
Moraga wildflowers

10

CONSERVATION ELEMENT

The Conservation Element addresses Moraga's natural resources, such as vegetation, wildlife, water, and air. It identifies the natural ecosystems in the Moraga Planning Area and provides guidance for their management and protection. It provides policies to support regional, state and federal air and water quality standards and to meet state targets for solid waste diversion. This element also covers energy use in the town, emphasizing conservation and the use of renewable energy sources.

Conservation is closely aligned with the General Plan themes of sustainability and resilience. Many policies in this element are focused on reducing greenhouse gas emissions, fossil fuel consumption, and the use of non-renewable resources. The Element addresses the connections between conservation and climate change, particularly through its policies on air, water, and energy. Additionally, the Element highlights the role of environmental stewardship in creating a more resilient community, including controlling invasive species, managing vegetation to minimize fire risks, and preserving trees, riparian areas, and woodlands. Conservation is vital for maintaining Moraga's quality of life.

The Element is organized around six broad goals:

- CON-1: Protecting Natural Resources and Ecosystems
- CON-2: Water Quality and Conservation
- CON-3: Improving Air Quality
- CON-4: Reducing Solid Waste
- CON-5: Promoting Energy Conservation and Fossil-Free Energy
- CON-6: Reducing Greenhouse Gas Emissions

10.1 NATURAL COMMUNITIES AND SENSITIVE SPECIES

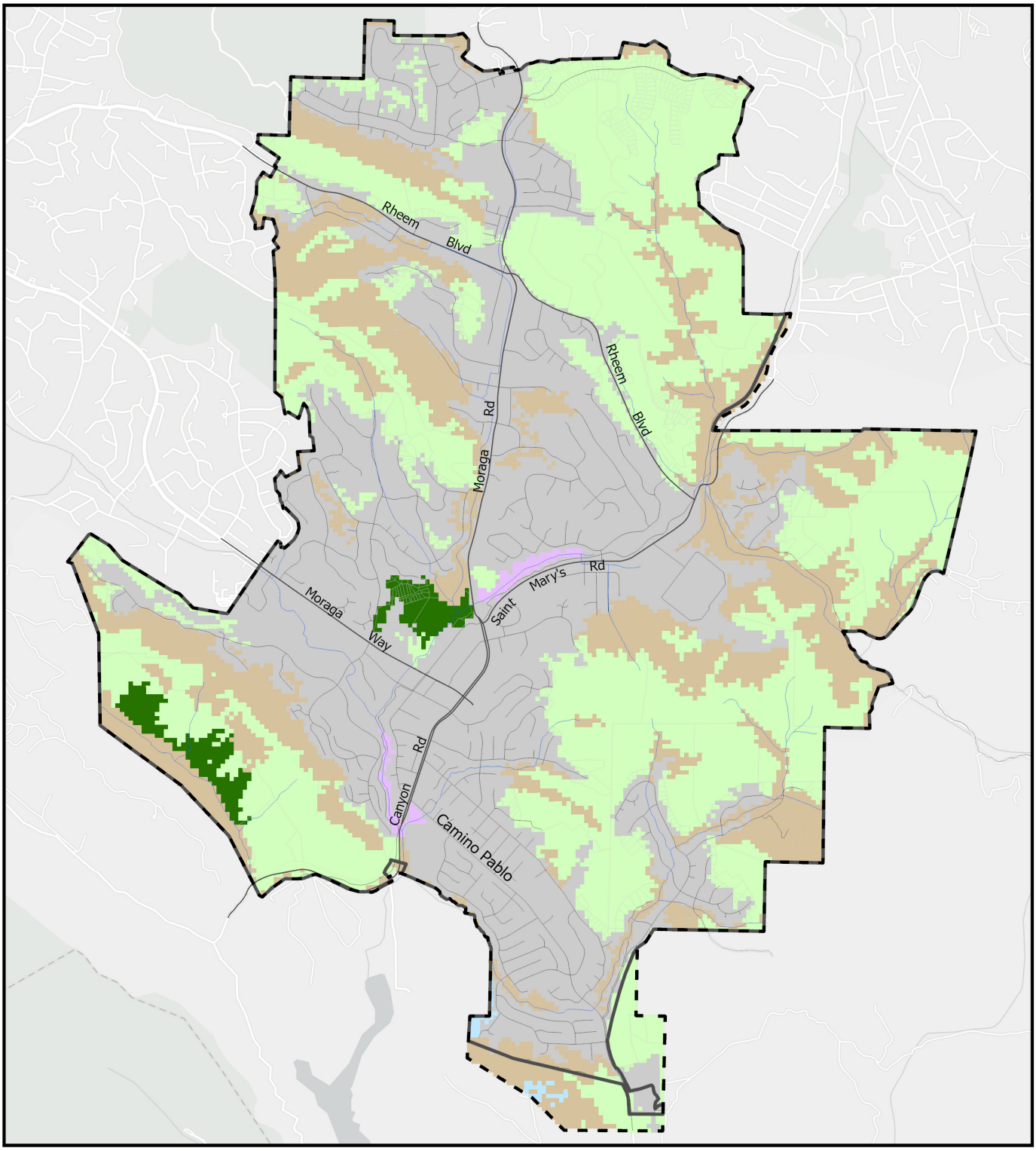
The Moraga Planning Area includes approximately equal amounts of urbanized and undeveloped lands. On open space lands, much of the native landscape has been altered by past agricultural uses, especially cattle grazing. Riparian areas along creeks and streams also have been altered. At the same time, the town still includes oak and riparian woodlands, coastal scrub, grassland, and chapparal areas, as well as urban habitat that supports plant and animal life.

