remove weeds in shrub beds, ground cover, sidewalks, and turf.
- Inspect plant material for pests. Also, monitor for beneficial insects.
- Be sure to follow all Storm Water Best Management Practices for potential pollutants.

INTEGRATED PEST MANAGEMENT – ANNUAL CALENDAR

JANUARY

- Prune eucalyptus and pine trees in winter when borers and beetles are less likely to be active to reduce risk of pest problems.
- Prune deciduous trees to remove dead, broken, or crossing limbs using horticulturally correct pruning cuts.
- Submit service requests for larger trees that need pruning.
- Rake up fallen leaves and debris in shrub beds.
- Plant native plants and/or sow native seeds directly into weeded and cleared ground. If no rain, irrigate regularly.
- Check brow ditches and remove any debris that has accumulated (to reduce storm water pollution).
- Review Weekly Checklist (see top of page).

FEBRUARY

- Submit request to pesticide crew to spray broadleaf weeds in turf if California burclover, mouseear chickweed, black medic, common or buckhorn plantains, or prostrate knotweed are a significant problem. Remember to attach the IPM Checklist and GDP to the request.
- Remove winter annual weeds and perennial weeds. Don't allow them to flower and produce more seeds!
- Submit request to pesticide crew to apply preemergence herbicide to prevent weed seeds from germinating once shrub beds have been weeded and cleared of debris.
- Inspect trees for broken and hanging limbs, leaning, and lifting. Report them to your supervisor and barricade the area.
- Review Weekly Checklist (see top of page).

MARCH

- Fertilize trees, shrubs, and ground covers with a complete fertilizer (ex.: Turf Supreme).
- Fertilize palms using fertilizer formulated for palm trees.
- Fertilize chlorotic plants with chelated iron.
- Start planting summer annuals, perennials, trees, ground covers, and vines.
- Monitor for pests (especially aphids) and beneficial insects on new growth.
- Monitor for caterpillar larvae and, if found, submit request to pesticide crew.
- Monitor for signs of snails and slugs. Remove snails by hand or, if problem is significant, submit a service request to the pesticide crew.
- Mulch shrub beds to a depth of 2 to 3 inches. Be careful not to get mulch against crowns of plants. Maintain a "mulch-free" area around trunks.
- In early March, prune lantana hard to remove dead wood and prevent woodiness.
- Review Weekly Checklist (see top of page).

APRIL

- Continue monitoring plant material for pests and beneficial insects, particularly on new growth.
- Monitor plant material for giant whitefly and aphids. Hose them off with a strong stream of water. Prune to thin shrubs if necessary to better wash off interior and undersides of leaves.
- Apply mulch around trees to suppress weeds and grasses; however, be sure to maintain a "mulch free" zone immediately adjacent to the trunks. Do not damage or girdle tree trunks with green machine line!
- Continue monitoring for caterpillar larvae and, if found, submit a service request to the pesticide crew.
- Plant or transplant tropical plants (including palms) beginning now through summer.
- Plant drought resistant plants and succulents.
- Trim hedges and screens including Photinia, Pittosporum and Myoporum to the desired size this month. Remember to prune flowering shrubs after they bloom.
- Review Weekly Checklist (see top of page).

INTEGRATED PEST MANAGEMENT – WEEKLY CHECKLIST

- Check irrigation controller schedule and adjust as needed.
- Check irrigation system.
- Promptly repair irrigation problems, or request for repairs to <http://vmquest/WorkRequests/Login.aspx>.
- Edge all hardscape (curbs, mow curbs, and sidewalks).
- Remove weeds in shrub beds, ground cover, sidewalks, and turf.
- Inspect plant material for pests. Also, monitor for beneficial insects.
- Be sure to follow all Storm Water Best Management Practices for potential pollutants.

