

Integrated Pest Management Annual Report

Fiscal Year 2022-2023 & 2023-2024



**Office of Sustainability
and Resilience**

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Executive Summary

The County of Santa Clara Integrated Pest Management (IPM) Program successfully continues its efforts in reducing chemical pesticide use at County facilities, demonstrating success through collaborations with County departments, contracted service providers and since last year with the University of California Cooperative Extension (UCCE) and University of California Integrated Pest Management program staff. Despite its achievements, the Program is seeing increasing challenges in pest management due to shifts in climate, including extreme weather patterns and drought. These factors are escalating pest populations, necessitating reevaluating traditional pest management techniques.

Due to limited staffing over the last two years, the focus has been streamlining program operations and supporting departments to build their in-house capacity to develop and manage site-specific IPM plans, such as for the Vietnamese American Service Center (VASC), O'Connor Hospital, and San Martin Airport. Efforts are underway to expand the site-specific approach to Valley Medical Center (VMC), St Louise Hospital, and Elmwood Correctional Facility; streamline overall operations and update the IPM Ordinance and Administrative Guidelines to align with current procedures and protocols.

Moving Forward with a Holistic Natural Resource Management Approach

Pest management is deeply interconnected with natural resources because pest populations can significantly impact the health and sustainability of ecosystems. Recognizing the interconnectedness of pest management and natural resource systems, the Program has broadened its scope and will soon be renamed the Integrated Natural Resource Management (INRM) Program under the Office of Sustainability and Resilience. This strategic shift in focus and vision allows for a more holistic approach to resource management and aligns with the County's broader environmental policies and priorities.

Moving forward, the Program will continue to implement strategies that prioritize the minimal use of chemicals and focus on controlling pest populations within acceptable thresholds through improved sanitation, housekeeping, and maintenance (SHM), cultural

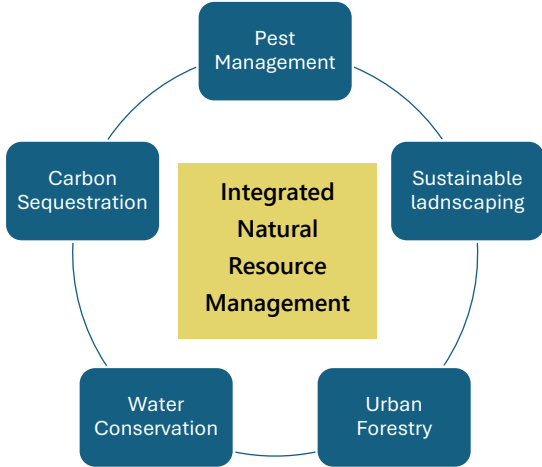


Figure 1. Focus Areas for Integrated Natural Resource Management Program

practices, and enhanced departmental implementation of site-specific IPM plans. Additionally, as shown above in Figure 1, the Program will promote initiatives in urban forestry, water conservation, sustainable landscaping, and carbon sequestration. Overall, the Program's dedication to integrated natural resources solutions positions the County to address challenges holistically while implementing board-approved plans and priorities, ensuring a lasting and sustainable community and environment.

IPM Program - Fiscal Years 2022-2023 & 2023-2024

Background

The County of Santa Clara Integrated Pest Management (IPM) Program is a vital initiative focused on safeguarding public health, the environment, and water quality through sustainable pest management practices. Since its inception in 2002, the Program has embraced a comprehensive approach that integrates biological, cultural, mechanical, and limited chemical pest control methods. The primary objective of the Program is to address pest issues on County property while adhering to the standards outlined in Division B28 in the Integrated Pest Management and Pesticide Use Ordinance¹. The Program is managed through the four tenets of IPM: Management, Research, Outreach, and Best Practices.

Over the year, concerted efforts were made to reduce pesticide use, eliminate the use of restricted pesticides like Glyphosate, and authorize an exemption process for the list of approved pesticides after all other pest control methods have been exhausted. The Program provides consultation to other County Departments when pest issues are identified and tracks pesticide use data on targets, locations, types, and amounts of chemicals used.

Integrated Natural Resource Management

In 2018, the IPM Program was placed within the Office of Sustainability and Resilience (OSR). This organizational shift from a stand-alone program area to a component of OSR recognizes the interconnectedness of IPM to nature-based systems and provides an opportunity for a holistic approach to pest and resource management.