Figure 10.1 shows the major natural communities in the Planning Area. Some of these communities are subject to special regulations enforced by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS), as they provide habitat for protected plants and animals.

- **Grasslands.** Grasslands are the most widely distributed natural community in Moraga, occurring on many hillsides and ridgelines. Grassland communities are frequently interspersed with other natural communities and are dominated by non-native annual grasses. Common plants include wild oats, brome grasses, wild barley, and foxtail fescue. Grasslands provide foraging habitat for a variety of wildlife, including raptors, small mammals, and reptiles.
- **Coastal Scrub.** There is a small area of coastal scrub on the southern edge of the Planning Area, dominated by coyote brush with a sparse understory of grasses. Coastal scrub has a moderately high wildlife habitat value and is considered one of the primary habitat areas for the threatened Alameda whipsnake.
- **Chaparral.** Chaparral is a dense shrub community that occurs on shallow rocky soils. It is composed of evergreen woody shrubs such as manzanita and chamise. Chaparral areas form low shrublands on the hills across California, and are able to withstand frequent fires and low water availability. This natural community provides cover, foraging, and breeding habitat for many wildlife species, including the Alameda whipsnake.
- **Oak Woodlands.** The most common oak woodland community in Moraga is dominated by coast live oaks and California bay, with an understory of grasses and poison oak. It is sometimes mixed with grassland on drier sites, and with madrone on sites with higher moisture levels. These areas are characterized by a tall, dense tree canopy with few shrubs and low-growing herbs. There are also deciduous oak areas dominated by Valley oak, black oak, and blue oak. A diverse range of species rely on oak woodlands for shelter, shade, food, and breeding habitat.
- **Riparian.** Riparian woodlands and forests are complex habitats associated with rivers, creeks, and streams. These communities are dominated by broad-leaved, winter deciduous trees such as cottonwoods, willows, elderberries, and alders. Wildlife value is typically high, as these areas provide proximity to water as well as food, cover, and breeding areas.

Downy Woodpecker at Upper San Leandro Reservoir
Photo Credit: Becky Matsubara

Figure 10.1: Vegetation and Land Cover



WIldlife Corridors

One of the greatest threats to wildlife health is fragmentation of habitat due to urban development or agriculture. Wildlife corridors—or habitat linkages—provide connections between different habitat areas that allow otherwise isolated animal populations to interact. They may serve as migration routes, connections between foraging and denning areas, and places to find food and cover. Corridors are typically continuous strips of natural areas, although landscaped areas can be used by certain species for this purpose.

Wildlife corridors can be local or regional in nature. The State of California has identified certain regional corridors as "Essential Connectivity Areas" (ECAs) and recommends that local governments use the underlying data to inform their land use plans and development decisions. Moraga lies along an ECA that extends north-south through the East Bay Hills from Wildcat Canyon in the north to Calaveras Reservoir in south. Some of the town's open spaces are part of this network, providing habitat linkages to the regional park and watershed lands to the south, east, and west of the town. Smaller scale movement corridors exist on the town's undeveloped ridgelines and along its streams.

A number of the natural communities described above include wetland areas. Wetlands are inventoried by the USFWS National Wetlands Inventory and are classified based on their aquatic features. Riverine wetlands occur along streams such as Moraga Creek and Las Trampas Creek. Some of the agricultural and open space sites in the town include freshwater forested and shrub wetlands. Wetlands are particularly important given their role in supporting wildlife, reducing flood risks, and filtering stormwater runoff.

Moraga' s diverse vegetation communities support a number of "special status species." These are species that have been identified as rare, threatened, or endangered by the state or federal Endangered Species Acts, as well as animals designated as Species of Special Concern. There are a variety of plant, invertebrate, fish, amphibian, reptile, bird, and mammal species in the Moraga Planning Area that fall into these categories.

The Moraga Comprehensive Advanced Planning Initiative EIR identified 64 special status plant species that are known to occur or have the potential to occur in the Planning Area or surrounding area. Most of the known occurrences have been recorded in open space areas such as Mulholland Ridge. The EIR further identified 48 special status wildlife species that are known to occur or have the potential to occur in the Planning Area or surrounding areas. The EIR may be consulted for the complete inventory of species.

Special status species are most likely to occur in open space and undeveloped areas. However, they may also occur in and along streams, wetlands, ponds and riparian areas in urban environments. Species potentially present include California red-legged frog, foothill yellow-legged frog, and western pond turtle. Several occurrences of the federally and state-listed Alameda whipsnake have been recorded in and around the town, primarily in open chaparral and scrub habitats. Several special status species of bats have also been observed in East Bay open spaces around Moraga.

10.2 WATER AND AIR RESOURCES

WATER RESOURCES

Moraga straddles the watershed divide between the San Leandro Creek watershed, which drains west to Upper San Leandro Reservoir and then west to San Francisco Bay, and the Las Trampas/ Walnut Creek watershed, which drains north to Suisun Bay. Both watersheds are within the San Francisco Hydrological Region, which covers approximately 4,500 square miles in the central Bay Area. **Figure 10.2** shows watershed boundaries and creeks within the Moraga Planning Area.

The principal surface waterways in the town are Moraga Creek, Laguna Creek, Rimer Creek, and Las Trampas Creek. Runoff reaches these creeks through a combination of open channels and constructed drainage systems.

Although the town is not underlain by a groundwater basin, its landscape contributes to the recharge of nearby basins. Groundwater may be recharged through surface water infiltration through permeable surfaces, with water migrating to basins underlying other parts of the East Bay.

