Natural Environment

Purpose

Nestled between the salt marshes of the San Francisco Bay and the slopes of Mount Tamalpais, Mill Valley exists where it does because of the attraction of the natural environment. From the earliest settlements of the Coast Miwok Indians in the territory that became known as Eastland to the present day's urban settlement, the natural environment supports the essence of Mill Valley.

View of Mount Tam, circa 1900
Source: Mill Valley Public Library, Lucretia Little History Room

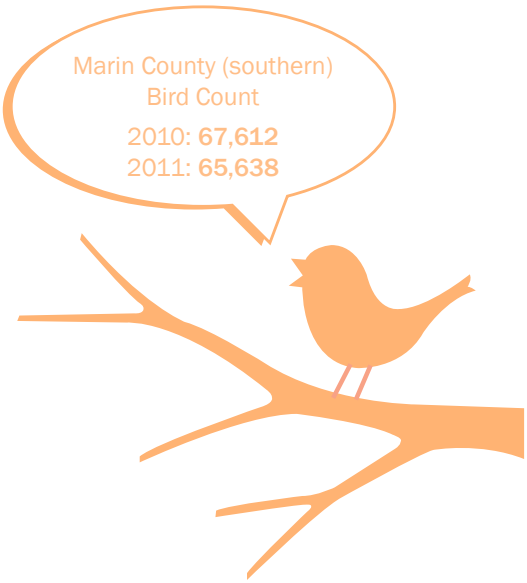
Mill Valley's natural environment has evolved due to the unique combination of climate changes, habitat adaptation, landslides and earthquakes, rise in sea level, and fire. Over a century of urbanization has created changes to the landscape and settlement, but Mill Valley's vitality hinges on our ability to sustain the ecosystem. At the same time, natural and manmade disruptions and dangers need to be recognized, anticipated, and addressed. Human endeavors balanced with natural processes will create a dynamic Mill Valley.

The goals, policies, and programs in this element of the General Plan are specifically intended to:

- Protect, where possible within the urbanized community of Mill Valley, the populations, stands, groves, and heritage specimens of native species. These species include coast live oak, redwood, and madrone and the habitats for common wildlife that they support.
- Protect and restore the waters, stream corridors, and marshlands and maintain healthy riparian zones, such as those adjacent shoreline habitats of upper Richardson Bay. These con-

Table 5.1 | State Requirements for Conservation and Open Space Elements

Conservation & Open Space Element Content Requirements (Government Code Sections 65302(d) & 65563)	MV2040 General Plan Provisions
Identification, conservation, and use of water resources	Resources are managed by Marin Municipal Water District (MMWD); see related policies and programs regarding coordination with MMWD on water conservation.
Identification, conservation, and use of waterways	See Figure 5.2 and related policies and programs.
Identification and conservation of soils and forests	See Figures 5.3, 5.4, and 5.5 and related policies and programs.
Identification and conservation of wildlife	See Figure 5.7 and related policies and programs.
Preservation and conservation of open space for recreation and public health and safety	See Figure 5.8 and related policies and programs. See also Community Vitality Element.



JUST THE FACTS

- Marin County's ecological footprint (i.e., the amount of land and sea needed to produce the resources to support one person) is estimated to be about 27 global acres per person. The U.S. average is about 20 acres, and the world average is 5.4 acres.[1]
- Marin County generates more garbage per person than any other county in the U.S.[2]
- The 2012 annual Christmas bird count for southern Marin identified 72,624 birds and 185 different species in a single day--including 2,672 birds and 85 different species counted in Mill Valley and Mill Valley Marsh.[3]

stitute some of the most significant biotic and wildlife habitat resources of the area: they serve as major visual, recreational, and educational resources and form a natural link to the Richardson Bay and San Francisco Bay ecosystem.

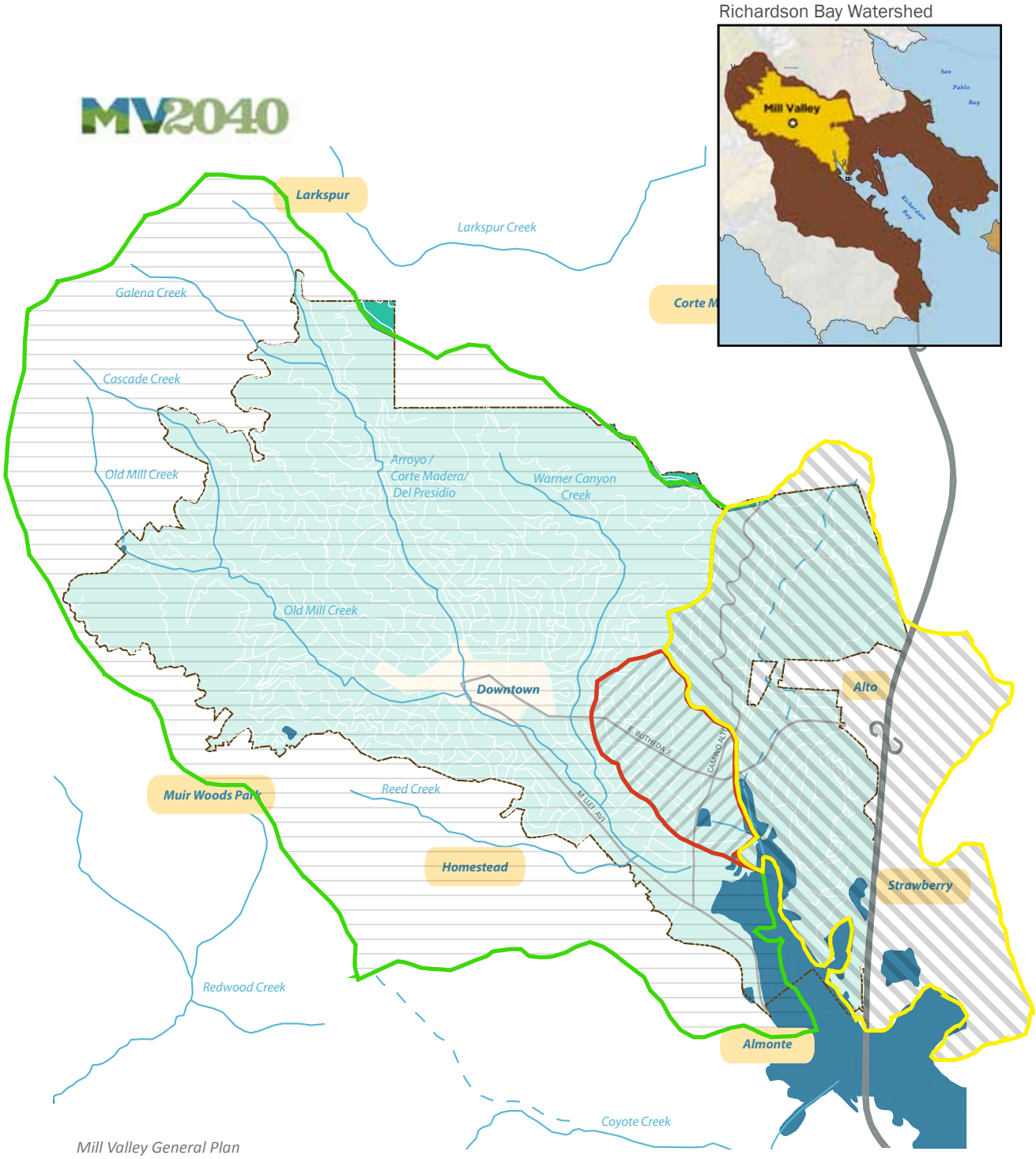
- Protect and restore the stream corridors and drainage network of the Mill Valley watershed, from their origins along the ridgelines to the principal points of discharge in upper Richardson Bay.
- Create and enhance opportunities for enjoyment of scenic vistas of natural areas, including the bay, Mount Tamalpais, and riparian corridors.
- Maintain a diversity of vegetation types and wildlife habitats on the remaining open space lands, keeping the grasslands free of brush encroachment and protecting woodlands and chaparral, thereby limiting the increased threat of fire in the wildland-urban interface (WUI) zone while preserving and enhancing the biodiversity and protection of our natural resources.

The Natural Environment Element addresses the statutory General Plan content requirements for Conservation and Open Space Elements listed in California Government Code Sections 65302(d) and 65563, as shown in Table 5.1.

Existing Conditions

Natural Resources in Mill Valley

Mill Valley is located between the upper end of Richardson Bay, a shallow arm of San Francisco Bay, and the southeast face of Mount Tamalpais (see Figure 5.1). The smaller valleys that make up the area are the result of long erosion of the Mount Tamalpais land mass and deposition of alluvium in the lowlands, which together with marine sediments of the bay formed the once extensive marshlands and mudflats around the bay. Mill Valley is a branched watershed; major stream systems and their tributaries drain the southeast flank and ridges of Mount Tamalpais into Richardson Bay. An additional stream system drains the southwest flank, forming the unincorporated areas immediately south of the city limits, as shown in Figure 5.2.



Source: Marin Map, 2012
County of Marin, Department of Public Works 2013

Mill Valley General Plan

Figure 5.1: Mill Valley Watershed & Subwatersheds

Mill Valley is blessed with a natural setting rich in resources from **wooded slopes, to riparian corridors, to marshy bayfront.**