INTEGRATED PEST MANAGEMENT – ANNUAL CALENDAR

MAY

- Check tree stakes and adjust ties to prevent damage to trunks and limbs. Remove stakes that are no longer needed.
- Reseed, sod, or hydrostolonize Bermuda grass in cultivated bare areas of sports fields. Fence off area and irrigate regularly to allow germination and establishment.
- Remove and/or submit a service request to the pesticide crew to spray herbicide to kill summer annual weeds (ex.: crabgrass, spurge, and prostrate knotweed) and perennial weeds (ex.: dandelions, oxalis, wiregrass, and broadleaf plantain). Use your hand weeder to get the roots out, too!
- Prune *Osteospermum* (trailing African daisy) in early May after bloom to prevent buildup of thatch, which could lead to death from summer fungus. Clean up the ground, removing clippings and dead leaves. Mulch and fertilize for another show of bloom.
- Monitor for powdery mildew on leaves of shrubs and small trees. Submit a request to the pesticide crew if necessary.
- Review Weekly Checklist (see top of page).

JUNE

- Monitor for snails and slugs. Remove snails by hand or, if problem is significant, submit a service request to the pesticide crew.
- Wash off trees and vines particularly in dusty areas (such as along roads) to remove dust and prevent mite infestations.
- Remove sucker growth from trees. Pests are attracted to the tender new growth.
- Reduce water to native plants.
- Prune winter and spring flowering trees and shrubs to shape, train, and control them after they finish blooming. Remove dead, damaged, or crossing limbs.
- Fertilize palms using fertilizer formulated for palm trees since it contains micronutrients needed for healthy palms.
- Submit a service request to the pesticide crew to apply preemergence herbicide to prevent weed seeds from germinating once shrub beds have been weeded and cleared of debris.
- Review Weekly Checklist (see top of page).

JULY

- Fertilize trees, shrubs, and ground covers with a complete fertilizer (ex.: Turf Supreme).
- Keep dead leaves cleaned up around plants to prevent the spread of diseases and pests.
- Deep irrigate newly planted trees and non-irrigated trees at dripline throughout the summer. Use soil probe to determine the depth of water penetration.
- Increase watering frequency and duration for manually irrigated areas such as shrub beds, turf areas, and canyon slopes.
- Monitor irrigation schedules and increase run times, cycles, and/or days, as needed, due to longer, hotter days. Avoid runoff by using shorter run times with more frequent cycles.
- Review Weekly Checklist (see top of page).

AUGUST

- Deeply water mature Torrey and Aleppo pine trees to ward off boring beetles.
- Control fireblight by properly removing affected branches and twigs. Disinfect loppers after each cut to avoid spreading this bacterial disease.
- Reapply mulch as needed in shrub beds to control weeds and retain moisture.
- Monitor for giant whitefly, thrips, and mites as summer heat continues. Wash plants off at regular intervals to reduce pest populations.
- Prune out small, heavily infested portions of shrubs, if appropriate, to keep infestation from spreading.
- Flush filters and lines of drip irrigation systems and ensure that drip emitters are working properly. Put bug caps on the ends of emitter tubing if they're missing.
- Review Weekly Checklist (see top of page).

INTEGRATED PEST MANAGEMENT – WEEKLY CHECKLIST

- Check irrigation controller schedule and adjust as needed.
- Check irrigation system.
- Promptly repair irrigation problems, or request for repairs to <http://vmquest/WorkRequests/Login.aspx>.
- Edge all hardscape (curbs, mow curbs, and sidewalks).
- Remove weeds in shrub beds, ground cover, sidewalks, and turf.
- Inspect plant material for pests. Also, monitor for beneficial insects.
- Be sure to follow all Storm Water Best Management Practices for potential pollutants.

INTEGRATED PEST MANAGEMENT – ANNUAL CALENDAR

SEPTEMBER

- Remove and/or submit a service request and GDP to the pesticide crew to spray summer annual weeds to prevent seed production.
- Submit request to pesticide crew to spray broadleaf weeds in turf if California burclover, mouseear chickweed, black medic, common or buckhorn plantains, or prostrate knotweed are a significant problem. Remember to submit an IPM Checklist and GDP with your request.
- Weed Control: Keep slopes and canyons clear of “noxious” weeds before they set seed (ex.: castor bean, arundo donax, tumbleweed, tree tobacco, and pampas grass.) When removing pampas grass plumes, remember to tie a trash bag over the plumes before cutting them off to capture the seeds.
- Fertilize palms using fertilizer formulated for palm trees.
- Prune oleanders, bougainvilleas and plumbago after bloom in frost-free zones.
- Don’t prune New Zealand tea trees (Leptospermum scoparium) now or you’ll get no winter flowers!
- Review Weekly Checklist (see top of page).

