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APPENDIX D — BACKGROUND INFORMATION FOR ASSETS AND VALUES AT RISK

D.1 COMMUNITIES AT RISK

On January 4, 2001, for the purposes of the National Fire Plan, the Department of Interior (DOI) published in the Federal Register a "Notice of Urban-Wildland Interface Communities within the Vicinity of Federal Lands That Are at High Risk from Wildfire." On August 17, 2001, the DOI added more communities to the Communities at Risk list. All the Humboldt County communities listed in the table below, were part of these original lists of communities designated as "communities within the vicinity of federal lands that are at high risk from wildfire," more commonly known as "Communities at Risk" or CAR.

Nearly all of the populated areas within the county have already been designated CAR either at the federal or state level. The existing CARs are shown in the following table, *Figure D.1, Humboldt County Designated Communities at Risk*. *Map D.1, Population and Communities at Risk* below also shows these existing CARs. **Two additional communities are proposed to be added to the CAR list in this CWPP: Redwood Valley and Titlow Hill.**

FIGURE D.1 HUMBOLDT COUNTY DESIGNATED COMMUNITIES AT RISK[1]

PLACE NAME	FEDERAL THREAT[2]	FEDERALLY REGULATED[3]	YEAR DESIGNATED
Alderpoint			2001
Alton			2001
Arcata	x		2001
Bayside	x		2001
Bayview			2001
Beatrice	x		2001
Benbow			2001
Berry Glen	x	x	2001
Big Lagoon	x	x	2001
Big Lagoon Rancheria	x	x	2001
Blocksburg			2001
Blue Lake	x	x	2001
Blue Lake Rancheria	x	x	2001
Bracut	x		2001
Briceland			2001
Bridgeville	x	x	2001
Carlotta			2001
Crannell			2001
Cutten			2001
Essex			2001
Ettersburg	x	x	2001
Eureka			2001

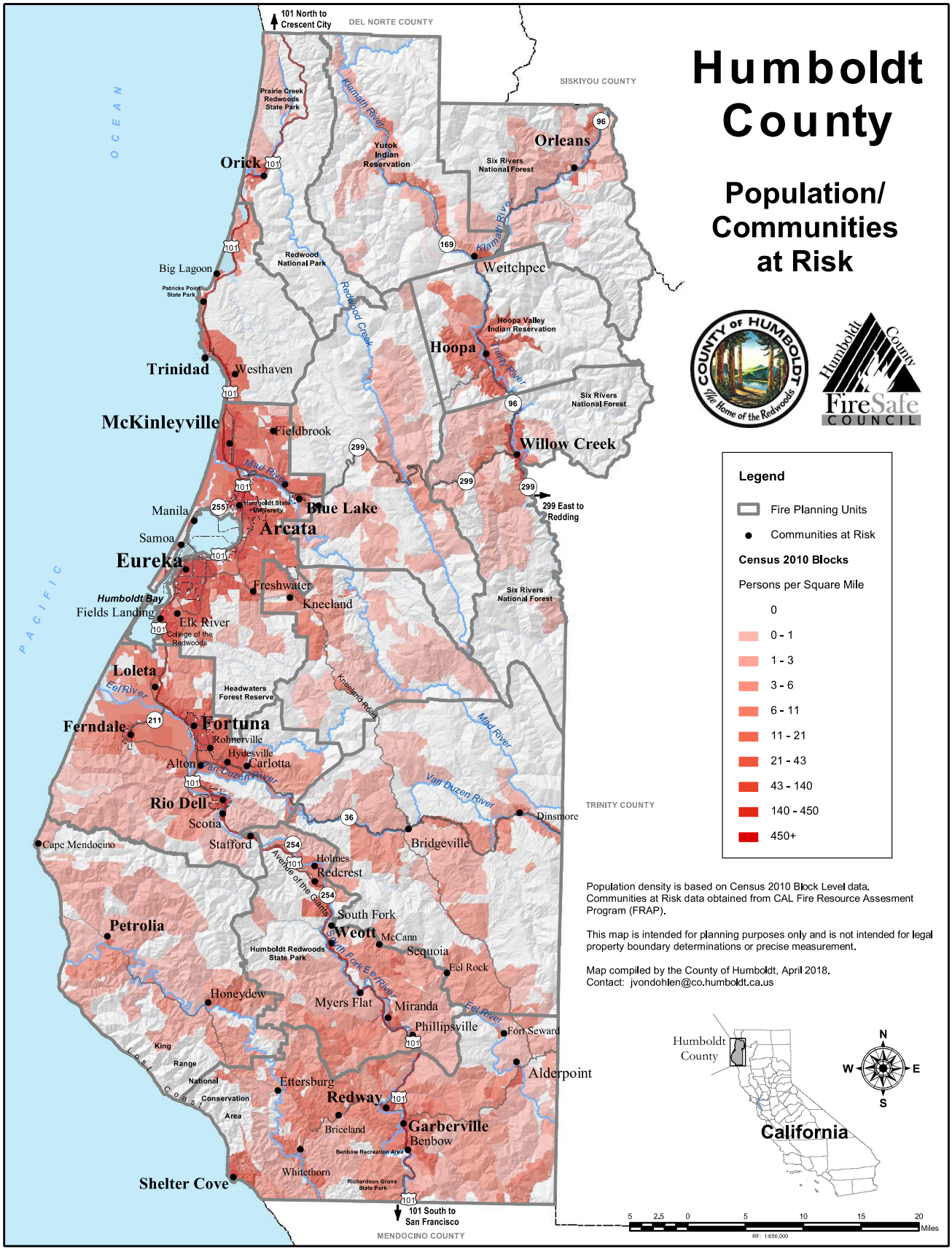
[1] CAL FIRE. (2001). Communities at Risk List. Retrieved from http://osfm.fire.ca.gov/fireplan/fireplanning_communities_at_risk

