4 CONSERVATION AND OPEN SPACE ELEMENT

State law requires that a General Plan include both a Conservation Element and an Open Space Element. The State-mandated Conservation Element is concerned with the conservation of natural resources, including plants and animal wildlife, water bodies and watersheds, forests, soils, minerals, and energy conservation. Since most natural resources are located in open space land, the City of Vacaville General Plan combines these two elements into one.

The purpose of the Conservation and Open Space Element is to ensure the comprehensive and long-range preservation and management of open space lands in and around the city for the protection of natural resources and as a scenic resource. The recreation amenities of open space lands are addressed in the Parks and Recreation Element. This Conservation and Open Space Element also addresses the protection of cultural resources, including paleontological resources, archaeological resources, historic resources, and Native American cultural resources. Lastly, this Element addresses air quality because clean air is an important natural resource and a vital component of a healthy environment.

This Element is divided into the following sections:

- Biological Resources
- Agricultural Resources
- Cultural Resources
- Scenic Resources
- Greenhouse Gases
- Energy Conservation
- Air Quality
- Water Resources
- Military Installations
- Mineral Resources

Each of these sections is divided into the following two subsections:

- **Background Information:** Provides background information about the various resources within Vacaville.
- **Goals, Policies, and Actions:** A list of goals, policies, and actions that provide guidance to the city related to decisions affecting the open space and resources addressed in this Element.

Requirements for the Conservation Element are established in Government Code Section 65302[d]. General Plans are to address "the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources." Water as a hydraulic force,

commercial fisheries, and harbors are not issues in Vacaville's Planning Area, and therefore are not addressed in this Element.

The State-mandated Open Space Element is concerned with the management of open space resources. Open space is defined as any parcel or area of public or private land or water that is essentially unimproved and undeveloped. Government Code Section 65560 describes six categories of open space:

- Open Space for the Preservation of Natural Resources
- Open Space for the Managed Production of Resources
- Open Space for Outdoor Recreation
- Open Space for Public Health and Safety
- Open Space in Support of the Mission of Military Installations
- Open Space for the Protection of Native American Sacred Sites

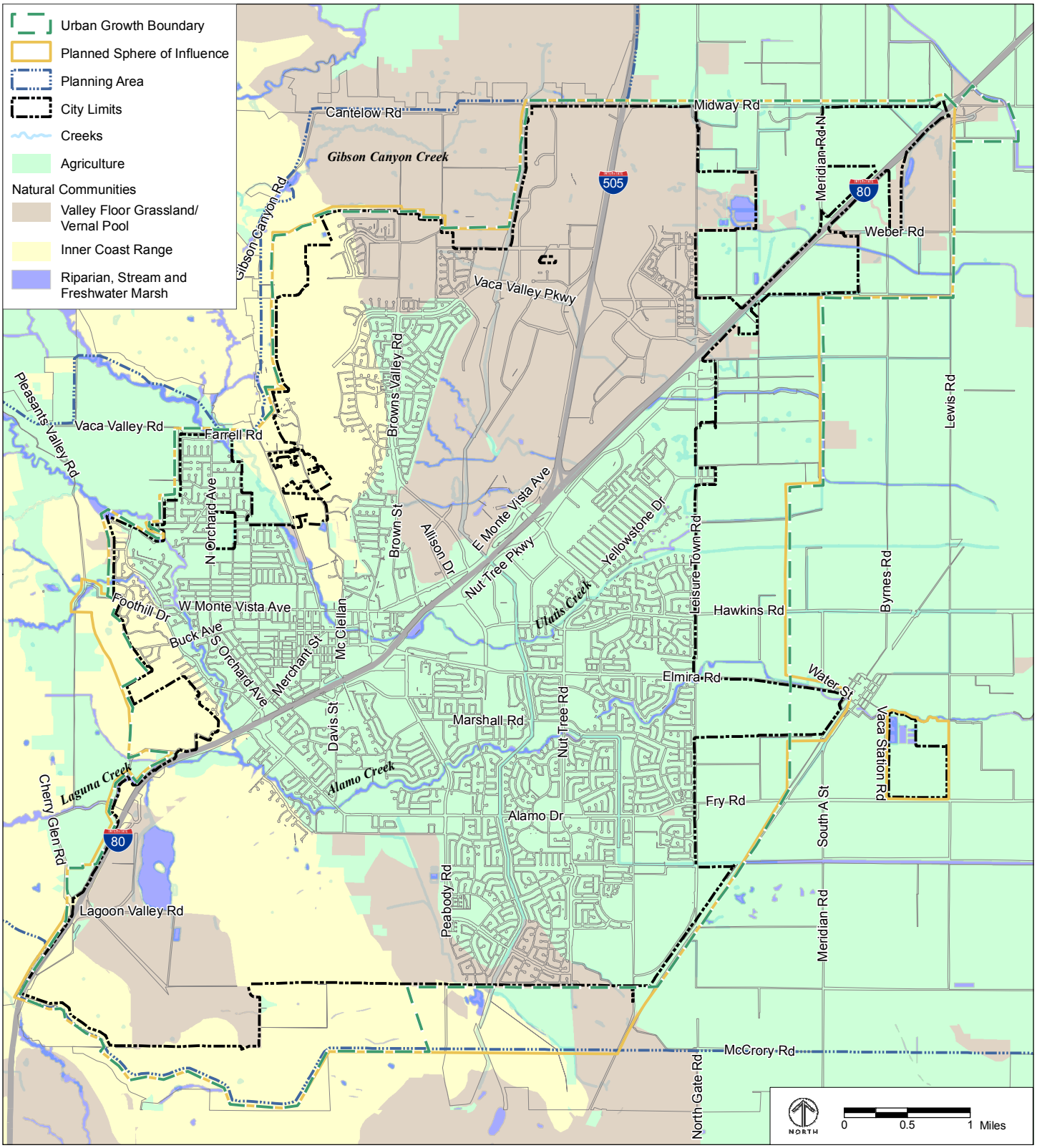
The types of open space in each of these categories and where they are addressed in this General Plan are identified in Table COS-1. Although the Government Code establishes what topics must be included in the Open Space Element, it does not dictate a specific organization for the Element.

Biological and Natural Resources

Background Information

Located at the transition zone between the Sacramento Valley to the east, and the Coast Ranges to the west, Vacaville features a rich diversity of plant and animal species and ***habitats***, which are the physical locations or types of environments in which an organism or biological population lives or occurs. As shown in Figure COS-1, in addition to agricultural areas, the city contains three broad ***natural community*** types – a distinctive group of different organisms that inhabit a common environment, interact with each other, and are relatively independent of other groups – that encompass a wide range of habitats. The distinction between the following natural community types and agriculture is based on soil types, land form, and land use.

- **Valley Floor Grassland and Vernal Pool Natural Community.** This community includes areas that currently support, or have historically supported, vernal pool habitats surrounding grasslands. This community includes known wetlands, including in the areas around Interstate 505 that are subject to various business park policy plans.
- **Inner Coast Range Natural Community.** This community consists of ridges and valleys within the Inner Coast Range that contain a number of plant communities, including grassland, oak woodland, oak savanna, and mixed chaparral/scrub brush.



SOURCE: Solano Habitat Conservation Plan (June 2012).

FIGURE COS-1
NATURAL COMMUNITY BOUNDARIES

TABLE COS-1 **GOVERNMENT CODE OPEN SPACE CATEGORIES**

Category	Addressed In:
Open Space for the Preservation of Natural Resources	
Plant and animal habitat areas	Conservation and Open Space Element, Biological and Natural Resources Section
Rivers, streams, lakes, and their banks	
Watershed lands	
Areas required for ecologic and other scientific purposes	
Open Space Used for the Managed Production of Resources	
Agricultural lands and rangelands	Conservation and Open Space Element, Agricultural Lands Section
Forest and timber lands	
Mineral resource production areas	Conservation and Open Space Element, Mineral Resources Section
Open Space for Outdoor Recreation	
Areas of outstanding historic or cultural value	Conservation and Open Space Element, Cultural Resources Section
Parks and other areas used for recreation	Parks and Recreation Element
Areas of outstanding scenic value	Conservation and Open Space Element, Scenic Resources Section
Scenic corridors, trails, and links between different open space areas	
Open Space for Public Health and Safety	
Areas requiring special management or regulation because of risks presented by natural hazards such as earthquakes or flooding	Safety Element
Open Space in Support of the Mission of Military Installations	
Areas associated with military bases	Conservation and Open Space Element, Military Installations Section
Open Space for the Protection of Native American Sacred Sites	
Local tribal lands	Conservation and Open Space Element, Cultural Resources Section
Any Native American cultural sites	

- **Riparian, Stream, and Freshwater Marsh Natural Community.** This community occurs within the other natural communities and encompasses all freshwater, aquatic, marsh, and riparian habitats. Alamo Creek and Ulatis Creek, two major riparian and stream habitats in Vacaville, have well-developed riparian plant communities, but the majority of the areas in Vacaville are dominated by non-native species. Although the riparian habitat within the city is narrow and characterized by a mix of native and non-native trees and shrubs, it provides important habitat linking the Vaca Mountains to the valley floor.

These three community types mirror those identified in the countywide Solano ***Habitat Conservation Plan (HCP)***, which is discussed further below. Though not officially classified as a formal community, intensive agriculture is a community that makes up a significant portion of the Vacaville area. It offers critical contributions to the natural environment, including important foraging and nesting habitat for many species, such as the Swainson's hawk and burrowing owl.