OCTOBER

- Plant all types of permanent landscape plants except bare root plants, tropicals, and native plants.
- Monitor irrigation schedules and decrease run times and days as necessary due to shorter days and cooler nights.
- Check backup batteries in irrigation clocks for needed replacement.
- If no rain yet this season, continue to deep water newly planted trees and manually irrigated canyon slopes.
- Shape and clean out the dead interiors of native plants.
- Divide, trim and mulch plants that tend to grow in a clump and that need to be divided, including overcrowded Hemerocallis (day lilies), moraea lilies, and bird of paradise. Clean up the dead leaves and remove snails and slugs. Wait until November to divide and transplant agapanthus (Lily-of-the-Nile) if they need it.
- Check brow ditches and remove any debris that has accumulated (to reduce storm water pollution).
- Review Weekly Checklist (see top of page).

NOVEMBER

- Fertilize trees, shrubs and ground covers with a cool season fertilizer (ex.: Nitra-King).
- Monitor for snails and slugs and remove by hand or, if problem is significant, submit a service request to the pesticide crew.
- Monitor for weeds that have germinated and remove them.
- Submit a service request and GDP to the pesticide crew to apply preemergence herbicide to prevent weed seeds from germinating once shrub beds have been weeded and cleared of debris. (Note: Preemergence herbicide should not be applied in areas where you plan to sow native plant seeds or wildflower seeds as it will keep these seeds from germinating also!)
- Plant ground covers such as ice plants, gazania, Osteospermum (African daisy) and star jasmine.
- Review Weekly Checklist (see top of page).

DECEMBER

- Plant native plants and/or sow native seeds directly into weeded and cleared ground. Also, plant spring bulbs. Irrigate regularly until winter rains start.
- Turn off clocks when rain occurs, but remember to test your irrigation systems once a week to keep your automatic valves working properly and to check for problems.
- Once rains arrive, stop watering established succulents growing in the ground.
- Submit a service request to the pesticide crew for dormant oil spray for deciduous trees and fruit trees after leaves drop to reduce summer insects (scale/mites) and diseases. They should be sprayed before the buds break.
- Review Weekly Checklist (see top of page).



Integrated Pest Management Resources July 2021

Contacts

- Citywide Park Maintenance District Manager – Albert Sais – 619-376-3333
- Integrated Pest Management Group – Vacant – 619-23-55923
 - o Pest Management Advisor – PëYt j ĆYír ù # 619-23-55923
- Department Water Management Office – Vacant – 619-23-55917
- Park Arborist – Erich Kast – Cell Phone 619-376-3361
- Citywide Park Maintenance Service Requests – Submit via Managers+ Work Request
 - o Clayton Walsten – 619-53-35787
- Storm Water Compliance, Vegetated BMP Maintenance, Annual BMP Verifications and Inspection
 - o Senior Planner – DžěYo – 619-23-55925

- If staff obtain or renew their QAC please send a copy to the training office and CC Pest Management Advisor within two weeks of renewal.
 - o Training Office: Jonathan Richards – Aôôôôj αĆńr α Ćôăđo
 - JMRichards@sanidiego.gov
 - 619-53-36527
 - o Training Office: Berenice Garcia – Trainer, Safety and Training Program
 - Bereniceg@sanidiego.gov
 - 619-52-58245

INTEGRATED PEST MANAGEMENT TAILGATE

MULCHING

1. HOW IS MULCH PRODUCED?

Mulch generally comes from two sources, clearing and tree work on City or Park and Recreation Department-managed property and mulch produced at the Miramar Greenery/Landfill. Mulch received directly from City and City-contracted tree and clearing work may be conveniently available but is generally unprocessed and may contain mixed debris. Mulch from these sources may also contain diseased organic matter.

Be very careful not to use or accept mulch if trees are diseased. Avoid using prunings/chips directly from a landscape contractor or arborist unless you know the trees are not diseased. Consult an arborist who can help diagnose problem trees or shrubs before you accept materials. Avoid any chippings from trees with Pine Pitch Canker or Gold-spotted Oak Borer as these diseases are known to spread through chippings.