Since then, the program staff have been assisting various County departments (Facilities and Fleet, Parks, Health and Hospitals, Roads and Airports) with natural resource management initiatives,

¹ [Division B28 – Integrated Pest Management and Pesticide Use](#)

including tree inventories, landscape assessments, tree health evaluations, urban tree planting, water conservation projects and most recently carbon sequestration studies.

The interconnectedness of the various areas and program expansion warrants a renaming of the program to the Integrated Natural Resource Management (INRM) Program to reflect its holistic approach to resource management. The INRM Program will continue to develop policies, guidelines and best practices; conduct studies and assessments; educate and train relevant County employees and launch demonstration projects that align operations and agency partners with the Board's identified priorities, adopted plans, and policies. Key achievements across INRM since 2018 include the following:

- A Landscape Inventory and Operational Needs Assessment Study for Facilities and Fleet (FAF) and Parks Departments. As a result, landscaping at nearly 15 County-owned sites managed by FAF and Roads and Airports have been upgraded to include some drought-tolerant landscaping areas or hybrid grass engineered to be low maintenance.
- Reducing annual potable water use consumption at FAF serviced facilities by an estimated 38% since 2013 and using irrigation controllers to reduce water use to 85% at all parks with turf, which include Martial Cottle Park, Vasona Lake County Park, Hellyer County Park, Ed Levin County Park, and Almaden Quick Silver Mining Museum's Casa Grande grounds.
- Installation of a native plant demonstration garden at Hellyer County Park which will include interpretive signage on hydrology, wildlife, and native plants and motivate visitors to adopt the conservation practices on display in this drought-tolerant, native and pesticide free planting area. Through these landscape and irrigation system improvements, the native garden is projected to save over 2 million gallons of water annually.
- Planting 2,803 trees to date between 2021 – 2024 in support of the County's goal to plant 1,000 trees annually in areas of high need.
- Building a Santa Clara Valley Urban Forestry Alliance (SCVUFA), a work group and community of practice within the Santa Clara County Climate Collaborative intended to provide resources and knowledge sharing for all stakeholders working on urban forestry management programs.
- Partnership with the Santa Clara County Office of Education in 2022 on a tree planting Initiative in 400 public schools.
- Securing nearly \$1 million in grant funding from CAL FIRE for a Santa Clara County Urban Forest Master Plan.

IPM Program Operations

Pesticide Use and Pest Management Approaches in Different Settings

The Program's pesticide use strategy reflects the County Integrated Pest Management and Pesticide Use Ordinance. The use of chemical pesticides is considered to return pest populations within an acceptable threshold only when cultural and mechanical methods alone have proven unsuccessful. This approach has led to the success of several projects in a range of settings using minimal chemical applications in FY 2022-2023/FY 2023-24.

Structures

Chemical pesticide use in all County-owned structures has been reduced to statistically insignificant levels. This was possible due to adherence to IPM plans, consistent monitoring, and improved sanitation, housekeeping, and maintenance (SHM).

Significant structural pest challenges included ants, bedbugs, cockroaches, drain flies, fleas, rats, pigeons, and swallows. A comprehensive strategy involving SHM, interdepartmental cooperation, and contracted services yielded success. Notable projects include:

- Elmwood Correctional Facility – Insect, rodent, and bird management
- County Civic Center – Bird management
- Main Jail & Juvenile Hall – Rodent management
- Bed Bug management – Various HHS locations
- Ant and Cockroach management- VMC, O'Conner, Charcot

Ten inspections for wood-destroying pests led to one fumigation at Mendoza House. Fumigation was also necessary at two county medical facilities, with logistical challenges and ongoing stakeholder coordination.

Urban and Semi-Rural Landscapes

Facilities and Fleet gardeners and landscape contractors avoided the routine application of pesticides by working with the Program to monitor sites and use mechanical methods to control weeds (e.g., timed mowing/trimming, discing, mulching, and grazing). Irrigation system improvements and repairs focused water deliberately on desirable plants to outcompete weeds.

Limited Pesticide Use Exemptions (PUEs) were approved for urban landscape settings in FY23 and FY24. Many of these projects targeted invasive plant species with the goal of eradication and were supplemental to non-chemical treatments. (Table 1)

Table 1 – Pesticide Use Exemptions (PUE’s)

Pesticide Use Exemptions by Department

Department	FY 2022-2023	FY2023-2024
Facilities and Fleet	2	2
Roads and Airports	20	0
Parks and Recreation	2	6
External	1	1

PUEs are submitted based on the site. They vary in chemical type, amount, and target.