[2] "Federal Threat" refers to communities within 1.5 miles of federal lands.

[3] According to CAL FIRE: "Federally Regulated" refers to land owned by the federal government. In these cases, these communities are likely inholdings on federal lands.

FIGURE D.1 HUMBOLDT COUNTY DESIGNATED COMMUNITIES AT RISK[1]			
PLACE NAME	FEDERAL THREAT[2]	FEDERALLY REGULATED[3]	YEAR DESIGNATED
Fickle Hill		x	2001
Fieldbrook			2001
Fortuna			2001
Freshwater			2001
Friday/Morton Ranch	x		2001
Fruitland			2001
Garberville			2001
Holmes			2001
Honeydew	x	x	2001
Hoopa Valley Indian Reservation	x	x	2001
Humboldt Hill			2001
Hydesville			2001
Kneeland			2001
Korbel		x	2001
Kuhn Ranch/Ammon	x	x	2001
Mad River			2001
Maple Creek	x	x	2001
McKinleyville			2001
Miranda			2001
Myers Flat			2001
Myrtletown	x		2001
Orick	x	x	2001
Orleans	x	x	2001
Patrick's Point	x		2001
Pepperwood			2001
Petrolia		x	2001
Phillipsville			2001
Pine Hills		x	2001
Pine Mountain			2001
Redcrest			2001
Redway			2001
Rio Dell			2001
Riverside Park/Swains Flat			2001
Rohnerville	x		2001
Scotia			2001
Shelter Cove	x	x	2001
Shivley			2001
Stafford			2001
Trinidad		x	2001
Trinidad Rancheria	x	x	2001
Weitchpec	x	x	2001
Weott			2001
Westhaven-Moonstone	x	x	2001
Whitethorn (Thorn)		x	2001
Willow Creek	x	x	2001

Map D.1 Population and Communities at Risk



D.2 COMMUNITY AND ECONOMIC

Residential Construction and WUI Building Codes

New residential construction permitted in Humboldt County's State Responsibility Areas (SRA) have been built according to the standards of the 2007 California Building Code Chapter 7A: "Materials and Construction Methods for Exterior Wildfire Exposure" (effective January 1, 2008). (Henceforth, in this plan, the Chapter 7A standards will be referred to as the Wildland-Urban Interface (WUI) Building Standards.) A noteworthy exception to the WUI standards is new residential construction built with a permit under the County's "Modified Limited Density Owner Built Rural Dwelling Regulations" for alternative owner builders (AOB).[4] Homes built to AOB standards are exempt from the California Building Code (including the WUI code) but must meet the standards for the electrical, mechanical, and plumbing codes. County Building personnel encourage AOB permit applicants to follow California Building Code standards; however, there is no way to verify compliance.