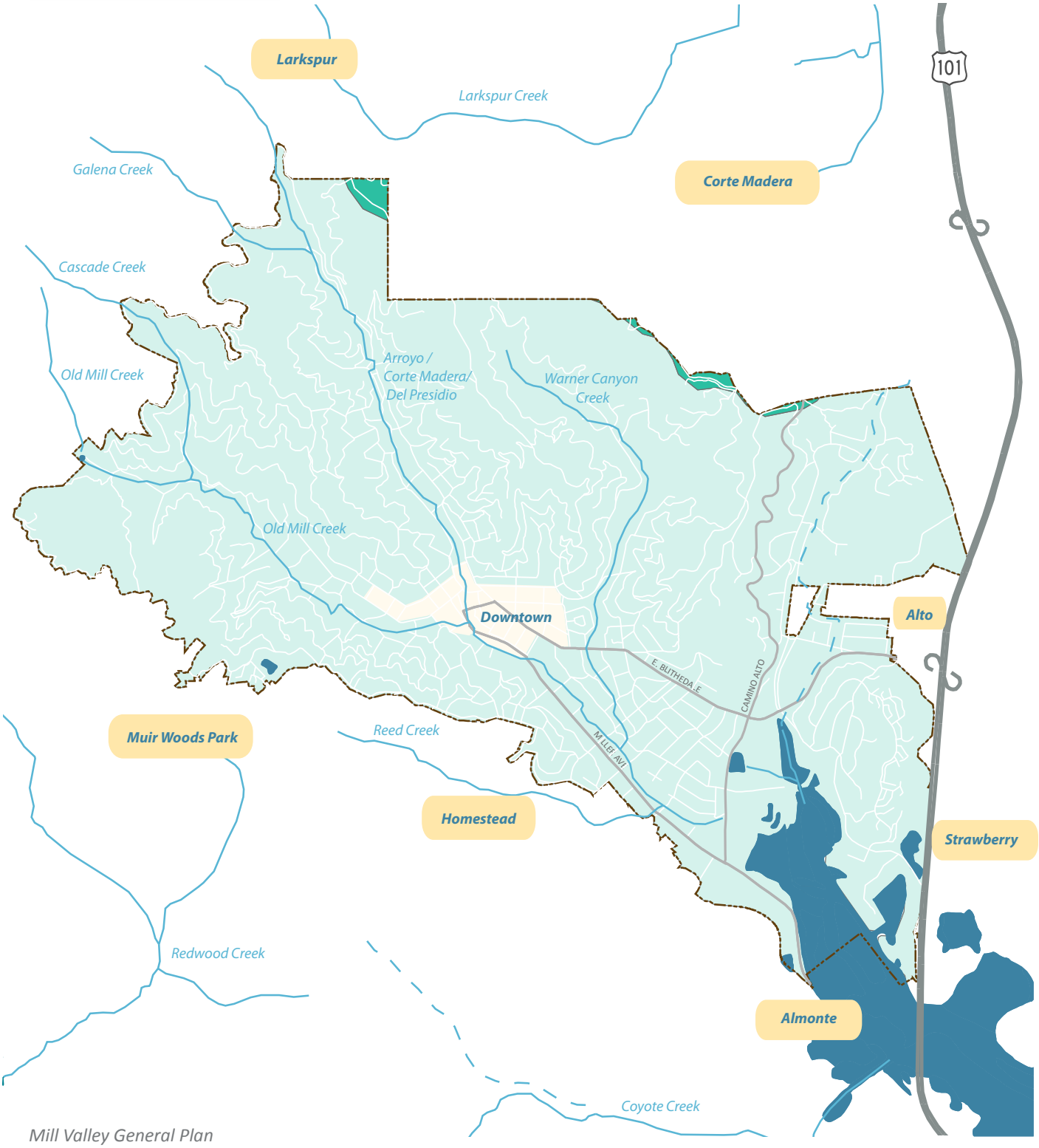
The combination of natural conditions – Mount Tamalpais, with its ridges, valleys, and waterways, and the bay marshlands – composes the physical and aesthetic setting for the community. The merging of the town with the flatlands and shoreline of Richardson Bay links Mill Valley and the unincorporated Tam Junction area to the greater San Francisco Bay region, with its diversity of topology and vegetation types, micro-environments, and habitats, from open bay water to steep, dry, chaparral ridges and deep, moist redwood ravines.

A survey of the existing natural resources in the Planning Area indicates that many of the native communities and habitats of the Bay Area are represented in Mill Valley. As it has throughout the Bay Area, the natural landscape of Mill Valley has been altered by development, road construction, agriculture, and modification of native processes (such as fire and flood regimes). Natural succession—the process by which a plant or animal community alters its own environment to the extent that the changed conditions lead to replacement by species that are better adapted—has occurred. "Unnatural" succession has also occurred, to the extent that humans have consciously or unconsciously brought about changed conditions, such as introducing "exotic" and invasive (non-native) plants, suppressing periodic fires, and grazing domestic livestock. The urban extent of Mill Valley and the unincorporated areas immediately south of the City now surrounds the tip of Richardson Bay, leaving an ever-narrowing margin of shoreline habitats as part of the City's natural heritage.

Click Off (2008)
Source: Mill Valley Arts Commission
Photographer: Abby Wasserman

The principal open space resources in the community include its creek systems, which have both functional (drainage and flood control) and aesthetic values; the community's biotic resources, which include vegetation and diverse wildlife habitats; and other open space areas with natural habitat and scenic vistas. Native biotic resources include redwood groves, mixed stands of broad-leaf evergreens, oak woodland, chaparral, coastal scrub, grasslands, marshes, and mudflats. Non-native, introduced species also contribute to the biotic resources, and, in fact, dominate the urban portions of the setting. (A more detailed description of these biotic resources is provided on a sub-area basis later in this element.)

The locations of biotic communities found in Mill Valley are shown in Figure 5.3 and descriptions are provided in Appendix E. Land



Source: Marin Map, 2012

Mill Valley General Plan

Figure 5.2: Creeks & Wetlands

cover types found within the City are shown in Figure 5.4, and the soil types and geology of the area are presented in Figure 5.5.

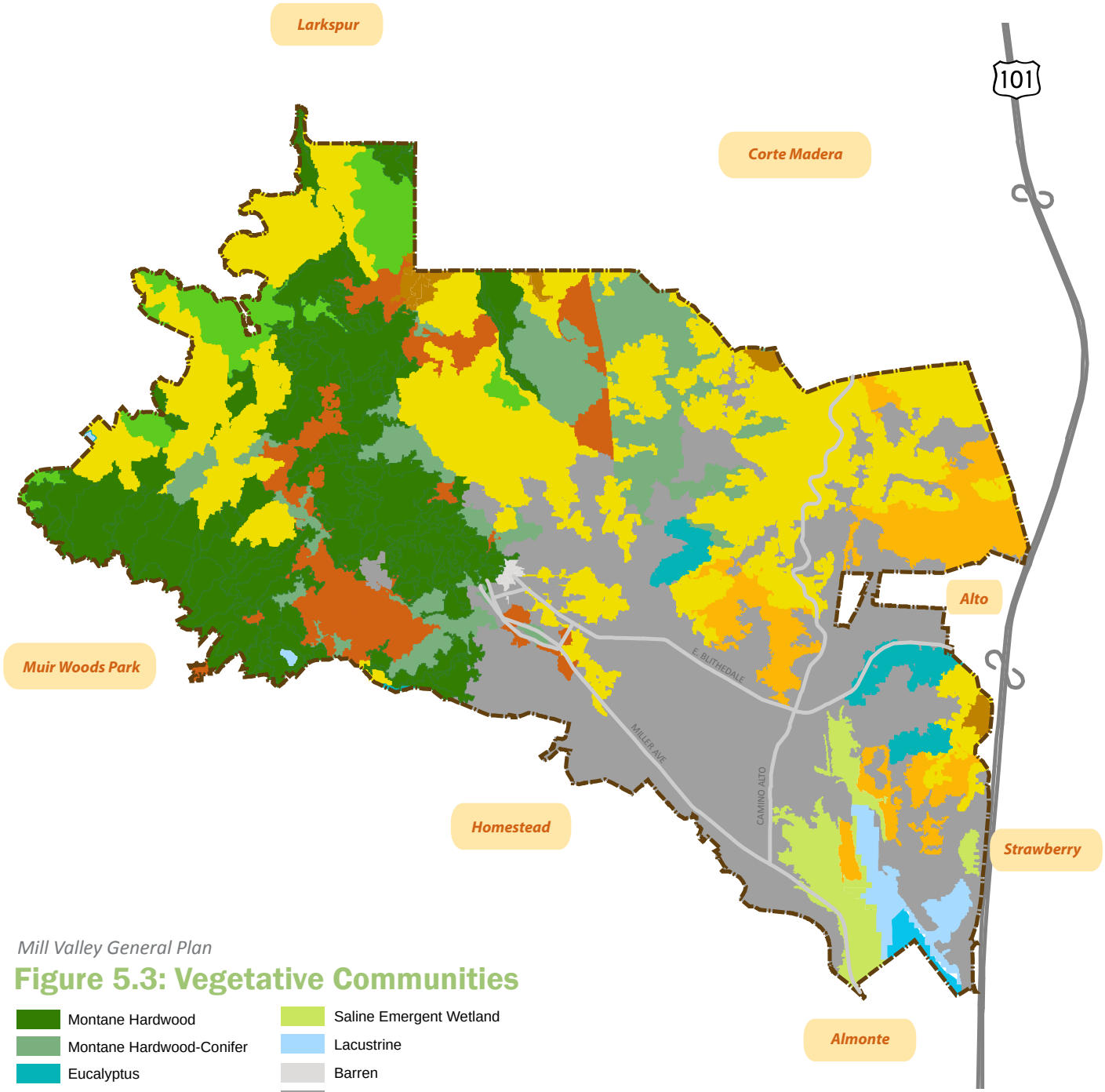
Mill Valley is committed to the protection of its biological heritage. To this end, the City strives to ensure the protection of its natural resources. Vegetative communities develop over time based on a delicate interaction among the climate, topography, geology, and ecology of a given area. With its unique and varied landscape, Mill Valley has 13 distinct vegetative communities. Native communities include oak/bay woodland, Douglas fir/redwood woodland, coastal scrub, oak woodland, Douglas fir woodland, and coastal salt marsh. These habitats are afforded some protection under state or local laws and ordinances.

Within the vegetative communities of Mill Valley, there have also been observations of rare plant species, and there is potential for additional rare species to occur as well. Examples of such species include Marin manzanita (*Arctostaphylos virgata*), Mount Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*), Point Reyes bird's beak (*Chloropyron maritimum* ssp. *palustre*), Napa false indigo (*Amorpha californica* var. *napensis*), San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*), Marin checker lily (*Fritillaria lanceolata* var. *tristulis*), and diablo helianthella (*Helianthella castanea*).

Additionally, the generalized locations of threatened and endangered plant species are shown in Figure 5.6.

Click Off (2004)
Source: Mill Valley Arts Commission
Photographer: Abby Wasserman

Natural features are the primary ingredients that establish the visual character of Mill Valley. Major ridgelines, which still have relatively few residential structures on them, sharply define the north, west, and south limits of the community. This sense of visual containment and separation from adjoining communities is reinforced by lower hill forms such as Alto and Kite Hills and Shelter Ridge, which help define the entrance points to the community. The flat marshlands, mudflats, bayfront parklands, and water of upper Richardson Bay contrast with the rugged hill landscape and open up opportunities for expansive views toward San Francisco and, from the opposite direction, the chance to view all of these open space features as a unit.