The Town receives its water supply from East Bay Municipal Utility District (EBMUD). Approximately 90 percent of EBMUD's supply originates from the Mokelumne River watershed and 10 percent originates from protected lands in the East Bay Hills. EBMUD's supply system consists of reservoirs, aqueducts, treatment plants, pumping plants, and other distribution facilities that convey water from Pardee Reservoir to the EBMUD service area.

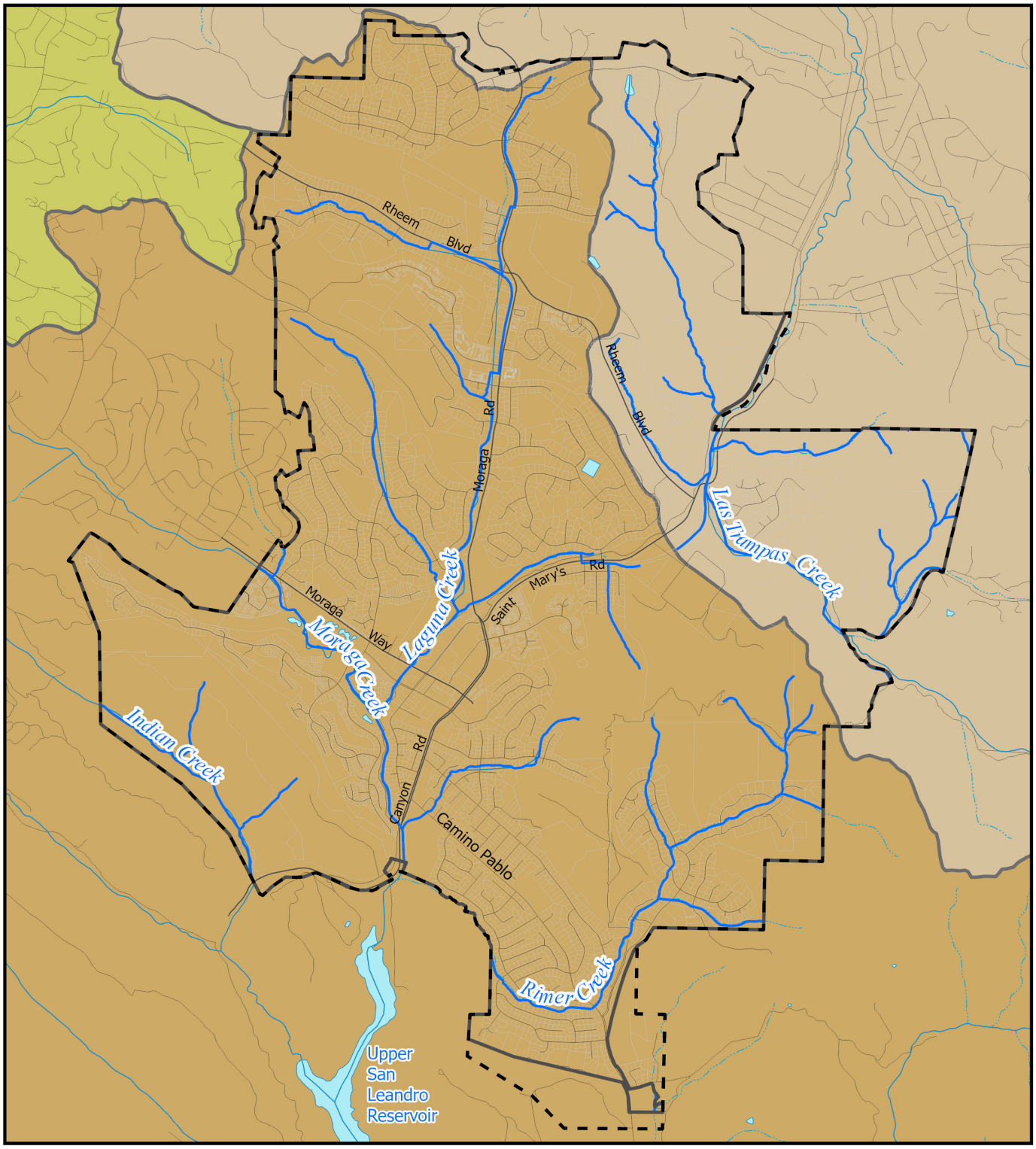
Potable water is a limited resource in California and is vulnerable to supply constraints during drought periods. EBMUD implements multiple conservation measures and programs, while State Building Codes require water efficiency in plumbing systems. Moraga has implemented the State's Model Water-Efficient Landscape Ordinance (MWELO) requirements, which include programs to reduce water waste and focus on native and drought-tolerant plants in local landscape projects.

Water quality in Moraga is governed by the San Francisco Regional Water Quality Control Board, which sets standards for surface waters and groundwater in the region. This includes maximum contaminant levels and the definition of "beneficial uses" for local waterways. For Moraga Creek and Las Trampas Creek, beneficial uses include freshwater replenishment, warm and cold freshwater habitat, species preservation, fish spawning, recreation, and wildlife habitat.

The Town is a participant in regional water quality improvement programs, which primarily target urban runoff from local streets, lawns, buildings, and open space. Rainwater and outdoor water use can wash pollutants such as pesticides, fertilizers, oil, grease, and garbage into the Town's storm drain system, and ultimately into local streams, creeks, and reservoirs. Moraga is one of 21 agencies covered by a joint permit for stormwater discharge into Contra Costa County's waterways, prohibiting the discharge of anything other than rain into the local stormwater system. The County Clean Water Program includes numerous "best management practices" designed to eliminate pollution from surface runoff. Many of these practices apply to new construction. The Town has also adopted a Storm Drain Master Plan that provides direction for compliance with Clean Water program requirements.

