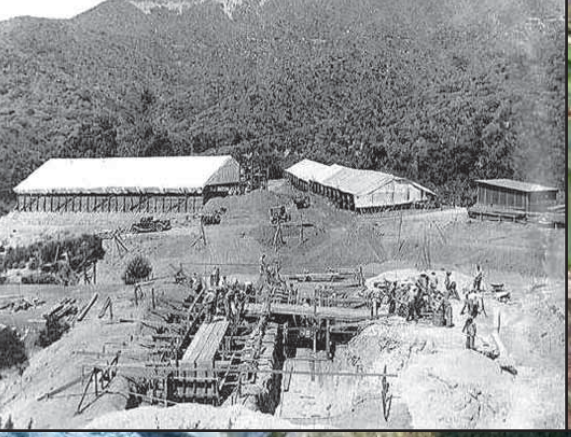

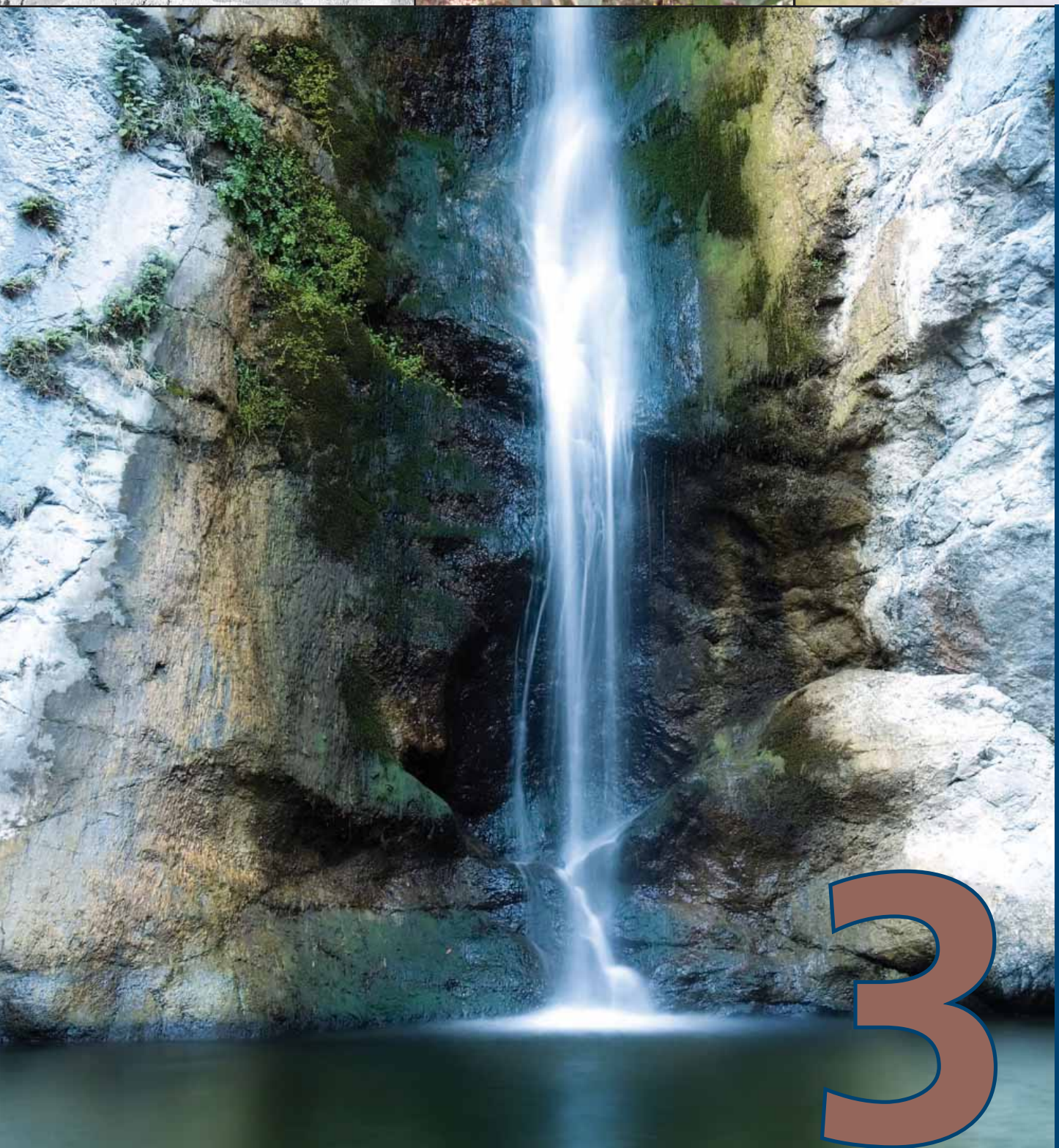

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Resource Significance

Photos (clockwise): 1. San Dimas Experimental Forest. United States Forest Service photo. 2. Walnut tree. NPS Photo. 3. Hiking, Angeles National Forest. NPS Photo. 4. Eaton Falls. Photo by Eric Lowenbach.

Chapter 3: Resource Significance

Criteria for National Significance

The National Park Service (NPS) uses four basic criteria to evaluate the national significance of proposed areas. These criteria, listed in the National Park Service *Management Policies*, state that a resource is nationally significant if it meets all of the following conditions:

- It is an outstanding example of a particular type of resource
- It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage
- It offers superlative opportunities for public enjoyment, or for scientific study
- It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource

The NPS evaluates national significance for cultural resources by applying the national historic landmarks (NHL) criteria contained in 36 CFR Part 65 (see Appendix E), in addition to the criteria above.

National Park Service professionals consult with subject matter experts, scholars, and scientists in determining whether a study area is nationally significant. Natural and cultural resource experts and scholars, locally and within the NPS, contributed expertise, research and technical review of this statement of significance. See Chapter 8, *Consultation and Coordination* for more information on subject matter experts and their role in this portion of the study process.

National Significance of the San Gabriel Watershed and Mountains Study Area

The topographically and geographically diverse study area contains a mosaic of natural communities that span both coastal and desert ecological regions. Plant communities range from coastal sage scrub in the coastal valleys and foothills, to unique subalpine habitats high in the San Gabriel Mountains, to desert scrub and Joshua trees at the northern base of the mountains. The region has a long history of human use with a wide range of historical and archeological resources.

Due to extensive urbanization in the Los Angeles region, many native plant communities and their associated wildlife are now rare, threatened or endangered. The intersection of biological resources and urbanization has made the southern California coastal region the most-threatened biologically diverse area in the continental United States (California Department of Fish and Game 2007). Southern California has been identified as a "hotspot" for biodiversity due to the high diversity of imperiled species (Stein, Kutner and Adams 2000). Archeological and historical resources have also been impacted by urbanization.

In 1973, the National Park Service conducted a comprehensive survey of natural history in California and identified sites with national significance that would be eligible for National Natural Landmark designation. This survey found that for areas in the Transverse and Peninsular Ranges, "Much of the mountainous areas lack intensive agriculture or dense urbanization, unlike the lowland valleys and floodplains of this area. These upland sites are in many cases the sole remnant of the pristine landscape (NPS 1973)." This statement remains true today. The significant resources within the study area are concentrated in the San Gabriel Mountains and foothills and in undeveloped hillside areas such as the Puente-Chino Hills.

Nationally Significant Regions

The NPS determined that two regions of the study area are nationally significant, the San Gabriel Mountains and the Puente-Chino Hills (See Map: Nationally Significant Regions). These regions contain outstanding examples of geologic resources and native southern California ecological communities. The San Gabriel Mountains are also culturally rich, with a long history of human use. Nationally significant cultural resources in the San Gabriel Mountains include the Mount Wilson Observatory and the San Dimas Experimental Forest.

SAN GABRIEL MOUNTAINS

The San Gabriel Mountains and foothills are nationally significant for their geologic resources, high biodiversity, dynamic river systems, and the long history of scientific study and discovery. Early conservation of the San Gabriel Mountains ensured that these areas were protected from the rapid development of the Los Angeles basin, which began in the late 19th century. The active mountain system has created scenic and unusual landscapes that support a high level of ecological

diversity. Within a short distance, the mountains and foothills feature coastal, desert, montane and sub-alpine ecological communities. This diverse landscape provides habitat for an abundance of rare and endemic plants and wildlife. In addition, the San Gabriel Mountains contain significant waterways and riparian areas, some of which are eligible Wild and Scenic River segments. Nationally significant cultural resources include the San Dimas Experimental Forest, which contains some of the earliest and most comprehensively and continuously monitored research watersheds, and the Mount Wilson Observatory which includes large telescopes that were used in significant astronomical discoveries.

PUENTE-CHINO HILLS

The Puente-Chino Hills contain rare native plant communities. Although this area is somewhat of an island of open space surrounded by urbanized areas, the Puente-Chino Hills and the Santa Ana Mountains to the southeast together encompass about 500,000 acres of wildlands containing significant biological resources.

The remaining portions of the study area which contain highly urbanized communities were found not to be nationally significant. These areas include urbanized areas of the San Gabriel Valley and the Los Angeles Coastal Plain. Although significant natural and cultural resources are located within these urbanized areas, these resources are highly fragmented and surrounding development has, in many cases, negatively impacted their integrity.