As a result of these diverse communities, varied and abundant wildlife occurs within and around the city. Since this diversity of natural communities and fauna includes many endangered, threatened, special-status, or otherwise sensitive species and habitats, Vacaville has implemented policies and actions to protect and conserve key areas and the overall natural environment, and is currently participating in the countywide HCP effort, as described below. In addition, in 1989, Vacaville adopted Resolution 1989-J-5, which approved the City's Creekways Policy. The Creekways Policy document addresses public access, open space, and drainage management along creeks.

Vacaville is a member agency for the Solano HCP. The HCP effectively shifts endangered species regulations compliance from the federal and State level, including the federal and State Endangered Species Acts, to the local level under the authority of a well-regulated, regional plan. The federal ***Endangered Species Act (ESA)*** protects listed animal species from "take," which is broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct." Plants are legally protected under the ESA if take occurs on federal land or from federal actions, such as issuing a wetland fill permit. The federal ESA is administered by the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The ***California Endangered Species Act (CESA)*** also protects listed species from "take." The State and federal lists of threatened and endangered species are generally similar; however, a species present on one list may be absent from the other. CESA regulations are also somewhat different from the federal ESA in that the State regulations include threatened and endangered plants on non-federal lands within the definition of "take." The California Department of Fish and Wildlife (CDFW) administers CESA.

The HCP addresses 37 threatened and endangered species, many of which occur in and around Vacaville, such as the Swainson's hawk, burrowing owl, vernal pool fairy shrimp, and California tiger salamander. The HCP will implement conservation measures to ensure the protection of these species and their habitat within the HCP area. In addition, the HCP conservation actions provide significant benefit for an additional 35 species identified as "Special Management Species." Special Management Species include species that may be considered by the ***California Environmental Quality Act (CEQA)*** – California legislation that requires environmental review for projects anticipated to result in adverse impacts to the environment – to be threatened or endangered, but insufficient information is available on their status to receive the protections and assurances provided through federal HCP regulations. Table COS-2 includes the threatened and endangered species and Special Management Species addressed in the Solano HCP that are known or could potentially occur in the Vacaville area. Table COS-2 also identifies other special status species potentially present in the Vacaville area that are not addressed in the Solano HCP.

TABLE COS-2 **SPECIAL STATUS SPECIES IN THE VACAVILLE AREA**

Common Name (*Scientific Name*)	Status Federal/ State/RPR	Natural Community Associations
Ferris's milk-vetch *Astragalus tener var. ferrisiae*	–/–/1B	VFG&VP
Alkali milk-vetch *Astragalus tener. var. tener*	–/–/1B	VFG&VP
Heartscale *Atriplex cordulata*	–/–/1B	VFG&VP
Brittlescale *Atriplex depressa*	–/–/1B	VFG&VP
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B	VFG&VP
Vernal pool smallscale *Atriplex persistens*	–/–/1B	VFG&VP
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	–/–/1B	ICR
Big tarplant *Blepharizonia plumose*	–/–/1B	ICR
Mt. Diablo fairy-lantern *Calochortus pulchellus*	–/–/1B	ICR
Holly-leaved ceanothus *Ceanothus purpureus*	–/–/1B	ICR
Pappose tarplant *Centromadia parryi* ssp. *parryi*	–/–/1B	VFG&VP
Hispid bird's-beak *Cordylanthus mollis* ssp. *mollis*	–/–/1B	VFG&VP
Recurved larkspur *Delphinium recurvatum*	–/–/1B	VFG&VP
Dwarf downingia *Downingia pusilla*	–/–/1B	VFG&VP
Mt. Diablo buckwheat *Eriogonum truncatum*	–/–/1B	ICR
Fragrant fritillary *Fritillaria liliacea*	–/–/1B	ICR and VFG&VP
Adobe-lily *Fritillaria pluriflora*	–/–/1B	ICR
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–/SE/1B	VFG&VP
Brewer's western flax *Hesperolinon breweri*	–/–/1B	ICR
Carquinez goldenbush *Isocoma arguta*	–/–/1B	VFG&VP
Northern California black walnut *Juglans hindsii*	–/–/1B	ICR
Contra Costa goldfields *Lasthenia conjugens*	FE/–/1B	VFG&VP
Legenere *Legenere limosa*	–/–/1B	VFG&VP
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	–/–/1B	VFG&VP
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	–/–/1B	VFG&VP
Colusa grass *Neostapfia colusana*	FT/SE/1B	VFG&VP
San Joaquin Valley orcutt grass *Orcuttia inaequalis*	FT/SE/1B	VFG&VP
Bearded popcorn-flower *Plagiobothrys hystriculus*	–/–/1A	VFG&VP
Rayless ragwort *Senecio aphanactis*	–/–/2	ICR
Slender-leaved pondweed *Stuckenia filiformis*	-/-/2	RSFWM
Showy Indian clover *Trifolium amoenum*	FE/–/1B	ICR
Saline clover *Trifolium depauperatum* var. *hydrophilum*	–/–/1B	VFG&VP

TABLE COS-2 **THREATENED, ENDANGERED, AND SPECIAL MANAGEMENT SPECIES** *(CONTINUED)*

Common Name (*Scientific Name*)	Status Federal/ State/RPR	Natural Community Associations
Crampton's tuctoria or Solano grass *Tuctoria mucronata*	FE/SE/1B	VFG&VP
Animals		
Invertebrates		
Conservancy Fairy Shrimp *(Branchinecta conservation)*	FE / –	VFG&VP
Vernal pool Fairy Shrimp *(Branchinecta lynchi)*	FT / –	VFG&VP
Mid Valley Fairy Shrimp *(Branchinecta mesovalleyensis)*		VFG&VP
Delta Green Ground Beetle *(Elaphrus viridis)*	FE and CH / –	VFG&VP
Valley Elderberry Longhorn Beetle *(Desmocerus californicus dimorphus)*	FT and CH / –	RSFWM
Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)	– / –	VFG&VP
Vernal pool Tadpole Shrimp *(Lepidurus packardi)*	FT / –	VFG&VP
Wilbur Springs shore bug *Saldula usingeri*	- / -	RSFWM
Fish		
Chinook Salmon - Winter-run *Oncorhynchus tshawtyscha*	FE / SE	RSFWM
Chinook Salmon-Central Valley fall/late fall-run Evolutionary Significant Unit (ESU) *Oncorhynchus tshawtyscha*	Candidate / –	RSFWM
Chinook Salmon – Spring-Run *Oncorhynchus tshawtyscha*	FT / CSC	RSFWM
Steelhead – Central California Coast ESU *Oncorhynchus mykiss*	FT / –	RSFWM
Amphibians/Reptiles		
California tiger salamander (*Ambystoma californiense*)	FT/ ST	VFG&VP and ICR
Western pond turtle (*Actinemys marmorata*)	– /CSC	RSFWM, ICR, and VFG&VP
Foothill yellow-legged frog (*Rana boylii*)	– / CSC	RSFWM and ICR
Birds		
Tricolored blackbird (*Agelaius tricolor)*	– / CSC	RSFWM, VFG&VP, ICR, & Agriculture
Swainson's Hawk (*Buteo swainsoni*)	– / ST	Agriculture, VFG&VP, ICR, & RSFWM
Mountain Plover *Charadrius montanus*	– / CSC	VFG&VP,
Short-eared owl (*Asio flammeus*)	– / CSC	Agriculture, RSFWM, & VFG&VP
Golden eagle (*Aquila chrysaetos*)	– / CSC; CP	ICR & VFG&VP
Burrowing owl (*Athene cunicularia)*	– / CSC	Agriculture, VFG&VP, and ICR
Northern harrier (*Circus cyaneus)*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture
Yellow warbler (*Dendroica petechia brewsteri*)	–/ CSC	RSFWM
Yellow-breasted Chat *Icteria virens*	–/ CSC	RSFWM
White-tailed kite (*Elanus leucurus*)	– / CP	RSFWM, VFG&VP, ICR, and Agriculture

TABLE COS-2 **THREATENED, ENDANGERED, AND SPECIAL MANAGEMENT SPECIES** *(CONTINUED)*

Common Name (*Scientific Name*)	**Status Federal/ State/RPR**	**Natural Community Associations**
Grasshopper sparrow *Ammodramus savannarum*	–/ CSC	VFG&VP
Song sparrow-Modesto population *Melospiza melodia*	–/ CSC	RSFWM and VFG&VP
American peregrine falcon (*Falco peregrinus anatum*)	Delisted/SE	
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture
Loggerhead shrike *Lanius ludovicianus*	– / CSC	VFG&VP, ICR, Agriculture, and RSFWM
Mammals		
Pallid bat *Antrozous pallidus*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture
Townsend's big-eared bat *Corynorhinus townsendii*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture
Greater western mastiff-bat *Eumops perotis californicus*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture
Western red bat *Lasiurus blossevillii*	– / CSC	RSFWM, VFG&VP, ICR, and Agriculture

Status Designations

Federal:
FE = Listed as "endangered" under the federal Endangered Species Act.
FT = Listed as "threatened" under the federal Endangered Species Act.
PE = Proposed for federal listing as "endangered."
PT = Proposed for federal listing as "threatened."
C = A candidate species under review for federal listing Candidates include taxa (i.e. taxonomic categories) for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.

