

## **II. EXISTING CONDITIONS AND TRENDS**

This report focuses on specific environmental resources in Imperial County, including biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space.

### **A. BIOLOGICAL RESOURCES**

#### **1. Plants and Vegetation Communities**

An extensive range of vegetation communities have been identified in the County, including native and nonnative communities on which sensitive and common plant and wildlife species are dependent. Native communities include wetland and riparian habitats within fresh and saltwater systems and high and low elevation woodland and scrub habitats, some with saline and alkali soil conditions. Nonnative communities include agriculture, annual grasslands, and tamarisk or salt cedar stands.

#### **2. Sensitive Habitats and Conservation Areas**

A number of sensitive vegetation communities, identified by the California Department of Fish and Wildlife (CDFW) and others as rare and worthy of consideration in California, occur in Imperial County. Of the total 2,942,080 acres in the County, approximately 215,220 are sensitive habitats. Sensitive vegetation and habitats are a conservation priority for local, State, and Federal regulatory agencies because they have limited distribution and support a variety of sensitive plants and wildlife.

Several areas in Imperial County have been designated as environmentally sensitive areas by various public agencies or entities. These include US Fish & Wildlife Service (USFWS)-designated critical habitat, USFWS National Wildlife Refuges, Bureau of Land Management (BLM), National Landscape Conservation System (NLCS) lands, BLM Desert Wildlife Management Areas (DWMAs) and Areas of Critical Environmental Concern (ACECs), wilderness and wildlife areas, State parks, and other protective designations by Federal and State agencies in the County. Many of these areas have development restrictions or prohibitions to facilitate conservation of biological resources or other sensitive resources. These areas are shown on **Figures 1 through 3**.

Critical habitat is a Federal designation to provide essential habitat for listed species. While development is not precluded from designated critical habitat, these areas have been afforded legal protection which requires developers to consult with the USFWS if a project would affect critical habitat or any listed species. Critical habitat units support important habitat and often support more than one listed species. Critical habitat is designated in Imperial County for the following species:

- Desert pupfish
- Razorback sucker
- Desert tortoise
- Peirson's milk-vetch
- Peninsular bighorn sheep
- Yellow-billed cuckoo (proposed as of October 2014)

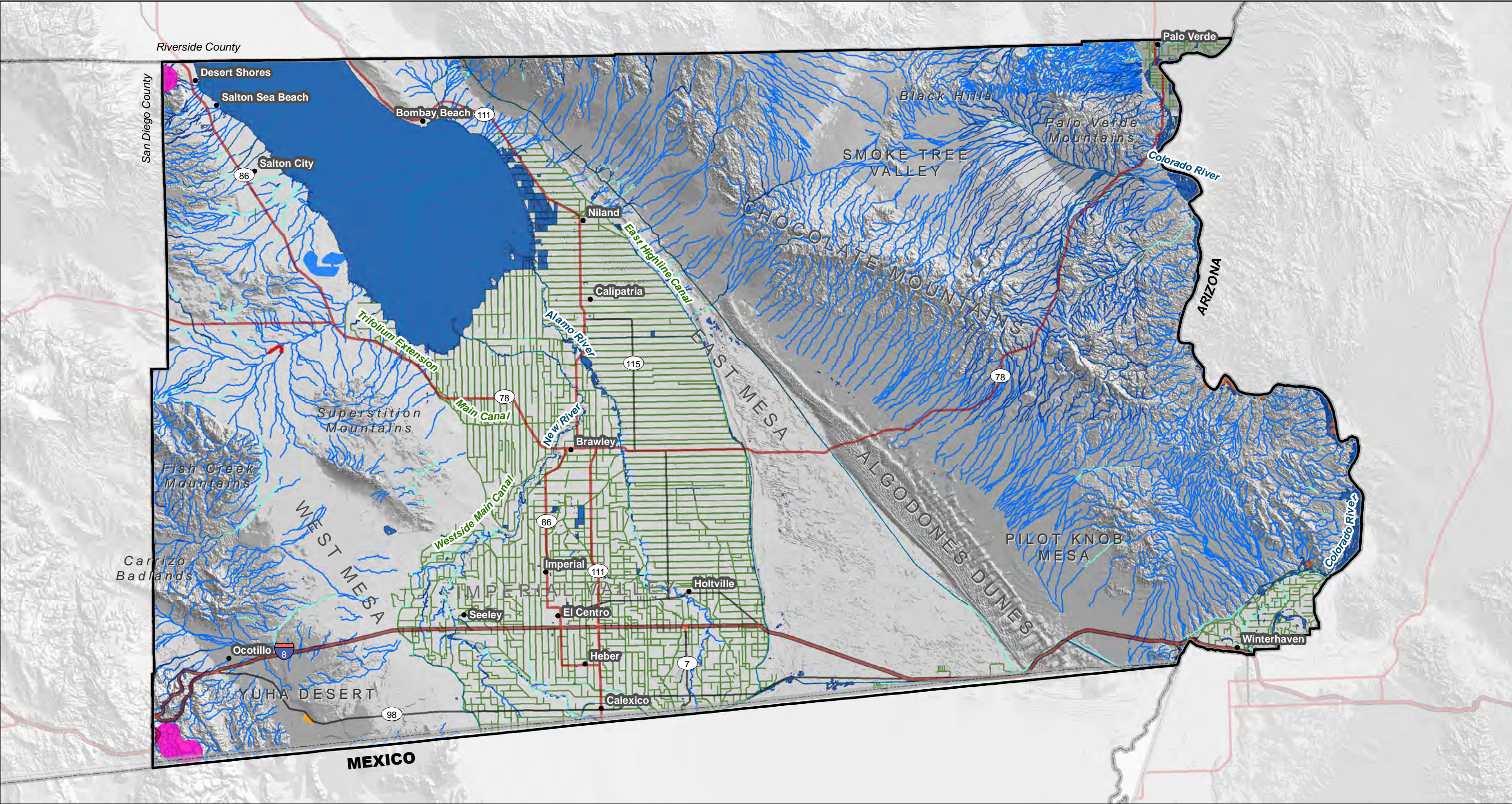
### 3. Sensitive Species


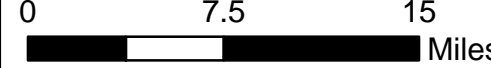
A number of species listed or candidates for listing as endangered or threatened under the Endangered Species Act or California Endangered Species Act, or listed as rare under the California Native Plant Protection Act, have been recorded or potentially occur in Imperial County. Listed species documented in the California Natural Diversity Database (CNDDDB) for the County include:

- Desert tortoise
- Barefoot gecko
- Townsend's big-eared bat
- Peninsular bighorn sheep
- Western yellow-billed cuckoo
- Southwestern willow flycatcher
- Least Bell's vireo
- Arizona Bell's vireo
- Western snowy plover
- California black rail
- Yuma clapper rail
- Gilded flicker
- Gila woodpecker
- Elf owl
- Bald eagle
- Desert pupfish
- Bonytail
- Colorado pikeminnow
- Razorback sucker
- Peirson's milk-vetch
- Wiggins' croton
- San Diego button-celery
- Algodones Dunes sunflower

Numerous other special-status species occur in the County, including wildlife designated as California fully protected species or California Species of Special Concern as well as plants identified as California Rare Plant Rank. Several California Species of Special Concern are of particular conservation focus in Imperial County including the burrowing owl and flat-tailed horned lizard. Approximately two-thirds of the burrowing owl population in California occurs in agricultural areas in the Imperial Valley. There are three regional populations of flat-tailed horned lizard in California; two of these (representing the majority of the range in the State) occur in Imperial County. These are on the west side of the Salton Sea/Imperial Valley and on the east side of the Imperial Valley; both populations extend south into Mexico.





Source: CDFW, USGS, USFWS

**Imperial County Boundary**

- Major Highways
- Highways
- Major Roads

**Sensitive Vegetation (CNDDDB Data)**

- Crucifixion Thorn Woodland
- Desert Fan Palm Oasis Woodland
- Sonoran Cottonwood Willow Riparian Forest
- Active and Stabilized/Partially Stabilized Desert Dunes
- Transmontane Alkali Marsh