- Facilities and Fleet (FAF) was authorized to use insecticides to treat dry wood termites in a structure where other control methods were not feasible and to treat fleas that presented a public health risk at James Ranch.
- Roads and Airports maintain rights-of-way and transportation infrastructure. Specific maintenance standards are required for the safe use of these facilities. These demanding settings often require pest managers to utilize the complete kit of tools available to provide safety for the public and maintenance staff. The number of PUEs is representative of the many separate locations maintained by the department.
- Parks and Recreation was authorized to use chemical herbicides for one-time treatments on projects to eradicate invasive species. Herbicides were also approved to control vegetation where mechanical methods created a public health risk of lead exposure.
- External partners that were issued PUEs were Spring Valley Golf Course and Midpeninsula Regional Open Space District (MIDPEN). Spring Valley is working on phasing out chemical fungicides and herbicides by implementing an alternative plant palette. MIDPEN was issued an exemption for chemical eradication of invasive stink wort.

Many semi-rural settings experience infrastructure damage from burrowing animals. Ground squirrel infestations at Reid-Hillview and San Martin County airports required significant resources. Trapping and PERC machine treatments have been successful control methods for these two facilities. Burrowing vertebrate pests damaging infrastructure were managed by trapping or using pressurized exhaust rodent control (PERC)² machines. Follow-up treatment using Burrow Blockers to remove the burrows increased the control period and reduced re-treatment.

² Pressurized Exhaust Rodent Control (PERC) is a method and apparatus for controlling rodents that uses pressurized engine exhaust gases. The gases are injected into underground burrows of rodents, filling the tunnels with highly concentrated carbon monoxide, which causes asphyxiation within seconds. This method is only used in areas that do not support habitat for special status species.

Open Space/Wildland/Forest

Pests in 26 of 28 county parks were managed exclusively using non-chemical methods. Some park areas are under easement or lease agreements and are partially managed by the lessees. The Program continues to collaborate with these groups to minimize their pesticide use through planning and education.

Invasive Weed Management

Chemical intervention in invasive weed management projects throughout the County Park system is used on only 2 out of 52,140 acres, and the emphasis remains on using non-chemical alternatives throughout County parkland. However, a slight variance from year to year in the acreage under chemical management is cyclic and need based.

Parks used a suite of mechanical and cultural control methods, such as grazing, hand-pulling, mowing, and prescribed fire to manage plants identified by CAL-IPC as A (e.g., arundo, yellow starthistle, pampas grass, medusa-head). Through the Tree Safety Program, Parks monitors, diagnoses, and mitigates tree pests through annual inspection activities. Data on plant health conditions are considered when assessing the risk a tree or its parts present to identified targets. The responses to mitigate these conditions often focus on the environment supporting the tree, such as soil health or water and nutrient availability.

Vertebrate Pest Control

Vertebrate pest control in the Parks system, which includes ground squirrels and feral pigs, is managed without chemicals. County Parks employ traps, PERC machines, and a Burrow Blocker³ to control rodent populations without using chemical rodenticides. During this period, eighteen feral pigs were trapped at Coyote Lake Harvey Bear Ranch, and sixteen yellowjacket nests were treated in County Parks.

Drought years and changing climate often lead to increased run-ins and conflicts with various wildlife due to decreased food availability and the seeking of alternate food sources. Most wildlife interactions that present a risk to public health occur in campgrounds. Feral pigs are a non-native and invasive species that thrive in the wildland-urban interface, where developed areas often provide easy access to food resources. Parks have implemented SHM methods of food lockers for campers and secured garbage receptacles that drastically decrease the forage for the pigs, removing their incentive to enter the space and inadvertently encountering people or their pets.

³ The Burrow Blocker is a machine that creates and pumps a sand and water slurry into tunnel networks created by burrowing vertebrates like ground squirrels and gophers. After the slurry fills the tunnels, the water absorbs into the surrounding soil, leaving behind the sand, which occupies the former burrow space. This method is only used in areas that do not support habitat for special status species.

Right-of-Way

The County continues to reduce the use of chemicals for vegetation management on rights-of-way by an average of 72% annually. In FY23, only 10 out of 789 managed roadside acres (1.2%) used herbicides. While less-toxic alternatives are growing, effective products for large-scale roadside management are still limited. Most roadside areas are disturbed landscapes where invasive weeds thrive. The traditional maintenance standards for roadsides and rights-of-way conflict with those of stable landscapes. These settings are not generally viewed as places that can support healthy soils and plant cover. Traditional herbicide use does not address the underlying design challenges of these spaces. Their design and purpose require a successful integrated vegetation management (IVM) strategy involving a long-term, ecology-based approach, using desirable, stable, low-growing plant communities that will resist invasion.