State:
SE = Listed as "endangered" under the California Endangered Species Act.
ST = Listed as "threatened" under the California Endangered Species Act.
CP = California fully protected species; individual may not be possessed or taken at any time.
CSC = Considered a "Species of Special Concern" by the CDFW.

California Rare Plant Rank (RPR)
1A = Plants of highest priority; plants presumed extinct in California.
1B = Plants of highest priority; plants rare and endangered in California and elsewhere.
2 = Plants rare, threatened, or endangered in California, but more common elsewhere.
3 = Plants requiring additional information; a review list.
4 = Plants of limited distribution; a watch list.

Natural Community Abbreviations
VFG&VP = Valley floor grassland and vernal pool
ICR = Inner coast range
RSFWM = Riparian, stream, and freshwater marsh

Goals, Policies, and Actions

Goal COS-1	**Protect and enhance habitat for sensitive species and natural communities.**

Policies

Policy COS-P1.1 Support the Solano County Water Agency and federal and State agencies' efforts to prepare and implement the Solano Habitat Conservation Plan (HCP).

Policy COS-P1.2 Manage natural open space lands, where feasible, in a manner consistent with wildlife protection.

Policy COS-P1.3 Protect the existing wildlife movement corridors within the designated Vacaville-Fairfield Greenbelt area and create new wildlife corridors, including creek corridors and utility easements, where feasible, to enable free movement of animals, to minimize wildlife-urban conflicts, and to establish open space linkages.

Policy COS-P1.4 Continue to protect mature trees and existing native non-agricultural trees.

Policy COS-P1.5 Require new development proposals to provide baseline assessments prepared by qualified biologists. The assessment shall contain sufficient detail to characterize the resources on, and adjacent to, the development site. The assessment shall also identify the presence of important and sensitive resources, such as wetlands, riparian habitats, and rare, threatened, or endangered species affected by the development.

Policy COS-P1.6 Require that new development minimize the disturbance of natural habitats and vegetation. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.

Policy COS-P1.7 Encourage new development to incorporate native vegetation into landscape plans.

Policy COS-P1.8 Prohibit the use of invasive, non-native species, as identified by the State or County Department of Agriculture or other authoritative sources, in landscaping on public property or in common areas in private developments.

Policy COS-P1.9 Require that new development include provisions to protect and preserve wetland habitats that meet one of the following conditions:

- The wetlands contribute to the habitat quality and value of reserve/preserve lands established or expected to be established in perpetuity for conservation purposes.
- The wetlands are contiguous to riparian or stream corridors, or other permanently protected lands.
- The wetlands are located within or contiguous to other high value natural areas.

Policy COS-P1.10 Where avoidance of wetlands is not practicable or does not contribute to long-term conservation of the resources, require new development to provide for off-site mitigation that results in no net loss of wetland acreage and functional value within the watersheds draining to the Delta or Suisun Marsh.

Policy COS-P1.11 Require that, as appropriate, new policy plans or specific plans contain a resource management component and associated funding mechanisms that includes policies to protect preserved natural communities.

Policy COS-P1.12 Until the Solano Habitat Conservation Plan (HCP) is adopted, comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano HCP (see Appendix A for a list of the Avoidance and Minimization Measures that are applicable to Vacaville). In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Wildlife (2081 Individual Take Permit) and US Fish and Wildlife Service (Section 7 Take Authorization) prior to receiving grading permits or other approvals that would permit land disturbing activities and conversion of habitats or impacts to protected species. In cases where environmental review indicates that such permits may not be required, the Community Development Director may establish time limits of not less than 45 days from the submission of an adequate request for concurrence response from an agency. If the agency has not responded, or requested a time extension of no more than 90 days to complete their assessment, within the established time frame, applicable grading permits or other authorizations may be provided, subject to other City requirements and review. However, the City's issuance of grading permits or other authorizations does not absolve the applicant's obligations to comply with all other State and federal laws and regulations.

Policy COS-P1.13 Require that new development avoid the loss of special-status bat species as feasible.

Policy COS-P1.14 Require that new development that would result in the loss or conversion of woodland resources develop and implement a plan that clusters impacts

in order to reduce tree removal and impacts to trees to the maximum extent feasible.

Actions

Action COS-A1.1 Adopt and implement the requirements of the Solano Habitat Conservation Plan (HCP) once it is approved. If the Solano HCP is not adopted, develop standardized policies for conserving natural communities affected by development.

Action COS-A1.2 Develop and implement programs to identify invasive, non-native species and prohibit the use of such species in landscaping in order to prevent them from becoming established or expanding their populations within the city.

Action COS-A1.3 Amend Section 14.09.131, Supplemental Standards, Tree Preservation, of the Land Use and Development Code to include tree protection measures for native trees and woodland habitat.

Action COS-A1.4 Amend the Land Use and Development Code to require all new specific plans, and the Residential Design Requirements for New Single-Family Development to include a resource management component that protects and preserves natural communities, encourages the use of native drought-resistant California vegetation in landscape plans, and establishes street tree planting standards for new development.

Action COS-A1.5 Adopt a citywide open space management plan that identifies ways to protect wildlife, including the protection and enhancement of existing wildlife movement corridors.

Action COS-A1.6 Amend the Land Use and Development Code to establish the following protections for special-status bat species:

- An approved biologist shall conduct pre-construction roost surveys between March 1 and August 31 to identify any roosting bats, and ensure that surveys are conducted within 30 days prior to the anticipated removal of habitat.
- If a maternity roost is encountered during a pre-construction survey, demolition of the roost shall wait until September 15 when the young can live independently of the adults. Prior to demolition, the bats shall be excluded by an experienced expert. If the roost is not a maternity roost, then the bats shall be excluded from the roost by the certified expert prior to demolition.
- A bat roost shall be recreated within 5 miles of the project site. A conservation easement shall be placed on the mitigation bat roost to

ensure that it is not destroyed. The bat roost shall be monitored until it can be demonstrated that bats have used the mitigation roost for three consecutive years. An endowment shall be established in sufficient quantity to provide for the maintenance of the bat roost. The City of Vacaville shall approve the quantity of the endowment.

Action COS-A1.7 Amend the Land Use and Development Code to require that new development mitigate all impacted oak woodland and oak savanna habitats by preserving oak woodland and oak savanna habitat with similar tree canopy densities at a 3:1 ratio (preservation: impact).

Action COS-A1.8 Amend the Land Use and Development Code to require that applicants for development projects that would impact oak woodland and oak savanna prepare and implement a long-term management plan for oak woodland and oak savanna areas that are protected as open space and a mitigation plan to address short-term impacts. Funding for the short-term mitigation and long-term management of these areas shall also be provided. The plans, at a minimum, shall incorporate the following:

- The plans shall be prepared by a qualified person(s) experienced in the development and implementation of grassland and oak woodland restoration, mitigation, and management plans.
- A mitigation plan for an oak woodland area shall include vegetation management, site preparation, exotic species removal, site grading, erosion control, and revegetation of disturbed areas outside of development envelopes. Any revegetation program shall use plant materials indigenous to this region.
- The mitigation plan shall specify a construction and five-year post-construction maintenance and monitoring program by a qualified restoration team to ensure that the project goals and performance standards are met. The monitoring program shall include provisions for remedial action as needed to correct deficiencies. Annual reports and a final report, prepared by the property owner and subject to approval by the local lead agency and the Department of Fish and Game, shall document the success of the revegetation. If the revegetation is not successful, an additional period of correction and monitoring shall be specified.
- The management plan shall clearly identify the plan's goals focusing on vegetation (e.g. stability, succession, reproduction, and non-native species) and wildlife (e.g. habitat quality and species diversity) issues.

- The management plan shall specify maintenance requirements and the responsibility for implementation, long term ownership and/or management responsibility, and a funding mechanism.

Action COS-A1.9 Amend Chapter 14.09.131 of the Land Use and Development Code (Tree Preservation) to require the replacement of protected trees removed as part of a new development project as follows:

- Native Trees:
  - Native trees with a diameter at breast height (dbh) of 6 to 10 inches shall be replaced at a ratio of two replacement trees to one removed tree (2:1).
  - Native trees with a dbh of 10.1 to 18 inches shall be replaced at a ratio of 4:1.
  - Native trees with a dbh of 18.1 to 36 inches shall be replaced at a ratio of 6:1.
  - Native trees with a dbh over 36 inches shall be replaced at a ratio of 8:1.
- Non-Native Trees:
  - Trees with a dbh of 6 to 10 inches shall be replaced at a ratio of 1:1.
  - Trees with a dbh of 10.1 to 18 inches shall be replaced at a ratio of 2:1.
  - Trees with a dbh of 18.1 to 36 inches shall be replaced at a ratio of 3:1.
  - Trees with a dbh over 36 inches shall be replaced at a ratio of 4:1.

City staff shall address mitigation for the removal of eucalyptus trees on a case-by-case basis.

The mitigation trees shall be derived from local stock. A mitigation plan shall be developed by a biologist or professional arborist in order to ensure the long-term survival of the native plantings and City staff shall review mitigation plans on a case-by-case basis. The mitigation plan shall include the location of planting, planting techniques, need for irrigation, monitoring, maintenance, performance standards, and annual reporting. Monitoring shall be done for at least five years after planting to verify that at five years after planting, 80 percent of planted replacement trees shall be established. "Established trees" means trees that are not hazardous, diseased, or a nuisance.