**USGS National Hydrology Dataset**

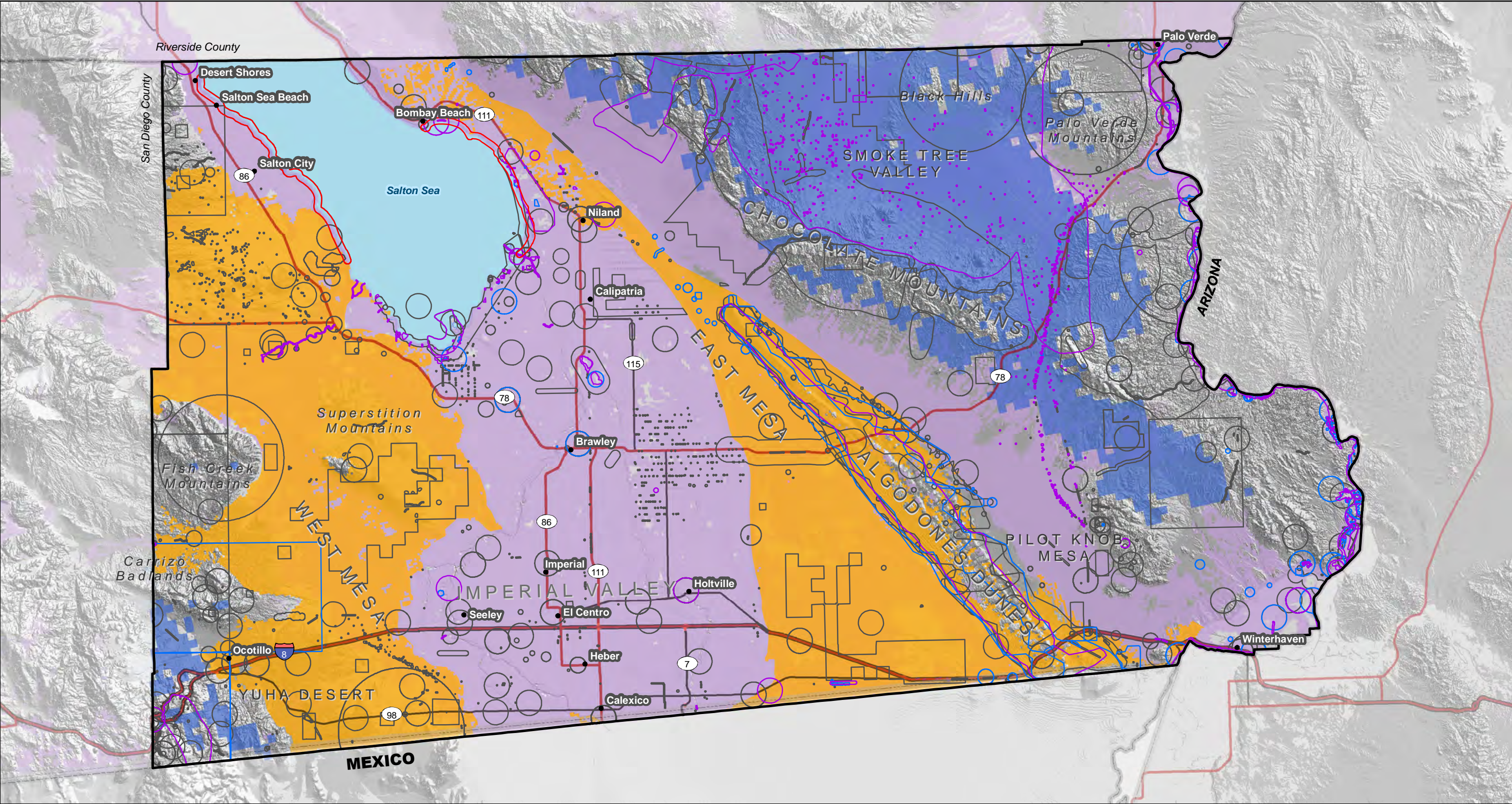
- Stream/River
- Artificial Path
- Canal/Ditch

**USFWS National Wetlands Inventory**

Figure 1

Imperial County  
Sensitive Habitats





0 7.5 15 Miles

Source: DRECP, CDFW, USGS

- Major Highways
- Highways
- Major Roads
- Imperial County Boundary
- Desert Tortoise Habitat Model
- Flat-Tailed Horned Lizard Species Distribution Model
- Burrowing Owl Species Distribution Model

CNDDDB Documented Species Occurrence

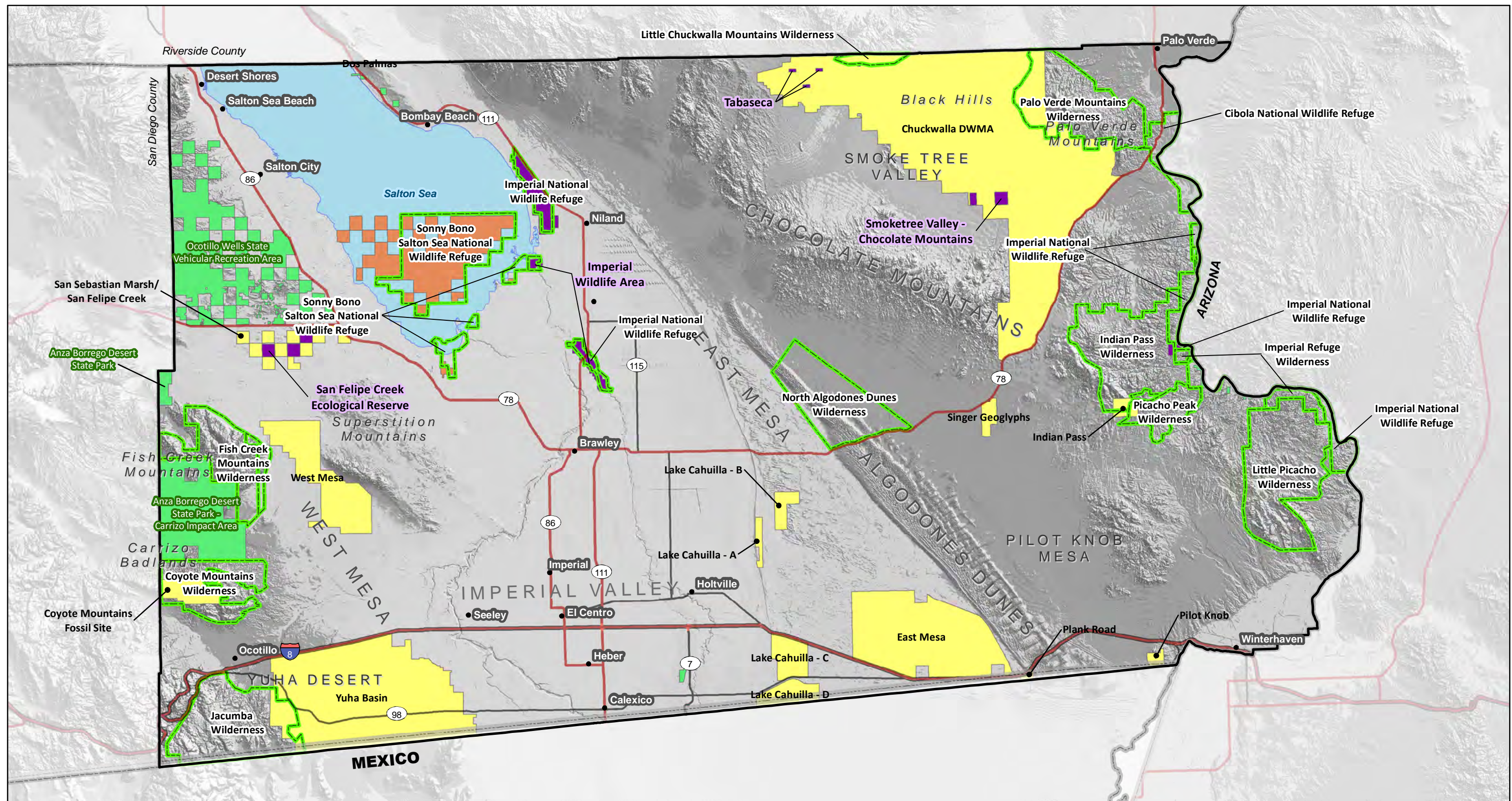
Listing

- Federal and State
- State
- Federal
- Not Listed

Figure 2

Imperial County  
Sensitive Species





### Figure 3

## Imperial County Agency-Designated Habitats



## **B. CULTURAL RESOURCES**

In Imperial County most archeological resources can be separated into two distinct sections: prehistoric and historic. All prehistoric archeology involves indigenous culture that existed prior to Spanish colonization in 1769. Additional cultural resources, which have been identified by the State of California, include sacred lands that are manifested in cultural landscapes.

### **1. Prehistoric Resources**

Prehistoric resources are the remains of activities in the past prior to sustained European contact. The Cahuilla, Tipai, and Quechan inhabited the Imperial County area since before Spanish contact. The Cahuilla people occupied a territory in south-central California, between the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, east to the Colorado Desert, and west into the San Jacinto Plain near Riverside and the Palomar Mountains. The Tipai, previously called Diegueño or Kamia, occupied an area that roughly extended from the Pacific Coast at San Diego eastward to the Sand Hills of Imperial County as well as south into modern-day Mexico. The Quechan, also known as the Yuma, continue to occupy their traditional territory at the confluence of the Gila and Colorado rivers at the edge of the California, Arizona, and Mexican borders. From here their territory stretched north along the Colorado River and to the east of the Gila River.

The previous studies conducted in the County identified resources including villages, rock shelters, habitation sites, lithic scatters, trails, rock art localities, and milling stations. Isolated artifacts not associated with the larger sites have also been identified in Imperial County. In addition, cultural landscapes and ethnographic resources are elements of the natural resource types that are assigned cultural significance by traditional users or groups, such as geographic features. Previously identified prehistoric resources can be used as a general guideline to understanding the nature of localized prehistoric inhabitation and provide assistance in determining areas of known sensitivity for prehistoric resources.

The most important feature in the study of the prehistory and history of Imperial County is Lake Cahuilla, the modern iteration of which is the Salton Sea. This enormous lake periodically formed when flooding in the Colorado River broke through low-lying areas and flooded the Salton Trough, inundating up to an average elevation of about 40 feet above mean sea level. Because Lake Cahuilla was a rare source of fresh water in the desert, human populations would have been attracted to live and gather plant and animal resources near the lake. Human occupation sites mark the ancient shorelines both above the high stand mark and along the lower, retreating shorelines.