Right-of-way IVM aims to minimize wildfire threats, ensure infrastructure integrity, and address aesthetic concerns. Recent initiatives included:

- Roadside surveys – research and testing of non-selective herbicide alternatives
- Grazing - Cattle and goat grazing affected the non-chemical control of fuel loads and invasive species in urban and wildland settings.

Aquatic

Aquatic pest management focuses on invasive plants and blue-green algae⁴. Valley Water owns and manages the reservoirs in and adjacent to County Parkland. Invasive plants such as arundo and primrose are managed by mechanical removal, spot applications of herbicide, and physical plant dispersal prevention.

The Program continued to monitor blue-green algae in County park water bodies. While these bacteria are naturally occurring, blooms pose severe health risks to people and animals alike. Blue-green algae can rapidly increase under favorable environmental conditions. To prevent bloom conditions, non-chemical interventions included:

- Water flow management to alleviate stagnation, abundant nutrient levels, organic matter, and surface-suspended algae.
- Aeration to increase dissolved oxygen, lowering available food sources.
- Targeted grazing in riparian areas and vernal ponds and streams.

Agriculture

The County is committed to supporting organic farming by leasing agricultural land at Martial Cottle Park to Jacobs Farm. This working farm produces organic fruits and vegetables directly from

⁴ Blue-green algae is a common name for cyanobacteria, plant-like organisms that live in water and produce harmful toxins. For more information, visit [CDC resources](#).

field to fork, conducts important “Organic Farming Public Outreach” and uses nature as a model to establish the farm’s role in the natural systems that support it.

A few highlights of the non-chemical pest management approaches undertaken by Jacobs Farms in FY 2022-23 include:

- Trapping to control ground squirrels
- Growing smaller herbs such as dill and cilantro during the winter months as weeds die back, ensuring that summer crop programs are vigorous enough to out-compete them.
- Cereal grain cover crops are left unharvested, competing with weeds for light, space, and moisture.
- Utilizing physical methods to rip, chisel, and pull weeds during the season.
- Growing tomatoes and sage as companion crops to out-compete weeds.

Streamlining and Operationalizing Department/Site level IPM Planning and Operations

Over the last year, Program staff have worked with high-priority sites to streamline and operationalize site specific IPM planning and maintenance. This approach develops internal capacity within a department to address and manage pests in a timely manner and free up OSR program staff to focus attention and time on critical areas of need. OSR will continue to refine program operations and will:

- Update IPM ordinance and Administrative Guidelines to align with current practices and procedures
- Streamline pest management systems and protocols
- Create a SharePoint site for internal coordination, information sharing and project tracking

San Martin Airport – Adhering to the plan

In 2021, active management successfully reduced the squirrel population at San Martin Airport to an acceptable level. However, over the following two years, inconsistent implementation of an on-going IPM maintenance plan allowed the squirrel population to rebound. By early 2024, the ground squirrel population had established an extensive burrow system that threatened the facility’s infrastructure and operational safety. In response to this issue, airport staff sought guidance from the IPM Program for pest management.

A contractor, working alongside airport staff, is now implementing a Ground Squirrel Management Plan in partnership with San Martin Airport staff. A commitment to ongoing monitoring and response efforts will help keep the squirrel population manageable without extensive professional services. This situation underscores the importance of adhering to the maintenance aspects of the IPM plan and having a dedicated IPM coordinator responsible for these critical tasks.

VASC – Training and Sanitation, Housekeeping and Maintenance (SHM)

In 2024, a failed health inspection halted valuable food services offered at the Vietnamese-American Cultural Center (VASC). The VASC team reached out to the IPM Program for assistance. With subject matter experts from UCANR and a contracted pest control service provider, the IPM Program performed a site assessment of the reported pest issues. The findings and recommendations were provided in a report highlighting the importance of sanitation, housekeeping, and maintenance. The pest problem was rooted in operations, to which the team at VASC quickly responded with internal training on food safety and kitchen sanitation. A monitoring plan is in place with a designated site IPM coordinator. This will ensure that if any pests return, a prompt response is made, preventing the population from reaching intolerable levels. The case at VASC exemplifies how a department utilizes the IPM Program effectively and implements a comprehensive IPM plan.