National Significance Criteria

The following analysis describes how the study area resources meet the national significance criteria. More detailed information on study area resources and historical context can be found in Chapter 2, *Resource Description.*

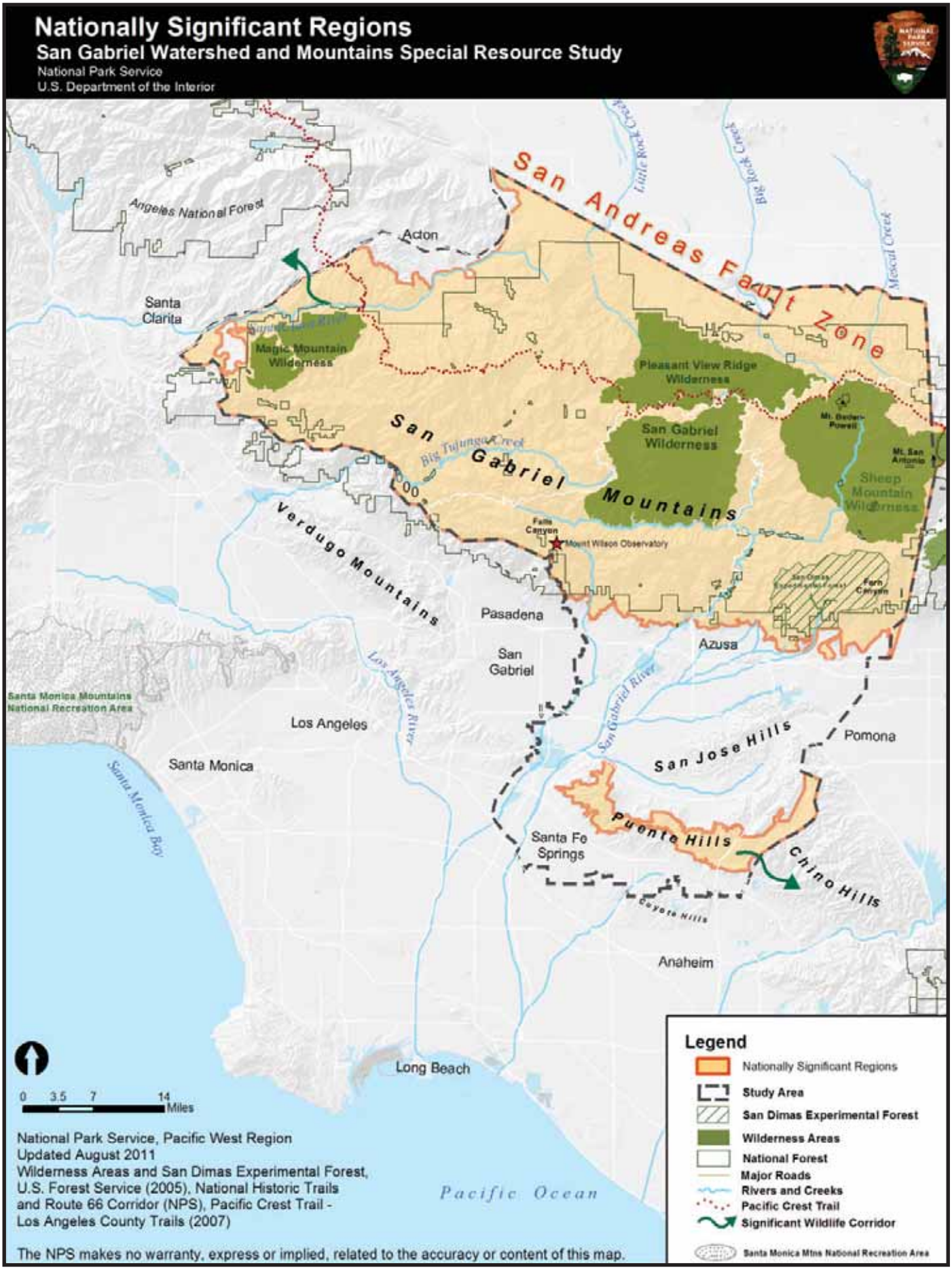
San Gabriel Mountains

CRITERION 1: IT IS AN OUTSTANDING EXAMPLE OF A PARTICULAR TYPE OF RESOURCE.

Natural Resources

Mountain building and diverse geology. The San Gabriel Mountains present the greatest vertical elevation gain for the shortest horizontal distance from the ocean, when compared to anywhere else in the continental United States. These mountains owe their ruggedness to the fact that they are one of the most tectonically active mountain systems in the United States. Tectonic activity along the

San Gabriel Mountains, Vincent's Gap. NPS photo.


Nationally Significant Regions
San Gabriel Watershed and Mountains Special Resource Study
National Park Service
U.S. Department of the Interior
San Andreas Fault Zone
Angeles National Forest
Acton
Santa Clarita
Magic Mountain Wilderness
Pleasant View Ridge Wilderness
San Gabriel Wilderness
Mt. Baldy-Powell
Mt. San Antonio
Sheep Mountain Wilderness
San Gabriel Mountains
Big Tujunga Creek
Verdugo Mountains
Falls Canyon
Mount Wilson Observatory
Fork Canyon
Pasadena
Azusa
San Gabriel
Santa Monica Mountains National Recreation Area
Los Angeles
Los Angeles River
San Gabriel River
Santa Monica
Santa Monica Bay
San Jose Hills
Pomona
Puente Hills
Chino Hills
Santa Fe Springs
Coyote Hills
Anaheim
Long Beach
Pacific Ocean
0 3.5 7 14 Miles
National Park Service, Pacific West Region
Updated August 2011
Wilderness Areas and San Dimas Experimental Forest, U.S. Forest Service (2005), National Historic Trails and Route 66 Corridor (NPS), Pacific Crest Trail - Los Angeles County Trails (2007)
The NPS makes no warranty, express or implied, related to the accuracy or content of this map.
Legend
Nationally Significant Regions
Study Area
San Dimas Experimental Forest
Wilderness Areas
National Forest
Major Roads
Rivers and Creeks
Pacific Crest Trail
Significant Wildlife Corridor
Santa Monica Mtns National Recreation Area

San Andreas and other regional faults force the mountains to rise at a rate of as much as 2 inches a year. The San Gabriel Mountains thus provide an ideal setting to learn about mountain building and plate tectonics. Geologists have studied the San Gabriel Mountains for many years and continue to make new discoveries about the evolution of the San Andreas Fault and the Transverse Range province (Gumprecht 1999, McPhee 1989, Murphy 1985, Powell 1993).

One of the most geologically diverse mountain ranges in southern California, the San Gabriel Mountains are comprised of rocks from all the major geologic eras as defined by the U.S. Geological Survey's geologic time scale. This includes the most extensive, best-exposed and most completely studied exposures of several geologic formations: the San Gabriel Mountains anorthosite massif, the Mount Lowe plutonic suite, and Pelona schist (Carter 1982a and 1982b, Ehlig 1982, Powell 2007a).

The San Gabriel Mountains also contain some of the oldest rocks in California. Ancient Precambrian rocks in the San Gabriel Mountains include Mendenhall gneiss (1.045 billion years old), anorthosite and related rocks (1.02 billion years old) and augen gneiss (1.7 billion years old). Although these rocks are not as old as the 3.6 billion-year old Archean rocks of the Lake Superior region, they do form part of the Precambrian core of the North American continent. Rocks of this age are typically associated with what geologists refer to as the North American craton, the old nucleus of the North American continent. Ancient rocks associated with the North American craton are typically found throughout the Midwest and in the Colorado Plateau (areas of Utah, Colorado, Arizona and New Mexico where the craton has been uplifted) (Norris and Webb 1990, Powell 2007b, Lillie 2005).

Within the San Gabriel Mountains there are many striking landforms. One such area is the Devil's Punchbowl, a magnificently exposed ridge of steeply tilted sandstone that was forced out of areas of older crystalline rocks by tectonic activity along the San Andreas rift zone. Tilted sandstone ridges and associated riparian areas create a highly scenic landscape. The Devil's Punchbowl was identified by two previous studies as a nationally significant geological feature (NPS 1974 and NPS 1976). The latter study recommended it for designation as a National Natural Landmark. It was described as *"an ideal place to ponder the importance of the regional faults and to view the San Gabriel Mountains* (NPS 1976)." Devil's Punchbowl is designated a "Special Interest Area" by the Angeles National Forest and is managed as a county park by the Los Angeles County Department of Parks and Recreation.

Geologic activity in the San Gabriel Mountains creates dynamic disturbance regimes. As a result of significant tectonic activity, mountain building and climate, ecological systems in the region have evolved to be dependent on disturbance dynamics associated with fire, flooding and erosion. Specialized plant communities have adapted to these disturbance conditions.

The U.S. Forest Service's San Dimas Experimental Forest (SDEF) is an international leader in the study of dynamic disturbance regimes. Established in 1933, the SDEF is one of the first U.S. Forest Service experimental forests established in the nation. Created as a natural laboratory to study fire, hydrology, and other topics related to chaparral ecology, the SDEF maintains some of the earliest and most comprehensive records from continuously monitored experimental watersheds in the United States (Jones and Stokes 2004). In 1976, the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Man and the Biosphere Program recognized the SDEF as a "Biosphere Reserve."

The SDEF's technological innovations in watershed research include:

1. the development of rain gauges and rain gauge networks to accurately measure precipitation in steep terrain,
2. the development of flumes (San Dimas Flume) to measure and withstand debris-laden flows,
3. the identification of post-fire soil conditions, and
4. use of lysimeters, large rectangular planters used to measure the influence of different vegetation types on water transpiration, evaporation, and percolation.

High levels of biodiversity. The topographically and geographically diverse San Gabriel Mountains feature climatic variations and extreme changes in elevation that create conditions for a high level of biodiversity. The San Gabriel Mountains contain plant communities that span two ecological regions (ecoregions): the coastal Southwestern ecoregion (coastal areas from Santa Barbara County to San Diego County) and the Mojave Desert ecoregion. Plant communities range from coastal sage scrub in the foothills, to unique subalpine habitats high in the San Gabriel Mountains, to desert scrub and Joshua trees at the northern base of the mountains.