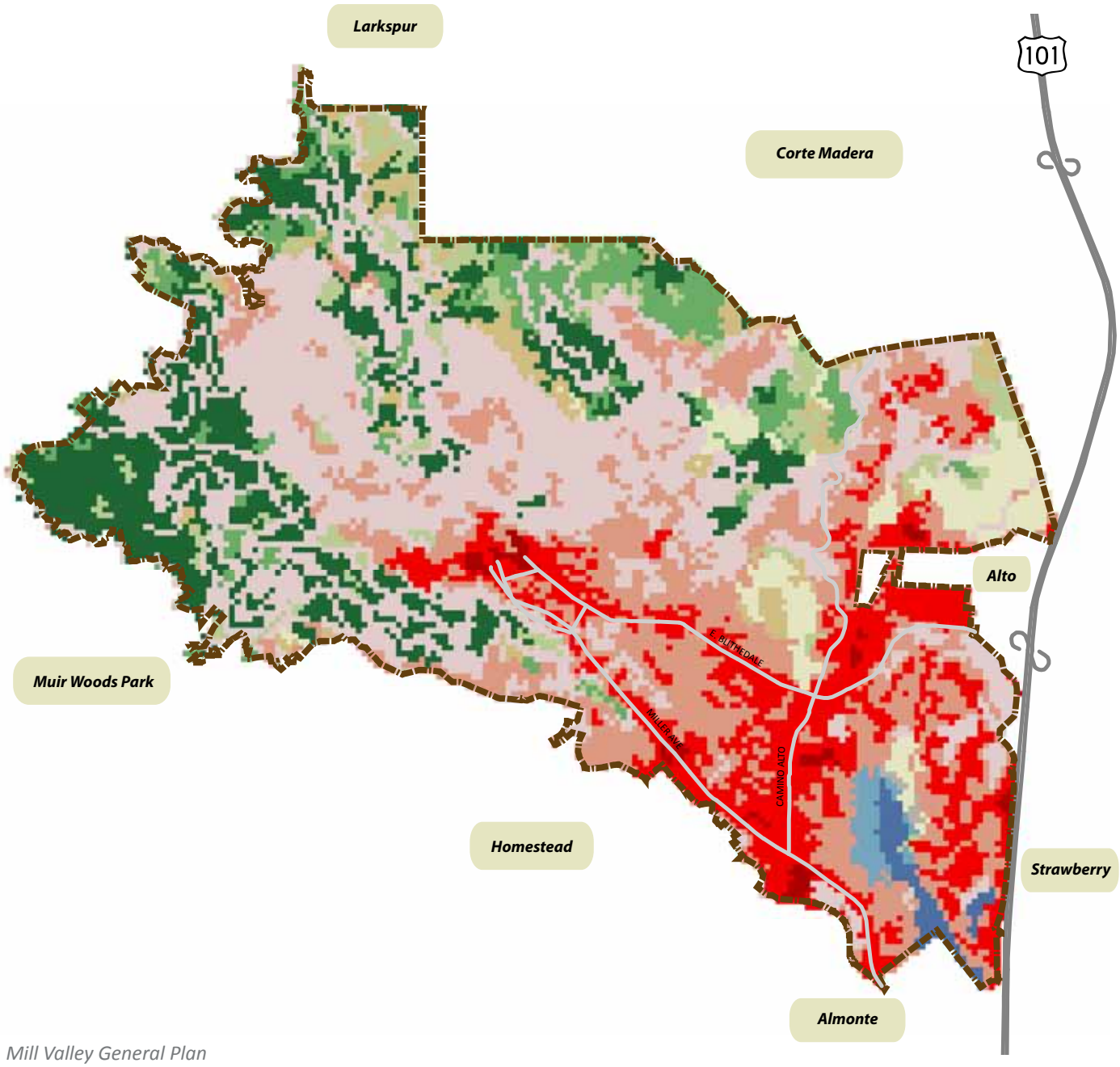
Mill Valley General Plan

Figure 5.3: Vegetative Communities

- Montane Hardwood
- Montane Hardwood-Conifer
- Eucalyptus
- Coastal Oak Woodland
- Redwood
- Mixed Chaparral
- Coastal Scrub
- Annual Grass
- Saline Emergent Wetland
- Lacustrine
- Barren
- Urban
- Water
- City Boundary
- Mill Valley Arterials
- Highway

0 0.25 0.5 Miles

Source: US Department of Agriculture Forest Service, 2000 and 2007



Mill Valley General Plan

Figure 5.4: Land Cover Types

- Open Water
- Developed, Open Space
- Developed, Low Intensity*
- Developed, Medium Intensity**
- Developed, High Intensity; Barren***
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Emergent Herbacous Wetlands
- City Boundary
- Mill Valley Arterials
- Highway

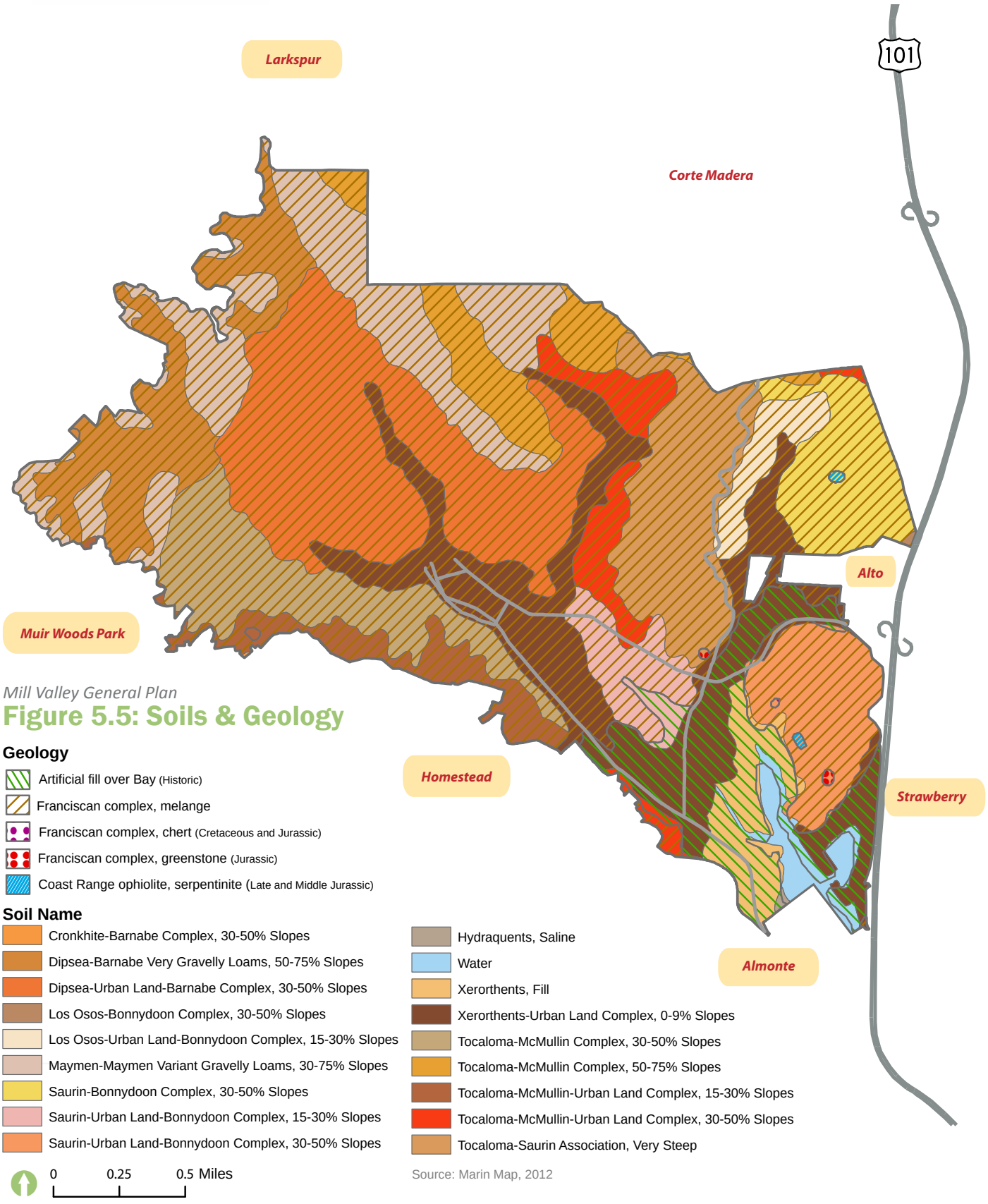
0 0.25 0.5 Miles

Source: USGS National Land Cover Database, 2006

***Developed, Low Intensity:** Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.

****Developed, Medium Intensity:** Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

*****Developed, High Intensity**: Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.



Mill Valley General Plan

Figure 5.5: Soils & Geology

Geology

- Artificial fill over Bay (Historic)
- Franciscan complex, melange
- Franciscan complex, chert (Cretaceous and Jurassic)
- Franciscan complex, greenstone (Jurassic)
- Coast Range ophiolite, serpentinite (Late and Middle Jurassic)

Soil Name

- Cronkhite-Barnabe Complex, 30-50% Slopes
- Dipsea-Barnabe Very Gravelly Loams, 50-75% Slopes
- Dipsea-Urban Land-Barnabe Complex, 30-50% Slopes
- Los Osos-Bonnydoon Complex, 30-50% Slopes
- Los Osos-Urban Land-Bonnydoon Complex, 15-30% Slopes
- Maymen-Maymen Variant Gravelly Loams, 30-75% Slopes
- Saurin-Bonnydoon Complex, 30-50% Slopes
- Saurin-Urban Land-Bonnydoon Complex, 15-30% Slopes
- Saurin-Urban Land-Bonnydoon Complex, 30-50% Slopes
- Hydraquents, Saline
- Water
- Xerorthents, Fill
- Xerorthents-Urban Land Complex, 0-9% Slopes
- Tocaloma-McMullin Complex, 30-50% Slopes
- Tocaloma-McMullin Complex, 50-75% Slopes
- Tocaloma-McMullin-Urban Land Complex, 15-30% Slopes
- Tocaloma-McMullin-Urban Land Complex, 30-50% Slopes
- Tocaloma-Saurin Association, Very Steep

0 0.25 0.5 Miles

Source: Marin Map, 2012

Richardson Bay Watershed

Mill Valley, Tiburon, Sausalito, Marin City, Tamalpais Valley, and Belvedere are linked together by the watershed lands draining to Richardson Bay, a shallow, protected, biologically rich wildlife preserve. Richardson Bay is considered one of the most "pristine estuaries on the Pacific Coast in spite of its urbanized periphery."[1] The bay is recognized as an Important Bird Area (IBA) and is located on the Pacific Flyway, an important migratory bird corridor. During the winter months, the bay supports hundreds of thousands of waterbirds, including shorebirds and waterfowl.

The watershed supports a number of special-status plants and animals. Of particular interest are the occurrences of species found in coastal marsh in the lower watershed. Noteworthy species include California black rail, San Pablo song sparrow, salt marsh harvest mouse, and Point Reyes bird's beak. At higher elevations, northern spotted owl territories occur in wooded areas along several creeks. There is a small population of California red-legged frog (CRLF), federally listed as threatened and a California Species of Special Concern, on the Tiburon Peninsula.[2] The population was discovered in 1997 at a small pond, formerly a lagoon, at Keil Cove. A second sighting was made in 2000 in coast live oak woodland to the northwest of the Keil Cove sighting. This is probably the last remaining population on the peninsula.