O'Connor – Aging facilities with design/mechanical flaws that promote pest issues

Through an acquisition, O'Connor Hospital became the county's responsibility in 2019. Previous pest management of the facility likely relied primarily on pesticides to combat the infiltration of insects and rodents. Following reports from OSHA citing unsanitary work environments, the IPM Program was enlisted to assess the current conditions and to create an IPM plan. The Findings and Recommendations Report identified several mechanical issues resulting from previous remodeling projects and deferred maintenance items that provided unabated access by rodents and insects to the facility's interior. Many deficiencies can be corrected by repairing broken pipes or properly sealing off abandoned drains. Other flaws will require new designs and construction to the façade, which, until approved, will require temporary exclusion methods and intense trapping efforts to manage the pests. This case shows that only a holistic approach to pest management can follow the IPM Ordinance. A pest's presence in this setting results from porous physical barriers to entry. Maintaining pests in this environment with extremely low tolerances is only possible through the relentless use of pesticides.

Education and Outreach

All stakeholders in pest management, including building occupants, can benefit significantly from training on the importance of SHM. It often requires active and ongoing engagement from program staff and meetings with departmental management and building occupants. Key activities include conducting field inspections and engaging in on-site discussions with affected groups, following up with communication, presenting urgent issues in staff meetings, raising IPM awareness at facility manager workshops, and coordinating contractor work.

Training Modules and Resources

Program staff is seeking to improve efficiency and effectiveness in education and training through collaborations with external partners (e.g., [University of California Agriculture and Natural Resource \(UCANR\)](#), [Our City Forest](#), [Canopy](#), contractors, consultants and other subject matter experts), also by developing web-based tools ([IPM Program website](#), [Sustainable Landscape Management Resource Guide](#), [Water Efficient Landscaping Ordinance Guidance](#)), on-line presentations, webinars, videos, and other training materials; and subject-specific mini-workshops to engage diverse audiences regularly.

The Program has contracted with the UCANR to develop 11 IPM training modules focused on helping residents and occupants understand their role in pest issue prevention and the importance of least-toxic pest management. The Program has also contracted with CreaTV to help produce 11 videos that will help to train facilities management staff on important resource management topics that can help to reduce both pest issues and pesticide use. These deliverables will be completed in the coming year.

Pesticide Applicator Safety Education Training

The program provides five hours of annual Pesticide Applicator Safety Education (PASE) to County staff with a Qualified Applicant License (QAL) or designated pesticide application workers. Per the IPM Ordinance, the county must ensure that staff interacting with pesticides receive proper training for safe application and handling.

Table 1 – PASE Training Attendees by Department

Department	2022	2023
Parks and Recreation	58	51
Roads and Airports	17	12

Due to limited staffing, the annual IPM training and Pesticide Applicator Safety did not occur in FY23-24. However, individual departments administered IPM training for staff that apply pesticides. Parks staff participated in a five-hour pesticide and safety course in the annual maintenance refresher. Roads staff participated in an IPM training provided by their contracted Pesticide Control Advisor in March 2024 and eight staff attended the training. FAF hosted a Facility Manager Conference Webinar series in Nov 2023. Seventy-seven staff members attended, and the County pest control vendors presented on the County IPM program/policy, best practices, and guidance.

Future Program Focus

Expand on nature-based solutions and holistic management

Climate change, drought, temperature shifts, extreme weather, and flooding pose new challenges that alter ecosystems and make them more susceptible to pests, disease, and non-native plant infiltration. What were once seasonal pests are now becoming year-round issues. The techniques and resources that were sufficient in the past, now require supplementary efforts to achieve the same results. Departments must be adequately funded, well-trained, and properly equipped to provide effective IPM services to County staff and residents in a changing ecosystem. Stronger partnerships with research institutions such as the University of California Agriculture and Natural Resources and contracted services will be essential to implement the IPM Ordinance effectively.

For the past few years, Program staff have been assisting County departments—such as FAF, Parks, Roads and Airports, and the Health System—with various natural resource management initiatives. These initiatives include creating departmental tree inventories and management guides, conducting landscape conversion assessments, performing tree health assessments, and providing operational assistance to preserve dying trees. Additionally, they have been involved in tree planting efforts in urban County parks, implementing water conservation projects in County buildings and landscapes, and promoting regional urban forestry. Much of this work is interconnected and complementary to pest management. When approached holistically, it maximizes benefits and leads to positive impacts.