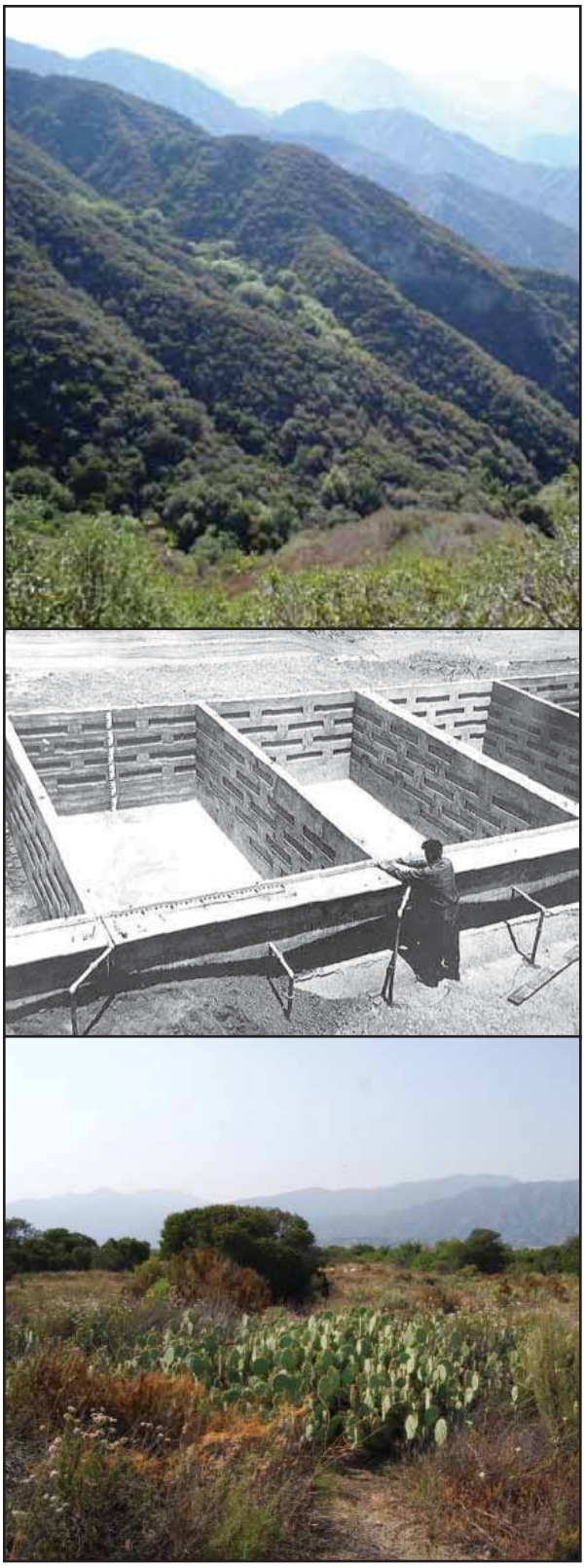
Visitors to the mountains can experience all of these distinct communities in a two-hour drive from the City of Los Angeles.

The wide range of vegetation types in the San Gabriel Mountains provides habitat for 67 sensitive, rare, threatened or endangered plant species. Federally listed threatened (FT) or endangered (FE) plants include: Nevin's barberry *(Berberis nevinii)* (FE), slender-horned spineflower *(Dodecahema leptoceras)* (FE), Braunton's milk-vetch *(Astragalus brauntonii)* (FE), thread-leaved brodiaea *(Brodiaea filifolia)* (FT), and California Orcutt grass *(Orcuttia californica) (FE).*

High levels of wildlife diversity are also present in the San Gabriel Mountains. Four of the six life zones (areas with similar plant and animal communities) identified for North America by Merriam are represented in the San Gabriel Mountains: Lower Sonoran, Upper Sonoran, Transition and Canadian. No single national park unit in the Southwestern and Mojave Desert ecoregions contains this level of diversity.

Federally listed threatened or endangered animals include the arroyo toad *(Bufo californicus)* (FE), least Bell's vireo (*Vireo bellii pusillus*) (FE), mountain yellow-legged frog (*Rana muscosa*) (FT), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) (FE), California condor (*Gymnogyps californianus*) (FE), California red-legged frog (*Rana aurora draytonii)* (FE), coastal California gnatcatcher (*Polioptila californica californica*) (FT), desert tortoise (*Gopherus agassizi*) (FT), Santa Ana sucker (*Catostomus santaanae*) (FT) and southern willow flycatcher (*Empidonax traillii extimus*) (FE). Other significant species in the San Gabriel Mountains include black bear, the mastiff bat, kit fox, bighorn sheep and mountain lions.

In a statewide comparison, the San Gabriel Mountains contain high levels of biodiversity. The California Department of Fish and Game has identified 12 measures to compare biodiversity throughout the state. These measures include species rarity, richness and endemism. The San Gabriel Mountains have among the highest levels of biodiversity for 8 of the 12 measures identified including: vegetation type richness, plant rarity, amphibian richness, reptile richness, bird richness (winter and summer), mammal richness and invertebrate rarity. Although not among the richest areas for native freshwater fishes in the state, within the southern California region, the San Gabriel Mountains are among the richest areas for native freshwater fishes (California Department of Fish and Game 2003).



Photos (top to bottom): 1. San Gabriel Mountains. NPS photo. 2. San Dimas Experimental Forest Lysimeter construction. Photo by the United States Forest Service. 3. Santa Fe Dam Natural Area. NPS photo.

The Angeles National Forest manages special designated areas, including research natural areas and special interest areas, for research and protection of outstanding examples of habitat types. The Fern Canyon Research Natural Area (RNA) was established to protect chamise (***Adenostoma fasciculatum***), chaparral, and canyon live oak (***Quercus chrysolepis***) woodland. This area also includes a unique relict stand of low-elevation ponderosa pine (***Pinus ponderosa***) at Brown's Flat, a shallow 80-acre bowl created by an ancient land slump. Fern Canyon RNA falls entirely within the San Dimas Experimental Forest. Fern Canyon was affected by the 2002 Williams fire but is expected to recover naturally (USFS 2005).

The Falls Canyon RNA encompasses a tributary of the West Fork of the San Gabriel River. This area was set aside to preserve rare stands of dense, mature bigcone Douglas-fir trees, some of which are over 350 years old. Most old-growth, bigcone Douglas-fir communities are in decline as younger trees do not survive well during the extreme fire events common in the southern California. The Falls Canyon forest is more resistant to fire because of its lack of understory vegetation. The U.S. Forest Service manages the Falls Canyon RNA to maintain biological diversity and provide ecological baseline information, education, and research.

Mount San Antonio and Mount Baden-Powell Special Interest Areas contain a rich array of isolated subalpine habitats close to large-scale arid and semi-arid landscapes. Mount San Antonio, the highest peak in the San Gabriel Mountains (10,064 ft), contains rare alpine and subalpine plants, partly related to the local geology. The area supports an unusual subalpine forest of krummholz lodgepole pine, *Pinus murrayana*. Disjunct western juniper *(Pinus occidentalis ssp. australis)* also occurs here. Mount San Antonio is the only known locality in southern California for the rare dwarf hawksbeard *(Crespis nana*), an arctic-alpine plant species. Other rare plant species in this area include alumroot (*Heuchera abramsii**),*** bed straw ***(****Galium parishii**),*** and wooly mountain parsley *(Oreonana vestita).* The area provides summer habitat for Nelson's bighorn sheep, a California Species of Special Concern. Mount San Antonio was recommended as a potential National Natural Landmark in a 1979 survey (NPS 1979, USFS 2005).

Mt. Baden-Powell, at 9,399 feet, features some of the best examples of 1,000 year-old limber pines in southern California. The peak and adjacent areas contain elements of subalpine habitat, including at least three endemic plant species (USFS 2005).

Although pinyon-juniper communities are common in southern California, a community near Mescal Creek, which flows from the San Gabriel Mountains north to the Mojave Desert, contains an unusual relict/remnant juniper woodland. The type of vegetation found in this woodland is a remnant of vegetation that was prevalent in this area during the Pleistocene epoch (1.8 million to 8,000 years ago.) Fossils of similar juniper species associated with the Pleistocene epoch in Mescal Creek have been found in the La Brea Tar Pits in Los Angeles. Species include *Juniperus californica* and *Juniperus utahensis.*

The Mescal Creek area juniper woodland was recommended for National Natural Landmark status in a previous study because of its high aesthetic value and the opportunity it provides to interpret the interaction of geologic history, plant geography, plant adaptation, water supply, desert-montane habitat and ecotones.

No recent surveys of the Mescal Creek juniper woodland have been conducted. However, it remains an undeveloped area of the Angeles National Forest. There are few trails in the Mescal Creek Area and off-road vehicle use is not allowed.

Dynamic River Systems. The highly erosive steep slopes of the San Gabriel Mountains produce dynamic river systems with rich habitat such as alluvial fan sage scrub and riparian areas. San Gabriel Mountains river segments that remain free flowing meet eligibility criteria for Wild and Scenic River designation.

Alluvial Fan Sage Scrub. During rain events, water moves with great velocity from the mountains carrying soil and aggregate which are deposited in the foothills and valleys below. In years following fire episodes, soils from slopes cleared of vegetation form mud and debris flows which can be highly destructive. Alluvial fan sage scrub is a specialized plant community that has adapted to this type of disturbance conditions.

The study area contains some of the best remaining examples of alluvial fan sage scrub in the Los Angeles basin. Alluvial fan sage scrub is a distinct and rare plant community found on alluvial fans and floodplains along the southern base of the Transverse Ranges and portions of the Peninsular Ranges in southern California (Hanes et al 1989). Flood control projects, agriculture, and urban development have significantly reduced alluvial fan sage scrub in river washes throughout the Los Angeles region (Davis et al. 1998). Only remnants of this habitat remain.

An analysis of ten stands of the most well-developed alluvial fan vegetation in Los Angeles, Riverside, and San Bernardino Counties found that Big Tujunga Wash is one of three sites which exhibits the most species diversity and the San Gabriel River is among one of two sites that exhibits the greatest structural diversity (Hanes et al. 1989). San Antonio Canyon and the upper Santa Clara River also contain excellent examples of alluvial fan sage scrub.

Riparian Vegetation. A wide range of riparian habitats are present in the San Gabriel Mountains: Mojave riparian forest, southern coast live oak riparian forest, southern cottonwood willow riparian forest, southern mixed riparian forest, southern riparian scrub, and southern sycamore alder riparian woodland (Davis et al. 1998). These riparian areas support wildlife including threatened and endangered species such as the Santa Ana sucker, arroyo toad, unarmored threespine stickleback and the southwestern willow flycatcher.

Riparian areas are important for resident and migratory bird species. The Santa Fe Dam Recreation Area and the Santa Clara River at the base of the mountains contain riparian areas that are recognized International Bird Areas because they support a high number of bird species (Los Angeles County Department of Public Works 2006a; Audubon Society 2007; San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy 2001).