In general, composted wood chips like the type available from Environmental Services at the Miramar Yard have been thoroughly mulched and composted and are free of disease-causing organisms. The mulch currently produced at the Miramar Greenery/Landfill is a 4-inch and smaller ground material. This mulch has undergone a high temperature pasteurization process that eliminates disease-causing pathogens and kills weed seeds. This high quality of mulch can be used in a number of useful applications.

2. WHAT ARE SOME PRACTICAL BENEFITS AND APPLICATIONS OF MULCH?

- a. **Landscape Top Dressing:** Mulch can be used as decorative topdressing to cover areas of bare soil between newly planted or established landscaping. Covering these areas with mulch can help reduce soil erosion, conserve water, and suppress weed growth. Use mulch around the base of plants and trees, taking care to keep the mulch from actually touching the stem or trunk. Spread mulch to a depth of 2 to 3 inches.
- b. **Weed Suppression:** Mulch application on bare soil hinders weed seed germination by blocking sunlight from reaching the soil surface. If weeds do germinate, they root in the mulch, making physical control (pulling for removal) easy. This is a very effective way of controlling weeds without the use of herbicides.
- c. **Dust Control:** Mulch applied over the surface of dirt roads and trails, or unvegetated open areas, can reduce the incidence of vehicle or wind-induced dust clouds. Spread a layer of mulch 3 inches deep over the surface of dirt roads or paths.
- d. **Erosion Prevention:** Mulch reduces soil erosion by lessening the impact of heavy rainfall on steep slopes and by increasing the water-holding capacity of the soil.
- e. **Water Conservation:** Using mulch as a ground cover over bare soil and around plants helps to reduce water evaporation and the need for frequent irrigation.
- f. **Improves Soil Structure:** Use mulch to add trace nutrients and organic matter to the soil as the mulch breaks down.
- g. **Moderates Soil Temperatures:** Mulch shades and protects plant roots from hot and cold temperatures.

- h. **Helps Abate Muddy and Wet Conditions:** Use mulch as a ground cover over wet areas to soak up moisture, reduce slipping hazards, and provide foundation for foot or vehicular traffic.
- i. **Reduce Fire Risk:** Mulch cover reduces the growth of “flashy fuels” and is generally less flammable than dry natural vegetation when used in the correct location.
- j. **Improves Landscape Aesthetics:** Mulch adds color, texture and a “managed” look to landscapes.

3. **HOW DO I PREPARE A SITE FOR AN APPLICATION OF MULCH?**

- a. Weed the site using a hoe, asparagus forks, rakes and/or rototiller.
- b. Rake the area to remove uprooted weeds, leaf litter and other debris.
- c. Be cautious not to place mulch directly against the trunks or crowns of trees and shrubs. Keep mulch 12 to 24 inches away from the base of trees and shrubs. Tree trunks are not suited to wet conditions. Placing mulch so that you can see the root flare keeps the trunk dry and reduces the risk of damage from disease, insects, and rodents. Extend mulch out to the drip line of trees and shrubs to help retain moisture in the root zone and assist mower operators in avoiding sensitive tree roots.
- d. Select the correct mulch for your primary application needs like weed control, erosion control, moisture retention, fire prevention, and/or beautification. Not all mulch is appropriate for every application.
- e. Apply mulch at a depth of three inches. Less mulch and you may not receive the benefits to moisture retention and reduction in soil temperatures. Thicker layers of mulch may encourage roots to develop and grow along the soil surface rather than below.
- f. Compact mulch slightly after placement to reduce fluff, improve contact with the soil as a means to increase the absorption of moisture, improve soil moisture retention and reduce potential combustibility by removing air pockets.
- g. Consider the aesthetics. Mulch is available in different colors, textures, material types. Pick the type of mulch that best fits the appearance and aesthetics you are trying to emulate. Some mulch is natural in appearance, others very formal or architectural in look.
- h. Never allow mulch to touch the base of plants or the bark of trees and shrubs. When mulch comes in contact with trees or shrubs, it keeps the bark moist, which invites insects and disease. When it touches perennials or annuals, it can cause them to rot or rob them of nitrogen, causing them to turn yellow.
- i. Take care in the use of mulch near the edge of parking areas, pathways and heavily traffic areas in parks where illegal smoking might present the hazard of igniting overly dry mulch and spreading to nearby natural areas.