To date, 14,860 prehistoric and historic period resources have been recorded in Imperial County. Of those, 12,398 are archaeological sites and the rest are either isolates or historic structures. As the entire County has not been surveyed, additional sensitive prehistoric and historic period cultural resource are likely to exist throughout Imperial County.

A prehistoric predictive model was developed in order to provide a general idea of potential locations of cultural resources present in the County. This model focused on proximity to water sources, access to food, access to tool-making sources (obsidian), and geographic slope. Using this criteria, regions most sensitive for prehistoric resources were determined to be those areas within 1,000 meters of a water source (in this case, named streams, waterbodies, wetlands, and playas/dry lakes), within 200 meters of an ecotone boundary (access to food), near obsidian stone tool sources, and less than 16.1 percent slope. These sensitive areas are depicted on **Figure 4**.

## 2. Historic Resources

The historic period in California is generally broken into three parts: the Spanish period (1769 to 1821), the Mexican period (1821 to 1848), and the American period (1848 to present).

Although the first Europeans arrived in Imperial County with the Hernando de Alcarón expedition of 1540, the Spanish did not begin to colonize what was then known as Alta California until 1769. Spanish settlements were largely restricted to the West Mesa, now known as the Yuha Desert, in the southwestern portion of the County. Inhospitable terrain of the Algodones Dunes discouraged early exploration and colonization of the eastern portions of the County. Included in the early settlement sites of the Spanish period are the Mission Puerto de Purísima Concepción (1780) and Mission San Pedro y San Pablo de Bicuñer (1781) along the de Anza Trail, along the Colorado River in the southeast portion of the County. As described above, both missions were destroyed in 1781 in conflicts between the Spanish and the Quechan.

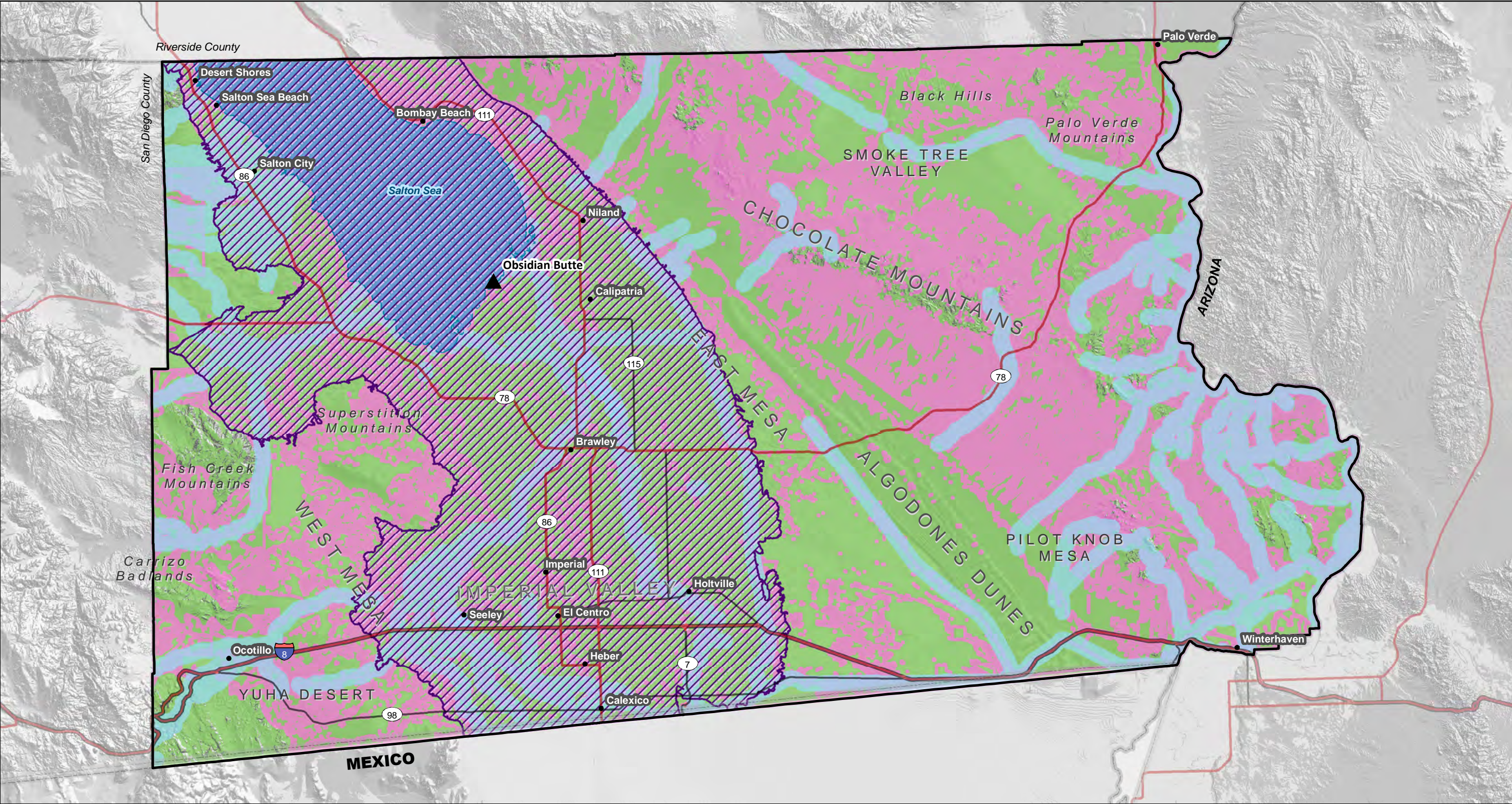
The Mexican Period in Imperial County was characterized by efforts to reestablish an overland route from Sonora to the California coast in order to encourage trade and settlement. Following several expeditions, the Sonora Road was established in 1825, following portions of the Juan Bautista de Anza Trail through the County before turning westward through the Carrizo Corridor and branching toward both San Diego and Temecula (see Figure 5).

The American Period in Imperial County is marked by further exploration and by development of the agricultural potential of the Imperial Valley. The signing of the Treaty of Guadalupe Hidalgo in 1848 and the U.S. acquisition of California was immediately followed by the establishment of the Southern Emigrant Trail, which largely followed the old Sonora Road. This route was extensively used by settlers, miners, and the military on their way to California. Until the twentieth century, few people permanently settled in Imperial County. Irrigation measures, vital to the County's development during this period, were first made by the California Development Corporation using water from the Colorado River, which was then diverted to the Alamo River via the Alamo Canal. Irrigation from the Alamo Canal Project soon prompted a large population boom in the area; the town sites of Imperial, Brawley, Calexico, Heber, and Silsbee were constructed as part of irrigation projects to entice settlers to become permanent residents. In 1904, heavy silting greatly reduced the amount of water reaching the Imperial Valley farmers. Under stress, the California Development Company attempted to create a breach at the banks of the Colorado River; however, this action caused uncontrolled flooding of the Salton Sink through 1905 and resulted in the Salton Sea. Flooding to the region was not completely halted until 1907. Railroad lines, including a branch of the Southern Pacific Railroad extending through the Imperial Valley to Calexico (1903), were constructed throughout portions of the County. The introduction of automobiles also prompted the development of new and better roads.

Identified historic period built-environment and archaeological resources represent a range of activities including, but not limited to, mining, transportation, and ranching/homesteading and are represented throughout the County. The number of previously identified historic period resources is smaller than prehistoric resources, making determination of areas of known or established sensitivity difficult. It is possible, however, to make informed deductions about the types of resources likely to be encountered based on the previously identified sites in combination with the documented history of the area.

Similar to the prehistoric model, a historic period predictive model was developed based on criteria that includes proximity to water sources, proximity to exploration routes/surveys/trails, locations of historic period railroad towns, and the locations of dams/mines/wells over 50 years