Action COS-A1.10 Amend Chapter 14.09.131 of the Land Use and Development Code (Tree Preservation) to require that a tree protection zone be established on a new development site adjacent to work areas to mitigate potential damage to native trees on the site during construction activities. Usually a tree protection zone encompasses the edge of the canopy. A professional arborist shall be consulted prior to construction regarding the specifications of the tree protection zone and the appropriate care for trees before, during, and after construction. Trees whose roots are damaged by the project shall be monitored for five years after the end of construction. Those trees that die within the five-year monitoring period shall be replaced with three native trees. These new replacement trees shall be covered by the mitigation plan described in Action COS-A1.8.

Goal COS-2 Preserve and restore Vacaville's creeks.

Policies

Policy COS-P2.1 Discourage undergrounding of creeks and encourage daylighting of existing culverted creeks.

Policy COS-P2.2 Protect existing stream channels and riparian vegetation by requiring buffering or landscaped setbacks and storm runoff interception.

Policy COS-P2.3 Require creekway and riparian area protection during construction, such as providing adequate setbacks from the creek bank and riparian areas, and creekway and riparian area restoration after construction.

Policy COS-P2.4 Implement the City's Creekways Policy in all new development approvals to balance recreation and conservation within creekway areas. Integrate creeks with trails and other recreational open space, and encourage public access along creek corridors where compatible with protection of the creek's natural resources and flood control functions.

Policy COS-P2.5 Encourage restoration and expansion of riparian and floodplain habitat within channelized streams and flood channels where feasible, such as old Alamo Creek and old Ulatis Creek channels east of Leisure Town Road.

Policy COS-P2.6 Promote invasive species control programs to reduce potential for infestations to occur and incorporate control programs as part of on-going operational and maintenance activities along creek corridors.

Policy COS-P2.7 Require creek areas in new developments to be visible from the public right-of-way to ensure safety, maintenance, access, and integration into the neighborhood.

Actions

Action COS-A2.1 Develop a creek protection ordinance requiring development setbacks from creeks and protection of the creeks and associated riparian habitats during construction, and restoration after construction. As part of this ordinance, implement programs to limit invasive non-native species from becoming established or expanding within the city, and evaluate public access along creekways to ensure protection of habitat resources and to ensure public safety within creek setback areas. Update the City's Creekways Policy to be consistent with the creek protection ordinance.

Action COS-A2.2 Establish a single maintenance district to ensure uniform maintenance, management, and invasive species control for selected channels and creeks.

Agricultural Lands

Background Information

Like most cities in Solano County, Vacaville was built on agricultural land. Whereas the city's economy once thrived on agriculture, the city has since become urban and diversified. The economic importance of agriculture within Vacaville has diminished, as illustrated by the very few remaining agricultural acres within the city limit. However, given the importance of agriculture in the region, agriculture still contributes to Vacaville's economy and culture.

A significant amount of agricultural land exists immediately outside of the Vacaville city limit and within the Planning Area. The State Department of Conservation (DOC) maps and categorizes farmland within the State. Within the Planning Area, the DOC identifies prime farmland, farmland of statewide importance, unique farmland, and grazing land; these classifications are described as follows:

- ***Prime Farmland*** has the best combination of physical and chemical features able to sustain long-term agricultural production. Prime farmland has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agriculture production at some time during the four years prior to the mapping date.
- ***Farmland of Statewide Importance*** is similar to prime farmland, but with minor shortcomings, such as steeper slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- ***Unique Farmland*** consists of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been farmed at some time during the four years prior to the mapping date.

- ***Grazing Land*** is the land on which the existing vegetation is suited to the grazing of livestock.

The majority of agricultural land within the Planning Area is classified as prime farmland. Table COS-3 lists the number of acres within the Planning Area in each classification. As shown in Figure COS-2, most of the prime farmland is located on the eastern side of the Planning Area. Throughout the western and southern limits of the Planning Area, the agricultural land is predominantly grazing land, with the exception of prime farmland along Vaca Valley Road, west of the city limit and between Cherry Glen Road and Interstate 80.

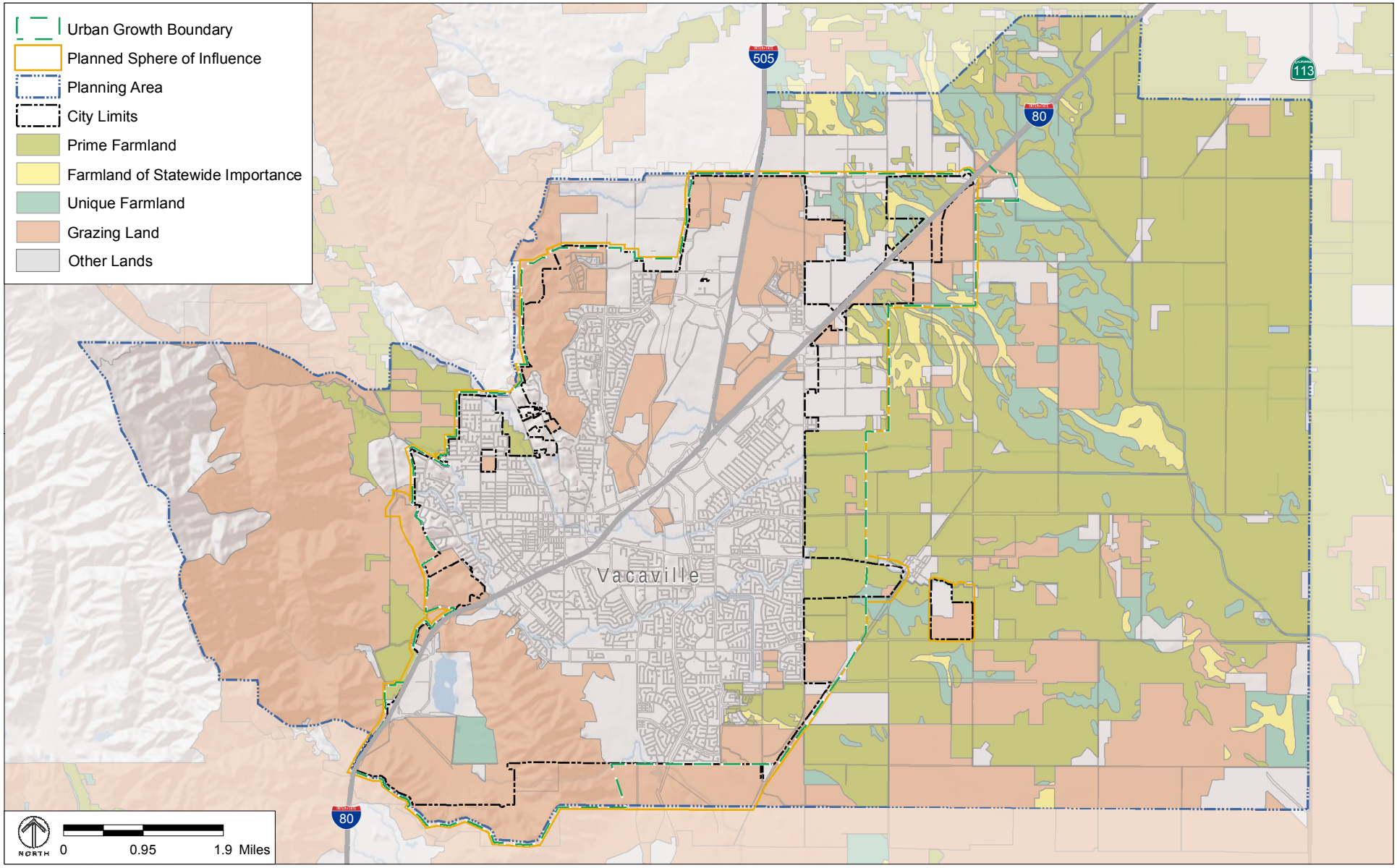
In addition, the Vacaville Planning Area includes lands protected under ***Williamson Act*** contracts, a State incentive to retain prime agricultural land and open space in agricultural use. These contracts preserve land in agricultural use for ten years and are adopted by land owners on a voluntary basis in exchange for tax benefits. According to Solano County, as of December 2009, there are approximately 27,000 acres of agricultural lands under Williamson Act contracts within the Vacaville Planning Area, including 1,200 acres within the Sphere of Influence. These numbers include both lands currently held in active contracts and those that have filed for non-renewal.

Goals, Policies, and Actions

Goal COS-3	**Support Solano County efforts to preserve existing agricultural lands located in the Planning Area.**

Policies

Policy COS-P3.1	Maintain a compact urban form and locate new development to minimize the loss of agricultural and open space resources.
Policy COS-P3.2	Support the preservation of land under Williamson Act contracts within the Vacaville Planning Area.
Policy COS-P3.3	Encourage the continued agricultural use of land within the Planning Area that is currently being used for agricultural purposes.
Policy COS-P3.4	Work cooperatively with non-profit organizations, such as land trusts, to preserve agricultural land in the Planning Area, as shown on Figure LU-6 in the Land Use Element.



Source: City of Vacaville, 2011; California Farmland Mapping and Monitoring Program, 2010

FIGURE COS-2
IMPORTANT FARMLANDS

TABLE COS-3 **AGRICULTURAL LANDS WITHIN THE PLANNING AREA**

Classification	Acres
Prime Farmland	19,809
Farmland of Statewide Importance	1,430
Unique Farmland	3,888
Grazing Land	18,581
Total	**43,708**

Source: Department of Conservation, Farmland Mapping and Monitoring Program GIS data, 2010)

Actions

Action COS-A3.1 Adopt an Agriculture Preservation Policy that addresses the width, location, and allowed uses in the agricultural buffer, and addresses the right-to-farm.