Wild and Scenic Rivers. Many river systems in the San Gabriel Mountains remain free-flowing with intact riparian areas. The U.S. Forest Service determined, in its Angeles National Forest Plan, that free-flowing stretches of the East, North and West Forks of the San Gabriel River and Little Rock Creek are eligible for National Wild and Scenic River designation (USFS 2005).

Portions of these river systems traverse the San Gabriel and Sheep Mountain Wilderness Areas, providing opportunities for public enjoyment in a wilderness setting. The east and west forks of the San Gabriel River contain remarkable recreational

East Fork San Gabriel River, NPS photo

values and provide easy access to year-round water-based recreation. These river segments contain outstandingly remarkable scenic, recreation, fish, wildlife and historic resource values.

The Santa Clara River is the only major river corridor in southern California that runs freely without obstruction by major flood protection facilities. Although much of the upper Santa Clara watershed is located within the Angeles National Forest, the U.S. Forest Service did not include this corridor in their Wild and Scenic River analysis as the main stem of the river is outside the national forest boundaries. The upper Santa Clara River in the Soledad basin contains high quality riparian and aquatic habitats that support the Santa Ana sucker, arroyo toad, unarmored threespine stickleback and the southwestern willow-flycatcher. This area also functions as one of the important habitat linkages in the Los Angeles region, providing a connection between the San Gabriel Mountains and the Sierra Pelona Range (Stephenson and Calcarone 1999).

Wild cactus in bloom. NPS Photo.

Cultural Resources

Scientific Research and Discovery. The San Gabriel Mountains have been the location for major scientific research and discovery. Nationally significant research facilities within the San Gabriel Mountains that meet the criteria for designation as National Historic Landmarks include the Mount Wilson Observatory and the San Dimas Experimental Forest.

Mount Wilson Observatory. A National Historical Landmark theme study for Astronomy and Astrophysics (1989) included a National Historic Landmark nomination for the Mount Wilson Observatory which establishes the significance of the observatory. The Mount Wilson Observatory, established in 1904 by astronomer George Ellery Hale, contains five major research telescopes still in operation. The 60-inch reflector and the 100-inch Hooker reflector made Mount Wilson the home of the two largest telescopes in the world in the early 1900s. These telescopes laid the technological foundation for all large modern telescopes. In 1981, the 100-inch Hooker reflector was designated an International Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers (NPS 1989).

Many of the major advances and greatest names in 20th-century astronomy are associated with the Mount Wilson Observatory, including Edwin P. Hubble and Albert Michelson. Astronomy questions, including the nature of sunspots, the temperature and composition of stars, and the structure and origin of the universe, were addressed by the greatest astronomers in the world using the best equipment at Mount Wilson (NPS 1989).

The observatory continues to provide opportunities for scientific study. The Center for High Angular Resolution Astronomy Array, operated by Georgia State University, is used for current astronomical research. It is the world's largest optical interferometer array. University of California, Berkeley, operates the Infrared Spatial Inferometer.

San Dimas Experimental Forest. An "Inventory and Evaluation Report for the San Dimas Experimental Forest," prepared by Jones and Stokes, concluded that the SDEF field headquarters located in Tanbark Flats appears eligible for listing on the National Register as a historic district. The buildings and structures at the Tanbark Flats headquarters are excellent examples of Blanchard and Maher Forest Service Administration Buildings. Architects Blanchard and Maher designed the buildings to reflect California's architectural heritage

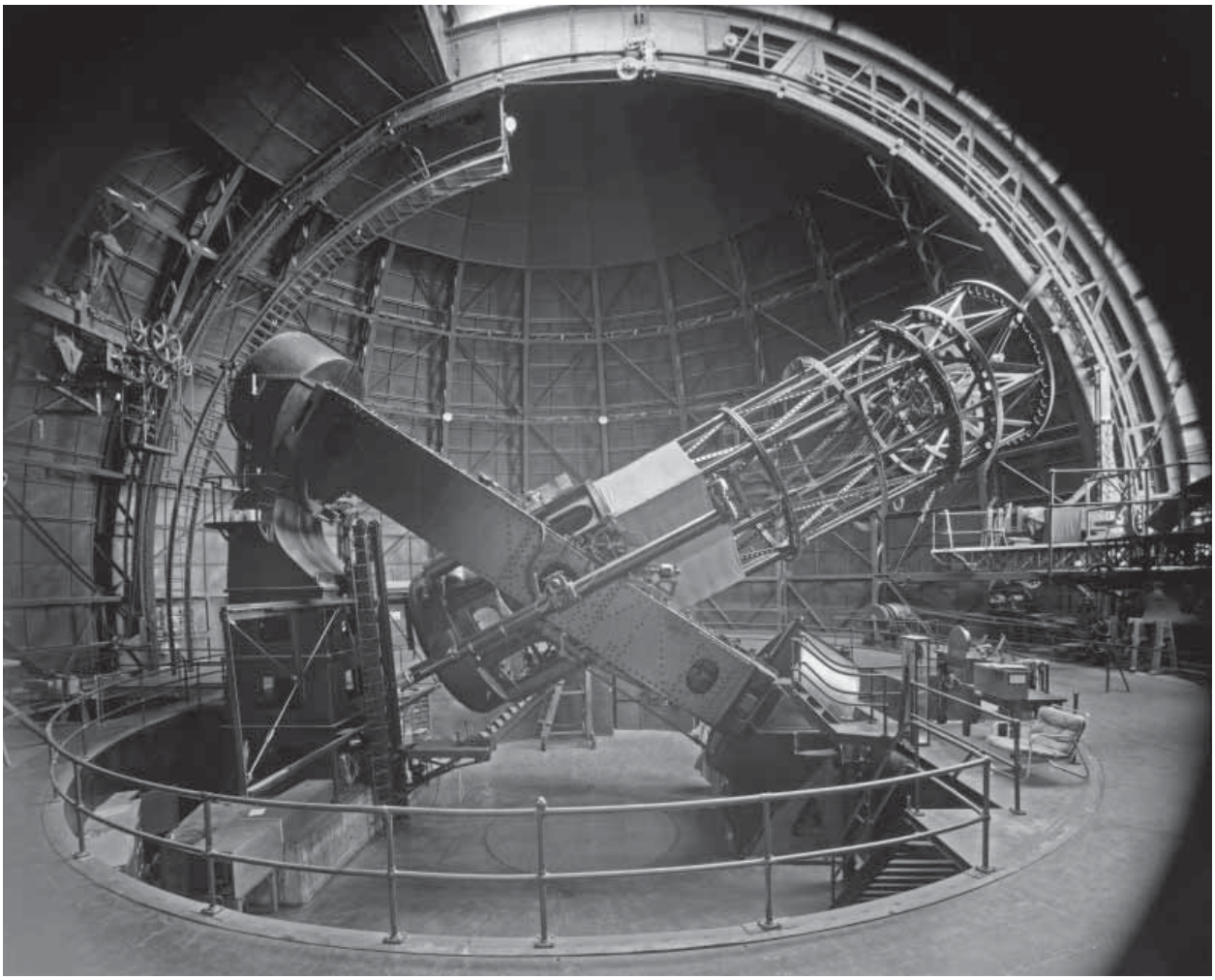
(wood buildings of the early days of the Mother Lode Country). Between 1933 and 1937, they produced over 200 designs. (Jones & Stokes 2004).

The SDEF facilities are among the earliest facilities constructed by U.S. labor programs during the 1930s, including the Civilian Conservation Corps (CCC) and the Work Projects Administration labor programs, as well as a group of conscientious objectors (COs) assigned by the Civil Public Service program (Jones & Stokes 2004).

The Tanbark Flats field headquarters appears eligible for listing on the National Register as a separate historic district. Research/ monitoring equipment includes a historical lysimeter facility (Jones & Stokes 2004). The Lysimeter facility at SDEF (tunnel and instrument room) is the largest of its kind in the world. The facility contains 26 large lysimeters (each measuring 10.5 x 21 ft and 6 ft deep) and numerous small ones. The facility appears eligible for listing on the National Register as an individual resource and contributes to the larger historic district (Robinson 1985, Robinson 1991, and Jones & Stokes 2004).

Other important CCC structures include stone landscape features (walls, stairs, flumes, and walkways) that contribute to the cultural landscape. In total, the historic district includes 42 contributing resources. In addition, the natural features (topography, landscape) of the SDEF also contribute to the historic landscape setting (Jones & Stokes 2004).

Potential Cultural Significance. The Angeles National Forest contains several dams that are part of the comprehensive flood control system in the Los Angeles Region. The Los Angeles County Flood Control System is a comprehensive coordinated river-based flood-control system that was constructed by the Los Angeles County Flood Control District and the U.S. Army Corps of Engineers under the Flood Control Act of 1936. The Los Angeles County system was the first and largest program to receive funding under this law. Because



Mount Wilson Observatory 100-inch Hooker telescope. This image is reproduced by permission of The Huntington Library, San Marino, California.

of the geologic forces affecting the region extensive growth and development in the Los Angeles basin would not have been possible without the comprehensive flood control system. In addition to flood control dams, the system also includes other facilities such as debris basins, spreading grounds, diversion tunnels, outlets, inlets, guide walls, gates, and spillways.

In a recent theme study on large federal dams, the U.S. Bureau of Reclamation determined that the Los Angeles County Flood Control System might be nationally significant for its impact on the history and development of the Los Angeles metropolitan region. Further study would be needed to identify which resources contribute to the national significance of the system and to document the integrity of the contributing resources (Billington, Jackson, and Melosi 2005). A National Historic Landmark nomination would need to be prepared using the theme study guidelines for applying the NHL criteria to the flood control system. This nomination process would only happen if supported by the agencies that manage the flood control system facilities.

Criterion 1 Conclusion

The San Gabriel Mountains provide outstanding examples of geologic resources, mountain building, native plant communities, wildlife, dynamic river systems, and cultural resources related to scientific research and discovery. The San Gabriel Mountains meet criterion 1.