Creek signage on Country Club Drive at Laguna Creek

Figure 10.2: Creeks and Watersheds



AIR RESOURCES

Air quality in Moraga is influenced by climate, wind patterns, and topography, as well as the presence of local pollution sources such as highways and urban development. In hot weather, the daytime flow of marine air is sometimes capped by a dome of warm air that acts as a lid over the region. The result can be unhealthy levels of smog. In the winter, inversion layers may form when cool air pools in low elevations while the air above remains warm. Air quality issues also arise during wildfires, when smoke may be a serious and persistent threat.

Air quality in the Bay Area is regulated by state and federal agencies who administer laws establishing standards for specific pollutants. Some of these pollutants are emitted directly from a source (such as a vehicle tailpipe or a smokestack) into the atmosphere. Others, like ozone, are created through chemical and photochemical reactions in the atmosphere. The text box at right provides an overview of the major pollutants of concern in the Bay Area.

Most of the responsibility for regulating emissions in California has been delegated to regional air districts. In the San Francisco Air Basin, the Bay Area Air Quality Management District (BAAQMD) has the primary authority over stationary and indirect sources. BAAQMD is also responsible for air quality monitoring and enforcement.

The monitoring station closest to Moraga is in Concord. Ozone measurements at this station have exceeded federal and state standards during recent years, while particulate and fine particulate matter standards have exceeded federal standards. Air basins that are not in compliance with state and federal standards are classified as "non-attainment" areas for those pollutants and are required to adopt Air Quality Management Plans. These plans typically focus on reducing emissions from transportation, which is the biggest source of air pollution in the Bay Area.

Major Air Pollutants of Concern

- **Ozone** is formed by photochemical reactions between oxides of nitrogen and reactive organic gases. Elevated ozone concentrations result in reduced lung function, with particularly acute risks for the elderly, children, and those with respiratory conditions.
- **Carbon monoxide (CO)** is formed by the incomplete combustion of fossil fuels, with motor vehicles accounting for nearly all emissions. It is a colorless, odorless gas that can cause dizziness, fatigue, nervous system impairments, and death at high levels of exposure.
- **Nitrogen dioxide** is a reddish-brown gas formed from fuel combustion under high temperature or pressure. It is a component of smog and contributes to pollution problems such as poor visibility, decreased lung function, and acid rain.
- **Sulfur dioxide** is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. It irritates the respiratory tract, and can injure lung tissue when combined with fine particulate matter.
- **Particulate matter** refers to a mixture of solid particles and liquid droplets found in the air. Particles up to 10 microns in diameter are referred to as PM10, while fine particles less than 2.5 microns in diameter are called PM2.5. Particulates can be directly emitted through fuel combustion, or may be formed by blowing soil, smoke, chemical reactions, and other sources. Particulates can transport carcinogens and other toxic compounds, reduce lung function and aggravate respiratory and cardio-vascular diseases.
- **Toxic Air Contaminants (TACs)** refer to a group of pollutants that are harmful in small quantities, such as benzene, formaldehyde, and hydrogen sulfide.

10.3 SOLID WASTE, ENERGY, AND GREENHOUSE GAS EMISSIONS

SOLID WASTE

Landfilled waste disposal contributes to greenhouse gas emissions, consumes natural resources, and can threaten environmental quality. Promoting recycling and the use of recycled goods can reduce the need for raw material extraction, save energy, decrease pollution, and contribute to a cleaner environment. It also extends the life of our landfills and promotes environmental stewardship and sustainability.

The Town of Moraga is a participant in solid waste reduction initiatives administered by the Central Contra Costa Solid Waste Authority (CCCSWA, or RecycleSmart), a joint powers agency serving Moraga, Lafayette, Orinda, Walnut Creek, Danville and unincorporated areas of Central Contra Costa County. The Authority provides residential and commercial solid waste, recycling and organic services to its service area, primarily through franchise agreements with waste management vendors. Solid waste is disposed at the Keller Canyon Landfill in Pittsburg while recyclables are processed at a recycling center also located in Pittsburg. Based on CalRecycle data, Keller Canyon Landfill is anticipated to be operational through 2066.

RecycleSmart reported an annual diversion rate of 63 percent in 2023. In other words, 63 percent of the waste generated by customers in its service area was diverted from landfills. The State has set a target of diverting 75 percent of organic waste from landfills by 2025. This will require additional initiatives related to food waste reduction and recovery, education and outreach, and construction debris recycling.

Contra Costa Clean Water and Cal Recycle Educational Exhibit

Zero Net Energy

Zero net energy (ZNE) refers to a building that produces enough renewable energy to meet or exceed its annual energy consumption requirements. One major component of ZNE is to maximize energy efficiency through building design and materials, including high-performance insulation, efficient lighting, and advanced HVAC systems. The other major component is to include photovoltaics (PV) in new buildings—now mandatory in new construction in California. Creating ZNE buildings is beneficial to our climate and is also an effective way to reduce or even eliminate utility bills. It can also provide a more reliable energy source during blackouts.

ENERGY

Energy use impacts environmental quality both directly and indirectly. For centuries, we have depended on fossil fuels like oil and gas for power, transportation, and industry. These finite resources, when extracted and burned, can cause significant environmental harm. Additionally, over reliance on fossil fuels affects energy reliability, impacting both our power supply and the electrical grid.

Since 2018, residential and commercial electricity accounts in Moraga have been automatically enrolled in Marin Clean Energy (MCE), which procures power from renewable sources such as solar, wind, biogas, geothermal, and small hydroelectric plants. Pacific Gas and Electric (PG&E) delivers this electricity via its network of transmission and distribution lines. PG&E also supplies natural gas to Moraga, much of which comes from outside California via pipelines.