The County began to keep digital records on building permit activity in 1993. Between 1993 and 2008 (up to the effective date of the WUI code) there were 1,263 permitted, new residential structures built. Records indicate that only three of those were built with an AOB permit. This report is believed to be massively understated, due to inaccuracies in permit coding; there were likely many more AOB permits granted in that time period. As of 2017, there have been 1,885 residential units constructed since the effective date of the WUI code (2008), of those approximately 376 were constructed with an AOB permit.

FIGURE D.2 IMPROVEMENT VALUE BY FIRE HAZARD SEVERITY ZONE[5]

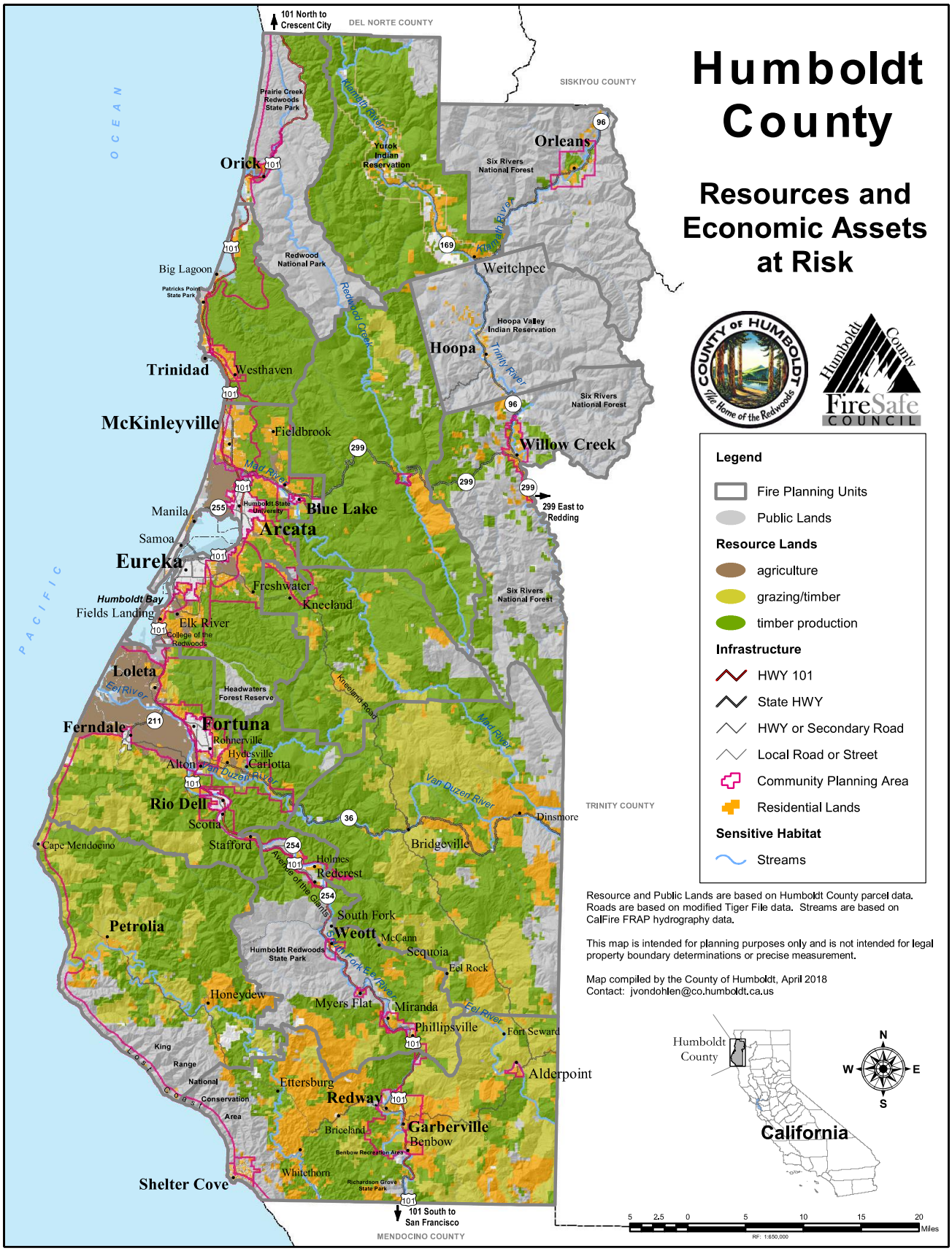
PROPERTY TYPE	NON-WILDLAND/ NON-URBAN	URBAN UNZONED	MODERATE	HIGH	VERY HIGH	TOTAL
Agriculture	$9,955	$0	$2,084	$3,583	$3,426	$19,049
Churches & Other Non-profit Org.	$664	$4,170	$5,910	$5,366	$2,493	$18,603
Entertainment & Recreation	$0	$22	$1,098	$2,559	$718	$4,396
Heavy Industrial	$135	$1,309	$3,649	$0	$331	$5,425
Light Industrial	$1,572	$901	$3,907	$2,113	$567	$9,059
Multi-dwellings (10 + units)	$19	$10,517	$1,691	$1,736	$0	$13,964
Multi-dwellings (2 to 4 units)	$1,210	$73,862	$78,524	$57,503	$1,463	$212,562
Multi-dwellings (5 to 9 units)	$519	$8,565	$9,026	$5,704	$348	$24,162
Nursing Home	$0	$731	$137	$466	$0	$1,335
Personal and Repair Services	$0	$2,898	$6,779	$5,377	$4,023	$19,076
Professional/Technical Services	$93	$19,085	$10,353	$11,238	$4,639	$45,407
Public	$21	$0	$62	$0	$0	$84
Retail Trade	$1,448	$18,396	$18,317	$20,318	$6,823	$65,302