Goal COS-4 Minimize conflicts between agricultural and urban uses.

Policies

Policy COS-P4.1 Within the area east of Leisure Town Road, south of the Locke Paddon Community, and north of the railroad tracks, as shown in Figure LU-6 in the Land Use Element, require new development to maintain a 300- to 500-foot wide agricultural buffer along the eastern boundary of all residential development and existing agricultural lands. Require that uses within the agricultural buffer be limited to passive open space uses that are not accessed by a large number of employees or the general public at one time. Permitted uses within the buffer shall be limited as described below:

- Any portion of the buffer located inside the Urban Growth Boundary, adjacent to the Pacific Gas & Electric Company easement, shall contain substantial landscaping to discourage unlawful access onto the agricultural lands, and to lessen the potential impacts of typical agricultural activities on residential uses. Passive recreational uses such as pedestrian and bicycle trails are permitted.
- Uses located outside of the Urban Growth Boundary, within the 385-foot wide Pacific Gas & Electric Company easement, shall be limited to public infrastructure improvements necessary or appropriate to serve or protect existing and new permitted uses within the Urban

Growth Boundary, including but not limited to, alternative energy facilities, stormwater detention basins, water tanks (reservoirs), and sewer and water lines to accommodate buildout of the Vacaville General Plan.

Policy COS-P4.2 For interim residential development in areas east of Leisure Town Road, as described in Policy COS-P4.1, while adjacent agricultural operations are still on-going, require a disclosure to residents that agricultural operations happen nearby and that they will be exposed to impacts from such operations, such as dust, noise, and odors.

Policy COS-P4.3 Require that the cost of agricultural buffer creation and on-going maintenance be funded by new development in areas east of Leisure Town Road, as described in Policy COS-P4.1.

Policy COS-P4.4 Require property owners within the areas east of Leisure Town Road, as described in Policy COS-P4.1, who own property located outside of the Urban Growth Boundary, adjacent to the Agricultural Buffer, to use this land as mitigation for the loss of agricultural lands resulting from the development of their property east of Leisure Town Road.

Policy COS-P4.5 Consistent with the City's Master Water Agreement with the Solano Irrigation District, which is discussed further in the Land Use Element, prohibit the conversion of agricultural buffer lands to developed urban uses.

Policy COS-P4.6 Require non-residential uses in the Northeast Growth Area to provide on-site agricultural buffers, such as larger landscaped setbacks and plantings, to prevent conflicts between agricultural and non-residential urban uses. Specific Plans for Technology Parks / Business Parks shall incorporate design standards to provide these on-site buffers.

Actions

Action COS-A4.1 Adopt an Agricultural Buffer Policy and zoning district.

Action COS-A4.2 Adopt a right-to-farm ordinance that informs homebuyers near agricultural operations of the possible negative effects of living near active agricultural operations, such as noise, dust, and spraying.

Goal COS-5	**Provide local produce to Vacaville residents.**

Policies

Policy COS-P5.1 Encourage, maintain, and enhance the Vacaville Farmer's Market and explore ways to expand the market to other locations.

Actions

Action COS-A5.1 Research the formation of an agricultural co-operative for specialty crops to make use of economies of scale and thereby minimize the barriers to providing local crops to Vacaville residents.

Cultural Resources

Background Information

Paleontological Resources

Vacaville lies in a geological transition zone between the Sacramento Valley to the east and the Coast Ranges to the west. The deposits underlying the Vacaville area comprise a variety of rock types dating from various geologic periods, with certain formations containing fossils, some of which may be paleontologically significant. Fossils are the preserved remains of ancient organisms. Mineralized organisms are the most commonly known type of fossils and usually consist of hard material such as bone, shell, and wood. Many common fossils have shapes that can look very bone-like and are usually preserved after being quickly buried in sediment.

Archaeological Resources

Solano County is known for having had a relatively high population density in prehistoric times. The Patwin peoples controlled the area west of the Sacramento River to the crest of the Coast Ranges. The Patwin lived by hunting, fishing, and gathering, and inhabited semi-permanent villages, the remnants of which have been found in the hills around Vacaville. The California Historical Resources Information System identifies dozens of recorded prehistoric archaeological resources in the Vacaville area. These resources consist of the following: habitation sites, containing evidence of resource procurement and social organization; burial sites; bedrock mortars, representing use of technology in food processing; and isolated stone tools, found in contexts other than typical archaeological sites.

Historic Resources

The town of Vacaville was established in 1851, and by the end of that year had a population of 580. During the mid to late 19th century, livestock and wheat production were the principal economic products in the county. The completion of nearby railroads in the late 1860s provided a way for ranchers to get their crops to market, but the higher cost of rail transport coupled with increased competition led to the decline of the area's wheat industry during the

1880s. Subsequently, Solano County farmers turned to other crops, most of which, like vineyards and row crops, required irrigation. While rail transport had contributed to the decline of wheat production, the ease of access it provided gave a boost to produce farming. By the 1890s, Vaca Valley and the foothills of the Vaca Mountains were covered with orchards encompassing almost all of the available non-irrigated land, and in 1892, Vacaville was formally incorporated.

After peaking in the mid-1910s, fruit production in the Vacaville area declined due to drought and soil depletion, competition during the Great Depression, and overproduction for the World War I war effort. In the mid-20th century, new employers arrived in the area, resulting in explosive growth in Vacaville. The now defunct Basic Vegetable Products company located a 1,000-worker onion dehydrating facility in Vacaville, and in 1942, Suisun Air Base (now Travis Air Force Base) was established just to the south of Vacaville.

The Vacaville area contains over 200 identified historic resources, including the Peña Adobe, Will H. Buck House, Vacaville Town Hall, the site of the First Vacaville Buddhist Church, Pleasants/Hoskins Ranch district, and Vaca Adobe, which are all listed in the National Register. In addition to the Pleasants/Hoskins Ranch district, the City has identified the following five other historic districts, each as an aggregation of resources related by a common historical theme:

- Buck Avenue District, which includes 15 contributing buildings on the 100, 200, and 300 blocks of Buck Avenue.
- Monte Vista Avenue District, which includes nine contributing buildings on Bush Street and East Monte Vista Avenue.
- 100/200 Block of Kendal Street, which includes 14 contributing buildings.
- 300/400 Block of Kentucky Street, which includes seven contributing buildings.
- Parker Addition, which includes 56 contributing buildings on Boyd Street, Catherine Street, Davis Street, Elizabeth Street, Stevenson Street, and William Street.

The City has also designated the Downtown and a parcel containing a building that served as St. Mary's Catholic Church from 1930 to 1956 as historical preservation zones with design standards to enhance the historical characters of these areas.

Native American Tribal Cultural Resources

Native American tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe. While some tribal cultural resources include physical archaeological resources, described above, cultural resources are not limited to physical resources that have scientific significance. Tribal cultural resources also include cultural landscapes and non-unique archeological resources. Non-unique resources are resources that are deemed culturally significant to a tribe, but do not contain information needed for scientific purposes, and may not be the best specimen in terms of quality, uniqueness, or age.

Aside from the prehistoric archaeological resources discussed above, no Native American tribal cultural resources have been identified by records searches, literature reviews, and consultation with interested parties. However, because the Vacaville area was part of the ancestral territory of Native Americans, there are likely unrecorded cultural resources that may be valued by Native American Tribes for reasons other than scientific significance. To ensure that tribal cultural resources are not impacted by development, the City will continue to consult with the Native American Tribes with ancestral ties to the Vacaville area.

Goals, Policies, and Actions

Goal COS-6	**Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values.**

Policies

Policy COS-P6.1	Consult with those Native American Tribes with ancestral ties to the Vacaville city limits regarding proposed new development projects and land use policy changes.
Policy COS-P6.2	Require that a records search of the California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historic cultural resources and the potential for as-yet-undiscovered cultural resources.
Policy COS-P6.3	Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation.
Policy COS-P6.4	Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.
Policy COS-P6.5	Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.
Policy COS-P6.6	Treat human remains discovered during implementation of public and private projects within the city with respect and dignity.

Policy COS-P6.7 Continue to preserve historic resources by delineating historic preservation districts in the Land Use and Development Code and requiring design review of proposals affecting historic buildings.

Policy COS-P6.8 Continue to require new buildings in historic districts to be complementary to the character of the existing buildings.

Actions

Action COS-A6.1 Consult with Native American Tribes with ancestral ties to Vacaville to discuss tribal cultural resources and to create agreed upon parameters defining what type of projects will be routinely referred to the Tribes (e.g. project types, projects located in specific geographic locations).

Goal COS-7 Protect and enhance the historic value of the Downtown area.

Policies

Policy COS-P7.1 Continue to encourage the rehabilitation, restoration, and reconstruction of designated historic structures in the Downtown historic district to preserve the architectural, historical, and cultural significance of those buildings.

Policy COS-P7.2 Allow existing historic structures and properties in the Downtown that exceed currently allowed densities to remain at their existing density, even if uses change or the property is substantially rehabilitated, in order to preserve the historic nature of the property.