CRITERION 2: IT POSSESSES EXCEPTIONAL VALUE OR QUALITY IN ILLUSTRATING OR INTERPRETING THE NATURAL OR CULTURAL THEMES OF OUR NATION'S HERITAGE.

Every unit of the National Park System preserves important aspects of our nation's natural and/or cultural heritage. The National Park Service uses a series of natural and cultural themes to categorize the important resources protected by our national park units. The themes are used to evaluate whether resources in a study area would broaden and diversify resources protected by our national park system.

The natural and cultural resources as described in the previous section possess exceptional value in illustrating the themes represented in the lists below. The Suitability chapter includes an evaluation of themes represented by resources in the study area in terms of their current representation in the national park system.

Natural Themes

The geological and biological diversity of the San Gabriel Mountains are unparalleled in southern California. These resources represent the following NPS natural themes:

Landforms of the Present. The "Landforms of the Present" theme describes the character of the landscape as a physical and scenic entity as it exists today, as well as present and past geologic events and processes. The following sub-themes related to Landforms of the Present are represented in the San Gabriel Mountains:

- **Mountain Systems:** The San Gabriel Mountains possess exceptional value in illustrating and interpreting mountain building and plate tectonics.
- **Sculpture of the Land:** The Devil's Punchbowl is an excellent example of sculpture of the land created by impressive geologic forces. This striking landform is a dramatic example of earth movement caused by plate tectonics.
- **River Systems and Lakes:** The East, West and North forks of the San Gabriel River, and Little Rock Creek are eligible for National Wild and Scenic River designation. They present an exceptional opportunity to illustrate free flowing southern California river systems. The San Gabriel River system has played a significant role in shaping the southern California region, both geologically and culturally.

Land Ecosystems. The theme "Land Ecosystems" represents vegetation types as well as the animal populations and physical environmental features which are often important elements in identifying and evaluating sites. The following sub-themes related to Land Ecosystems are represented in the study area:

- **Chaparral (shrubs and evergreen forest trees):** Coastal sage scrub, San Dimas Experimental Forest (chaparral)
- **Dry Coniferous Forest:** Bigcone Douglas-fir, pinyon-juniper forest, subalpine forest

Land ecosystem themes represented by plant communities in the San Gabriel Mountains provide a unique opportunity to interpret native southern California habitats. Within a relatively short distance, visitors can experience excellent examples of coastal, desert, montane, alpine and subalpine habitats. The mountain habitat contains exceptionally high plant and animal diversity and representations of the vegetation types described above.

Aquatic Ecosystems Themes. The theme "Aquatic Ecosystems" is based on geomorphic and other physical aspects of aquatic ecosystems. The sub-theme "Streams" represents aquatic ecosystems with flowing waters. The following sub-themes related to Aquatic Ecosystems are represented in the study area:

- **Streams:** Some of the best remaining examples of alluvial fan sage scrub are located in the foothill canyons of San Gabriel Mountain rivers providing an exceptional opportunity to preserve and interpret rare remnants of southern California natural heritage. San Gabriel Mountain river systems contain high quality riparian habitat which support numerous rare, threatened, and endangered species.

Cultural Themes

The San Gabriel Mountains contain historically significant research facilities that represent the following cultural themes:

Expanding Science and Technology. This theme focuses on science, which is modern civilization's way of organizing and conceptualizing knowledge about the world and the universe beyond. Technology is the application of human ingenuity to modification of the environment in both modern and traditional cultures. Topics under this theme that are represented by nationally significant resources within the study area include:

- **Experimentation and Invention:** Astronomy questions, including the nature of sunspots, the temperature and composition of stars, and the structure and origin of the universe were addressed by some of the greatest astronomers in the world using the telescopes and other equipment at the Mount Wilson Observatory. Research conducted at the San Dimas Experimental Forest has greatly contributed to our understanding of natural processes and chaparral ecosystems.
- **Technological Applications:** The telescopes at the Mount Wilson Observatory laid the technological foundation for all large modern telescopes. Major accomplishments and effects of research at San Dimas include the development of rain gauges and rain-gauge networks to accurately measure precipitation in steep terrain, the development of flumes to measure and withstand debris-laden flows, and the identification of post-fire soil non-wet-ability.
- **Scientific Thought and Theory:** Research efforts at the Mount Wilson Observatory and the San Dimas Experimental Forest have shaped current scientific thought and theory in the areas of astronomy and Mediterranean watersheds and ecosystems.

Expressing Cultural Values. The theme "expressing cultural values" covers expressions of culture – people's beliefs about themselves and the world they inhabit. This theme also encompasses the ways that people communicate their moral and aesthetic values. Topics under this theme that are represented by nationally significant resources within the study area include:

- **Architecture:** San Dimas Experimental Forest buildings and structures at Tanbark Flats are excellent examples of Forest Service Administration Buildings reflecting California's architectural heritage (wooden buildings of the early days of the Mother Lode Country). The buildings were some of the first to be constructed by federal relief programs such as the CCC.

Criterion 2 Conclusion

The San Gabriel Mountains possess exceptional quality in illustrating or interpreting natural and cultural themes of our nation's heritage, including: mountain systems, sculpture of the land, river systems and lakes, chaparral and dry coniferous forest, streams, expanding science and technology, and expressing cultural values. The San Gabriel Mountains meet criterion 2.

CRITERION 3: IT OFFERS SUPERLATIVE OPPORTUNITIES FOR PUBLIC ENJOYMENT, OR FOR SCIENTIFIC STUDY.

Scientific Study. Scientific study of geological features in the San Gabriel Mountains continues to provide major contributions to our understanding of plate tectonics. The Mount Wilson Observatory provides opportunities for scientific study in the field of astronomy. Several guest institutions use the observatory.

The San Dimas Experimental Forest provides excellent opportunities for the scientific study of mountain watersheds and chaparral ecosystems. Studies completed at the experimental forest have greatly contributed to our understanding of natural processes and chaparral ecosystems. Technological innovations developed at the experimental forest to monitor watersheds are in use in similarly diverse areas all over the world.

The U.S. Forest Service manages the Falls Canyon

and Fern Canyon Research Natural Areas to maintain biological diversity and provide ecological baseline information, education, and research. Mount San Antonio and Mount Baden-Powell Special Interest Areas provide opportunities to observe subalpine forest close to both desert and coastal environments.

Proximity to the Los Angeles Metropolitan Area provides many universities and colleges alike with readily available access to the mountains for research.

Opportunities for Public Enjoyment. A scenic backdrop of the Los Angeles region, the San Gabriel Mountains offer dramatic views of both the coast and the desert. Over 15 million people live within a 90-minute drive to the San Gabriel Mountains. The Angeles National Forest, which includes the San Gabriel and Sierra Pelona Mountains, comprises 70% of the open space in Los Angeles County. The Angeles National Forest describes itself as a "backyard wildland," as local and regional families consider the forest a preferred destination for day use recreation.

With over 3.5 million annual visitors, the Angeles National Forest is one of the most visited forests in the nation. Because of the steepness of the San Gabriel Mountains, visitation is highly concentrated along several prominent canyons such as Big Tujunga and San Gabriel canyons (USFS 2003a and 2009).

Many recreation facilities constructed by the Civilian Conservation Corps (CCC) are among the first of such facilities in the nation. The Angeles National Forest maintains historical trails, camps, and other recreation facilities that continue to serve millions of visitors each year. These facilities are being evaluated for listing on the National Register of Historic Places.

The Mount Lowe Railway Historic District in the Angeles National Forest was part of Los Angeles's once active Pacific Electric Railway. When in operation, the railway included various stops within easy walking distances of mountain trail heads. Although only remnants of the railway remain today, there are opportunities to hike and learn about the railway from interpretive features.

Today, recreational opportunities in the San Gabriel Mountains include hiking, backpacking, climbing, camping, swimming, picnicking, birding, fishing, off-highway vehicle driving, and horseback riding. The Angeles Crest Scenic Highway is the only developed road that traverses the San Gabriel Mountains from north to south. This road is an important access point for visitors to the national forest. The road offers unparalleled views and scenery.

The San Gabriel Mountains contain 5 nationally designated recreation trails. The Pacific Crest National Scenic Trail, which spans 2,650 miles from Mexico to Canada, traverses the mountain divide. Four national recreation trails also traverse the San Gabriel Mountains; the Gabrieleno Trail, the High Desert Trail, the Silver Moccasin Trail, and the West Fork (San Gabriel River) Trail.

Water-based recreation is one of the most popular activities in the forest. Visitors are drawn to the wild and scenic rivers that contain flowing water throughout the year. Balancing recreation demand with the sensitive nature of these river systems is one of the major management challenges of the Angeles National Forest.

The dynamic river systems that run through the San Gabriel and Sheep Mountain Wilderness Areas provide opportunities for public enjoyment in a wilderness setting. The east and west forks of the San Gabriel River contain remarkable recreational values and provide easy access to year-around water-based recreation.

Mount Wilson Observatory has allowed public visitation to its facilities since the 1930s. The museum interprets the astronomical knowledge. Nearby Skyline Park Picnic Area, operated by the U.S. Forest Service, is open to the public. The Mount Wilson Observatory Association provides walking tours on weekends and holidays. The Mount Wilson Trail provides additional recreation opportunities (Mount Wilson Observatory 2007).

Criterion 3 Conclusion

The San Gabriel Mountains offer superlative opportunities for public enjoyment and scientific study. Over 15 million people live within a 90-minute drive to the San Gabriel Mountains. The mountains have a long history of research in geology, Mediterranean ecosystems and astronomy. The San Gabriel Mountains meet criterion 3.

CRITERION 4: IT RETAINS A HIGH DEGREE OF INTEGRITY AS A TRUE, ACCURATE, AND RELATIVELY UNSPOILED EXAMPLE OF A RESOURCE.

The Angeles National Forest was part of an early conservation movement to protect wilderness lands and watersheds in California. It is one of the first national forests in the United States and is the first in the State of California. California has designated the Angeles National Forest a state historic landmark.

Early conservation of the San Gabriel Mountains in 1891 has largely preserved its natural and scenic integrity. Although certain areas of the mountains have been altered for flood control and recreational facilities, as a whole, the native plant communities and river systems remain intact and provide a refuge for wildlife. Areas with significant resources retain a high degree of integrity and are relatively unspoiled examples of their type of resource.