In 2022, the transportation sector accounted for about one-third of California's energy demand, with petroleum-based fuels making up 83 percent of this demand. To reduce petroleum use, alternative energy sources like electricity, hydrogen, and biodiesel are being promoted. State regulations are encouraging a shift from gasoline to low-emission alternatives.

Improving building efficiency is another cost-effective way to conserve energy. Simple upgrades, such as adding insulation and sealing ducts, can cut energy use by 20 percent. Other measures include installing high-efficiency heating and air conditioning, replacing windows and light bulbs, and using programmable timers. Recent changes to the building code have been made for new construction in order to achieve state goals for energy efficiency. These goals include zero net energy in new buildings, along with zero net carbon emissions by 2045 (see text box).

Energy demand can also be reduced through land use policies that minimize driving distance and dependence on motor vehicles. These policies involve placing developments near public transit, mixing residential and commercial land uses, and locating housing close to jobs to reduce commute lengths.

GREENHOUSE GAS EMISSIONS

Greenhouse gases (GHGs) are gases in the earth's atmosphere that trap heat radiated by the earth's surface. Without GHGs, the planet would be too cold for habitation. Human activities have caused an increase in greenhouse gas emissions, to the point that the planet is getting warmer.[1]

The principal GHGs contributing to human-induced climate change are carbon dioxide (CO2), methane (CH4), nitrous oxides (N2O), fluorinated

[1] See General Plan Chapter 3 (Sustainability and Climate Change) for further information.

gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). Because each type of GHG has a different impact on global warming, a common reference gas (CO2) is used to relate the amount of heat absorbed to the amount of gas emitted. This is referred to as "carbon dioxide equivalent" or CO2e.

The GHGs generated in the greatest quantities by human activities are carbon dioxide and methane. Carbon dioxide is emitted by fossil fuel combustion while methane results from off-gassing associated with agriculture and landfills. Additional GHGs are generated in smaller quantities but some have higher CO2e values and can be very impactful. As noted throughout this General Plan, the increase in GHG emissions and associated effects on our climate affect our water supply, wildfire vulnerability, storm frequency, sea level, health, and economy, as well as the survival of many species.

Based on the 2014 Moraga Climate Action Plan (CAP), the town generated an estimated 93,945 metric tons of CO2e in 2005. The largest contributor to the town's emissions was the transportation sector, accounting for 49 percent of total emissions. The next largest contributor was residential energy use with 34 percent of total emissions. The commercial sector made up 15 percent of overall emissions and included electricity and natural gas used by local businesses and schools. Solid waste sent to landfill comprised 2 percent of emissions followed by wastewater treatment, which accounted for less than 1 percent of emissions.

The 2040 General Plan recommends an update to the Moraga CAP to establish a new GHG baseline, as well as new reduction targets and strategies.

10.4 CONSERVATION GOALS AND POLICIES

GOAL CON-1: ENVIRONMENTAL QUALITY

PROTECT AND ENHANCE MORAGA'S NATURAL RESOURCES AND ECOSYSTEMS.

Policy CON-1.1: Habitat Conservation

Ensure that local planning and development decisions do not adversely affect the habitat of rare, endangered, or threatened species, and other species of special concern in Moraga and surrounding areas. When development is permitted in the vicinity of such areas, use the environmental review process to evaluate potential impacts and determine mitigation measures when necessary.

Policy CON-1.2: Areas of Natural Significance

Conserve and protect natural resource areas recognized as having significance to the Town of Moraga. These areas include but are not limited to:

(a) The remnants of Lake LaSalle on the Saint Mary's campus, which provide scenic value and wildlife habitat along Las Trampas Creek.

(b) Flicker Ridge (west of Indian Valley), for its wildlife value and unique knob-cone pine forest.

(c) The remaining laguna environment of Laguna de los Palos Colorados.

(d) Mulholland Ridge open space.

Cows along a Moraga hiking trail
Photo Credit: Zemi Omrom, Alltrails.com photo contributor

Policy CON-1.3: Protecting Creeks and Waterways

Protect the habitat value and hydrologic functions of creeks, streams, and riparian areas wherever possible. New development should recognize the carrying capacity of local waterways and minimize the potential for downstream erosion, flooding, and other adverse effects.

Policy CON-1.4: Creek Restoration

Pursue opportunities to restore and/or "daylight" creeks that have been compromised by past urban development. Within the Moraga Center and Rheem Center areas, Laguna Creek should be treated as a potential amenity and open space resource.

Policy CON-1.5: Wildlife Corridors

To the extent possible, connect open space areas so that wildlife can move freely through the area, bypass urban areas, and have access to nearby regional parks and open space systems.

Policy CON-1.6: Reintroduction of Wildlife

Consider reintroduction of wildlife species into natural areas where the outcome would be beneficial for the species and not detrimental to the environment and community.

Policy CON-1.7: Reintroduction of Native Plants

Consider reintroduction of native plant species, as well as programs to manage, reduce, or eliminate the proliferation of non-native, invasive species in natural areas. Encourage the use of native plants in landscaping plans, consistent with local ordinances.

Policy CON-1.8: Woodland Areas

Preserve or substantially maintain important woodland areas, especially with respect to their value as wildlife habitat, even if development in those areas is permitted. Give preference to the retention of native trees over tree removal and replanting. Important wooded areas in the town include, but are not limited to:

(a) Mullholland Ridge Open Space (northeast and southwest slopes), including the area behind Rheem Elementary School

(b) Indian Ridge

(c) Bollinger Canyon

(d) Saint Mary's Road, including the regional trail corridor, areas west and south of Saint Mary's Gardens, and areas north of The Bluffs

(e) East and west of Sanders Ranch, including the ridge south of Sanders Drive and the area east of Merrill Circle South.