View of Mill Valley and Richardson Bay

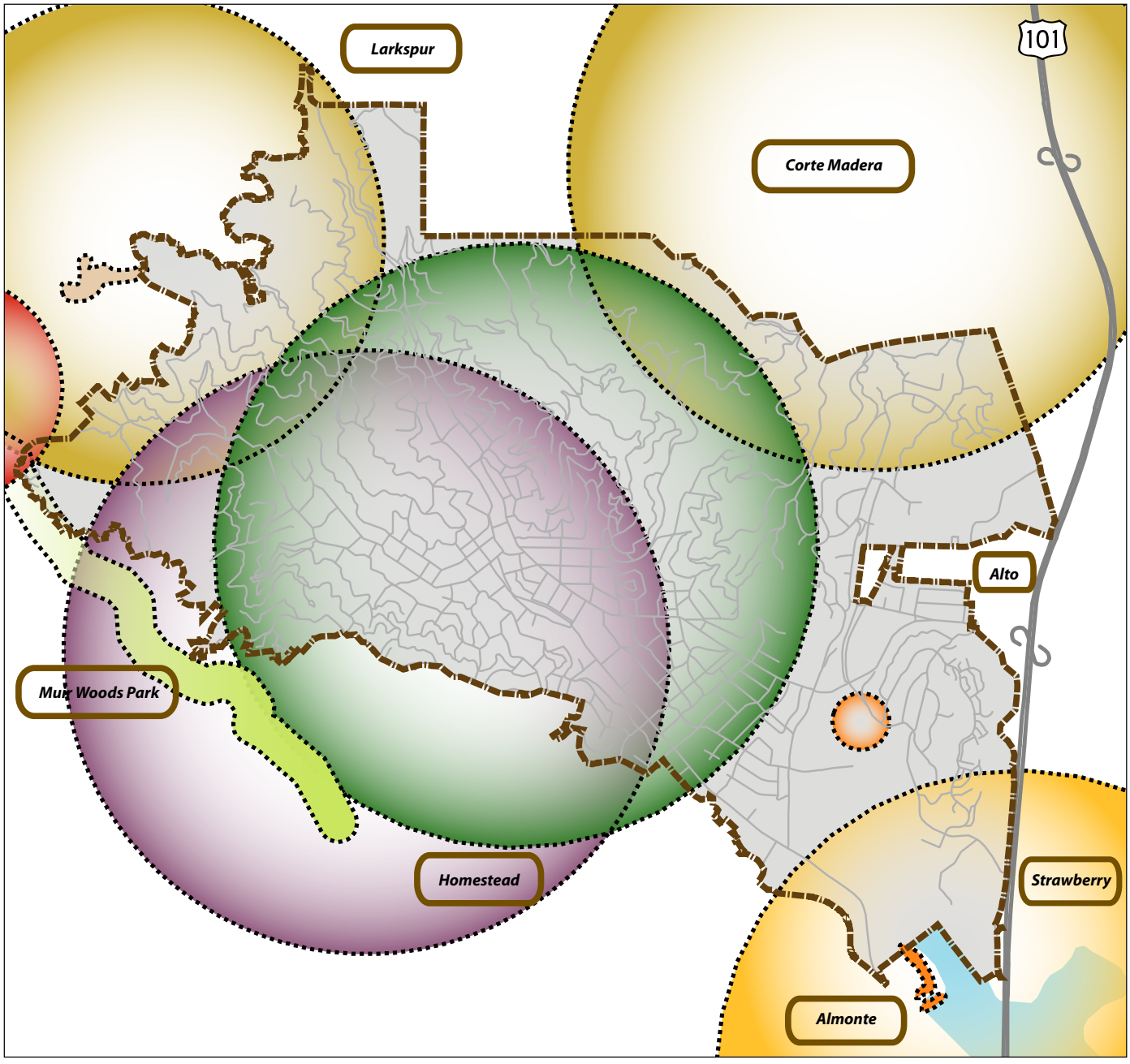
The Arroyo Corte Madera del Presidio subwatershed still supports a steelhead trout run. Old Mill and Cascade Creeks support the healthiest remaining fisheries habitat in the watershed. Due to their ephemeral nature, the small creeks draining directly to Richardson Bay do not support sustainable fisheries. The Arroyo Corte Madera del Presidio subwatershed is known to support nine fish species (seven native and two introduced). Native species include California roach, Sacramento pikeminnow, Coho salmon, steelhead trout, threespine stickleback, and staghorn and prickly sculpins. Introduced species include rainwater killifish and western mosquitofish.[3] Recorded observations of Coho date from the 1940s to 1960s; Coho were last seen in 1981.[4] Steelhead, federally listed as a threatened species, continue to inhabit Arroyo Corte Madera del Presidio in reduced numbers.

[1] Richardson Bay Audubon, 2008

[2] CDFG, 2008

[3] Leidy, 2007

[4] Leidy et al., 2005



Mill Valley General Plan

Figure 5.6: Threatened and Endangered Plant Species

- Diablo helianthella, small groundcone, and minute pocket moss
- Tamalpais oak
- Mt. Tamalpais manzanita
- Marsh microseris
- Small groundcone
- Thin-lobed horkelia
- Hairless popcorn flower
- Point Reyes bird's-beak
- Water
- City Boundary
- Mill Valley Roads
- Highway

0 0.25 0.5 Miles

Sources: Marin Map, 2012; CNDDB, 2013

Local Creeks and Seasonal Wetlands

Within the city limits, streams and tributaries form four drainage basins on the southeast flank and ridges of Mount Tamalpais. This hydrologic system is illustrated in Figure 5.2. The overall Arroyo Corte Madera del Presidio basin extends southeast from over 2,500 feet in elevation on Mount Tamalpais to sea level at Richardson Bay, covering an area of 6.0 square miles. The basin generally slopes from a westerly to easterly direction, forming four sub-basins: (1) Arroyo Corte Madera Creek in West Blithedale Canyon, (2) the Cascade Creek basin, (3) the Warner Creek basin, and (4) the Reed Creek basin (Homestead Valley). The Salt Creek basin (Scott Valley and Sutton Manor) is situated west of Highway 101 and extends southerly from over 400 feet elevation in the Town of Corte Madera to sea level at Richardson Bay. The seasonally heavy fresh water flows from the entire watershed help to flush the marshes and harbor of Richardson Bay. Coyote Creek is the main stream in Tam Valley. From its source in the Golden Gate National Recreation Area and southwest flanks of Mount Tamalpais, it descends through the valley and has been in part redirected and channelized to run parallel to Shoreline Highway. The creek crosses under the highway just south of Tam Junction and empties into Richardson Bay. The capacity of the lower creek is maintained by periodic dredging in order to prevent severe flooding.

The integrity of this network of streams, ravines, and springs that descend abruptly from the upper reaches of the mountain down through the center of the City and its neighboring valleys is often threatened by human actions. Throughout the watershed, grading, excavation, vegetation removal, and replacement of natural ground surface by impervious structures and paved surfaces have led to flooding and erosion of channel banks. Along the creek channels, construction of bridges, roads, culverts, closely abutting residences, and other structures have led to disruption of creekside vegetation, obstruction of creek flows, erosion, and maintenance problems. Where portions of the creeks are exposed to close-by urban development, litter accumulates and ends up in the creeks.

Old Mil Creek

Creeks in Mill Valley provide open water and riparian habitats that support a diverse community of plant and wildlife species. Aquatic habitat in the upper reaches of Arroyo Corte Madera del Presidio (Mill Creek) and Old Mill Creek are known spawning and rearing habitats for central California coast steelhead (*Oncorhynchus*

mykiss irideus), a protected species[5] (See Figure 5.7). Additionally, critical habitat has been designated for green sturgeon (*Acipenser medirostris*) in Richardson Bay and its tributaries (including Arroyo Corte Madera del Presidio) up to the limit of tidal influence.[6] This species is not known to spawn in the vicinity of Mill Valley, though tidal and open waters of Richardson Bay may offer important foraging opportunities. Mill Valley's creeks support many aquatic species, including three-spine stickleback (*Gasterosteus aculeatus*), river lamprey (*Lampetra ayresii*), white sturgeon (*Acipenser transmontanus*), Pacific chorusfrog (*Pseudacris regilla*), California newt (*Taricha torosa*), sculpin (*Cottus* spp.) and California roach (*Hesperoleucus symmetricus*).

Historically, Arroyo Corte Madera del Presidio was home to the federally and state-listed endangered central California coast coho salmon (*Oncorhynchus kisutch*). This species has not been observed in Mill Valley for several decades, and its absence is likely due to fishing pressure, urban development, and the alteration of Arroyo Corte Madera from its natural state. In the 2004 *Recovery Strategy for California Coho Salmon*, the California Department of Fish and Game recommended restoration of Arroyo Corte Madera's historic Coho salmon habitat.[7] Restoration of Arroyo Corte Madera could play an essential role in the recovery of coho salmon, steelhead, green sturgeon, and other species in Marin County. Arroyo Corte Madera is also considered a potential location to reintroduce the federally listed endangered tidewater goby (*Eucyclogobius newberryi*).[8]

[5] CalFish, CalFish Data and Maps, 2013, http://www.calfish.org/DataampMaps/CalFishGeographicData/ tabid/91/Default.aspx, accessed January 2, 2013

[6] National Oceanic and Atmospheric Administration (NOAA), Final Rulemaking to Designate Critical Habitat for the Threatened Southern Distinct Population Segment of North American Green Sturgeon, Federal Register, Vol. 74, No. 195, October 9, 2009.

[7] California Department of Fish and Game (CDFG), 2004 Recovery Strategy for California Coho Salmon: Report to the California Fish and Game Commission, http://www.dfg.ca.gov/fish/documents/SAL_SH/SAL_Coho_Recovery/ReportToCommission_2004/CohoRCohoRecoveryStr.pdf, February 2004

[8] U.S. Fish and Wildlife Service, Recovery Plan for the Tidewater Goby (Eucyclogobius newberryi), U.S. Fish and Wildlife Service, Portland, Oregon, vi + 199 pp., 2005