With over 90% of the San Gabriel Mountains slopes being steep and rugged, much of the landscape has retained its natural character. Over one-quarter of the national forest lands within the study area, 114,000 acres, are designated wilderness areas (USFS 2005 and 2011). The Angeles National Forest has nearly 60,000 acres of inventoried roadless areas within the study area. Several conservation groups and members of Congress have proposed that some of these roadless inventory areas be designated wilderness.

Nearly 20,000 acres of land in the San Gabriel Mountains are U.S. Forest Service special designated areas (research natural areas, experimental forests and special interest areas). As described under Criterion 1, these areas are protected for their botanical, geological, and research values.

Rare opportunities to see free flowing rivers with perennial flows are available in the study area. The rivers are the main attractions of the national forest. The rivers are also home to several native fish species.

The 2010 Station Fire has had impacts on some of the significant resources as described previously in the Fire Effects section in Chapter 2, *Resource Description*. Habitat for threatened and endangered species has been damaged. Those species that reside in pools and riparian areas are threatened by erosion and debris flows. Recovery efforts have salvaged many of these species and habitat in many areas is recovering well due to weather patterns and efforts to control non-native species invasion. Additionally, those habitats that fared best in the fire were those that were mature and had a high level of integrity. Continued restoration efforts on the part of the U.S. Forest Service will help restore habitats. One of the largest threats is the spread of non-native species. Forest closures and weed removal efforts are planned to reduce the spread of such species (USFS 2010).

The privately-owned Mount Wilson Observatory continues to operate on a renewed 99-year lease with the U.S. Forest Service. The observatory retains

San Gabriel Mountains alluvial fan near La Crescenta. Photo by Jeremiah Easter.

a high degree of integrity of location, design, setting, materials, and association to their period of significance. All five significant telescopes are still in operation and are in their original location. The natural setting of the Angeles National Forest contributes to the integrity of the observatory's setting and association of the historic period (1904-present).

The design and setting of the observatory has been changed from the time the NHL nomination was prepared. New facilities added to the observatory are directly associated with the observatory's purpose for astronomical research.

The San Dimas Experimental Forest historic district retains a high degree of integrity of location, design, setting, materials, workmanship, feeling, and association to their period of significance. Many of the original CCC structures built for the SDEF remain. None of the resources have been moved and none has been greatly altered from its original design. Some resources are in a state of disrepair but all retain the majority of their original materials. Some minor alterations either occurred within the period of significance or are so minor that they do not affect the overall integrity of the buildings (Jones & Stokes, 2004).

The Williams fire in 2002 destroyed 4 buildings within the Tanbark Flat headquarters area. The most significant structure that was burned was the CCC Bunkhouse. It was a wood frame building that spanned Tanbark Creek much like a covered bridge (Jones & Stokes 2004). The SDEF retains the feeling and association of its historic period.

Criterion 4 Conclusion

The San Gabriel Mountains retain a high degree of integrity and contain relatively unspoiled examples of significant resources, despite impacts in some areas from reservoirs, utilities, roads, fire, and recreational use. The San Gabriel Mountains meet criterion 4.

OVERALL CONCLUSIONS

The San Gabriel Mountains meet all four criteria for national significance:

- The San Gabriel Mountains provide outstanding examples of geologic resources, mountain building, native plant communities, wildlife, dynamic river systems, and cultural resources related to scientific research, and discovery.
- The San Gabriel Mountains possess exceptional quality in illustrating or interpreting natural and cultural themes of our nation's heritage, including: mountain systems, sculpture of the land, river systems and lakes, chaparral and dry coniferous forest, streams, expanding science and technology, and expressing cultural values.
- The San Gabriel Mountains offer superlative opportunities for public enjoyment and scientific study. Over 15 million people live

Puente Hills with a view of the San Gabriel Mountains beyond. NPS photo.

within a 90-minute drive to the San Gabriel Mountains. The mountains have a long history of research in geology, Mediterranean ecosystems, and astronomy.

- The San Gabriel Mountains retain a high degree of integrity and contain relatively unspoiled examples of significant resources, despite impacts in some areas from reservoirs, utilities, fire, roads, and recreational use.

Puente-Chino Hills

CRITERION 1: IT IS AN OUTSTANDING EXAMPLE OF A PARTICULAR TYPE OF RESOURCE.

Natural Resources

High levels of biodiversity. The Puente-Chino Hills in the Los Angeles basin contain a diversity of native plant communities. Although this area is somewhat of an island of open space within urbanized areas, the Puente Hills along with the Chino Hills and the Santa Ana Mountains to the southeast together encompass over 500,000 acres of wildlands containing significant biological resources (Noss, Beir and Shaw n.d.). Covering over 40,000 acres within the study area, the Puente-Chino Hills are an important component of this regional wildlife corridor (Puente Hills Landfill Native Habitat Authority 2007). This mountain system is associated with the active Whittier-Elsinore fault system. Maintaining this contiguous corridor is a high priority for state and local conservation agencies.

"When combined with other habitat types in the area, such as chaparral and oak/sycamore woodland, the vegetation provides habitat for a unique assemblage of plants and animals" (Puente Hills Landfill Native Habitat Preservation Authority 2007).

Despite its proximity to millions of people, the Puente-Chino Hills contain over 300 species of birds, deer herds, predators such as bobcats and coyotes, and one of the most diverse raptor populations in southern California. Twenty-two raptor species have been observed in the Puente-Chino Hills. Many of these species rely on connections to the larger regional corridor (Puente Hills Landfill Native Habitat Authority 2007).

Within the study area, the Puente-Chino Hills provide habitat for sensitive, rare, threatened or endangered species. Federally listed threatened or endangered plants and animals include Braunton's milk vetch *(Astragalus leucolobus)*, least Bell's vireo (*Vireo bellii pusillus*) (FE), southwestern willow flycatcher *(Empidonax traillii extimus*) and coastal California gnatcatcher *(Polioptila californica californica).* The U.S. Fish and Wildlife Service has designated much of the Puente-Chino Hills as critical habitat for the California coastal gnatcatcher (Puente Hills Landfill Native Habitat Authority 2007, CDFG 2006, USFWS 2007, Scott and Cooper 1999).

Most of the Los Angeles basin's native plant communities have been destroyed by development.

California walnut. Photo courtesy of BonTerra Consulting.

However, excellent examples of coastal sage scrub and California walnut woodlands remain in the Puente-Chino Hills. Coastal sage scrub is one of the most threatened plant communities in California. Since 1945, the majority of coastal sage scrub vegetation in California has been lost to urban and agricultural land use (Kirkpatrick and Hutchinson 1980). Only 15% of coastal sage scrub's historic range remains in southern California. This habitat is of the highest priority for preservation (Davis et al. 1998, Mistretta 2007, personal communication, NPS 1973).

The Puente-Chino Hills are a transitional area for Venturan to Diegan coastal sage scrub communities. The California Natural Community Conservation Program identified the Puente-Chino Hills as a functioning biological unit of high conservation value for coastal sage scrub (Puente Hills Landfill Native Habitat Preservation Authority 2007, CDFG 1993).

California walnut (***Juglans californica***) woodlands and forests are found only in southern California. The historic distribution of California walnut woodlands and forests is limited to the areas between the Santa Clara River drainage in Ventura County on the north and the Chino Hills on the south. Outside this range, walnuts only occur interspersed with other foothill woodland species such as oaks (Quinn 1990).

Contiguous stands of walnut woodlands and forests once lined the Puente-Chino and San Jose Hills, favoring shale soils that have a high water-holding capacity. Walnut woodlands and forests provide habitat for deer, nesting birds, and rodents.

Today, California walnut woodland communities are in decline and residual stands are extremely limited. According to the California Natural Diversity Database (CNDDB), walnut forests are only found in small areas of Ventura and Los Angeles Counties. The best remaining stands of California walnut-dominated forests and woodlands south of Ventura County are located in the San Jose and Puente-Chino Hills. These stands have adapted to their local site characteristics and differ from the Ventura County stands in morphology and canopy structure (Quinn 1990).

The CNDDB has on record approximately 17,000 acres of remaining California walnut woodlands and forests. Approximately 2,300 acres are located in the study area. Only a small percentage (8%) of the California walnut woodlands and forests within the study area are in public ownership (CDFG 2006). Some of the prime examples are currently in private ownership. (Quinn 1990).

In 1973, a National Park Service study identified a grove of walnut woodlands in Diamond Bar as a potential National Natural Landmark (NPS 1973). Although this particular woodland has been reduced somewhat by development, woodlands and forests in nearby Brea and Tonner Canyons remain outstanding examples of walnut woodlands (Quinn 1990; PCR Services Corporation 2006).

Native walnut trees played an important role in the history of the region. During the 1900s, walnut production was almost entirely from Southern California. Success was due in part to use of the native walnuts to hybridize commercial walnut trees. Hybridization with native walnut trees improved the walnut's resistance to heat. The Paradox Hybrid Walnut Tree in Whittier, a state historical landmark, was planted in 1907 by the University of California. This landmark tree represents the once flourishing walnut industry in Southern California.

Wildlife within the Puente Hills is diverse and abundant due to the large acreage of natural open space, the habitat types, and regional connectivity. While a few wildlife species are entirely dependent on a single vegetative community, the entire mosaic of all the vegetation communities within the area and connected areas constitutes a functional ecosystem for a wide variety of wildlife species. This includes areas both within the Puente Hills as well as the regional ecosystem. Habitat in the Puente Hills supports migrating large mammals, over-wintering birds of prey and nesting songbirds, including the California gnatcatcher (PCR Services Corp. 2006).

Cultural Resources

Although there appear to be no nationally significant cultural resources in the Puente Chino Hills, the natural landscape contributes to the significance of the Juan Bautista de Anza National Historic Trail and the Old Spanish National Historic Trail. The Puente Hills also contain numerous cultural resources of state and local significances representing the Spanish/Mexican Rancho Period and historic oil industry sites.