(f) North of the terminus of Camino Ricardo.

Policy CON-1.9: Tree Preservation

Preserve and protect trees on public and private property, as they contribute to the beauty and environmental quality of the Town.

Policy CON-1.10: Urban Forest

Support, and where appropriate require, the planting and private maintenance of street trees in new development. Prioritize tree planting in the Moraga Center and Rheem Park areas to create shade and improve walkability, improve aesthetics, absorb air pollution and stormwater runoff, and provide urban habitat. Select species that are appropriate for the planting area and climate, while considering maintenance requirements, view impacts, and the potential for benefits to pollinators.

Policy CON-1.11: Quarrying

Prohibit quarrying and similar activities with the potential to erode the terrain or otherwise damage ecologically sensitive areas.

Protected watershed lands beyond Rancho Laguna Park

GOAL CON-2: WATER QUALITY AND CONSERVATION

PROTECT AND CONSERVE LOCAL AND REGIONAL WATER RESOURCES.

Policy CON-2.1: Water Quality

Protect the quality of groundwater and surface water in Moraga and the watersheds the town shares with other jurisdictions. Work collaboratively with other local and regional agencies to manage stormwater runoff in ways that reduce water pollution and improve water quality.

Policy CON-2.2: Stormwater Management

Ensure that new development complies with the stormwater management provisions of the Contra Costa County Clean Water Program. This includes stormwater retention facilities or other provisions to ensure that post-runoff conditions on any development site not exceed pre-development conditions, as well as measures to reduce non-point source pollution to local creeks and streams.

(See also Safety and Resilience Element policies on flooding under Goal S-4)

Policy CON-2.3: Management of Urban Runoff

Require Best Management Practices (BMPs) to reduce pollutants discharged to storm drains and waterways. These practices include but are not limited to reducing impervious surface coverage, respecting natural drainage patterns, using vegetation and bioswales to absorb runoff, and installing catch basins in storm drains. In new development, BMPs should consider the physical constraints of the site, potential public health and safety impacts, and economic feasibility.

Policy CON-2.4: Regulation of Pollutants

Require that activities with the potential to cause or contribute to the pollution of ground and surface waters comply with Best Management Practices and requirements to reduce water quality impacts. The accumulation, dumping, or improper discharge of trash, garbage, motor oil, and other wastes that might cause pollution shall be prohibited. In the event of a violation, require the removal of any pollutants as soon as possible.

Policy CON-2.5: Street and Gutter Maintenance

Maintain streets and gutters to prevent accumulation of debris and litter.

Policy CON-2.6: Sewer Connections

Require all development to be connected to a sewer system, with exceptions only granted where it is demonstrated that a sewer connection is infeasible, and it has been confirmed by a competent technical counsel that septic system effluent will not infiltrate underground aquifers or pollute surface waters.

Policy CON-2.7: Low Impact Development

Support the use of pervious pavement, rain gardens, bioswales, roof drains directed to cisterns, and other "low impact development" measures that capture and filter rainwater, support aquifer recharge, and reduce urban runoff.

Policy CON-2.8: Water Conservation

Require water conservation measures in new building construction and landscaping, consistent with State building codes and water-efficient landscaping requirements. Encourage other activities that support water conservation and the efficient use of water resources by Moraga residents and businesses.

Policy CON-2.9: Reclaimed Water

When and where feasible and appropriate, encourage the use of recycled wastewater ("purple pipes") for landscape irrigation and other non-potable purposes.

Policy CON-2.10: East Bay MUD Lands

Strongly encourage the continued preservation of East Bay Municipal Utility District (EBMUD) watershed lands as open space to protect water quality in area reservoirs.

Moraga hillsides

GOAL CON-3: AIR QUALITY

IMPROVE AIR QUALITY.

Policy CON-3.1: Development Design

Minimize direct and indirect emissions of air pollutants through the design and construction of new development. For example, landscaping, energy-efficient appliances, air purification systems, and similar measures may reduce direct emissions, while sidewalks and bike lanes may reduce related transportation emissions.

Policy CON-3.2: Mitigation of Air Quality Impacts

Require mitigation of air quality impacts associated with new development in a manner that is consistent with the California Environmental Quality Act. Seek input from the Bay Area Air Quality Management District (BAAQMD) on projects with the potential for significant, unavoidable air quality impacts, and consider that input when determining mitigation measures and making findings.

Policy CON-3.3: Reducing Particulate Matter

Reduce particulate matter from roads, parking lots, construction sites, and other sources. Where appropriate, require Best Available Control Technology (BACT) measures to reduce airborne dust from construction activities, demolition, grading, stockpiled soil, and truck traffic.

Policy CON-3.4: Buffering along Major Roadways

Encourage the use of vegetative buffers and building setbacks along higher-volume roadways to reduce resident exposure to air pollutants.

Policy CON-3.5: Transportation Control Measures

Consistent with other policies in this General Plan, support actions that reduce the adverse effects of the transportation network on local and regional air quality conditions. These measures include, but are not limited to:

- Increased use of electric and zero-emission vehicles, including charging stations
- More frequent and convenient public transit service, particularly to BART
- Ridesharing and vanpool programs
- An expanded pedestrian and bicycle network
- Transportation demand management measures such as flextime and working from home
- Additional opportunities for Moraga's workforce to live locally, and for residents to find essential goods and services locally without driving to other communities

Policy CON-3.6: Indoor Air Quality

Support actions that reduce problems associated with poor indoor air quality, such as mold, second-hand smoke, and other fine particulates.

Policy CON-3.7: Wildfire Smoke

Support efforts to reduce health hazards from wildfire smoke, such as limits on outdoor activities during "Spare the Air" days, access to respirators and air filtration systems, access to clean air refuge centers, and public education.