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Miles

Source: Redlands Institute, USGS

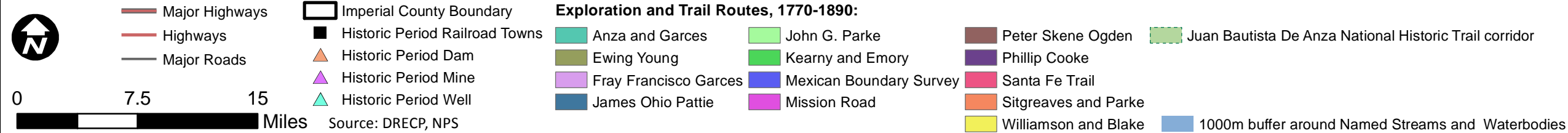
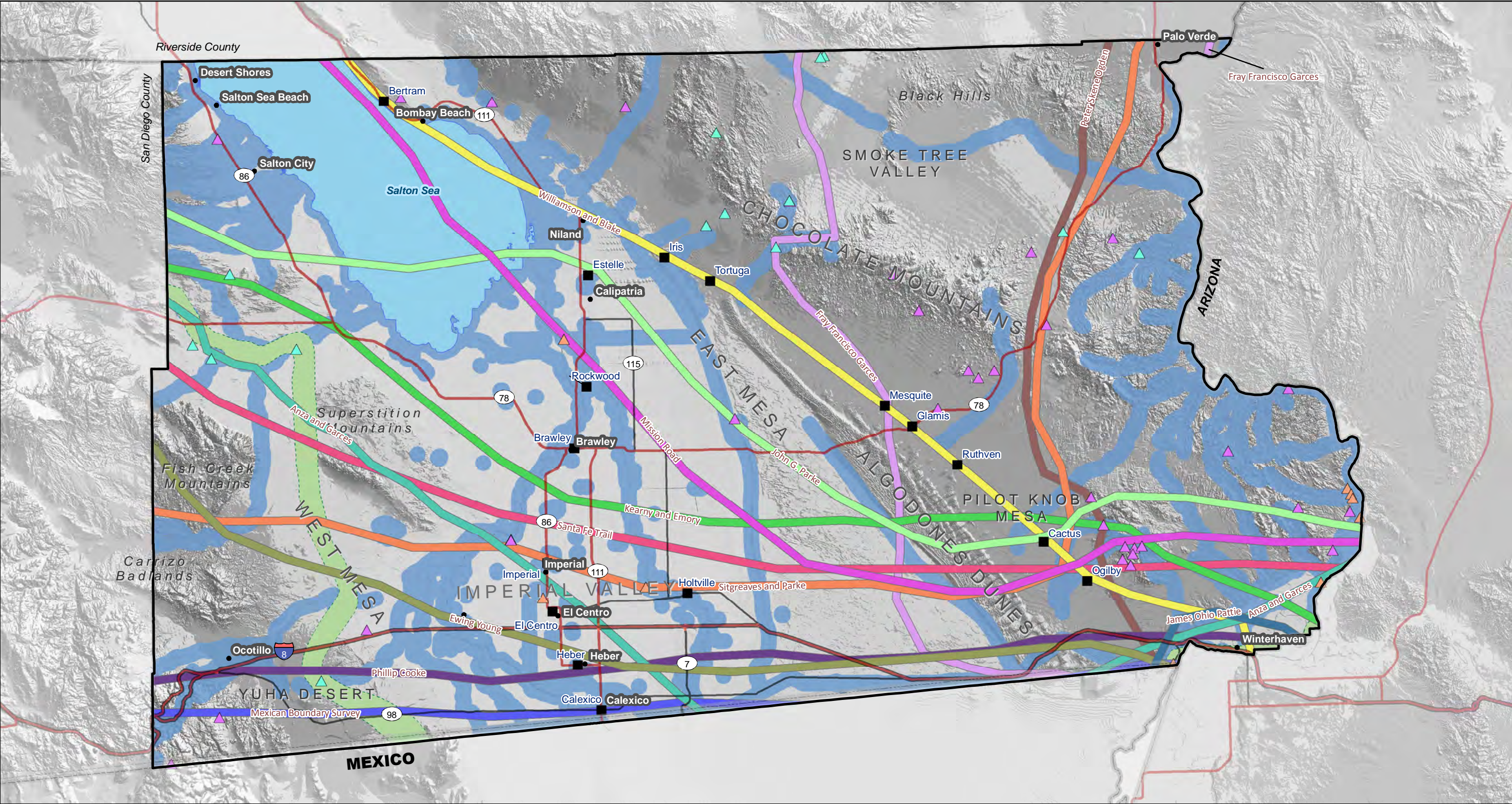
- |                  |                            |   |
|------------------|----------------------------|---|
| — Major Highways | ▲ Obsidian Resources       | ▨ Lake Cahuilla                                   |
| — Highways       | ▭ Imperial County Boundary | ■ 1000m Buffer Around Named River and Waterbodies |
| — Major Roads    | ■ Salton Sea               | ■ 200m buffer around Ecotones*                    |
|                  |                            | ■ Areas with 15% Slope or Less                    |

\* Ecotones were extracted from USGS GAP data (2013).

**Figure 4**

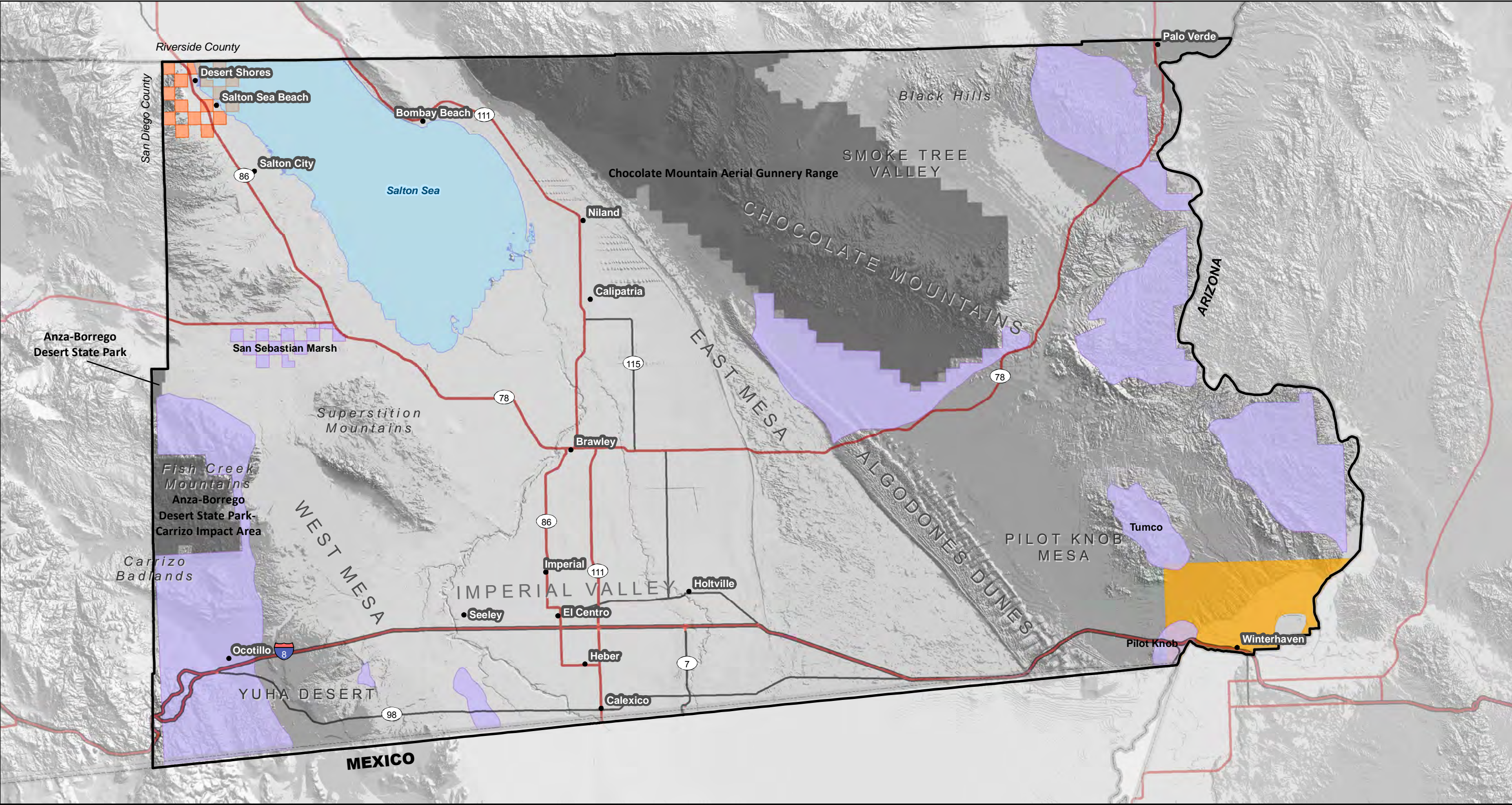
**Imperial County  
Areas of Heightened Prehistoric Sensitivity**





**Figure 5**  
**Imperial County**  
**Areas of Heightened**  
**Historic Period Sensitivity**





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Miles

Source: DRECP, NPS

- Major Highways
- Highways
- Major Roads
- Imperial County Boundary
- Torres Martinez Tribal Reservation
- Native American Sacred Sites
- Fort Yuma Indian Reservation

**Figure 6**

**Imperial County**  
**Known Areas of Native American Cultural Sensitivity**



## C. GEOLOGY AND SOILS

Imperial County is underlain by three natural geomorphic provinces: the Peninsular Ranges, the Colorado Desert, and the Mojave Desert. Each of these provinces is a naturally defined geologic region that displays a distinct landscape or landform with defining features based on geology, faults, topographic relief, and climate.

Soils in Imperial County are formed by stratified alluvial deposits. A large portion of the County includes fine-textured lakebed sediments. Approximately 28 known soil types occur in Imperial County: Aco, Antho, Carrizo, Carsitas, Chuckwalla, Cibola, Coachella, Fluvaquents, Gadsden, Gilman, Glenbar, Holtville, Imperial, Indio, Kofa, Lagunita, Laposa, Laveen, Mecca, Meloland, Niland, Orita, Ripley, Rositas, Salorthids, Superstition, Torriorthents, and Vint. Parent material includes Glenbar, Holtville, and Imperial soils. Indio, Vint, Meloland, and Rositas soils are derived from windblown and channel silts. Rositas and Carsitas soils were formed in beach deposits. Sand and gravelly fan materials are the parent materials of Carsitas and Rositas soils.