Criterion 1 Conclusion

The Puente-Chino hills contain a high level of biodiversity and outstanding examples of southern California communities including coastal sage scrub, one of the most endangered plant communities in California, and the best remaining stands of California walnut-dominated forests and

woodlands in their southern limit of distribution. The Puente-Chino Hills meet criterion 1.

CRITERION 2: IT POSSESSES EXCEPTIONAL VALUE OR QUALITY IN ILLUSTRATING OR INTERPRETING THE NATURAL OR CULTURAL THEMES OF OUR NATION'S HERITAGE.

Land Ecosystems Themes

The Puente Hills resources possess exceptional value in illustrating NPS natural history themes. Chapter 4, *Suitability*, includes an evaluation of themes represented by resources in the study area in terms of their current representation in the National Park System.

The following sub-themes related to Land Ecosystems are represented in the Puente-Chino Hills:

- **Chaparral:** The Puente-Chino Hills contain exceptional examples of coastal sage scrub. A unique transition zone between northern and southern affinities, coastal sage scrub in the Puente-Chino Hills provides habitat for rare, threatened, and endangered species.
- **Dry Coniferous Forest:** The Puente-Chino Hills contain some of the best remaining examples of California walnut woodlands, a rare, endemic plant community.

Criterion 2 Conclusion

The Puente-Chino Hills possess exceptional quality in illustrating and interpreting natural themes of our nation's heritage, including: chaparral and dry coniferous forest. The Puente-Chino Hills meet criterion 2.

CRITERION 3: IT OFFERS SUPERLATIVE OPPORTUNITIES FOR PUBLIC ENJOYMENT, OR FOR SCIENTIFIC STUDY.

Opportunities for Public Enjoyment

Easily accessible to the millions of residents that surround them, the Puente-Chino Hills feature several thousand acres of parks and open space, and miles of local and regional trails. Recreational opportunities include hiking, biking, horseback riding, and birding. A recreational route of the Juan Bautista de Anza National Historic Trail follows the popular Skyline Trail which traverses the Puente-Chino Hills. Publicly owned and accessible stands of coastal sage scrub, walnut woodlands and forests can be found in Walnut Park, and the Puente Hills Landfill Native Habitat Preserve (Preserve).

The largest area of preserved open space in this region of the study area is the Preserve. The Preserve offers superlative public enjoyment opportunities. In addition to traditional recreational activities such as hiking, jogging, mountain biking, and nature appreciation, the Preserve offers interpretation and outdoor education programs. Educational programs have included a Junior Ranger Program, guided hikes, campfire talks and lecture series. Interpretive panels, kiosks and signs describe wildlife, vegetation, historical descriptions, and public safety information.

Scientific Study

The Puente-Chino Hills have been studied by numerous universities and conservation agencies. The Habitat Authority's management plan encourages more opportunities for university-level research at the Preserve that would help to answer fundamental management questions regarding habitat and species of interest (Puente Hills Landfill Native Habitat Authority 2007).

The California Department of Fish and Game defined portions of the Puente-Chino Hills as a recovery and research area for the Natural Communities Conservation Planning (NCCP) program. The NCCP Program was initiated in 1991, and is administered by the California Department of Fish and Game. The focus of this program is the coastal sage scrub habitat of Southern California, home to the California gnatcatcher and approximately 100 other potentially threatened or endangered species. The Orange County portion of the Puente-Chino Hills is included in the Orange County Northern NCCP subregion. Recently Chevron set aside a 28-acre preserve as part of a permit to complete oil field abandonment operations in the area (California Department of Fish and Game 2008b).

Criterion 3 Conclusion

The Puente-Chino Hills feature public open spaces and miles of trails that provide opportunities such as hiking, biking, horseback riding, outdoor education and birding. Excellent opportunities are available for scientific research of native habitats and wildlife. The Puente-Chino Hills meet criterion 3.

CRITERION 4: IT RETAINS A HIGH DEGREE OF INTEGRITY AS A TRUE, ACCURATE, AND RELATIVELY UNSPOILED EXAMPLE OF A RESOURCE.

The Puente-Chino Hills have remained largely undeveloped despite the dense development that has occurred in the surrounding valleys and coastal plain. Lands in this hill system were historically used

for oil extraction, grazing, and recreation.

Despite its long history of use and proximity to urban development, the Puente-Chino Hills support many of southern California's native landscapes and sustain important habitat for numerous native animal species. Almost 17,000 acres of contiguous undeveloped open space within these hills contain significant native habitat. The Habitat Authority manages almost 4,000 acres in the western Puente-Chino Hills. The primary management objective is to protect biological diversity (Puente Hills Landfill Native Habitat Preservation Authority 2007). Large areas of undeveloped, privately owned land in the eastern Puente-Chino Hills contain some of the most significant natural resources and provide key linkages and connections to the larger wildlife corridor.

The slope, aspect and soil conditions of the Puente-Chino Hills favor walnut woodlands and forests. Significant contiguous stands line portions of the Puente-Chino Hills. These stands still retain the general pattern of walnut woodlands and forests documented over 50 years ago (Quinn 1990).

Plant communities found within the Puente-Chino Hills are becoming increasingly rare on a global scale, as are many of the wildlife and rare plant species. These species require walnut woodland, oak woodland, chaparral, native grassland, and coastal sage scrub habitats contained in the Puente-Chino Hills (Puente Hills Landfill Native Habitat Authority 2007).

"Biologically, this area preserves a microcosm of the California Floristic Province, an identified biodiversity hot spot in North America and a genetic reserve for the continent (Puente Hills Landfill Native Habitat Preservation Authority 2007)."

Some walnut woodlands in the far eastern end of the Puente Hills within the study area were impacted by the 2008 Freeway Complex fire. In total, this fire burned 30,305 acres including 90% of Chino Hills State Park. Most of the burned area was outside of the study area. The calculated acreage burned would make the fire the fourth largest fire on record in Orange County. Despite the fire damage, a 2010 field visit with California State Parks staff to Chino Hills State Park indicated that walnut woodlands and forests were making a strong recovery from the fire. Therefore, it is likely that the walnut woodlands in the eastern portion of the study area will also recover. California State Park officials stated that wildlife survival was aided by the contiguous open space which provided sufficient habitat during fire recovery. Potential threats continued to further recovery include fire and the spread of non-native species.

Criterion 4 Conclusion

The Puente-Chino Hills contain large areas of native habitat and a high level of biodiversity despite the development that has occurred in the surrounding valleys and coastal plain. The Puente-Chino Hills meet criterion 4.

Overall Conclusions

The Puente-Chino Hills meet all four criteria for national significance:

- The Puente-Chino hills contain a high level of biodiversity and outstanding examples of southern California communities including coastal sage scrub, one of the most endangered plant communities in California, and the best remaining stands of California walnut-dominated forests and woodlands in their southern limit of distribution.
- The Puente-Chino Hills possess exceptional quality in illustrating and interpreting natural themes of our nation's heritage, including: chaparral, and dry coniferous forest.
- The Puente-Chino Hills feature public open spaces and miles of trails that provide opportunities such as hiking, biking, horseback riding, outdoor education and birding. Excellent opportunities are available for scientific research of native habitats and wildlife.
- The Puente-Chino Hills contain large areas of native habitat and a high level of biodiversity despite the development that has occurred in the surrounding valleys and coastal plain.

Other Significant Resources within the Study Area

Portions of the study area that were not included in the nationally significant regions are highly urbanized. There are nationally significant resources in these areas, many of which are fragmented, and therefore lack overall integrity.

Significant Natural Resources

Isolated pockets of rare native plant communities can be found in the San Gabriel Valley and Los Angeles Coastal Plain.

Coastal Sage Scrub. The San Jose Hills, located just north of the Puente-Chino Hills contain excellent examples of coastal sage scrub. These

areas have been designated critical habitat for the coastal California gnatcatcher. Another isolated patch of coastal sage scrub that contains designated critical habitat for the coastal California gnatcatcher is located in the Montebello hills. Although these areas are small and isolated, they provide some of the few remaining habitats for the gnatcatcher in the Los Angeles basin (USFWS 2007).

Walnut Woodlands and Forest. Walnut woodlands in the San Jose Hills are some of the best remaining stands of California walnut-dominated forests and woodlands south of Ventura County (Quinn 1990).

Riparian Areas. Despite losses of habitat in the Los Angeles basin, remaining riparian areas support wildlife, primarily migratory and resident bird species. This includes federally listed endangered species such as the Least Bell's vireo. Many of these remaining areas lie along the San Gabriel River in areas such as the Santa Fe Dam and Whittier Narrows Recreation Areas. Much smaller fragments are located on other portions of the San Gabriel River and along a few areas of the San Gabriel River's tributaries such as Walnut Creek, San Dimas Wash, and San Jose Creek.

The Whittier Narrows Dam County Recreation Area riparian habitat supports over 300 migratory and resident bird species. This area, along with several other Los Angeles County Flood Control basins, are recognized as "Important Bird Area (IBA)" by Birdlife International. IBAs are key sites for conservation that: 1) hold significant numbers of one or more globally threatened species; 2) are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species; and 3) have exceptionally large numbers of migratory or congregatory species.

Also recognized as an International Bird Area is the Santa Clara River which supports a high number of bird species associated with riparian habitat (Los Angeles County Department of Public Works 2006a; Audubon Society 2007; San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy 2001).

Natural History Themes. Pockets of native habitat within the San Gabriel Valley possess exceptional quality in illustrating and interpreting natural themes of our nation's heritage, including: chaparral, dry coniferous forest, and streams.

Opportunities for Public Enjoyment or for Scientific Study. Isolated portions of the study area offer superlative opportunities for public enjoyment. Parks and recreation areas within the San Jose Hills and along the San Gabriel River feature public open spaces and miles of trails that provide opportunities such as hiking, biking, outdoor education, and birding.

High degree of Integrity. This portion of the study area lacks a high degree of integrity due to urbanization and fragmentation of resources. Although areas within the San Gabriel Valley and Los Angeles Coastal Plain provide pockets of intact, rare native plant communities, the integrity of these areas have been highly altered by flood control projects and subsequent urbanization.