GOAL CON-4: SOLID WASTE REDUCTION

MAXIMIZE THE DIVERSION OF SOLID WASTE FROM LANDFILLS WHILE INCREASING RECYCLING, COMPOSTING, AND THE USE OF RECYCLED MATERIALS.

Policy CON-4.1: Waste Reduction

Continue collaborative efforts to divert recyclables and organic materials from landfills. Support composting and green waste recycling by residents, businesses, and public entities.

Policy CON-4.2: Expanded Participation

Support continued participation in recycling and composting programs, especially by local businesses and multi-family housing dwellers.

Policy CON-4.3: Special Waste Pickup

Support bulk waste and e-waste pickup events to provide opportunities for residents to safely dispose of these materials. Continue efforts to ensure the safe disposal of household hazardous waste.

Policy CON-4.4: Source Reduction

Support initiatives to reduce consumption and prevent waste, including programs to encourage reuse and repair (rather than disposal), reduce food waste, advocate for extended producer responsibility, and expand markets for recycled goods and products.

Policy CON-4.5: Construction and Demolition Debris

Implement CalGreen Building Code standards for recycling of construction and demolition debris.

GOAL CON-5: ENERGY CONSERVATION

PROMOTE ENERGY CONSERVATION, FOSSIL-FREE ENERGY GENERATION, AND GREATER ENERGY SECURITY.

Policy CON-5.1: Energy Conservation

Promote energy conservation in new construction through education, incentives, and standards that incorporate passive solar design, solar space and water heating, insulation, and other measures where feasible and cost effective. Promote the weatherization and retrofitting of existing homes and businesses in ways that conserve energy and reduce energy waste.

Policy CON-5.2: Energy Efficiency Standards

Require that all new buildings and additions comply with the energy efficiency standards of the California Building Standards Code (Title 24, Code of Regulations)

Policy CON-5.3: Renewable Energy

Promote expanded use of renewable energy and phasing out of fossil fuels for building heating, cooling, and power. This should include municipal clean energy initiatives as well as programs which support renewable energy use by local households and businesses.

Policy CON-5.4: Energy Innovation

Consider innovative technologies such as micro-grids, solar with battery storage, and "smart" energy systems to reduce peak demands on the power grid and manage energy more efficiently. Emphasize strategies that decrease reliance on the energy grid in the event of power shutdowns.

Policy CON-5.5: Decarbonization

Support state and regional efforts to decarbonize the energy sector, and shift toward fuel sources that do not generate greenhouse gas emissions.

(see also Policy CON-3.5 on transportation control measures to reduce trips)

Solar installation at Moraga Country Club
Photo Credit: Sun Light & Power

GOAL CON-6: GREENHOUSE GAS REDUCTION

REDUCE MORAGA'S GREENHOUSE GAS EMISSIONS AT A RATE THAT SUPPORTS ATTAINMENT OF STATEWIDE GOALS, INCLUDING CARBON NEUTRALITY BY 2045.

Policy CON-6.1: Climate Action Strategies

Pursue projects and programs such as an updated Moraga Climate Action Plan to reduce greenhouse gas emissions and establish metrics for measuring success.

Policy CON-6.2: Climate Change as a Planning Consideration

Ensure that all Town decisions related to planning, building, transportation, and capital improvements consider potential impacts associated with climate change, including potential greenhouse gas emissions.

Policy CON-6.3: Leading By Example

Undertake transportation, waste reduction, water and energy conservation, and clean energy measures for municipal operations. Identify projects supporting municipal GHG reduction, such as energy audits, LED streetlights, and cool or green roofs. Pursue grants for sustainability improvements and programs to address climate change and resilience at the local level.

Campolindo students participate in an environmental education project | Photo Credit: Save Mount Diablo

Policy CON-6.4: Transportation Sector Focus

Recognize that the primary source of greenhouse gas emissions in Moraga is the transportation sector, and that the greatest emission reduction potential is in this sector. Implement General Plan policies and programs to reduce vehicle miles traveled, improve the bicycle and pedestrian network, expand local bus service and ridesharing, support the use of electric and low-carbon emission vehicles, and implement employer trip reduction measures. Supportive policies in this Plan include CON-3.1 through CON-3.5, T-2.1 through T-2.8, and LU-1.2.

Policy CON-6.5: Buildings and GHG Emissions

Support and facilitate a transition to renewable and carbon-free energy sources in new and existing buildings, recognizing that the building sector is the second largest source of greenhouse gas emissions in Moraga. Building and construction practices for homes and businesses should include low-emissions equipment, high-efficiency and electric appliances, renewable building materials, and other measures supported by the California Green Buildings Standards Code (CALGreen) and Leadership in Energy and Environmental Design (LEED) rating system.

Policy CON-6.6: Regional Partnerships

Support and participate in regional initiatives and partnerships to reduce greenhouse gas emissions, including shifting to renewable energy sources such as solar and wind.

Policy CON-6.7: Climate Change Education and Awareness

Improve public education on climate and sustainability issues, including the steps each individual and household can take to reduce their carbon footprint. Support print and social media campaigns, websites and on-line "dashboards," special events, community-based efforts, and other initiatives that raise awareness of the climate crisis.

Policy CON-6.8: Green Infrastructure

Recognize the importance of the Town's open space network, particularly riparian and woodland areas, as "green infrastructure" that absorbs air pollutants and greenhouse gases, sequesters carbon, filters stormwater, and moderates local climate.

(see the Open Space Element for policies on open space management and maintenance)

Policy CON-6.9: Green Businesses

Consider green business programs and other recognition-based incentives that encourage private enterprises to use greener practices in their operations. Provide information to businesses about greener business practices, rebate and grant opportunities, and other available resources.