- j. Be very careful not to use or accept mulch if trees are diseased. Avoid using prunings/chips directly from a landscape contractor or arborist unless you know that the trees are not diseased. Consult an arborist who can help diagnose problem trees or shrubs before you accept materials.
- k. All shrub beds should be mulched a minimum of once a year or as needed to ensure weed suppression.

All shrub beds should be mulched. Contact your supervisor if there is a unique situation where mulching is not the best solution.

4. WHERE CAN I GET MULCH?

1. Min. Cost Resource: If you need less than 40 yards of mulch, please submit a work request on Managers Plus (submit under Turf Maintenance) and send a marked GDP of where you would like for it to get dropped off to John Arce, JArce@sandiego.gov. Please coordinate with John Arce for delivery date (aerification and projects take precedence).

Make sure to get Supervisor approval before submitting request since fees are associated.

2. Min. Cost Resource: IF you need over 40 yards of mulch, Environmental Services Department will deliver mulch, up to 40 yards per truck load. A completed 999 form work request must be submitted to Martin Sr. Buelna at MRBuelna@sandiego.gov along with a marked GDP of where drop off will occur.

Make sure to get Supervisor approval before submitting request since fees are associated.

5. RESOURCES

Greenery Material:

<http://www.sandiego.gov/environmental-services/miramar/greenery/>

List of Unacceptable Waste:

<https://www.sandiego.gov/sites/default/files/legacy/environmental-services/pdf/ep/hazwasteflyer.pdf>

**INTEGRATED PEST MANAGEMENT TAILGATE
WOOD CHIPS**

1. HOW ARE WOOD CHIPS PRODUCED?

Wood chips are made from old pallets and construction lumber that have been ground to a particle size of one inch or less. They can be used as a decorative ground cover or on garden paths. The Miramar Greenery offers three types of wood chips: non-colored wood chips, brown wood chips and red wood chips.

2. WHAT ARE SOME PRACTICAL BENEFITS AND APPLICATIONS OF WOOD CHIPS?

The practical benefits and applications of wood chips are similar those of mulch and include landscape topdressing, weed suppression, dust control, erosion prevention, and water conservation. In addition, wood chips may be used for aesthetics in high visibility areas. (For details, refer to the IPM handout for Mulching.)

3. HOW DO I PREPARE A SITE FOR AN APPLICATION OF WOOD CHIPS?

Preparing a site for an application of wood chips is similar to that used for mulch and includes weeding the site and raking up any debris. (For details, refer to the IPM handout for Mulching.)

4. WHERE CAN I GET WOOD CHIPS?

Min. Cost Resource: Environmental Services Department will deliver wood chips. A completed 999 form work request must be submitted to Martin Sr. Buelna at MRBuelna@sandiego.gov along with a marked GDP of where drop off will occur. Make sure to get Supervisor approval before submitting request since fees are associated.

WOOD CHIP PRICING INFORMATION	Cost
Wood Chips Natural and Plain	\$24 per cubic yard
Colored Wood Chips..... Brown, Black, and Red	\$34 per cubic yard

Pricing updated September 2021

INTEGRATED PEST MANAGEMENT TAILGATE

Site-Specific Exercise

EXERCISE #1 – MULCHING

Preparation for Activity: Locate and bring to the site enough mulch for completing this exercise (covering shrub beds to a depth of three inches). Have tools available that would be useful for distribution of the mulch (scoop shovels, rakes, and/or pitchforks). Prior to the tailgate, inform your attendees that the site-specific exercise will include hands-on maintenance activities; advise them to bring gloves and a dust mask for the activity.

Activity: First, review the *MULCHING AND WOOD CHIPS* handout with the group. Next, split the tailgate attendees into teams. Assign each team a section of the park that needs to be mulched and have them mulch the designated area. As they complete the task, walk around the park, provide them with feedback, and answer any questions they may have.