Policy COS-P7.3 Allow existing residential uses that qualify as historic resources to remain on parcels designated Commercial General in the Downtown area if those residential uses contribute to the historic nature of the property.

Actions

Action COS-A7.1 Hire a cultural resources professional to study the creation of a Historic Preservation District for the residential areas west of Downtown. Use the results of this study to determine whether the district should be established.

Scenic Resources

Background Information

Vacaville's scenic resources are a valued local asset for the community. Views of and from the city serve to situate the community in its local environment and landscape, and comprise an important element of Vacaville's quality of life.

Most of Vacaville's scenic resources are associated with the open space, natural resources, and agricultural uses of the Planning Area. Such areas include the ***riparian corridors*** - the habitat and vegetation zones associated with the banks and floodplains of a river, stream, or lake - that run throughout the city, views of the rural and undeveloped lands surrounding the city, and Vacaville's hillside areas. Although views of the surrounding ridgelines and hilltops are an important contributor to the identity of the city, the General Plan addresses development on ridgelines and hills in the Safety Element in order to acknowledge and prevent risks to life and property that can result from such development.

Many of the scenic resources that are valued by Vacaville residents, such as the ridgelines of the Vaca Mountains and English Hills, are located outside the city limits or even beyond the Planning Area boundary. There are no State-designated scenic highways in Vacaville.

Goals, Policies, and Actions

Goal COS-8	**Maintain and enhance the quality of Vacaville's scenic and visual resources.**

Policies

Policy COS-P8.1 Preserve scenic features and the feel of a city surrounded by open space, and preserve view corridors to the hills and other significant natural areas.

Policy COS-P8.2 Retain major ridgelines and hillsides as open space.

Greenhouse Gases

Background Information

A balance of naturally occurring gases in the atmosphere determines the earth's climate by trapping solar heat through a phenomenon known as the greenhouse effect. ***Greenhouse gases (GHGs)***, including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and water vapor, keep solar radiation from exiting our atmosphere. In a process very similar to the windows on a greenhouse, GHGs trap so much heat that the temperature within the earth's atmosphere is rising.

GHGs are emitted through both natural processes and human activities. Emissions from human activities, such as electricity production, motor vehicle use, and agriculture, are contributing to the concentration of GHGs in the atmosphere and have led to a trend of unnatural warming of the earth's climate, which is known as global warming.

Coping with climate change and reducing GHG emissions is ultimately part of the larger challenge of fostering ***sustainable communities*** – communities that engage in practices that meet the needs of the present without compromising the ability of future generations to meet their own needs. A sustainable community is one that is economically, environmentally, and socially healthy and resilient. Climate change goals are most effectively accomplished when efforts are focused on integrating principles of sustainability within sectors such as transportation, buildings, ecosystems, and water systems. One way to integrate sustainability into a community is by creating compact, walkable development. Walkable, mixed-use communities provide their residents with retail and services within walking distance of their homes and workplaces, thereby reducing the need to make automobile trips and, consequently, reducing GHG emissions. In addition, green building practices that promote energy and resource conservation can be effective in cities like Vacaville, where energy use generates a significant portion of the city's GHG emissions.

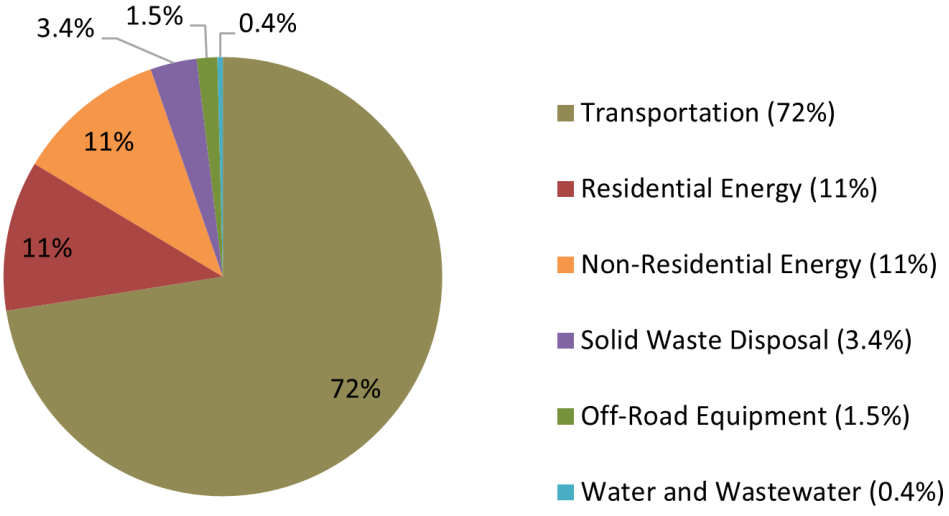
In 2006, the Governor of California signed Assembly Bill (AB) 32, codified under the Global Warming Solutions Act, into legislation. The Act requires that California cap its GHG emissions at 1990 levels by 2020. This legislation requires the California Air Resource Board (CARB) to establish a program for statewide GHG emissions reporting, as well as monitoring and enforcement of that program. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. To meet these regulatory requirements, CARB published a list of discrete GHG emissions reduction measures that can be implemented immediately. In addition, CARB's Early Action Plan identified regulations and measures that could be implemented in the near future to reduce GHG emissions.

The main measures to reduce GHG emissions are contained in the AB 32 Scoping Plan, which was approved on December 12, 2008. This plan includes a range of GHG reduction actions. Central to the draft plan is a cap and trade program covering 85 percent of the State's emissions. This program will be developed in conjunction with the Western Climate Initiative, comprised of seven states and three Canadian provinces, to create a regional carbon market. The plan also proposes that utilities produce a third of their energy from renewable sources such as wind, solar, and geothermal, and proposes to expand and strengthen existing energy efficiency programs and building and appliance standards. The plan includes full implementation of the Pavley clean car standards, whereby the California Environmental Protection Agency requires reductions of GHG emissions for passenger cars, pick-up trucks, and sport utility vehicles. Less polluting and more efficient cars and trucks allow consumers to save on operating costs through reduced fuel use. The standards also call for development and implementation of the Low Carbon Fuel Standard, which will require oil companies to make cleaner domestic-produced fuels.

Senate Bill (SB) 375 also responds to AB 32. SB 375 calls for the automobile and light truck industry to produce reduced-emission vehicles and requires metropolitan planning organizations (MPOs) to prepare sustainable communities strategies, which will demonstrate how a region will meet CARB's GHG reduction targets by reducing the amount of vehicle miles traveled. The Association of Bay Area Governments and the Metropolitan Transportation Commission are currently leading the effort to prepare the sustainable communities strategy for the Bay Area, including Vacaville.

The City inventoried baseline GHG emissions that occurred in 2019 in Vacaville from the following sectors: transportation, residential and non-residential energy use (electricity and natural gas), moving and treating water/wastewater, solid waste disposal, and other off-road emissions (e.g. from lawnmowers and construction equipment). This inventory provides a baseline against which to measure future reductions in GHG emissions. Figure COS-3 represents the 2019 GHG emissions in Vacaville by sector. The transportation sector represents the largest source of GHG emissions in Vacaville followed by energy use.

FIGURE COS-3 2019 GHG EMISSIONS IN VACAVILLE



Energy and Conservation Action Strategy

The City of Vacaville adopted an updated Energy and Conservation Action Strategy (ECAS) in 2021 to set targets and establish measures to reduce GHG emissions in Vacaville. The ECAS includes an inventory of 2019 GHG emissions and models 2035 business as usual forecasts of GHG emissions. The ECAS also includes targets for GHG emission reductions, measures that will enable the City to meet those targets through municipal and communitywide actions, and a monitoring and implementation plan.

Goals, Policies, and Actions

Policies relevant to GHGs and climate change are identified below and can also be found in the following elements:

- Transportation
- Safety

Goal COS-9	**Reduce greenhouse gas emissions and improve the sustainability of actions by City government, residents, and businesses in Vacaville.**

Policies

Policy COS-P9.1 Maintain the Energy and Conservation Action Strategy.

Policy COS-P9.2 Promote land use patterns that reduce the number and length of motor vehicle trips.

Policy COS-P9.3 To the extent feasible, encourage a balance and match between jobs and housing.

Policy COS-P9.4 Encourage higher density residential and mixed-use development adjacent to commercial centers and ***transit corridors*** – the land along or within walking distance of a street served by transit.

Policy COS-P9.5 Encourage employment areas to include a mix of support services to minimize the number of employee trips.

Policy COS-P9.6 Encourage retail and office areas to be located within walking and biking distance of existing and proposed residential developments.

Policy COS-P9.7 Continue to work with the Solano Transportation Authority on regional transportation solutions that will reduce vehicle miles traveled and greenhouse gas emissions.

Policy COS-P9.8 Promote green building practices in new development.

Actions

Action COS-A9.1 Continue to implement the Energy and Conservation Action Strategy and monitor its effectiveness every five years by conducting a greenhouse gas emissions inventory. Adjust the Energy and Conservation Action Strategy as needed based on these calculations to ensure that the City is on track to meet its greenhouse gas emissions reduction target.

Action COS-A9.2 Continue to provide alternative fuel infrastructure throughout the city, such as electric vehicle charging stations, and conduct periodic studies to ensure that there is demand for such facilities as technologies change.

Action COS-A9.3 Continue to purchase alternative fuel, low emission vehicles for the City's vehicle fleet.