Policy CON-6.10: Local Food Production

Promote local food production, community and backyard gardens, farmers markets, and more sustainable approaches to growing and transporting food. Local food production can reduce food transportation costs, thereby reducing both food costs and related greenhouse gas emissions.

10.5 CONSERVATION IMPLEMENTATION PROGRAMS

Program CON-A: Climate Action Plan

Maintain and periodically update a Town of Moraga Climate Action Plan.

Action CON-A1: Update GHG Emissions Baseline. *Update the Town's baseline inventory of greenhouse gas (GHG) emissions. Use this data to inform targets and measures for a new Climate Action Plan.*

Action CON-A2: Climate Action Plan Update. *Update the 2014 Moraga Climate Action Plan to reflect new baseline emissions data and updated targets for the Plan's horizon year. The Plan should quantify the expected GHG reduction impacts of various measures, as well as their economic feasibility and financial impacts. The Update process should include a robust public engagement program.*

Program CON-B: Building Codes

Implement all provisions of the California Building Standards Code, as amended by Contra Costa County. These provisions support include Title 24 standards relating to energy and water conservation, renewable energy use, energy efficiency, and other measures that reduce greenhouse gas emissions. Additional green building measures may be considered as part of the Climate Action Plan Update, subject to consideration of cost impacts and community input.[2]

[2] The County of Contra Costa may consider "reach codes" that go beyond State requirements in the future, to the extent these requirements comply with state and federal law.

Program CON-C: Community Choice Aggregation (CCA)

Continue CCA agreements so that Moraga customers may receive energy from renewable sources while still receiving transmission and distribution service from PG&E.

Program CON-D: Biological Resource Surveys

Where appropriate, require biological resource surveys on development sites as part of the environmental review process. Identify measures to protect plant and animal life as needed.

Program CON-E: Stream Channel Standards

Implement Contra Costa County standards for the design and maintenance of stream channels, including development setbacks from top of bank, design and maintenance of storm drain systems and outlets, and standards related to vegetation removal, revegetation, and bank stabilization. These standards should be used as a guide for development review and should provide guidance to owners of streamside properties.

Program CON-F: County Clean Water Program Implementation/ Municipal Regional Permit

Continue to implement the County Clean Water Program, as required by the Municipal Regional Permit (MRP) issued by the Regional Water Quality Control Board and the Municipal Separate Storm Sewer System (MS4) Permit for stormwater pollution prevention. As a member agency, Moraga implements measures such as trash capture devices in storm drains and periodic street sweeping to reduce runoff pollution, and works with the County on enforcement, administration, and education related to best practices.

Program CON-G: C.3 Requirements

Implement Contra Costa County "C.3" requirements for stormwater retention and treatment on new development sites. "C.3" refers to a provision in the Municipal Regional Permit that requires local planning authorities to include source control, site design, and stormwater treatment measures in new development and redevelopment projects to address pollutant discharges and prevent increases in runoff flow.

Pollintor garden in Rancho Laguna Park

Program CON-H: Storm Drain Management and Master Plan

Implement the recommendations of the Moraga Storm Drain Master Plan. Update the Plan periodically in response to completed projects, new requirements, and changed conditions. The Plan should document current storm drain conditions, define system improvement priorities, and establish ongoing management and maintenance needs and procedures.

Program CON-I: Stormwater Management Ordinance

Implement Municipal Code provisions requiring best management practices for stormwater control, including stormwater pollution prevention plans and stormwater control plans.

Program CON-J: Recycled Water Ordinance

Implement Municipal Code provisions for recycled water, in accordance with State law.

Program CON-K: Tree Preservation Ordinance

Implement and monitor the Moraga Tree Preservation Ordinance to protect Moraga's trees. Consider amendments and updates as needed to allow exceptions for hazardous trees, utility-related tree trimming, and other essential or public safety activities.

Program CON-L: Air Quality Measures

Continue to carry out Bay Area Air Quality Management District's (BAAQMD) measures designed to attain state and federal air quality standards. At the local level, this includes transportation control measures (TCMs) aimed at reducing motor vehicle emissions, including zero emission vehicle infrastructure, improvements to bicycle and pedestrian facilities, advocacy for improved transit, employer-based carpools, and mixed-use development in the commercial centers.

Interpretive signage on Moraga wildlife

Program CON-M: Solid Waste Reduction and Recycling Program

Continue to implement solid waste reduction and recycling program measures, including recycling and composting programs administered through the Central Contra Costa Solid Waste Authority. Participate in education and outreach efforts related to the importance and benefits of waste reduction, and to the proper methods for sorting and handling of discarded materials such as food scraps, recyclables, and yard trimmings.

Program CON-N: Agency Outreach and Education

Support efforts by partner agencies providing solid waste, water, sewer, and energy services to expand public awareness of resource conservation, sustainability, and environmental protection issues and activities.

Program CON-O: Town Outreach and Education

Maintain a Town sustainability website, including links and resources for residents and businesses. Encourage ongoing partnerships and communication with local environmental and climate advocacy organizations, and the engagement of these organizations in civic affairs.

The following programs in other elements also implement Conservation policies (Program IDs are shown in parentheses):

- Development Review (LU-C)
- Environmental Review/ CEQA compliance (LU-E)
- Zoning Ordinance (LU-B)
- General Plan Diagram (LU-A)
- Hillside Development Permits (LU-H)
- Water Efficient Landscaping (CD-H)
- CalGreen (CD-M)
- TSM Ordinance (T-I)
- Hillside and Ridgeline Ordinance (OSP-B)
- Grading Ordinance (OSP-C)