[4] The County of Humboldt adopted the AOB regulations in 1984.

[5] Figures are in thousands of dollars.

FIGURE D.2 IMPROVEMENT VALUE BY FIRE HAZARD SEVERITY ZONE[5]						
PROPERTY TYPE	NON-WILDLAND/ NON-URBAN	URBAN UNZONED	MODERATE	HIGH	VERY HIGH	TOTAL
Single Family Dwelling	$85,206	$480,198	$1,145,190	$1,150,346	$241,998	$3,102,937
Temporary Lodging	$227	$7,136	$12,569	$13,471	$3,841	$37,242
Timberland Improvements	$866	$0	$3,338	$111,364	$56,390	$171,957
Utilities	$0	$0	$4	$0	$0	$4
Vacant	$704	$3,538	$8,010	$10,100	$6,526	$28,878
Wholesale Trade	$0	$258	$2,141	$410	$286	$3,095
Total	**$102,639**	**$631,585**	**$1,312,789**	**$1,401,652**	**$333,871**	**$3,782,536**

Map D.2 Resources and Economic Assets at Risk



Map D.3 Development Density

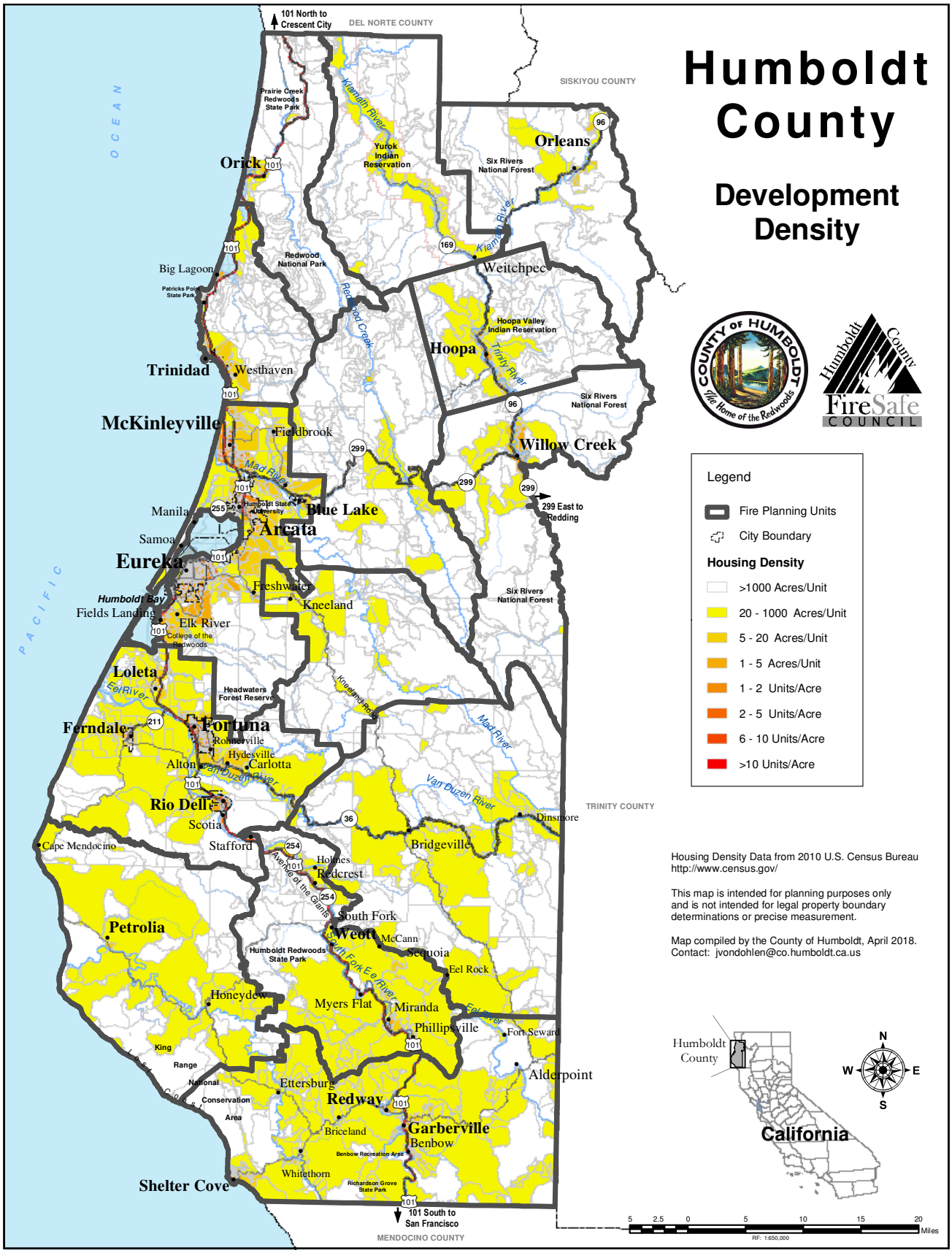


FIGURE D.3 MEDICAL FACILITIES		
➢ Mad River Community Hospital	3800 Janes Road Arcata, CA 95521	**707-822-3621**
➢ St Joseph Hospital	2700 Dolbeer Street Eureka, CA 95501	**707-443-8051**
➢ Jerold Phelps Community Hospital	733 Cedar Street Garberville, CA 95542	**707-923-3921**
➢ Redwood Memorial Hospital	3300 Renner Drive Fortuna, CA 95540	**707-445-8121**

FIGURE D.4 AIRPORTS	
➢ Arcata-Eureka Airport	➢ Dinsmore Airport
➢ Garberville Airport	➢ Kneeland Airport
➢ Murray Field Airport	➢ Rohnerville Airport
➢ Eureka Municipal Airport	➢ Shelter Cove Airport
➢ Hoopa Airport	

FIGURE D.5 SCENIC HIGHWAYS
➢ **Route 36** from Route 101 near Fortuna to the Trinity County line
➢ **Route 101** for its entire length in Humboldt County
➢ **Route 299** from Arcata to Willow Creek
➢ **Route 96** from Route 299 at Willow Creek north to Siskiyou County
➢ **Highway 254,** "the Avenue of the Giants," branching off of Route 101 in the southern portion of the County

D.3 NATURAL

Wildlife

The following table shows a list of federal and state listed species in Humboldt County.