The current Integrated Pest Management Program (IPM) within the Office of Sustainability will be expanded and renamed the *Integrated Natural Resource Management Program (INRM)*. The existing IPM staff, including the IPM Program Manager and Senior Management Analyst, will lead the OSR Integrated Natural Resource Management (INRM) program.

The INRM program will provide the county organization with policy and planning support, technical assistance, capacity building, and coordination. This initiative aims to support the implementation of cross-departmental and multi-jurisdictional natural resource management efforts, aligning with the priorities identified in the plans and policies adopted by the Board regarding natural resources.

- [Sustainability Master Plan Goals #3 and #4](#): “Protect, enhance, and restore natural resources and habitats and reduce the cumulative impacts of environmental hazards.” (Adopted January 12, 2021)
- [Sustainability Landscaping Policy](#): design, construction, and maintenance of sustainable landscapes on property under County government jurisdiction. (Adopted March 22, 2016)

- [Green Stormwater Infrastructure \(GSI\) Plan](#): integrate GSI into the County’s future capital improvement program development and redevelopment activities. (Adopted September 10, 2019)
- [Urban Forestry](#): Establish a tree planting services and stewardship program and plant 1,000 annually Countywide in areas of high need. (Adopted Feb 11, 2020)
- [Drought Resilience and Water Conservation](#): develop a recommended programmatic and infrastructure plan for increasing water conservation, reuse, and efficiency in county-owned and managed facilities and grounds and unincorporated areas of the county. (Adopted Dec 9, 2021)
- Pest Management: continued systematic approach to managing pests in County buildings and landscapes as required by the County [Integrated Pest Management \(IPM\) Ordinance](#).

Program staff will manage projects and offer technical assistance to support the County’s integrated resource management initiatives, including water use management and conservation, drought resilience, green infrastructure, carbon sequestration, soil health, urban forestry, and sustainable landscaping. Several previous and ongoing INRM projects throughout the County are already focused on these core areas.

Figure 2 presents the vision for the INRM program and the 4 elements critical to program implementation. Table 3 provides the various activities that will be implemented across fire areas of the INPRM program: pest management, sustainable landscaping, urban forestry, water conservation, and carbon sequestration.

Figure 2 - Vision for the Integrated Natural Resource Management Program

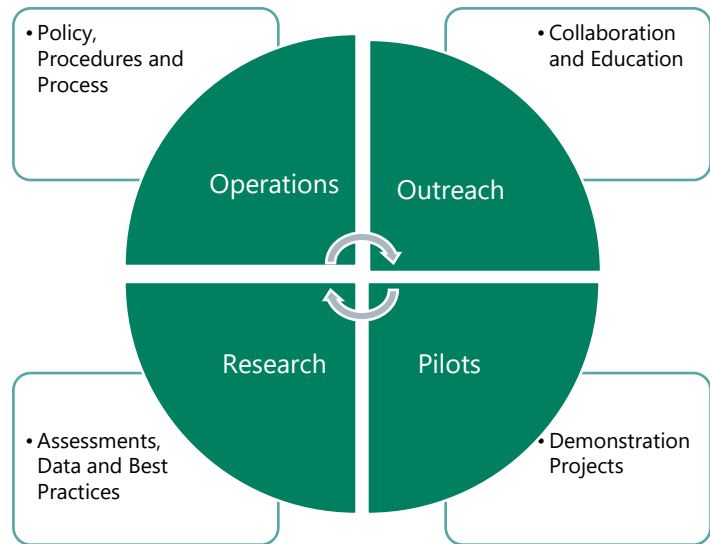


Table 3 – INRM Program Area Activities

Pest Management

- IPM Ordinance and Administrative Guidelines implementation
- Pest management systems streamlining across Depts
- Resources, best practices and trainings for Dept staff

Sustainable Landscaping

- Administrative guidelines for capital planning
- Facility landscape assessments
- Landscape and turf conversion and hydro-zoning
- Landscape operation and maintenance support
- Employee training and vocational program

Urban Forestry

- County managed Tree Health Assessments
- Tree planting space study for County Facilities
- Operation and maintenance guidance to preserve trees
- Santa Clara Urban Forestry Plan
- Countywide Collaboration through SCVUFA

Water Conservation and Drought Resilience

- Best practices, education, planning
- Updated Water Conservation Ordinance for unincorporated county with DPD
- Stormwater and Green Infrastructure projects – partner with Valley Water and County Depts

Carbon Sequestration

- Carbon Sequestration Study and Implementation projects
- Organic amendment utilization (compost, mulch, bio-char and biosolids)
- Forest woody biomass utilization

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