1. Team members:

2. Storm drain protection needed (describe action taken if any):

3. Site preparation needed prior to mulching (debris removal, weed removal, etc.):

4. If no site preparation needed, what area of the park was mulched?

5. Comments/questions from team members:

Observations/comments from supervisor:

INTEGRATED PEST MANAGEMENT TAILGATE

BASIC IRRIGATION SYSTEM INSPECTIONS

By performing routine irrigation system inspections, most problems can be located and repaired before they cause stress or damage to plant material. This is a necessary IPM practice. Irrigation systems consist of mechanical devices that need regular maintenance and routine checks to ensure they are operating safely and efficiently. Sometimes a failure in an irrigation system is quite obvious (a broken sprinkler or a valve stuck on), other times the problem may be more subtle (controller scheduling, a leaking valve, or a cracked lateral line). At a minimum, irrigation inspections should be completed every two weeks.

The following simple procedures and guidelines can help you to keep your system working effectively and efficiently. Generally, look for things that are obvious or clearly out of the ordinary. Walk the area while operating the irrigation system and visually check for brown spots, saturated areas, and overspray. These are clues that something is not correct. Keep in mind that problems can be grouped into one of three categories: **hardware, maintenance, and management.**

HARDWARE

The hardware, which includes the sprinkler heads and valves, is the foundation of an efficient irrigation system.

1. Sprinkler Heads

- a. Sprinkler heads should be uniform in manufacturer, model number, and nozzle size so that you have a matched precipitation rate.
- b. Sometimes different sprinklers get substituted when heads are replaced. Check with the Irrigation Shop to ensure that you are installing heads with a precipitation rate and radius (length of throw from the head) similar to the other heads on the system.

2. Valves

- a. Valves control the flow of water through a pipe to the sprinkler heads. Typically, an automatic irrigation valve is either fully closed or fully open. It should not leak or allow water to seep through.
- b. If a couple of stations at your site do not seem to have as much pressure as the others, it may be that those valves are no longer opening all the way. This is particularly true with the old piston valves. To request the repair/replacement of valves, have your supervisor submit a Citywide Park Maintenance Request through Managers Plus system and email a GDP to the Irrigation Supervisor.
- c. In addition to submitting the Citywide Park Maintenance Service Request, **BE SURE TO DIG OUT THE VALVE BEFORE SUBMITTING THE WORK REQUEST.** The valve should be dug out a min of 18" on each side of the valve and 12" underneath the valve, cover the hole with plywood, and barricade the area to ensure safety.

MAINTENANCE

Irrigation systems require routine service and adjustments to keep the system functioning properly. To conduct a basic maintenance check:

1. Adjust sprinklers so that they are spraying within the arc and distance intended to provide head-to-head coverage while avoiding overspray.
2. Verify that heads are installed at the proper height (flush with grade in turf; 2-to-3 inches above grade in mulched shrub beds) and perpendicular to the ground for good coverage.
3. Eliminate any interception of the spray by things such as unclipped grass, bushes, trash cans, etc.
4. Verify that valves are opening and closing properly.
5. Check for heads that are broken or not rotating effectively and replace them immediately.
6. Verify that there are no leaks on lateral lines, risers, globe valves, or quick couplers.

MANAGEMENT

If the hardware and maintenance of your irrigation system is adequately provided for, proper management involves:

1. Scheduling the days, cycles and runtimes on the controller to provide the amount of water needed by the plants at a rate that the ground can absorb using water conservation guidelines.
2. Turning the system off in times of rain.
3. Not scheduling irrigation on the night before mowing.
4. Exercising the system weekly for two minutes per station in the winter months when irrigation is at minimal use to keep the valves in good working condition.
5. Providing supplemental watering of small areas using quick couplers and portable sprinklers rather than turning on a valve.
6. Providing deep watering as needed for newly planted trees as well as for summer watering of established trees. Use your soil probe to ensure that the water is penetrating into the soil deeply enough to benefit the roots of the trees.

Remember: A properly designed and functioning irrigation system can save water, improve plant appearance, and reduce run off.

**SAN DIEGO PARK AND RECREATION DEPARTMENT
IRRIGATION SYSTEM INSPECTION CHECKLIST**

At a minimum, irrigation inspections should be completed by site staff every two weeks.
Use this checklist to identify problems requiring correction. Submit the completed checklist to the site supervisor.