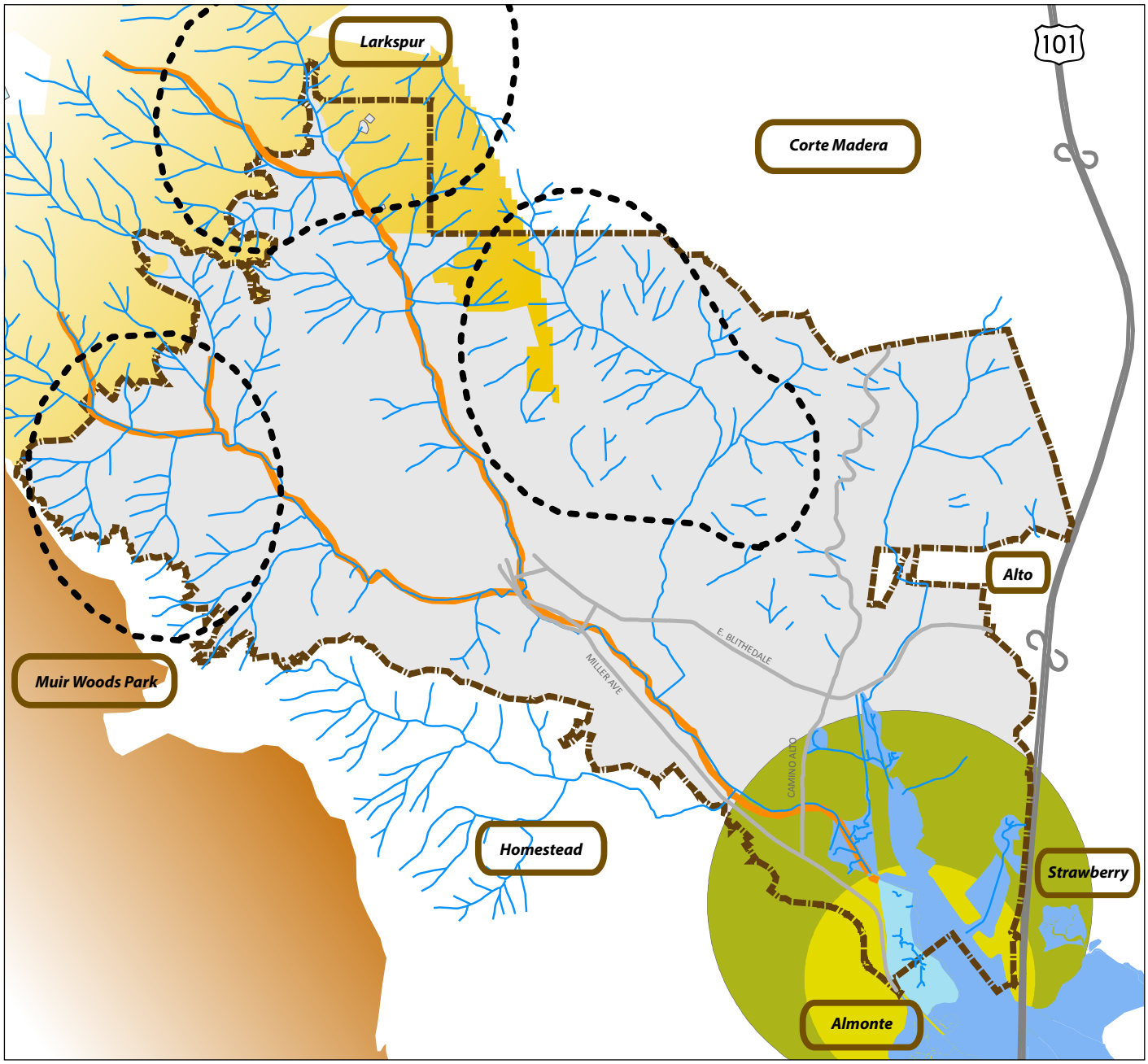
Click Off (2008)
Source: Mill Valley Arts Commission

Mill Valley's creeks support riparian vegetation, a plant community associated with watercourses. Riparian communities are typified by tree species such as willow, alder, and cottonwood combined with an understory of shrubs, vines, grasses, or herbaceous wetland vegetation such as California blackberry (*Rubus ursinus*), tall flatsedge (*Cyperus eragrostis*), California wildrose (*Rosa californica*), or poison oak (*Toxicodendron diversilobum*). Along with these native species, the riparian understory in Mill Valley may include non-native, invasive species such as giant reed (*Arundo donax*), wild oats (*Avena* species), sedge (*Carex pendula*), or Himalayan blackberry (*Rubus armeniacus*).

The typically complex structure of riparian communities, as well as their proximity to water, makes them important habitat features for wildlife. Riparian corridors are commonly used by wildlife as contiguous features that allow movement and access amongst otherwise fragmented habitat. Movement corridors also provide cover from predators, allowing birds, bats, mammals, amphibians, and reptiles to move or migrate throughout the region. Native wildlife species that may be observed in riparian habitat in Mill Valley include red-tailed hawk (*Buteo jamaicensis*), California quail (*Callipepla californica*), tree swallow (*Tachycineta bicolor*), barn owl (*Tyto alba*), Pacific chorusfrog, common garter snake (*Thamnophis sirtalis*), California myotis (*Myotis californicus*), dusky-footed woodrat (*Neotoma fuscipes*), and Columbian blacktail deer (*Odocoileus hemionus columbian*). The North American river otter (*Lontra canadensis*) has also returned to Mill Valley's watersheds. Native wildlife species recently extirpated from Mill Valley's watersheds include Pacific pond turtle (*Actinemys marmorata*), California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), Coho salmon (*oncorhynchus kisutch*), California freshwater shrimp (*Syncaris pacifica*), and sooty crayfish (*Pacifastacus nigrescens*).

Click Off (2008)
Source: Mill Valley Arts Commission

Seasonal wetlands are another important landscape feature found in Mill Valley. They form in depressions, swales, and floodplains that retain water for at least a few weeks every year. Wetlands are valued and protected for their benefits to water quality, air quality, and habitat for plants and wildlife. Birds, reptiles, and amphibians rely on the aquatic habitat and the emergent vegetation it supports. Bats hunt for insects over and drink from open water, while other mammals may find sustenance and drinking water at these features.



Mill Valley General Plan

Figure 5.7: Critical Wildlife Habitat

Critical Habitat Areas

- Steelhead Salmon
- Northern spotted owl
- Marbled murrelet
- Northern spotted owl sightings
- Wetlands
- Northern Coastal Salt Marsh
- Streams

Threatened & Endangered Species

- California black rail
- San Pablo song sparrow & California clapper rail

- City Boundary
- Mill Valley Arterials
- Highway

0 0.25 0.5 Miles

Sources: Marin Map, 2012; CNDDB, 2013; US Fish and Wildlife Service, 2013; San Francisco Estuary Institute, 2013; National Marine Fisheries Service, 2006

Shoreline and Tidal Marsh

The shoreline of upper Richardson Bay, both within the Mill Valley city limits and in the unincorporated areas to the south of the City, was once an extensive marsh system. Now it consists of a series of small vestigial tidal marshes, varying in size and condition, and filled developed and undeveloped land. The early marshes of Richardson Bay, prior to about 1930, extended into Alto, up Miller Avenue to La Goma, into Tamalpais and Tennessee Valleys, into the area now occupied by Strawberry Shopping Center, and around de Silva Island. Gradually, diking and filling have greatly reduced the total marsh acreage, while concomitant siltation from development in the watershed has moved marshlands far forward into the bay itself, substituting former open water with shallow mudflats and new marshes. Remains of the old marsh have been fragmented by re-routing of creeks entering the bay and by dredging of the harbor. The original, pre-Gold Rush shoreline is almost entirely obliterated.

The result of all these modifications is an "unnatural" shoreline, in Mill Valley as well as in adjacent lands. In spite of modifications, the shoreline area retains significant natural features – a diversity of plants associated with tidal and non-tidal salt marshes and important refuge and feeding areas for migrating and resident shorebirds and water fowl. Typically, marsh plants are distributed according to an elevation gradient relative to tidal submergence. The lowest emergent plant – subject to the most frequent and prolonged submergence daily – is Pacific cordgrass (*Spartina foliosa*), which colonizes mudflats as they approach an elevation permitting daily tidal exposure. Cordgrass is known for its high productivity as a food source in detrital form to a chain of organisms extending into the bay (estuary) and beyond. In Mill Valley, cordgrass is represented in the marshes adjacent to the Redwood Highway Frontage Road at Hamilton Drive (near Goodman Building Supply) and in the small channels in the upper tip of Richardson Bay, near the PG&E substation on Roque Moraes. Narrow bands grow on the banks of the harbor.

Elizabeth Terwilliger Marsh, located adjacent to the Mill Valley Community Center

The Tamalpais Preserve (Bothin Marsh) is located in Richardson Bay within the jurisdictions of both the City of Mill Valley and the County of Marin. In the County portion, near Tam Junction, extensive stands of cordgrass have developed over the past two decades following removal of tidegates and resumption of tidal action. The banks of Coyote Creek also support bands of cordgrass, although

these are periodically removed (every six to eight years) during dredging for flood control. Cordgrass has also re-established in the large marsh opposite Tamalpais High School, as a result of breaching of the levee and resumption of tidal action. This latter area is partially in the City and partially in the County.

Middle levels of the salt marsh are dominated by pickleweed but also support a diversity of plants adapted to less frequent tidal submergence than cordgrass. Pickleweed also contributes food in detrital form to the animal life of the estuary. This is the most extensive plant association in the marshes and is well represented in several marshes on City-owned lands west of the harbor, on both sides of Arroyo Corte Madera del Presidio. In a small marsh adjoining Mill Valley Middle School, pickleweed occupies most of the area. Pickleweed also occupies much of the marsh opposite the Tamalpais High School playing field (in both the City and County) and occurs at medium elevations at the mouth of Coyote Creek in the Tamalpais Preserve (Bothin Marsh) area, as well as along the Manzanita and Shoreline Center areas south of Richardson Bay Bridge.

Upper margins of the marsh, infrequently inundated by high tide but subject to high levels of soil salinity, are occupied by salt grass and several associates. Marshes in both the City and County include limited amounts of this association around the upper periphery of pickleweed marshes. These marshes are also the habitat for Point Reyes bird's beak, which has been documented to occur within the City as shown in Figure 5.6.

Only a few small areas of non-tidal, seasonal marsh remain in the shorelands of either the City or County around upper Richardson Bay. On both sides of the realigned Coyote Creek, vestigial marshes remain, wetted only by extreme high tides. In their present condition, these areas offer high-quality habitat in the fall and winter, following the onset of the rainy season. They could also be restored to more complete tidal action.

The large, formerly diked seasonal marsh opposite the Tamalpais High School playing field demonstrated how readily tidal action can restore a viable marsh. After the levee was breached, patches of pickleweed began to spread, and cordgrass re-established in drainage channels. Salt grass, brass buttons, and salt-bush, all aggres-

Mill Valley shoreline and tidal marsh adjacent to Miller Avenue between Camino Alto and Almonte

sive colonizers of disturbed marshes, have become established. The diversity of bird species using the area has also increased since tidal restoration.

Conservation and restoration of tidal marsh, diked marsh, shoreline, and open water habitat benefit a variety of productive biological processes and resources provided by these communities. Tidal marshes and wetlands serve to purify water resources by assimilating waste and trapping pollution from urban runoff and improve air quality by sequestering greenhouse gasses and producing oxygen. Marsh vegetation can also increase the retention of storm water, thereby recharging groundwater and slowing or diminishing peak flood levels. Marshes also prevent shoreline erosion and protect the City by absorbing wave energy and storm surges. Maintaining and enhancing these valuable services is an important adaptation strategy as sea levels and storm events are altered by climate change. Conservation and enhancement of Bothin Marsh and the waters that contribute to it ensure that the City will continue to enjoy these free, natural services, even in the face of a dynamic climate.