The clay material deposited in riverine environments during the formation of the Colorado River delta terrace is the source of the Holtville and Imperial soils. Niland soils occur in clayey lakebed. Several large gullies have formed from runoff water leading into the Salton Sea. The Antho, Laveen, Niland, and Superstition soils were formed from fan sediment. Fine-textured basin deposits provide the source material for Glenbar, Holtville, and Imperial soils.

The Imperial Formation is a geologic area that occurs in Imperial County and is exposed in the southeast Coyote Mountains on three major facies. Facies A includes shoreline deposits associated with alluvial fans. Facies B includes supratidal gypsum to low-tide terraces. Facies C includes siltstones and clays, indicating a filling of the Salton Trough by fine clastic material from the Colorado River. Rock units in Imperial County can be described as Precambrian and placed into two groups, the Chuckwalla complex and the Orocopia Schist. The rocks in the Chuckwalla complex include quartz biotite gneiss and various foliated hybrid granitic rocks and granophyres that range in composition from gabbro to granite. Rocks in the Orocopia Schist include weatherized mica-covered surfaces. The rock units are sericite-albite schist, quartz sericite schist, phyllite, and quartzite. Marble occurs in the schist in the Orocopia Mountains. Rock types or geological material known to occur in Imperial County include alluvium, andesite, basalt, conglomerate, dune sand, gneiss, granodiorite, limestone, mica schist, plutonic rock, rhyolite, sandstone, schist, and tonalite.

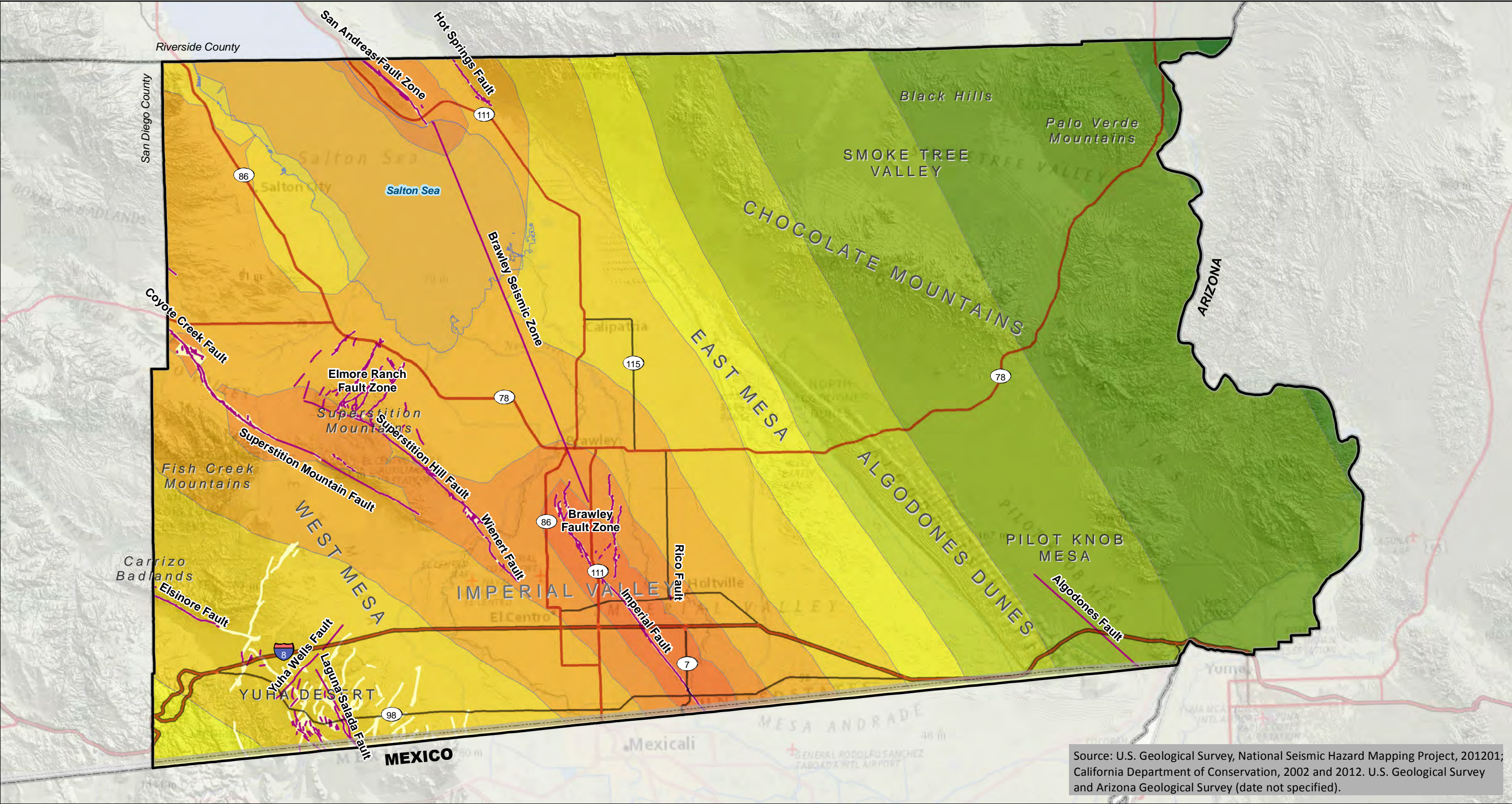
Existing conditions for geologic activity in Imperial County include earthquakes, the principal geologic activity affecting public safety in the County. Imperial County contains several major active faults, including the Brawley Fault Zone, the Coyote Creek Fault and the Elmore Ranch Fault (in the San Jacinto Fault Zone), the Elsinore Fault, the Imperial Fault, the Laguna Salada Fault (in the Elsinore Fault Zone), the San Andreas Fault, the Superstition Hills Fault, and the Wienert Fault (in the San Jacinto Fault Zone).

**Figure 7** shows the major faults and seismic hazard ratings in Imperial County.



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Source: U.S. Geological Survey, National Seismic Hazard Mapping Project, 201201; California Department of Conservation, 2002 and 2012. U.S. Geological Survey and Arizona Geological Survey (date not specified).



0
7.5
15

Miles

|   |   |
|---|---|
| <span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Imperial County Boundary   | <span style="color: magenta;">—</span> USGS Quaternary Faults |
| <span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Alquist-Priolo Earthquake Fault-Zoning | <span style="color: brown;">—</span> Major Highways           |
| <span style="color: brown;">—</span> Highways   | <span style="color: grey;">—</span> Major Roads               |

| Percent g* |          |
|------------|----------|
|            | 8 - 9    |
|            | 9 - 10   |
|            | 10 - 15  |
|            | 15 - 20  |
|            | 20 - 25  |
|            | 25 - 30  |
|            | 30 - 40  |
|            | 40 - 60  |
|            | 60 - 80  |
|            | 80 - 100 |
|            | > 100    |

\*This map layer shows peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10% probability of exceedance in 50 years. Values are given in %g, where g is acceleration due to gravity, or 9.8 meters/second^2

**Figure 7**

**Imperial County Seismic Hazards**

February 2015



## D. MINERALS

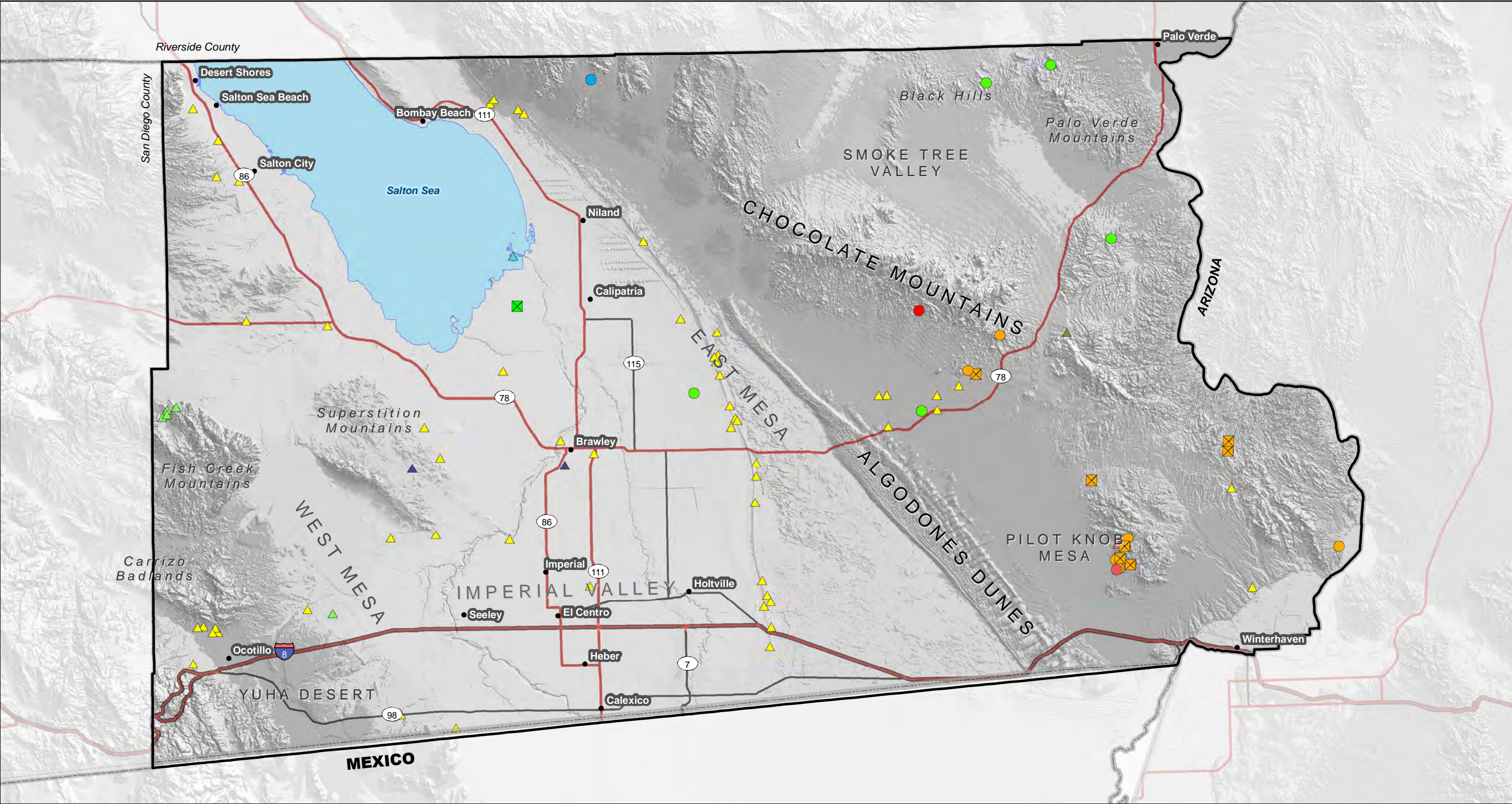
A number of mineral resources in Imperial County are currently being extracted. These mineral resources include gold, gypsum, sand, gravel, lime, clay, stone, kyanite, limestone, sericite, mica, tuff, salt, potash, and manganese. Several issues influence the extraction of mineral deposits in Imperial County, including the location of geologic deposition, the potential for impacts to the environment, and land use conflicts. As a result, the extraction of mineral resources is limited to a relatively small number of sites throughout the County. **Figure 8** depicts the distribution and location of mineral resources and mining sites in Imperial County.