Site:	Inspection Date:	Date repairs will be completed by on-site staff:
Controller Letter:	Inspected By:	If repairs are beyond the scope of on-site staff, submit Citywide Park Maintenance Service Request. Date request submitted:

*Denotes repairs that need to be made by the Irrigation Crew.	STATION NUMBER																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
VALVE NOT WORKING*																									
VALVE LEAKING*																									
HEADS OR NOZZLES MISSING																									
BROKEN RISERS																									
HEADS NOT ROTATING																									
HEADS NEED ADJUSTING																									
MISMATCHED HEADS																									
LOW HEADS TO BE RAISED																									
SPRAY PATTERN BLOCKED																									
OBVIOUS OVERWATERING																									
OBVIOUS UNDERWATERING																									
OTHER LEAKS*																									
VALVE BOX BROKEN																									
COMMENTS/OBSERVATIONS:																									

INTEGRATED PEST MANAGEMENT TAILGATE

Site-Specific Exercise

EXERCISE #2 – IRRIGATION

Preparation for Activity: None needed.

Activity: First, review the *BASIC IRRIGATION SYSTEM INSPECTIONS* handout with the group. Next, split the tailgate attendees into teams and assign them to different sections of the park. Turn on the irrigation system and have the teams evaluate the system for overall efficiency (including operating condition of sprinkler heads), run-off, absorption, or special concerns (burn areas, sloped areas, eroded areas, tree wells, impact on storm drains, etc.). Ask the teams to recommend ways to resolve any concerns noted.

1. Team Members:	
2. Area Evaluated:	
3. Storm Drain Protection Needed (describe action taken):	
4. Complete Irrigation System Inspection Checklist:	
CONCERNS NOTED (drainage, coverage, slopes, eroded areas, flower beds, trees, storm drains, etc.)	RECOMMENDATIONS TO RESOLVE*: (*see examples below)

Observations/comments from supervisor:

*Recommendations to resolve could include, but are not limited to:

- adjust the irrigation clock
- adjust or replace irrigation heads
- submit a Citywide Park Maintenance Service Request for the Irrigation Crew to evaluate
- purchase and place straw wattles to contain erosion
- contact the Department Water Management Office

INTEGRATED PEST MANAGEMENT TAILGATE

MONITORING

Maintaining an Integrated Pest Management (IPM) program requires some important steps if you want to make it work. In addition to cultural practices and pest identification, monitoring your plants is a key component of the IPM approach to pest control.

1. WHY SHOULD YOU MONITOR YOUR PLANTS?

Conducting frequent visual inspections of your plants gives you a good indication of pest activity and population, provides you with up-to-date information on the health of your plants, and allows you to make proper pest management decisions. When monitoring, you should check often for insect pests, weeds, disease, weather damage, or nutrient deficiencies that may kill or stunt the growth of your plants. If you find pests, monitor each pest ecosystem to determine the pest population, size, occurrence, and natural enemy population (beneficial insects). Identify decisions and practices that could affect pest populations.

2. HOW DO YOU MONITOR YOUR PLANTS?

There are several easy methods and useful tools to assist you to effectively monitor your plants. They include:

- a. Look for **ants** traveling up and down the branches of trees and shrubs: Ants will actually “farm” pests and protect them in return for their honeydew secretions. Follow the trail of ants to see if they are innocently going to the blooms on your trees and shrubs or if they are protecting a growing pest population!
- b. Inspect the **undersides of leaves**: Pests and their eggs often “hide” on the undersides of leaves where they are more protected from wind, rain, dust, and from being detected! Scale, aphids, lacebugs, and giant whitefly are a few of the common insect pests you might find on the undersides of leaves.
- c. Use a **hand lens** to closely look at a leaf or the bark of a tree: Things that you cannot see with the naked eye become obvious with a good hand lens.
- d. Use the **branch beating** technique: Hold a clipboard with a white sheet of paper on it under the canopy of a tree or inside a shrub. Using a tool (with a longer handle if you want to reach up into a tree), tap the branches or foliage above your white paper and see what insects fall onto the paper. Are there only a few or a significant number of pests? Did any beneficial insects fall onto the paper? If so, monitor to see if the pest population increases or decreases to determine what IPM practices best control the pests without harming the beneficial insects.
- e. Look for the presence of **sooty mold**: Sooty mold is a black sooty fungus coating that develops on leaves and twigs. The cool, moist, cloudy weather of late winter and early spring hastens the growth of mold. Several fungi (molds) grow in the sugary honeydew left on the plants by aphids, scale insects, white fly, mealybugs, and other insects that suck sap from the plant. Honeydew may drop on low shrubs from larger shrubs and overhanging limbs of trees. Sooty molds do not attack plants directly, but they can mar the beauty of the plant and, if extremely heavy, may shade out some light, causing the plant to be less vigorous. Sooty mold also will grow in honeydew on walls, fences, automobiles, or wherever it is present. Control is achieved indirectly by controlling the insects that produce the honeydew on which the molds grow. Before an appropriate control strategy is undertaken, it is first necessary to identify the insect that is causing the problem.