Marsh communities in Mill Valley and around the bay also provide habitat for specialized plant and wildlife species. Some species are so specialized that they depend completely on San Francisco Bay tidal marsh and have subsequently followed the path of the marsh in its decline. The U.S. Fish and Wildlife Service (USFWS) calls for the recovery of several species that depend on tidal marsh, including salt marsh harvest mouse (*Reithrodontomys raviventris*), salt marsh wandering shrew (*Sorex vagrans halicoetes*), California clapper rail (*Rallus longirostris obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), Samuel's (San Pablo) song sparrow (*Melospiza melodia samuelis*), and long-billed curlew (*Numenius americanus*), as well as marsh plant species including California sea-blite (*Suaeda californica*), and Pacific cordgrass (*Spartina foliosa*), among others. In addition, the National Marine Fisheries Service (NMFS) has identified marsh habitat and its surrounding coastal waters as "essential fish habitat" and strives to protect this sensitive area for the fish species that depend on it for food and shelter.

Mill Valley Marsh area and wildlife

Habitat features surrounding Mill Valley's shoreline also act together as an important wildlife movement corridor. Steelhead move through Richardson Bay and into its tributaries to spawn. Juvenile fish find refuge amongst vegetation and food close to shore before moving to their adult habitats. For endangered salt marsh harvest mice, large areas of contiguous marsh habitat are necessary for the recovery of the species. Maintaining connectivity between the marsh plain and high marsh, vegetated levees, and grasslands is essential for mice to escape high tides. Additionally, San Francisco Bay is part of the Pacific Flyway, the north/south route for migratory birds in the Americas. Open water, mud flats, and marsh habitat offer essential stop-over locations for food, rest, and cover during seasonal migrations.

Northern coastal salt marsh around the bay is both valuable and greatly reduced from its historic extent. This community has become a high-priority community for both state and federal resource agencies. In its Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, the USFWS has included Mill Valley's shoreline in the Central/South San Francisco Bay Recovery Unit.[9] Major threats to these communities include climate change, habitat loss and degradation, and invasion by exotic species such as non-native cordgrass species.

Bayfront Park offers shoreline open space opportunities. In those portions of the area that are not landscaped, vegetation consists predominantly of the opportunistic grasses, annuals, and woody plant species such as toyon and coyote brush. In the absence of further landscaping, natural succession to a coastal scrub community may occur. These portions of the "park" are at present used for passive recreation.

Grasslands, Chaparral, and Coastal Scrub

The city's rich natural history goes beyond its shoreline, over rolling hills and up steep wooded slopes, culminating in a scenic ridgeline to the west and the foot of Mount Tamalpais to the northeast. The regional topography and climate create niches for a variety of vegetation communities, which include redwood groves, broad-leaf evergreens, oak woodland, chaparral, coastal scrub, and grasslands

Click Off (2007)
Source: Mill Valley Arts Commission
Photographer: Ginna Fleming

[9] U.S. Fish and Wildlife Service, Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento, California, xviii + 636 pp., 2010

(see Figure 5.3). At lower elevations, open areas, coastal scrub, chaparral, and grasslands dominate the landscape.

Although native grasses such as California's state grass, the purple needle grass (*Nasella pulchra*), and forbs persist in Mill Valley, the City's grasslands have not escaped the invasion of non-natives such as ripgut brome (*Bromus diandrus*) and wild oats that have come to dominate many of these communities in California. Wildlife associated with this habitat may include birds, reptiles, amphibians, and mammals, and it may even be seasonally visited by the protected salt marsh harvest mouse where it occurs near the marsh edge. Burrowing mammals, such as American badger (*Taxidea taxus*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Otospermophilus beecheyi*), play a key role in the grassland ecosystem. These species constantly dig and churn soils that move seed, and their burrows provide subterranean homes for all manner of wildlife including coyotes, mice, snakes, and insects. California ground squirrels are a particularly important source of food for grassland predators; American badgers depend on them, as do golden eagle (*Aquila chrysaetos*) and others.

Redwood grove in MIll Valley

Forests and Woodlands

Forests and woodlands are found on the hills and slopes throughout the City. These communities improve air quality, influence the local climate, stabilize the soil, and provide food and places to live for wildlife. Oak woodland communities consist of coast live oak, California bay laurel, and a variety of shrubs and grasses in the understory. Acorns are an integral part of the local food web, feeding deer, woodpeckers, squirrels, and others. Some of the large, old, and more robust trees in this vegetation community are considered by the City of Mill Valley to be heritage trees, as are those that meet the criteria in the redwood and evergreen forests.

Native trees that make up the towering Mill Valley forest canopy include Pacific madrone (*Arbutus menziesii*), Arroyo willow (*Salix lasiolepis*), Scoulter, Pacific coulter species (*Salix* spp.), Red Elderberry (*Sambucus callicarpa*), coast redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), Bay laurel (*Umbellularia californica*), Giant Chinquapin (*Castanopsis chrysophylla*), California nutmeg (*Torreya californica*), silk tassel (*Garrya elliptica*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*), Sargent cypress (*Cupressus sargentii*)

and Northern California black walnut (*Juglans hindsii*), which is rare. There are also a variety of oaks within Mill Valley including coast live oak (*Quercus agrifolia*), canyon oak (*Quercus chrysolepsis*), chaparral oak (*Quercus wislizeni*), leather oak (*Quercus Durata*), California black oak (*Quercus kelloggii*), oracle oak (*Quercus xmorehus*), and tanbark oak (*Lithocarpus densiflorus*).

The forest is home to the northern spotted owl (*Strix occidentalis*), a protected species that is threatened by the removal of old-growth forest and by competition from the more aggressive barred owl (*Strix varia*). Immediately west of the city limits, the U.S. Fish and Wildlife Service has designated critical habitat for marbled murrelet (*Brachyramphus marmoratus*), and it is possible that this federally listed threatened species may have historically used old-growth or second-growth forest within the City (see Figure 5.7).

Sea Level Rise Due to Climate Change

The Richardson Bay watershed is one of the most highly susceptible areas of Marin County to the impacts of climate change. Rising tide levels in San Francisco Bay will result in more shoreline erosion as well as increased river flooding as the storm drain system is unable to drain against the rising tides. Loss of tidal marsh and upland transition zone from sea level rise will adversely affect plant and animal species. In addition, short duration rainfall intensities are anticipated to increase and will exacerbate storm water flooding as well as landslides and soil erosion in the upper watershed. Policies and programs to address sea level rise and climate change are provided in this element and the Climate Action and Hazards and Public Safety Elements of the General Plan.

Open Space Preservation

Natural resources along Mill Valley's edges are made up of both public and private land. Some of the land is under the jurisdiction of the Marin County Open Space District. These natural areas are protected in a series of open space preserves: Blithedale Summit, Camino Alto, and Alto Bowl to the north and Bothin Marsh to the southeast. The wetlands of the Bothin Marsh Preserve, along with those in Corte Madera, represent the majority of the tidal marsh habitat of west-central San Francisco Bay. Protected lands are shown in Figure 5.8.

Blithedale Summit Preserve

The City of Mill Valley has successfully protected a number of large parcels of land that were identified in the 1989 General Plan Open Space Element. Although much of the open space "backdrop" for Mill Valley is under permanent public protection, a number of environmentally sensitive parcels still remain. These lands have not been developed due to their steep slopes or proximity to existing open space, or because they support creeks or trails. Several of these sites were identified as priorities for protection by a Site Priority Committee in January 2002.

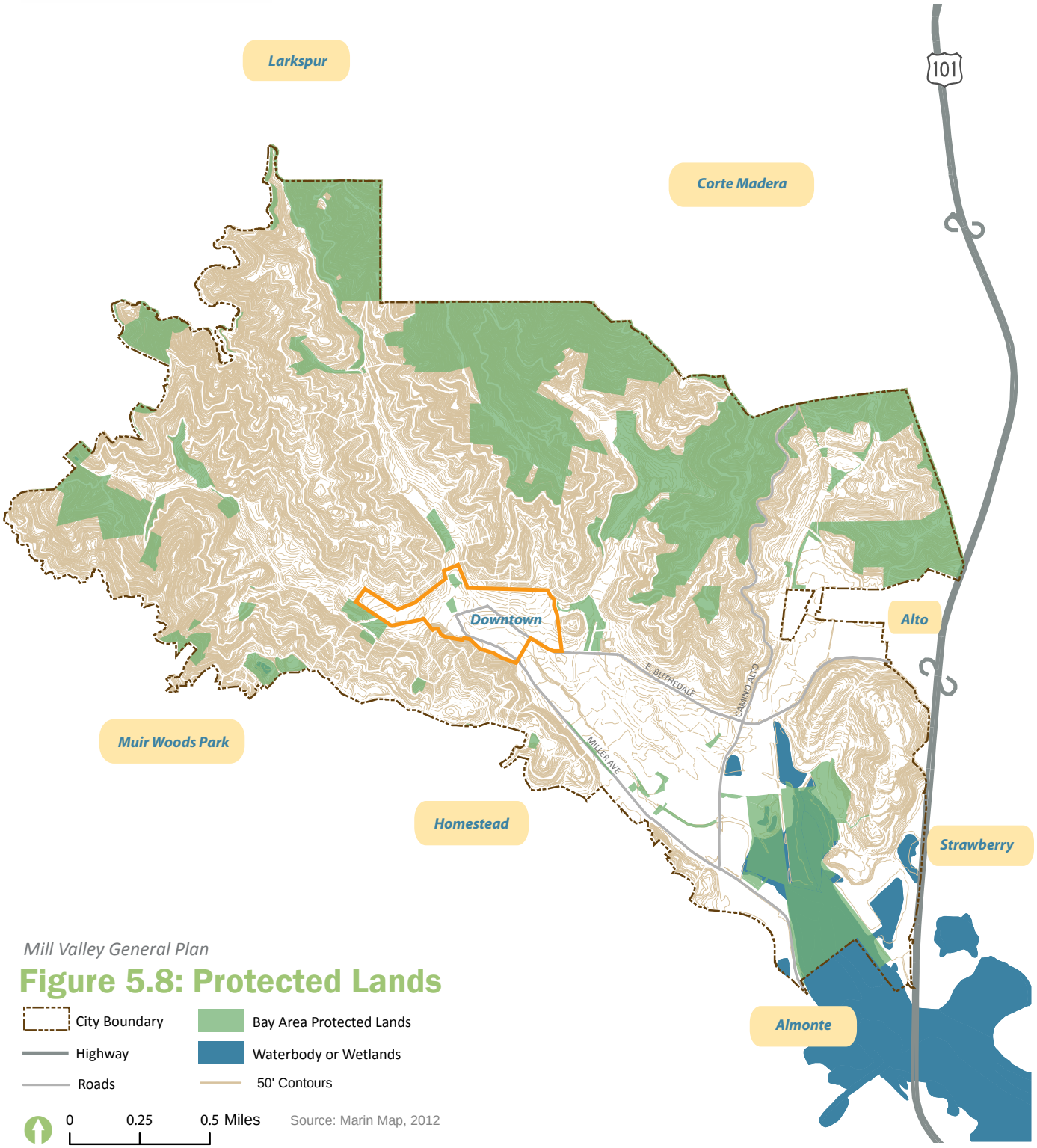
The City has several tools at its disposal to accumulate and protect open space. These tools include direct acquisition through purchase, purchase of tax defaulted property, acceptance of property donations, and negotiated development plans, which may be in the form of conservation easements or acquisition of development rights.