Action COS-A9.4 Implement a major tree planting initiative that includes the creation of an urban forest through street trees, shading requirements on commercial and residential projects, and providing trees to residents; and apply carbon farming to public open space and City-owned parks.

Energy Conservation

Background Information

Energy production, conservation, and patterns of energy consumption are of growing importance to individuals, agencies, and jurisdictions. Energy price fluctuations in the late 1990s and increases in early 2001, combined with rolling blackouts, have led to a renewed interest in energy conservation.

The residential sector's energy demands constitute approximately 52 percent of the electricity and natural gas use within the city limits, as shown in Table COS-4. Typically, the most important factors influencing residential energy consumption are the size of the house, the type of house (detached single-family or multi-family structure), the number of major appliances, and the construction and siting of the structure. Residential energy needs are often fulfilled by electricity or a combination of gas and electricity. Space heating is the most energy-consuming activity in residential structures.

The State of California requires local governments to address energy conservation and efficiency in new construction. The State Building Standard Code, including Title 24, requires energy conservation and efficiency measures for any new structures, additions to existing structures, changes to the footprint of structures, or changes to water and heating systems. In Vacaville, the Community Development Department is responsible for enforcing all the provisions of Title 24.

TABLE COS-4 **2005 ENERGY USE IN VACAVILLE**

Sector	Percent of Total (%)
Residential	**52%**
Electricity	23%
Natural Gas	29%
Commercial/Industrial	**47%**
Electricity – Commercial	24%
Electricity – Industrial	1%
Natural Gas – Commercial/Industrial	23%

Note: Due to rounding, numbers may not total 100 percent.
Source: AECOM 2011.

Goals, Policies, and Actions

Goal COS-10 Promote a sustainable energy supply.

Policies

Policy COS-P10.1 Encourage the development of energy generated by renewable fuel sources within the city, provided that significant adverse environmental impacts associated with such development can be successfully mitigated.

Policy COS-P10.2 Encourage solar-oriented and renewable design and ***grid-neutral development*** **–** development that generates enough energy to off-set its demands – by encouraging streets that are oriented east-west to facilitate the maximization of south-facing roofs that best accommodate solar panels.

Policy COS-P10.3 Encourage the installation of solar voltaic panels on new homes and businesses through reduced building permit fees or other incentives.

Policy COS-P10.4 Encourage the use of solar water and pool heaters.

Goal COS-11 Conserve energy and fuel resources by increasing energy efficiency.

Policies

Policy COS-P11.1 Require that new development incorporate energy-efficient design features for HVAC, lighting systems, and insulation that exceed Title 24.

Policy COS-P11.2 Require that site and structure designs for new development promote energy efficiency.

Policy COS-P11.3 Promote and reward the energy efficiency efforts of local businesses through recognition on the City's website and other outreach.

Actions

Action COS-A11.1 Pursue grants to address existing energy inefficiencies in City facilities.

Action COS-A11.2 Review and update the Land Use and Development Code and building codes to allow for innovative energy-efficient technologies as long as they do not significantly conflict with other goals in this General Plan.

Air Quality

Background Information

Due to its location, meteorology, land uses, and traffic patterns, Vacaville experiences a variety of air quality issues. The city is located primarily within the Sacramento Valley Air Basin (SVAB); however, a small portion of Vacaville, Lagoon Valley, is located within the San Francisco Bay Area Air Basin. The prevailing winds in Vacaville are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. Surface concentrations of pollutants are highest when stagnant conditions are combined with temperature inversions that trap pollutants near the ground.

Air pollutants of concern in Vacaville include ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_2 and NO), sulfur dioxide (SO_2), and particulate matter (PM). These pollutants originate from sources both within and outside of Vacaville. Vehicle use is the primary source of air pollutants in Vacaville. Vehicles form pollutants both directly by combustion and indirectly by the interaction of combustion byproducts with one another and with ultraviolet (UV) light. PM is produced by both vehicles and wood-burning fireplaces, among other sources. In addition, toxic air contaminants (TACs), such as benzene, butadiene, formaldehyde, and hydrogen sulfide, are of concern because they are harmful in small quantities.

Air quality in Vacaville and in Yolo County to the north is primarily monitored and managed by the Yolo Solano Air Quality Management District (YSAQMD), although a small southwest portion of the Planning Area is managed by the Bay Area Air Quality Management District (BAAQMD). The YSAQMD and BAAQMD are tasked with achieving and maintaining healthful air quality for their residents by establishing programs, plans, and regulations enforcing air pollution control rules in order to attain all State and federal ambient air quality standards and to minimize public exposure to airborne toxins and nuisance odors. The YSAQMD has adopted several attainment plans to achieve State and federal air quality standards. The YSAQMD continuously monitors its progress in implementing attainment plans and must periodically report to the California Air Resources Board and the US Environmental Protection Agency.

Sensitive receptors include those segments of the population that are most susceptible to poor air quality, such as children, elderly people, and sick people, as well as sensitive land uses, such as schools, hospitals, parks, and residential communities. Air quality problems intensify when sources of air pollutants and sensitive receptors are located near one another. Since residential areas are located throughout the city, as are schools, parks, and medical facilities, the consideration of sensitive receptors is an important aspect of the General Plan.

Data from the California Environmental Protection Agency and community input indicate that asthma is a significant issue for all of Vacaville. Multiple areas of Vacaville also experience health impacts from poor air quality due to pesticide use and exhaust fumes from cars and trucks. Reducing exposure to air pollutants and from both traffic and stationary sources can help improve community health and reduce asthma rates. Many of the strategies in the City's adopted ECAS, discussed above, will help to reduce toxic air pollutants in addition to reducing GHGs. Trees can also help improve air quality by capturing particulate matter, absorbing pollutants, and producing oxygen.

Goals, Policies, and Actions

Goal COS-12 Maintain and improve air quality.

Policies

Policy COS-P12.1 Cooperate with regional agencies in developing and implementing air quality management plans.

Policy COS-P12.2 Encourage community participation in air quality planning. Ensure that residents who would be affected by a project that would emit air pollutants be notified well in advance of community engagement opportunities.

Policy COS-P12.3 Encourage project designs that protect and improve air quality and minimize direct and indirect air pollutant emissions by including components that reduce vehicle trips and promote energy efficiency.

Policy COS-P12.4 Require a Health Risk Assessment to be prepared for proposed sources of air pollution that will generate significant new and unmitigable air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of toxic air pollutants. The Heath Risk Assessment shall be required to include mitigation measures consistent with the Yolo-Solano Air Quality Management District's Handbook for Assessing and Mitigating Air Quality Impacts.

Policy COS-P12.5 Require that development projects implement best management practices and Best Available Control Technologies to reduce air pollutant emissions associated with the construction and operation of the project.

Policy COS-P12.6 Require dust control measures as a condition of approval for subdivision maps, site plans, and all grading permits.

Policy COS-P12.7 Consistent with the Yolo Solano Air Quality Management District's standards, require that any fireplaces in new and significantly renovated residential projects, or commercial projects are pellet-fueled heaters, US EPA Phase II-certified wood burning heaters, or gas fireplaces.

Policy COS-P12.8 Require that sources of stationary air pollutants of concern, such as factories, be located more than 500 feet and/or downwind from residential areas and other sensitive receptors.

Policy COS-P12.9 Evaluate residential development or other projects with sensitive receptors proposed within the buffer distances identified by the California Air Resources Board's Air Quality and Land Use Handbook to ensure sensitive receptors would not be exposed to an increased cancer risk or to ground-level concentrations of non-carcinogenic toxic air contaminants. Permitted stationary air pollutant sources can be identified through the Yolo Solano Air Quality Management District.

Policy COS-P12.10 Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.

Policy COS-P12.11 Encourage the use of roadway materials that minimize particulate emissions.

Policy COS-P12.12 Address tree equity by prioritizing tree plantings in areas and neighborhoods where there is a low Tree Equity Score as measured by American Forests or a similar tool.[1]

Actions

Action COS-A12.1 Amend the Land Use and Development Code to identify land use sources of toxic air contaminants and sensitive users.

Action COS-A12.2 Cooperate with the Yolo-Solano Air Quality Management District to implement a community air monitoring program and to identify air monitoring locations in Vacaville.

Action COS-A12.3 Work with the Yolo-Solano Air Quality Management District to submit a recommendation to the California Air Resources Board to consider selection of the City of Vacaville for a Community Emissions Reduction Plan (CERP).

Action COS-A12.4 Develop an outreach program for owners and operators of existing projects that include sensitive receptors to explain the benefits of improvements such as landscaping, barriers, ventilation systems, air filters/cleaners, and/or other effective measures that reduce energy bills, increase property values, and minimize potential impacts from air pollution.

Water Resources

Background Information

As described in the Public Facilities and Services Element, Vacaville's water supply comes from both surface water and groundwater, and is drawn from a variety of reserves. The City's current water use is less than half of the City's total water allocation. Residential uses make up the vast majority of water use in the city (approximately 70 percent), followed by commercial/industrial uses and irrigation (each about 10 percent).

New mandatory requirements, per State law (The Water Conservation Act of 2009 – Senate Bill X7-7), mandate the reduction of per capita water use and agricultural water use throughout the state by 20 percent by 2020.

Currently, the City has "standby authority" to impose water conservation during emergencies.

The City's current Urban Water Management Plan (UWMP) addresses the current and projected use and distribution plans for recycled water.