Mineral deposits are an important natural resource that contribute to the economic development of the State and the County and provide essential raw materials for construction projects throughout the region. However, mineral extraction can result in numerous environmental impacts, including air pollution and degradation of air quality, noise pollution, accentuation of geologic hazards, surface and groundwater pollution, risks to public safety, destruction of cultural resources, and impacts to wildlife and plant species.



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Source: U.S. Geologic Survey  
MRDS and MAS/MILS, 2013

Imperial County Boundary

Major Highways

Highways

Major Roads

0 7.5 15 Miles

**Active Mines and Processing Plants**

Plants

- Potassium and Salt
- Gold

Mines, Metallic Commodities

- Aluminum
- Copper, Silver and Gold
- Gold

Mines, Non-Metallic Commodities

- Clay
- Gypsum-Anhydrite
- Mica
- Pumice
- Sand and Gravel, Construction
- Stone Crushed/Broken

**Figure 8**

**Imperial County**

**Existing Mineral Resources**



## E. REGIONAL AESTHETICS

### 1. Scenic Visual Resources

Imperial County extends over 4,597 square miles between Riverside County to the north, Mexico to the south, San Diego County to the west, and Arizona to the east. The County's visual character varies greatly. It includes natural scenic visual resources such as deserts, sand dunes, mountains, and the Salton Sea. Many of the natural scenic resources are located on land under Bureau of Land Management (BLM) jurisdiction. County areas for BLM-managed lands are shown on **Figure 9**, and depict the values of the County's visual resources based on their Visual Resource Inventory (VRI) process. Areas with a moderate to high value for maintenance of visual quality could represent opportunities for conservation and open space areas. Although these areas are within BLM lands, private inholdings under the County's jurisdiction may be available for conservation or open space designations. The County also includes agricultural areas and built environments such as urban areas and solar, wind, and geothermal energy development.

The desert areas include the Yuha Desert, West Mesa, lower Borrego Valley, East Mesa, and Pilot Knob Mesa. The Yuha Desert contains unique geologic features including sand chimneys and painted gorge formations that add scenic value to the natural landscape. Cultural features in the Yuha Desert include large earth sculptures, or geoglyphs, constructed by prehistoric Native Americans. The West Mesa, lower Borrego Valley, East Mesa, and Pilot Knob Mesa consist of desert vegetation from the creosote scrub community. Other plants include ocotillo, mesquite, palo verde, saltbush, and encelia.

Also contributing to the scenic quality of the desert areas are the springtime blooms of desert wildflowers. In springtime, up to 60 species of annuals may be viewed. A typical scene would include large, white evening primroses gleaming over variegated carpets of sand verbena, sunny desert dandelion, and desert sunflower, which are often joined by desert marigold, coreopsis, and other daisy family species.

Mountains are a significant visual resource in Imperial County. The eastern foothills of the Peninsular Range run along the County's southwest side. These foothills include the In-Ko-Pah or Jacumba Mountains, Coyote Mountains, and Fish Creek Mountains. East of these mountain/wilderness areas is Mount Signal, located along the international border on the eastern edge of the Yuha Desert, west of Calexico, which is visible from most of the Imperial Valley.

The southeast foothills of the Santa Rosa-San Jacinto Mountains are a prominent feature from State Route (SR) 86. The Superstition Mountains and Superstition Hills, located in West Mesa southeast of the lower Borrego Valley and west of Westmorland and Brawley, are visible looking north from I-8 west of El Centro and from SR 86 between El Centro and the Salton Sea. In the northeastern part of the County, the Chocolate Mountains, named because of their color, stretch northwest by southeast between Riverside County and the Colorado River. They are bisected by SR 78 between Glamis and the Palo Verde area. Portions of these mountain areas are designated by the BLM as Wilderness Areas, part of the National Wilderness Preservation System. The intention of this designation is to secure natural areas for the public purposes of recreation, scenic, scientific, educational, conservation, and historical use.

The Algodones Dunes are the largest sand dunes in California. This dune system covers approximately 160 square miles, extending for 45 miles along the eastern edge of the Imperial Valley agricultural region in a band averaging 6 miles in width. They extend lengthwise in a



northwest-southeast direction and are situated between the East Mesa and Pilot Knob Mesa areas. The dunes consist of shifting sands and attain a thickness of at least 200 feet in some parts. Rising to heights of over 300 feet above the surrounding desert floor, the dunes are a well-known landmark to County residents, and thousands of highway travelers pass them annually. The Imperial Sand Dunes are considered a significant visual resource in the County due to their unique scenic qualities, historic features, and prominent visibility to a large number of people.

The Salton Sea is located in the northwestern portion of the County and extends into Riverside County, measuring 35 miles in length and a surface area of approximately 376 square miles. The Salton Sea has been sustained by agricultural drainage from the Imperial, Coachella, and Mexicali valleys; rainfall; storm runoff from the surrounding mountains; and groundwater inflow. The area represents an important wildlife habitat area and provides migrating and wintering habitat for thousands of waterfowl and other birds. Masses of these birds are visible from the shores of the Salton Sea. This waterbody represents a unique visual resource because of its size, its location in a desert area, and its value to wildlife.

Anza-Borrego Desert State Park is located on the eastern side of San Diego County, with portions extending east into Imperial County and north into Riverside County. The park features washes, wildflowers, palm groves, cacti, sweeping vistas, and many miles of hiking trails.