- f. Inspect your trees and the ground beneath them: Look for small entry or exit holes in the bark and **frass** on the ground at the base of the trunk to see if there are signs of insects. Frass is a sawdust-like substance created by boring insects such as eucalyptus borers. Frass, which is actually a mixture of plant material and insect waste, is often one of the best indicators of borer presence in a tree.

3. WHAT DO YOU DO WITH THIS INFORMATION?

An effective monitoring program also includes keeping accurate written data on the history of pest problems, including the exact timing and location of each pest occurrence and past control measures. Accurate records of pest problems at a particular site can be a valuable aid in a successful IPM program. A good recordkeeping system can reduce the chance of repeating errors and should include the following:

- a. Name of the pest
- b. Where the pest occurred (the host plant and the site)
- c. Amount of damage it caused
- d. Approximate date that the pest or pest damage occurred
- e. Weather conditions present
- f. Control measures used
- g. Results

Keep the information in a useful place. One suggestion is to write it on a calendar in your shed or keep a notebook so you can review the information and anticipate when pest outbreaks may occur.

4. WHAT ARE YOUR OPTIONS?

In an Integrated Pest Management program, cultural and non-chemical controls are the primary options.

- a. **Manual Controls:** The best way to control weeds and unwanted plants within your park is to hand weed/ weed whip regularly and use mulch in all planter beds and areas where there is bare soil.
- b. **Cultural Practices:** These horticulturally correct practices result in healthy and vigorous plants. Plant care activities that help reduce or avoid pest problems include proper irrigation management, fertilization, pruning, cultivation, mulching, washing off plant material, and removing diseased flowers, leaves, and twigs. Cultural practices are an essential part of an effective IPM program.
- c. **Chemical Controls:** Department policy states that on-site staff are ***not*** authorized to apply pesticides. Pesticides are used ***only*** after monitoring indicates they are needed, and treatments are made with the goal of removing only the target organism. (Note: Several special user groups have been identified and staff in those groups who meet the QAC requirement may be allowed to use pesticides. Contact your supervisor for options *before* considering any chemical controls.) If chemical controls are needed, a service request, GDP indicating the affected area, and the Department's IPM Checklist, must be submitted to Work Control.

Remember: Beneficial Insects Are a Gardener's Friend!

INTEGRATED PEST MANAGEMENT TAILGATE

Site-Specific Exercise

EXERCISE #3 – MONITORING

Preparation for Activity: None needed.

Activity: First, review the *MONITORING* handout with the group. Next, split the tailgate attendees into teams and assign them to different sections of the park. Ask them to evaluate their assigned area, including plant material, turf, tree wells, planting beds, etc. Tell them to specifically look for pests (weeds or insects) that may be impacting the area and to recommend solutions for what they discover.

1. Team members:	
2. Area evaluated:	
CONCERNS NOTED (pests, weeds, diseases, etc.)	RECOMMENDATIONS TO RESOLVE (*see examples below)
a. Plant material (flowers and shrubs):	
b. Turf:	
c. Trees and tree wells:	
d. Planting beds:	
e. Other – specify:	

Observations/comments from supervisor:

*Recommendations to resolve could include, but are not limited to:

- hand weed the area
- prune, mulch, or irrigate the area
- submit a Citywide Park Maintenance Service Request for the Pesticide Crew to spray
- contact the Department Arborist for concerns regarding trees
- contact the Pesticide Management Unit for assistance with weed and/or pest identification, or go to the following website: www.ipm.ucdavis.edu