[1] Tree Equity Score. American Forests, 2021. https://treeequityscore.org/

The City owns and operates twelve municipal groundwater wells with very high quality groundwater. Eleven of the wells withdraw water from the deep aquifer in the basal zone of the Tehama Formation. Most City wells are located in the Elmira field. However, new wells are being sited further north, near Interstate 80. A regional program is being implemented to monitor groundwater data to ensure against overdraft and/or contamination.

The major sources of groundwater recharge in the Vacaville area are precipitation, infiltration from streets, subsurface inflow, and deep percolation of applied irrigation water in agricultural areas. Creeks, streams, flood corridors, riparian habitat, and wetlands may accommodate floodwater for groundwater recharge and stormwater management, which is discussed in the Safety Element.

Goals, Policies, and Actions

Goal COS-13	**Promote water conservation as an important part of a long-term and sustainable water supply.**

Policies

Policy COS-P13.1 Encourage and support water conservation programs.

Policy COS-P13.2 Protect and monitor the wells in the City's well field.

Policy COS-P13.3 Prohibit development that would adversely affect the City's well field.

Policy COS-P13.4 Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures.

Policy COS-P13.5 Coordinate water conservation and quality programs with the Solano County Water Agency and other appropriate water agencies.

Policy COS-P13.6 Whenever possible, use recycled or non-potable water for irrigation in landscaped areas.

Policy COS-P13.7 Explore installation of dual plumbing in large, new commercial and/or residential developments to enable future use of recycled non-potable water generated on- or off-site.

Actions

Action COS-A13.1 Revise the Land Use and Development Code to require water-use-efficiency best management practices.

Action COS-A13.2 Continue to implement the City's water-efficient-landscape requirements, which address the use of drought-tolerant plant materials and irrigation standards.

Action COS-A13.3 Continue to pursue the development of infrastructure for distribution of recycled or non-potable water for irrigation. Maintain and implement the Recycled Water Master Plan to use recycled water as an alternative source of water for agricultural irrigation, urban irrigation, industrial reuse, and other beneficial uses.

Goal COS-14 Protect the quality and supply of surface water and groundwater resources.

Policy COS-P14.1 Protect the Alamo, Encinosa, Gibson, and Ulatis Creek watersheds by minimizing point and nonpoint source pollutants.

Policy COS-P14.2 Integrate City planning and programs with other watershed planning efforts, including Best Management Practices (BMPs), guidelines, and policies of both the Sacramento and San Francisco Bay Regional Water Quality Control Boards.

Policy COS-P14.3 Encourage pest-tolerant landscapes using native plants to minimize the need for pesticides.

Policy COS-P14.4 Continue educational programs and outreach to promote water quality protection and limit pollution from pesticides and nutrients from businesses, homes, and landscaped areas.

Policy COS-P14.5 Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces.

Policy COS-P14.6 Protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.

Policy COS-P14.7 Protect groundwater recharge and groundwater quality when considering new development projects.

Action

Action COS-A14.1 Work with the Solano Irrigation District, nearby cities, and/or Solano County to develop a recharge area map to guide future development. Developments proposed in areas identified as "valuable" to the recharge area shall mitigate adverse impacts to the greatest extent possible.

Action COS-A14.2 Work with the Solano County Water Agency (SCWA) to identify ways for the City of Vacaville to coordinate with SCWA when planning activities and projects that may impact natural water sources that supply water to Vacaville.

Military Installations

Background Information

There are no military installations within the Vacaville city limits or Sphere of Influence. However, as shown in Figure COS-4, Vacaville is within the Travis Air Force Base's Area of Influence, an area where the Air Force Base has advisory status on long-range planning efforts of nearby jurisdictions. The Travis Air Force Base employs over 14,000 military personnel and civilian employees and is the county's largest employer. The base encompasses approximately 10 square miles and generates frequent aircraft overflights.

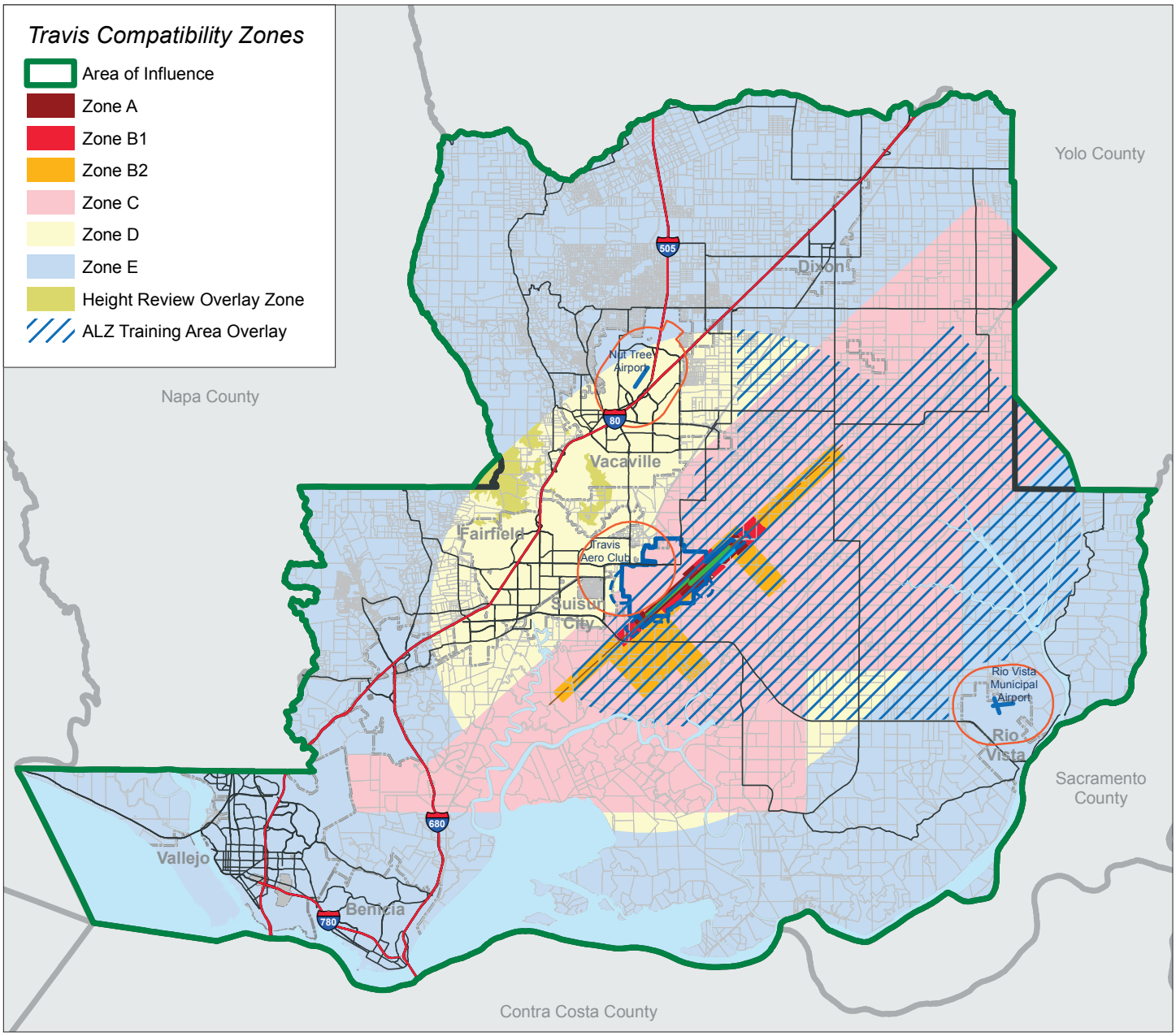
Goals, Policies, and Actions

Goal COS-15	**Coordinate with the Travis Air Force Base on planning issues within its Area of Influence.**

Policies

Policy COS-P15.1 Consult Travis Air Force Base officials for review and comment on proposed development projects, General Plan changes, zoning changes, policy and specific plans, and other comprehensive plans that have the potential for significant impacts within the Base's Area of Influence.

Policy COS-P15.2 Consider the needs of Travis Air Force Base for new and expanded infrastructure, as well as on-going maintenance needs for those infrastructure systems, within the Base's Area of Influence.



Source: Travis Air Force Base Land Use Compatibility Plan, November 2014.

NORTH

0 5 10 Miles

Travis Air Force Base

- Potential Future Assault Strip
- Runways - Existing
- Property Line
- Easement

Other Features

- Area of Influence for Other Airports
- Interstates
- Major Road
- Runways of Other Airports
- County Parcel Lines
- City Limits

FIGURE COS-4

TRAVIS AIR FORCE BASE AREA OF INFLUENCE

Mineral Resources

Background Information

According to the U.S. Geological Survey, the Vacaville Planning Area contains limited mineral resources that are being extracted. Near the southern boundary of the Planning Area in the vicinity of Cement Hill, limestone deposits show evidence of some historic use. Stone quarries in the Vaca Mountains produced dimensioned and ornamental stone. Although the western hills contain sandstone and conglomerates that may be used for sands, gravel, and stone, none of these resources are currently being mined. However, State law requires that the General Plan address mineral resources.

Goals, Policies, and Actions

Goal COS-16	**Consider the location of mineral resources in the development review process.**

Policies

Policy COS-P16.1 When reviewing land use proposals, take into account potentially available mineral resources on the property or in the vicinity of the project site.