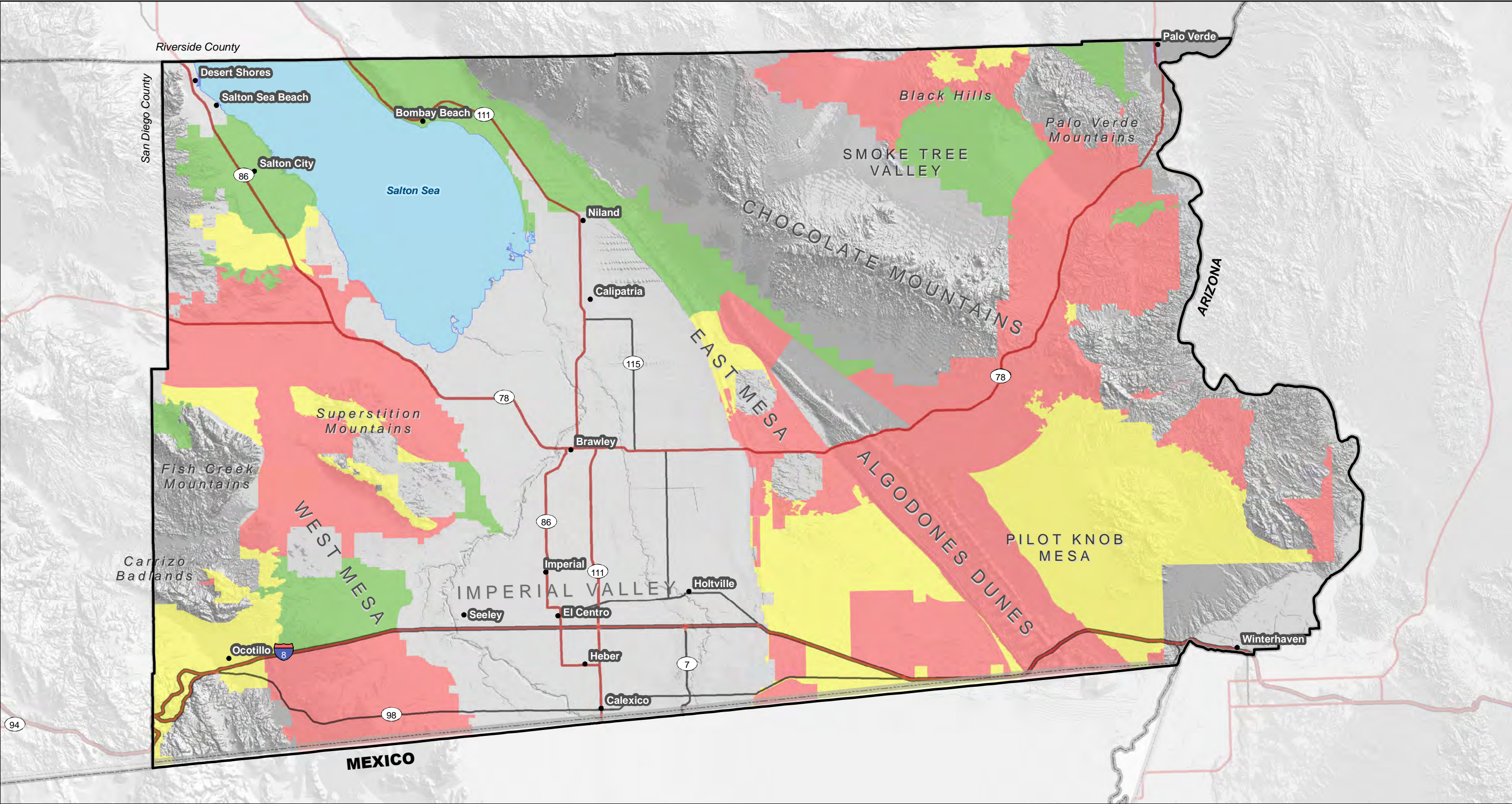
The Osborne Overlook offers scenic views of the Imperial Sand Dunes Recreation Area, North Algodones Dunes Wilderness, and surrounding area. The overlook is located among the largest and tallest dunes. The Juan Bautista de Anza Overlook provides a view of the Yuha Basin and surrounding landscape.

## **2. Scenic Highways**

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the scenic corridor. No State scenic highways have been designated in Imperial County; however, the following four routes in Imperial County are considered eligible for a State scenic highway designation:

- Interstate 8: The initial segment for future scenic highway designation status lies between the San Diego County line and its junction with SR 98 near Coyote Wells. This segment, known as Mountain Springs Grade, has a long, rapid elevation change, remarkable rock and boulder scenery, and plant life variations.
- SR 78: The portion of SR 78 from the junction with SR 86 near Julian to the San Diego County line is eligible for a future scenic highway designation. That area is considered scenic because of its desert characteristics and view of Salton Sea.
- SR 111: SR 111 travels along the northeast shore of the Salton Sea and is eligible for a future scenic highway designation from Bombay Beach to the County line. The drive contrasts the flat, wide portions of the Salton Sea with the rugged variations of the Chocolate Mountains.
- Borrego-Salton Seaway: County Highway S-22 is also known as Borrego-Salton Seaway; it begins in Salton City and ends at the community of Borrego Springs in San Diego County. This route includes views of Clay Point, the Anza Verde Wash, and scenic viewpoints.





0 7.5 15  
Miles

Source: Otak, Inc. and the BLM Ridgecrest Field Office, 2012

- Major Highways  
Highways  
Major Roads
- Imperial County Boundary
- Overall Rating**

- Maintenance of Visual Quality has High Value
- Maintenance of Visual Quality has Moderate Value
- Maintenance of Visual Quality has Low Value

**Figure 9**

**Imperial County**  
**VRI Sensitivity Level Ratings for BLM-Managed Lands**



### **3. Other Visual Characteristics**

Agricultural areas dominate the visual scenes in Imperial Valley 115 and are characterized by square or rectangular fields, typically 40 to 80 acres in area, that are sometimes interspersed with scattered farmhouses and related agricultural structures. These agricultural regions are crossed by irrigation canals and drainages that parallel dirt farm roads. Several cattle feed yards, other animal ranches, and aquaculture farms are located throughout the Imperial Valley, as are a few agricultural processing/packaging plants including Spreckels Sugar, fertilizer/chemical plants, and other agricultural-related operations.

Imperial County's urban areas include the areas surrounding seven incorporated cities (Brawley, El Centro, Imperial, Westmorland, Holtville, Calipatria, and Calexico) and five unincorporated communities (Heber, Niland, Seeley, West Shores/Salton City, and Winterhaven). These areas are characterized by low-rise, mixed-use development and contain or propose a broad range of residential, commercial, and industrial uses.

Military activities are centered at the Naval Air Facility El Centro, located north of Seeley, with military field and aerial operations conducted on approximately 350,000 acres in the Chocolate Mountains, 76,800 acres in the Superstition Mountains, and at other smaller sites throughout the County.

Certain areas previously used as farmland are being converted to solar power facilities. If all solar projects currently proposed and under review are approved, Imperial County would have over 23,000 acres of solar development.

### **4. Sources of Light and Glare**

Light and glare may be created day or night from various residential, commercial, and industrial uses throughout the County. Potential sources of glare during the day may include surface water, motor vehicles either parked or traveling on surrounding roadways, paved surfaces, building windows, and solar facilities. At night, light sources include street lamps, accent and security lighting on buildings, parking lot lighting, vehicle headlights, existing transmission lines, and some park facilities. The Ocotillo Wind Energy Facility is located along I-8 near the western border between Imperial and San Diego counties. This project has red and white flashing lights on the towers that dominate nighttime views for Ocotillo residents and travelers along Interstate 8.

## **F. AIR QUALITY AND CLIMATE CHANGE**

Air quality is defined by the concentration of pollutants related to human health. Concentrations of air pollutants are determined by the rate and location of pollutant emissions released by pollution sources and the atmosphere's ability to transport and dilute such emissions. Concentrations of air pollutants are determined by the rate and location of pollutant emissions released by pollution sources and the atmosphere's ability to transport and dilute such emissions.

Imperial County is located in the southeastern corner of California in a relatively flat desert valley surrounded by mountain ranges to the east and west. The State and Federal air quality regulations designated this region as the Salton Sea Air Basin (SSAB), which is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD). The SSAB encompasses the entirety of Imperial County and the southeast portion of Riverside County and is generally an arid desert region, with a significant portion located below sea level. A semi-permanent high-pressure cell blocks mid-latitude storms and causes sunny skies most of the time. The SSAB



contains relatively few major emissions sources, but may experience emissions from significant vehicular traffic, particularly near the two international port of entries. Emissions sources consist of geothermal power generation, food processing, plaster manufacturing, and other light industrial facilities. Additionally, the continued decrease in surface elevation of the Salton Sea is expected to generate dust containing decades' worth of agricultural runoff from exposure of land currently underwater.

Air quality in the County is measured at air quality monitoring stations located in Calexico, El Centro, Niland, Westmorland, and Brawley.

## 1. State and Federal Air Quality Standards

The Federal Clean Air Act (CAA) of 1971 and the CCA Amendments (1977) established the national ambient air quality standards (NAAQS), which are promulgated by the EPA. The State of California has also adopted its own California ambient air quality standards (CAAQS), which are promulgated by the California Air Resources Board (CARB). Both the State of California and the Federal government have established health-based ambient air quality standards for six air pollutants. These pollutants include O<sub>3</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub> and subset PM<sub>2.5</sub>, and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Specific geographic areas are classified as attainment, nonattainment, or unclassified areas for each pollutant, based on the comparison of measured data with Federal and State standards. The unclassified designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. The Imperial County portion of the SSAB is currently designated as a nonattainment area for the 8-hour O<sub>3</sub> NAAQS and CAAQS. The entire County is designated as a nonattainment area for the PM<sub>10</sub> NAAQS and CAAQS. The central portion of Imperial County is designated as a nonattainment area for the PM<sub>2.5</sub> NAAQS. The Imperial County portion of the SSAB is in attainment or unclassified with the NAAQS and CAAQS for the other applicable criteria pollutants. **Table 1** shows the Federal and State attainment status for the Imperial County portion of the SSAB.

**TABLE 1**  
**FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR IMPERIAL COUNTY**

| Pollutant                                     | Federal   | State         |
|---|---|---------------|
| 8-Hour Ozone (O <sub>3</sub> )                | Nonattainment   | Nonattainment |
| Coarse Particulate Matter (PM <sub>10</sub> ) | Nonattainment   | Nonattainment |
| Fine Particulate Matter (PM <sub>2.5</sub> )  | Nonattainment (central portion)<br>Unclassified (remainder) | Attainment    |
| Carbon Monoxide (CO)                          | Unclassified/Attainment                                     | Attainment    |
| Nitrogen Dioxide (NO <sub>2</sub> )           | Unclassified/Attainment                                     | Attainment    |
| Sulfur Dioxide (SO <sub>2</sub> )             | Attainment  | Attainment    |
| Lead  | Unclassified/Attainment                                     | Attainment    |
| Sulfates                                      | —   | Attainment    |
| Hydrogen Sulfide                              | —   | Unclassified  |
| Visibility Reducing Particles                 | —   | Unclassified  |



The Environmental Protection Agency (EPA), under the provisions of the CAA, requires each State with regions that have not attained the NAAQS to prepare a State Implementation Plan (SIP), detailing how these standards are to be met in each local area. The SIP is a legal agreement between each State and the Federal government to commit resources to improving air quality. It serves as the template for conducting regional and project-level air quality analysis. CARB is the lead agency for developing the SIP in California. Local air districts, such as the ICAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

For 8-Hour Ozone (O<sub>3</sub>), the ICAPCD adopted the Final 2009 8-hour Ozone Modified Air Quality Management Plan in July 2010. The plan includes control measures which are an integral part of how the ICAPCD currently controls the ROG and NO<sub>x</sub> emissions within the O<sub>3</sub> nonattainment areas. The overall strategy includes programs and control measures which represent the implementation of Reasonable Available Control Technology (40 CFR 51.912) and the assurance that stationary sources maintain a net decrease in emissions.