Natural Resource Management, Conservation, Restoration, and Enhancement Opportunities

Mill Valley hosts a range of biological communities and natural resources that perform valuable ecosystem services including flood control, fire prevention, and erosion protection and afford numerous opportunities for recreation. Many of these natural resources have been altered from their natural state due to urbanization and its cascading effects. Based on conditions as they exist today, however, there may be many opportunities to maintain, restore, or enhance these resources and ensure their viability for the future. These opportunities may include the following:

- **Preserving and enhancing wildlife movement corridors.** Corridors are an essential component of maintaining sustainable wildlife populations. Opportunities to achieve this within Mill Valley include removing barriers to fish passage, maintaining or enhancing connectivity between marshlands within the city limits and those outside, and planning development to maintain habitat cover or preventing barriers to the movement of wildlife. This may be accomplished by encouraging landscaping using native vegetation, installing undercrossings during routine road maintenance and construction, and incorporating wildlife-friendly features such as nest boxes or crevices for roosting bats into construction plans.

Centennial documentary photo contest (2000)
Source: Mill Valley Public Library.
Photographer: Cole Slater



Mill Valley General Plan

Figure 5.8: Protected Lands

84%
of Marin County land is
protected as
parks, open space, tidelands & farmlands

- **Planning for climate change.** Estimates of sea level rise change frequently, and federal and state resource management agencies have collaborated to produce adaptive management strategies to assist local governments in preparing for uncertain future conditions. Adaptive management includes a monitoring element that would allow the City to track changes in sea level rise, temperature, and water availability and plan accordingly. This may include maintaining open spaces along the shoreline and at low elevations, particularly where tidally influenced vegetation communities will migrate inland over time in response to sea level rise.
- **Controlling invasive species.** Opportunities currently exist to protect vistas, wildlife corridors, unique habitats, and the rare species of Mill Valley by managing and removing species that potentially threaten the ecosystem, such as giant reed, invasive Spartina species, non-native broom species, sedge (Carex pendula), and pampas grass (Cortaderia selloana). Public outreach is instrumental to provide residents with information about invasive species and encourage the public to use safe techniques for weed abatement and native, drought-resistant plants for landscaping.
- **Restoring creeks and wetlands.** Mill Valley's creeks and wetlands provide valuable ecosystem services. Restoration of degraded sites could further improve these natural services and aid in the recovery of native and/or rare species. Restoration may include removal of barriers to fish passage, removal of invasive plants and wildlife, or maintenance or improvement of habitat characteristics, such as structural complexity (i.e., adding woody debris to channels, increasing riparian vegetation along watercourses).
- **Managing and acquiring open space lands.** Large areas of contiguous open space provide wildlife corridors, habitat for rare species, and natural services such as soil stabilization and greenhouse gas sequestration. Opportunities may include monitoring and managing these areas to protect old-growth and heritage trees, as well as native species and communities; maintaining watershed functions by limiting the area of impermeable surfaces and restoring creeks and wetlands as appropriate to prevent flooding; monitoring brush encroachment into grasslands to reduce the prevalence of fires, and implementing

adaptive management strategies; and continuing to educate residents and visitors about the value of ecosystem services, recreational opportunities, and aesthetic beauty offered by Mill Valley's natural resources.

- **Managing natural resources to reduce the impacts of hazards such as fire, flood, erosion, and landslides.** Managing natural resources effectively not only provides recreational and ecosystem services, but it also affords protection to the community. By removing invasive species such as French broom (Genista monspessulana) and eucalyptus trees, both of which are especially prone to fire, the incidence of fire may be greatly reduced. Additionally, by maintaining riparian and tidal marsh vegetation, as well as limiting the area of impermeable ground surface, the City may protect itself to a greater degree against flooding. The many vegetation communities throughout the area also offer additional protection against excessive erosion and limit landslides by stabilizing the soil. By maintaining and restoring these natural services, the City promotes a safer, healthier, and more sustainable future for the community.

Woman atop Profile Rock on Mount Tam, circa 1901
Source: Mill Valley Public Library, Lucretia Little History Room

Natural Environment Goals, Policies & Programs

NATURAL-1 | Understanding and Sustaining the Ecosystem

Identify, map, and inventory natural resources and potential natural hazards, with regular updates.

NE.1 Data and Mapping

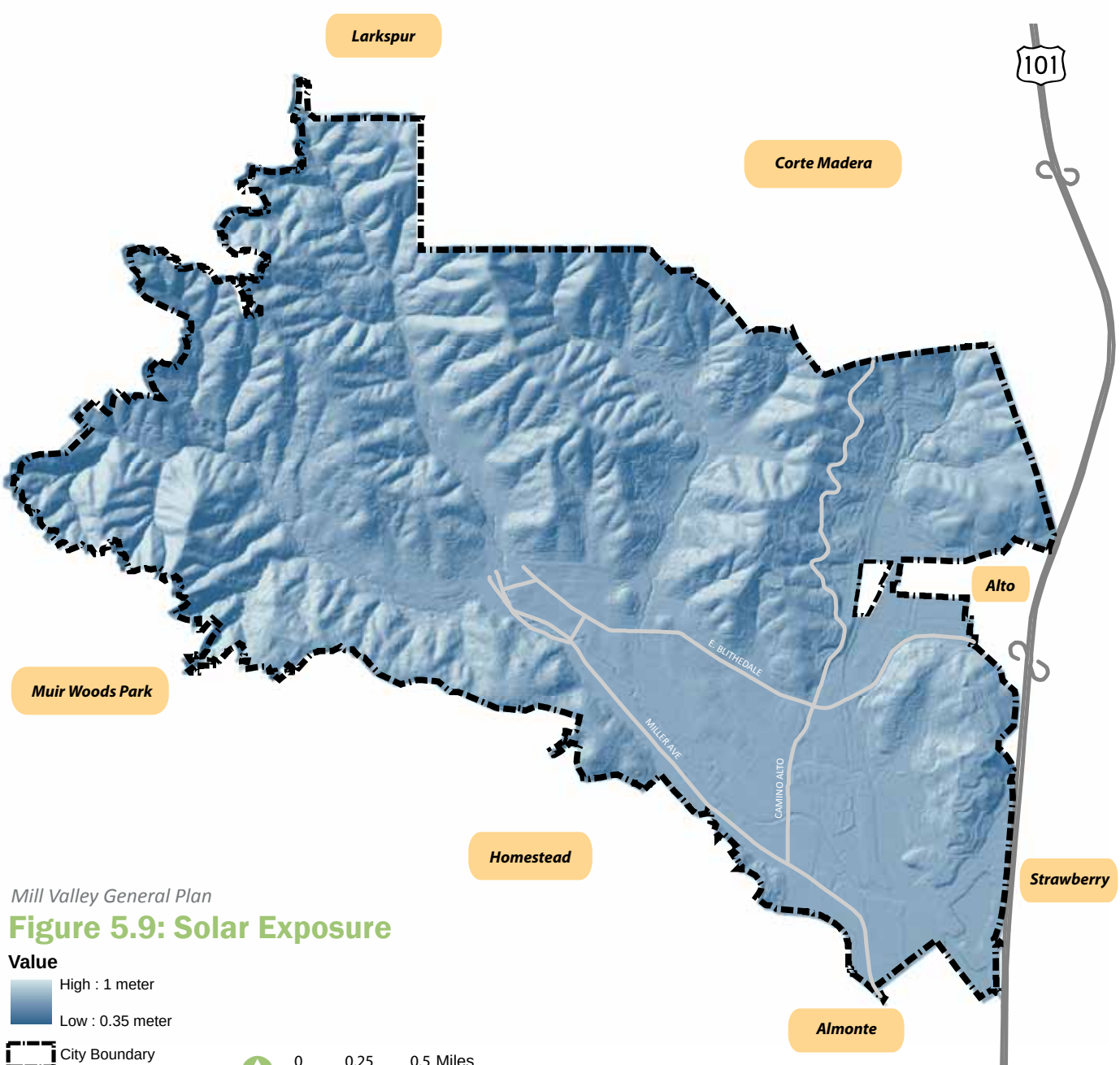
Collaborate with regional, state, and federal agencies to continually update and assess information on ecologically sensitive and significant natural communities.

NE.1-1 Create a comprehensive natural resources inventory and map of the data as described below to guide goals and strategies for local resource conservation and management; identify resource conservation priorities, evaluate current and identify new resource management practices, guide resource-related regulatory standards, and provide a basis for resource preservation, protection, and rehabilitation planning. At a minimum, the inventory should include the following, but the final scope will depend on community outreach and recommendations:

- Existing land cover (i.e., forest [including public trees], wetlands, other vegetation, impervious surfaces, etc.)
- Significant and sensitive native plant communities
- Endangered, threatened and special concern species
- Wildlife habitat
- Wetlands and streams
- Surface and groundwater quantity and quality
- Soil types
- Landforms (i.e., watershed, severe slopes, wetlands, streams, etc.)
- Greenways and habitat connections between sensitive areas
- Status of land conservation (open space, parks, easements, etc.)
- Existing trails and public access
- Invasive species
- Fire, flood, earthquake, and other hazard areas
- Human population distribution
- Solar access (see Figure 5.9)

NE.1-2 Review and compare the "baseline" inventory with updated data and information at least every ten years to assess potential changes in conditions and to ensure the information stays current and remains a valuable resource for the community and decision-makers.

MV2040



Mill Valley General Plan

Figure 5.9: Solar Exposure

Source: Golden Gate Lidar Project, 2013

NE.1-3 Use "best available" science and technology, such as "Marin Maps" or other Geographic Information System (GIS) or technical resources, to make critical natural resource and hazard data and mapping accessible to the community and to reinforce the links between residents and the surrounding natural environment.

NE.1-4 Identify and continually update mapping data showing areas of the City that are vulnerable to the effects of climate change-related hazards, including landslides, sea level rise, flooding, loss of barrier habitats (e.g., wetlands), changing storm cycles and increased rainfall, and extended periods of excessive heat.

NE.1-5 Continue to train City employees to remain up-to-date on the latest science and technology and best practices associated with the natural environment and ecology.

Public access along Mill Valley's shoreline near the Highway 101 Frontage Road

NATURAL-2 | Sustaining and Restoring the Ecosystem

Preserve, restore, or rehabilitate the integrity, function, productivity, and long-term viability and resiliency of the ecosystem and its ecologically sensitive and significant natural communities and wildlife habitats.

NE.2 Resource Preservation and Restoration

Use a watershed approach (as opposed to a parcel-by-parcel approach) to identifying, preserving, or rehabilitating natural resources in a consistent manner that supports applicable flood control, storm drainage, water quality, and public access values, and as a basis for identifying and applying best practices for the continued contribution of the community's native plant and wildlife species value and aesthetic character to Mill Valley.