Significant Cultural Resources

Historic Trails and Migration Routes. The San Gabriel Valley and the Los Angeles Coastal Plain contain cultural resources representing the theme "Peopling Places." These resources, in the form of historic trails, played an important role in the region's settlement. Many colonists, traders, explorers, and people searching for a better way of life dramatically increased the population and diversity of the study area. Below is a description of these nationally significant resources.

Juan Bautista de Anza National Historic Trail. The study area includes 19 miles of the 1,200 mile long Juan Bautista de Anza National Historic Trail. The trail, designated in 1990, represents the route taken by Juan Bautista de Anza in 1775–1776 when he led a group of colonists from Mexico into the northwestern frontier of New Spain.

Old Spanish National Historic Trail. The study area includes 21 miles of the 3,500 mile long Old Spanish National Historic Trail designated in 2002. The trail linked Mexican settlements in southern California with those in northern New Mexico.

Route 66. The study area includes 18 miles of the 2,400 mile long U.S. Highway 66, widely known as "Route 66." Route 66 is significant as the nation's first all-weather highway linking Chicago and Los Angeles.

Portola Expedition. The 1769 expedition of Gaspar de Portola and Padre Junipero Serra from San Diego to Monterey led to the founding of five missions and two presidios in California. From the Santa Ana River, the expedition traveled through La Brea Canyon, crossed the San Gabriel valley, and came to the bank of the Los Angeles River. A Portola marker in Brea Canyon marks the site where the Portola expedition group camped.

Other Cultural Resources. The *Upton Sinclair House,* a privately owned national historic

landmark, is located in the city of Monrovia. Upton Sinclair was one of the most influential American novelists focused on social justice in the early twentieth century. The house was designated a national historic landmark in 1971.

Cultural Themes. There are a few isolated areas within the San Gabriel Valley that possess exceptional quality in illustrating or interpreting resources that represent cultural themes, including "Peopling Places," "Expressing Cultural Values," Developing the American Economy," and "Changing Role of the United States in the World Community."

Opportunities for Public Enjoyment or for Scientific Study. Although many historic resources lack opportunities to experience historic settings, there are many opportunities for interpretation and education. Some areas are privately owned and lack opportunities for public enjoyment.

High degree of Integrity. Because of the impacts on historic settings, overall this portion of the study area lacks unspoiled examples of significant resources.

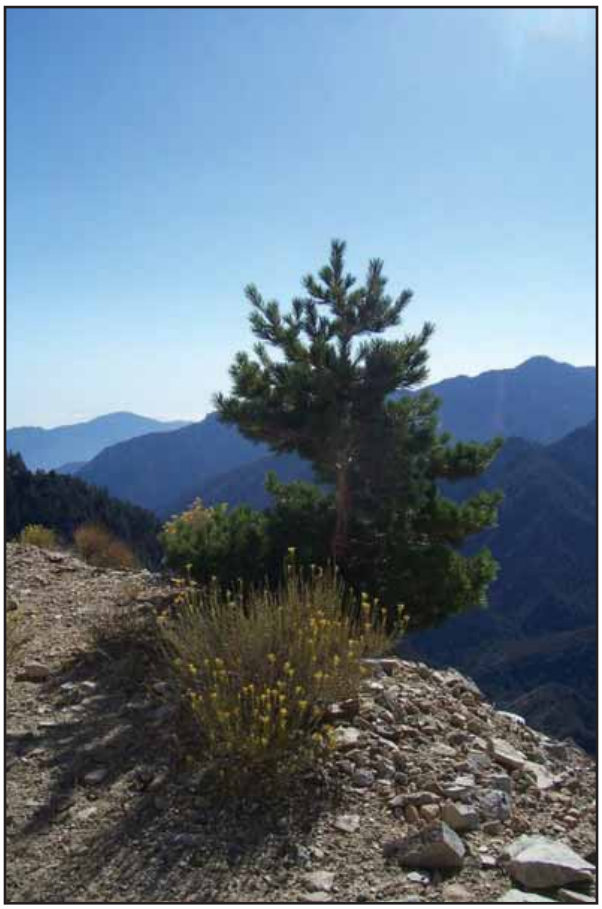
Potential Cultural Significance. Resources that are part of the comprehensive flood control system in the Los Angeles region are located along the lower portions of the San Gabriel River. The potential significance of that system is described under the significance evaluation of the San Gabriel Mountains.

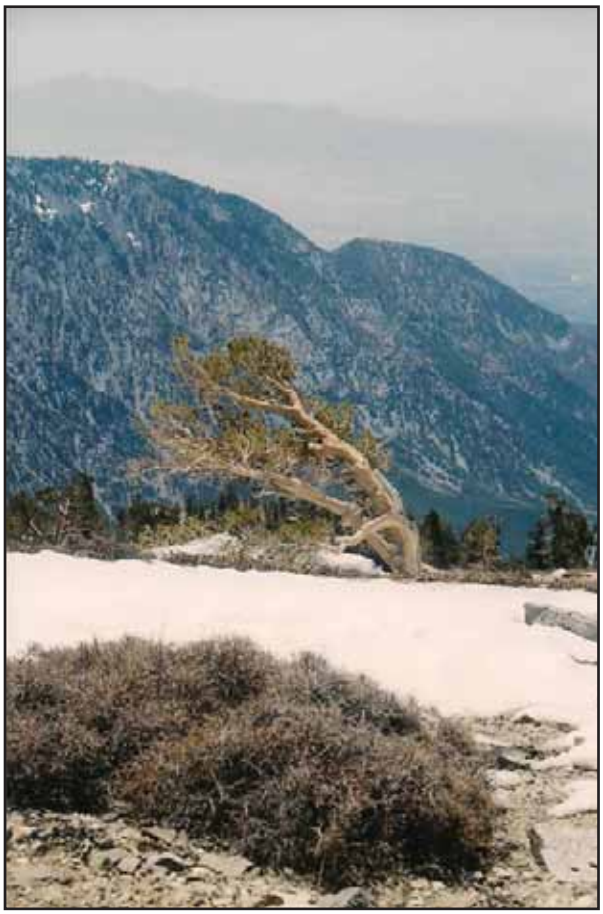
OVERALL CONCLUSIONS

Significant resources within isolated areas of this portion of the study area meet only three of the four criteria for national significance. Extensive urbanization has fragmented and impacted the integrity of the resources in these areas.

Other Recognized Resources

In addition to these nationally recognized cultural resources, there are many state and locally designated historic resources. These resources are described by their associated cultural theme in Chapter 2, *Resource Description*. Other important natural resource areas that are not nationally significant are also described in Chapter 2.





Photos (from left to right): 1. Jeffrey Pine, San Gabriel Mountains. 2. Lodgepole pine, West Baldy, San Gabriel Mountains. Photographs courtesy of Ryan Gilmore.

Table 6: Summary of National Significance

Area / National Significance	Is it an outstanding example of a particular type of resource?	Does it possess exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage?	Does it offer superlative opportunities for public enjoyment, or for scientific study?	Does it retain a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource?
San Gabriel Mountains **YES**	Yes, the San Gabriel Mountains provide outstanding examples of geologic resources, mountain building, native plant communities, wildlife, river systems and cultural resources related to scientific research and discovery.	Yes, the San Gabriel Mountains possess exceptional quality in illustrating or interpreting natural and cultural themes of our nation's heritage, including: mountain systems, sculpture of the land, river systems and lakes, chaparral and dry coniferous forest, streams, expanding science and technology, and expressing cultural values.	Yes, the San Gabriel Mountains offer superlative opportunities for public enjoyment and scientific study. Over 15 million people live within a 90-minute drive to the San Gabriel Mountains. The mountains have a long history of research in geology, Mediterranean ecosystems, and astronomy.	Yes, the San Gabriel Mountains retain a high degree of integrity and are relatively unspoiled examples of their type of resource, despite impacts in some areas from dams and reservoirs, utility corridors, roads and recreational use.
Puente – Chino Hills **YES**	Yes, The Puente-Chino hills contain a high level of biodiversity and outstanding examples of southern California communities including coastal sage scrub, one of the most endangered plant communities in California, and the best remaining stands of California walnut-dominated forests and woodlands in their southern limit of distribution.	Yes, the Puente Chino Hills possess exceptional quality in illustrating or interpreting natural themes of our nation's heritage, including: chaparral and dry coniferous forest.	Yes, the Puente-Chino Hills feature public open spaces and miles of trails that provide opportunities such as hiking, biking, horseback riding, outdoor education, and birding. Excellent opportunities for scientific research of native habitats and wildlife are available.	Yes, the Puente-Chino Hills contain large areas of native habitat and a high level of biodiversity despite the development that has occurred in the surrounding valleys and coastal plain.
Other Portions of the Study **NO**	Yes, areas within the San Jose and Montebello hills contain outstanding examples of coastal sage scrub and California walnut-dominated forests. Although reduced from historic accounts, the San Gabriel River and its tributaries contain important remnant riparian areas that provide essential habitat for migratory and resident bird species. Outstanding examples of cultural resources in these historic trails, migration routes, and literature.	Yes, isolated native habitat within the San Gabriel Valley possess exceptional quality in illustrating and interpreting natural themes of our nation's heritage, including: chaparral, dry coniferous forest and riparian areas. Cultural resources in other portions of the study area possess exceptional quality in illustrating or interpreting resources that represent several cultural themes, including "Peopling Places," "Expressing Cultural Values," Developing the American Economy," and "Changing Role of the United States in the World Community."	Yes, isolated areas within this portion of the study area offers superlative opportunities for public enjoyment and scientific study. Parks and recreation areas within the San Jose Hills and along the San Gabriel River feature public open spaces and miles of trails that provide opportunities such as hiking, biking, outdoor education and birding. Although many historic resources lack opportunities to experience historic settings, there are many opportunities for interpretation and education provided. Some areas are privately owned and lack opportunities for public enjoyment.	No, this portion of the study area lacks a high degree of integrity due to urbanization and fragmentation of resources. Although areas within the San Gabriel Valley and Los Angeles Coastal Plain provide pockets of intact, rare native plant communities, the integrity of these areas have been highly altered by flood control projects and urbanization. Because of the impacts on historic settings, overall this portion of the study area lacks unspoiled examples of significant resources.