For Coarse Particulate Matter (PM<sub>10</sub>), the ICAPCD adopted the PM<sub>10</sub> SIP in August 2009 that developed fugitive dust control measures (Regulation VIII). On April 23, 2013, the EPA approved Regulation VIII fugitive dust rules into the Imperial County portion of the California SIP.

For Fine Particulate Matter (PM<sub>2.5</sub>), the ICAPCD adopted the PM<sub>2.5</sub> SIP in December 2014. This SIP concluded that the majority of the PM<sub>2.5</sub> emissions resulted from transport in nearby Mexico. Specifically, the SIP demonstrates attainment of the 2006 PM<sub>2.5</sub> NAAQS “but for” transport of international emissions from Mexicali, Mexico. In accordance with the CAA, the PM<sub>2.5</sub> SIP satisfies the attainment demonstration requirement satisfying the provisions of the CAA.

The ICAPCD is working cooperatively with counterparts from Mexico to implement emissions reductions strategies and projects for air quality improvements at the border. The two countries strive to achieve these goals through local input from states, County governments, and citizens. Within the Mexicali and Imperial Valley area, the Air Quality Task Force (AQTF) has been organized to address those issues unique to the border region known as the Mexicali/Imperial air shed. The AQTF membership includes representatives from Federal, State, and local governments from both sides of the border, as well as representatives from academia, environmental organizations, and the general public. This group was created to promote regional efforts to improve the air quality monitoring network, emissions inventories, and air pollution transport modeling development, as well as the creation of programs and strategies to improve air quality.

## **2. Climate Change**

According to the State of California Climate Change Center, temperatures in California will rise significantly during this century as a result of the greenhouse gas (GHG) emissions humans release into the atmosphere. Generally, research indicates that California should expect overall hotter and drier conditions, with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures and accelerating sea-level rise.

In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing. Mean annual minimum temperatures are projected to substantially increase in Imperial County, as temperature change projections indicate mean annual, monthly median, and minimum and maximum temperature increases over 2°C. Projections also show a change in the distribution of precipitation and vegetation shift



due to climate change, based on the capacity of species to migrate and keep up with geographic change.

Further State studies and assessments are expected to better understand the scope, timing, cost, and feasibility of various management options to address climate risks. Understanding these risks will allow the State to prioritize actions and investments to safeguard the people, economy, and natural resources from climate change impacts. In addition, these further studies will assist in determining how future climate change is expected to impact the air quality of Imperial County and how the ICAPCD can address those impacts.

## **G. OPEN SPACE AND RECREATION**

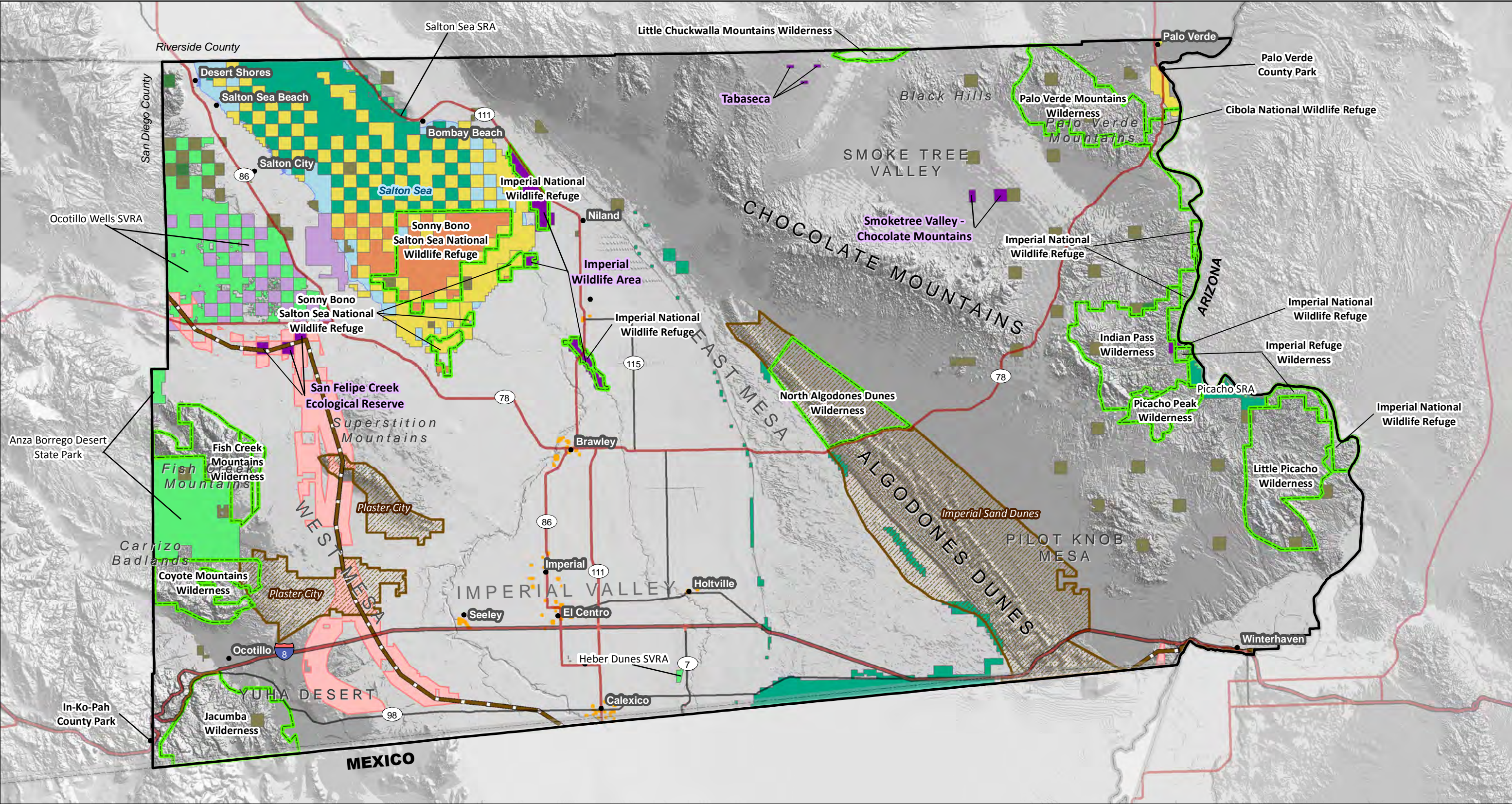
Parks and recreation in Imperial County are enhanced by the natural resources of the Sonoran Desert, including the mountains, sandy hills, Colorado River, and Salton Sea. Because of the varied terrain throughout the County, abundant opportunities for recreation exist, such as hiking, boating, fishing, hunting, and off-highway activities. Many of these opportunities are located on land under Federal or State jurisdiction, but multiple smaller parks are located in the urban areas of the County.

Much of Imperial County is open space. Open space is considered any parcel or area of land or water that is essentially unimproved and devoted to conservation of natural resources, outdoor recreation, and protection of the public health and safety. The State and Federal governments manage large amounts of open space in Imperial County, the largest being the California Desert Conservation Area under Bureau of Land Management (BLM) jurisdiction. State and Federal protected areas, including a number of wilderness areas, are shown on **Figure 10**.

The Imperial County Planning and Development Services Department (ICPDS) operates five parks: Sunbeam Lake Park, West Lake Park, Red Hill Marina Park, Ocotillo Community Park, and Palo Verde Park. These County parks offer a variety of passive and active recreation opportunities, including playground equipment, basketball courts, picnic tables, barbecue grills, campsites, walking trails, boating and fishing opportunities, and open space for passive recreation.

Imperial County hosts the El Centro Naval Air Facility, Imperial County Airport and other airports adjacent to open space areas. Countywide aircraft facilities are identified in the Airport Land Use Compatibility Plan and include land use compatibility and open space designations that protect people and property from potential aircraft accidents in the flight path.





0

7.5

15

Miles

Source: CPAD, USGS, NPS

Major Highways

Highways

Major Roads

Imperial County Boundary

Juan Bautista de Anza Trail

BLM Trail Areas

Federal Off-highway Vehicle Area

Wildlife

**Protected Areas**

California Department of Fish and Wildlife

California Department of Parks and Recreation

City Parks

County Parks

Non-Governmental Organization

Other State

Special District

US Bureau of Land Management

US Fish and Wildlife Service

Bureau of Reclamation

Figure 10

**Imperial County  
Recreation and Open Space Areas**

February 2015