NE.2-1 Revise City standards and regulations as necessary to consider the effects of development and redevelopment on areas identified as natural resources areas in the "baseline" inventory and develop mitigation strategies for any proposed development or redevelopment of property in these areas.

NE.2-2 Use best practices for restoring and rehabilitating the ecosystem to balance needs of the community and ecosystem.

NE.2-3 Provide access to designated open space areas along Richardson Bay and creek corridors consistent with preserving habitat and protecting threatened or endangered species.

NE.2-4 Retain plant and wildlife habitat areas, including those that contain known sensitive resources (e.g., sensitive habitats; special-status, threatened, endangered, or candidate species; and species of concern) and that are contiguous with other existing natural areas and/or wildlife movement corridors.

NE.2-5 Preserve the ecological integrity of watersheds and creek corridors that support riparian resources by preserving or restoring native plants and removing invasive non-native plants; developing "pools," "riffles," "cover," and "slow flow" areas; and removing or providing alternatives to barriers to fish movements.

NE.2-6 Develop a Creek Master Plan and management guidelines for maintaining and enhancing all identified creeks within the city limits, identify flood control measures, determine preferred stream bank protection techniques, establish a more precise and functional "creek setback" and related development standards, and identify public access and park development opportunities.

NE.2-7 Preserve and protect wetland resources in compliance with applicable regional, state, and federal regulations and to provide a buffer to sea level rise.

NE.2-8 Revise the City's heritage tree regulations and related education programs to protect populations, stands (groves), and heritage specimens of native tree species consistent with the City's fire and flood prevention strategies and programs and considering the following:

- Tree protection and planting in riparian zones
- Street tree planting and maintenance
- Reduction of tree/public infrastructure conflicts
- Vegetation management
- Root pruning

NE.2-9 Review and update the 2002 Site Priority Report and collaborate with the Marin Open Space District, property owners, and other open space acquisition agencies to identify and acquire additional open space resources for recreation, habitat protection, watershed management and flood control, and emergency evacuation purposes.

Plaque and bench dedication as part of land donation on Monte Vista

NATURAL-3 | Water

Protect and improve water quality, system supply, and system integrity.

NE.3 Water Quality, System Supply, and Integrity

Improve water quality and expand and diversify water supply.

NE.3-1 Work with Marin Municipal Water District (MMWD) to optimize storage, transmission, and distribution capacities and efficiencies and to minimize water outages due to drought, emergencies, or other disasters.

NE.3-2 Explore the retrofit of Cascade Dam for use during drought or emergency, consistent with habitat and species preservation policies and programs.

NE.3-3 In conjunction with the Sewerage Agency of Southern Marin (SASM) Board, assess the SASM treatment plant to attain greater efficiency, including advanced wastewater treatment capacity for water recycling and reuse on public and private properties.

NE.3-4 Continue to take actions to reduce inflow and infiltration ("I&I") in Mill Valley's sanitary sewer collection system to reduce spills to the bay during rain events.

NE.3-5 Continue to implement the sewer lateral evaluation and replacement program and consider the implementation of a point-of-sale sewer audit.

NE.3-6 Continue to work with the County of Marin and other agencies to implement the Marin County Stormwater Pollution Prevention Program (MCSTOPP) and the National Pollutant Discharge Elimination System (NPDES) Permit that require watershed-based regional water quality standards and urban run-off management and reduction best practices and standards for all new development and redevelopment.

NE.3-7 Encourage and educate residents and businesses to implement integrated pest management principles, reduce or discontinue the use of pesticides and herbicides, and reduce or discontinue the use of toxic cleaning substances.

NE.4 Conservation of Water Resources

Improve water quality by capturing source pollution, sedimentation, and run-off on public and private properties and allow for conservation of water resources through rainwater storage and greywater systems.

NE.4-1 Reduce water use in City buildings by:

- Assessing, maintaining, and repairing existing plumbing fixtures, pipes, and irrigation systems in all City buildings and facilities, including building and parking lot landscaping, public restrooms, parks, golf courses, and other recreational facilities, to minimize water use;
- Upgrading City plumbing and irrigation systems with water-conserving technology;
- Exploring options for installation of greywater systems as appropriate in City buildings and facilities;
- Auditing the City's water and wastewater pumps and motors to evaluate equipment efficiency;
- Developing and implementing a motor/pump efficiency cycling schedule to use the most efficient water or wastewater motors/pumps first and least efficient ones last;
- Replacing the least efficient motors and pumps with more efficient units;
- Implementing methane capture for energy production at the wastewater treatment plant;
- Using recycled water for City facilities and operations where appropriate; and
- Retrofitting existing City buildings and facilities to meet water efficiency standards of the Leadership in Energy and Environmental Design (LEED) rating system for "Existing Buildings."

NE.4-2 Reduce water consumption in the community by:

- Partnering with the Marin Municipal Water District (MMWD) to highlight the existence of rebates for the installation of indoor and outdoor water efficiency fixtures and appliances, and promoting existing and proven water conservation measures through educational programs and other initiatives;
- Partnering with MMWD, conservation organizations, installers, and manufacturers to promote the installation of greywater systems and rainwater catchment;
- Exploring incentives for promoting the installation of greywater systems and/or water-efficient landscaping at commercial and residential properties;
- Requiring water efficiency audits at point of sale for commercial and residential properties;
- Adopting a retrofit program to encourage or require installation of water conservation measures in existing businesses and homes;

- Consistent with upgrades to the Sewerage Agency of Southern Marin (SASM) wastewater treatment facility to provide advanced wastewater treatment and supply, requiring dual plumbing for use of recycled water for new commercial and/or residential developments;
- Using bay-friendly landscaping and gardening guidelines developed by StopWaste.Org or other similar best practices in the design, construction, and maintenance of residential and commercial landscapes; and
- Reviewing the City's zoning regulations and design guidelines to address lot coverage standards and increase the use of pervious paving for driveways, patios, walkways, and other hardscape features.

NE.4-3 Establish local greywater system guidelines.

NE.4-4 Evaluate existing City-owned landscapes and parking lots to consider options to convert reflective and impervious surfaces to pervious landscape, and install or replace vegetation with drought-tolerant, low-maintenance native species or edible landscaping that can also provide shade and reduce the effects of intense sunlight and heat.

NE.4-5 Work with the Marin Municipal Water District (MMWD) to establish and promote incentives for water conservation.

Swimmers on Cascade Dam, 1969
Source: Mill Valley Public Library, Lucretia Little History Room

NATURAL-4 | Leadership & Education

Increase the community's knowledge and understanding of ecologically significant and sensitive natural communities, natural processes, and any corresponding hazards in areas where the natural environment and human settlement meet.

NE.5 Community Outreach and Education

Support educational programs for residents and visitors about the uniqueness and value of Mill Valley's natural resources and ways to appreciate, enjoy, and protect those resources.

NE.5-1 Coordinate with the Mill Valley Library, Recreation Department, and local public and private schools to integrate sustainability and local natural resource appreciation and engagement into educational and recreation programs.

NE.5-2 Encourage the use of environmental monitoring applications and other technology to engage the community in resource protection and preservation.

NE.5-3 Use Mill Valley's commitment to volunteerism and environmental stewardship to help protect and rehabilitate the area's natural resources, seek funding for outreach and improvements, and facilitate open communication on issues that may affect those resources.

NE.5-4 Use the City of Mill Valley website or other technologies to highlight sustainability and local natural resource activities and accomplishments made within the community.

NE.5-5 Build community support for sustainability through engaging and fun activities and challenges such as the "Low Carbon Diet," "Resilient Neighborhoods," and other programs.

NE.5-6 Create walking tour maps and programs on natural resource areas and demonstration homes, gardens and businesses led by "sustainability docents". Develop self-guided walking tours that include various aspects of the community, such as local and historic landmarks and other arts, cultural and environmental features. Consider arts and culture walking tours.

NE.5-7 Identify and designate publicly accessible scenic vistas of natural areas, including Richardson Bay, Mount Tamalpais, and existing creek corridors.

NE.5-8 Create an easy-to-use and readily identifiable system of directional and informational signs along paths, trails, and creekside locations. Post signs that indicate prohibited activities (such as swimming, fishing, dogs off leash) due to the presence of threatened or endangered species. Limit public access during spawning and early development stages of young fish.

NE.5-9 Encourage litter reduction programs and promote individual responsibility for helping to maintain park, recreation and natural areas.

NE.5-10 Provide information to residents on local sustainability efforts, surrounding natural environment, potential hazards, and emergency preparedness.

Click Off (2002)
Source: Mill Valley Arts Commission
Photographer: Alisa Swartz

NATURAL-5 | Considering the Ecosystem in City Decision-Making

Ensure that all planning and decision-making processes integrate sustainability and resource conservation.

NE.6 Leadership and Coordination

Collaborate with local, state and federal agencies and private organizations to initiate and implement sustainable policies and programs. Develop and promote sustainable practices and using an ecosystem and watershed approach to solving resource related issues that go beyond political boundaries.

NE.6-1 Use the City's website and notification systems to disseminate best practices associated with resource management programs and practices and hazard mitigation to the community.

NE.6-2 Consider creating a "Sustainability Coordinator" City staff position or a Sustainability Commission to initiate, coordinate, and implement sustainable policies and programs as well as researching and writing successful grant applications to support sustainability efforts.

NE.6-3 Continue coordination efforts with Marin County and other jurisdictions to jointly create and implement common sustainability practices.

NE.6-4 Adopt purchasing practices and standards that support climate action policies and reductions in greenhouse gas emissions.

NE.6-5 Encourage application of new technologies that are environmentally beneficial.

Mt. Tam Locator (date uknown)
Source: Mill Valley Public Library, Lucretia Little History Room

In December of 1984, a benign accident changed the face of the south dry pond at the Sewerage Agency of Southern Marin (SASM), located near the Sycamore Avenue entrance to Bayfront Park in Mill Valley. The facility treats raw sewage from the surrounding area and pipes most of the treated water out to the Bay. In 1983, to handle the extra water that flows into the sewage system during winter storms, SASM built two dry ponds between its main building and the multi-use path in Bayfront Park. During periods of heavy rain SASM would store the excess wastewater in these ponds and after the rains ceased, draw the water back into the plant for treatment.

A leak developed that caused treated water to fill the pond to a level of one foot. It took a few months before the company that laid the pipes agreed that fixing the leak was their responsibility, and more time for them to actually perform the necessary repairs. During this period, waterfowl and shorebirds, beckoned by the fresh water and the quiet surroundings, began to visit the pond regularly. The immigration did not stop there though, for bird watchers and others finding a new, peaceful spot to commune with nature in the middle of civilization arrived soon thereafter. The birds brought on their feet and feathers and in their droppings seeds of cattails, sedges and other native California plants, some of which took root in this new, hospitable environment. A fresh water habitat was born.