FIGURE D.6 FEDERAL AND STATE LISTED SPECIES IN HUMBOLDT COUNTY[6]

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Acipenser medirostris	Green sturgeon	Threatened	None
Agelaius tricolor	Tricolored blackbird	None	Candidate Endangered
Astragalus agnicidus	Humboldt County milk-vetch	None	Endangered
Brachyramphus marmoratus	Marbled murrelet	Threatened	Endangered
Charadrius alexandrinus nivosus	Western snowy plover	Threatened	None
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	Threatened	Endangered
Empidonax traillii brewsteri	Little willow flycatcher	None	Endangered
Erysimum menziesii	Menzies' wallflower	Endangered	Endangered
Eucyclogobius newberryi	Tidewater goby	Endangered	None
Haliaeetus leucocephalus	Bald eagle	Delisted	Endangered
Howellia aquatilis	Water howellia	Threatened	None
Layia carnosa	Beach layia	Endangered	Endangered
Lilium occidentale	Western lily	Endangered	Endangered
Lupinus constancei	Lassics lupine	None	Candidate Endangered
Martes caurina humboldtensis	Humboldt marten	None	Candidate Endangered
Noccaea fendleri ssp. californica	Kneeland prairie pennycress	Endangered	None
Oncorhynchus kisutch	Coho salmon	Threatened	Threatened
Oncorhynchus mykiss irideus	Steelhead – northern California DPS	Threatened	None
Oncorhynchus tshawytscha	Chinook salmon – California coastal ESU	Threatened	None
Rallus obsoletus obsoletus	California Ridgway's rail	Endangered	Endangered
Rana boylii	Foothill yellow-legged frog	None	Candidate Threatened
Riparia riparia	Bank swallow	None	Threatened
Speyeria zerene behrensii	Behren's silverspot butterfly	Endangered	None
Spirinchus thaleichthys	Longfin smelt	Candidate	Threatened
Strix occidentalis	Northern spotted owl	Threatened	Threatened
Thaleichthys pacificus	Eulachon	Threatened	None

There are other plant and animal species that have not (as of publication) been listed as threatened or endangered at the federal or state level, but which are still rare enough to be listed in the CNDDB. These species, such as the Pacific fisher (*Pekania pennanti*) and Pacific lamprey (*Entosphenus tridentatus*), meet the criteria for listing but have not yet been formally listed or selected as candidates. Before engaging in wildfire hazard-reduction activities such as clearing vegetation, it is important to be aware of federal, state, and local laws to safeguard listed species. *For more information on protecting endangered species, see Appendix I,* ***Regulations and Compliance.***

[6] California Department of Fish and Wildlife. California Natural Diversity Database (CNDDB) [Data]. Retrieved from https://www.wildlife.ca.gov/Data/CNDDB

Case-Study Species: California Condor (*Gymnogyps californianus*)

Due to a number of factors, including lead poisoning, the California condor, *Gymnogyps californianus,* was close to extinction in the 1980s, reaching an all-time low of 22 individuals. Over the last several decades, conservationists and scientists committed themselves to saving the condor from extinction and reintroducing birds to the wild.[7] As of December 2015, there were 435 condors both in the wild and in captivity. Although the population of condors is increasing, the birds still face many environmental challenges. While only a small fraction of large old-growth redwoods have canopy cavities, these unusual fire features likely provided a unique habitat element along the California coast for generations. There is some documentation showing that coast redwoods provided roosting habitat for condors in the wild. In 2008, one of the released birds (from the captive breeding program at the San Diego Wild Animal Park and the Los Angeles Zoo) decided to nest in a redwood near Big Sur. As if this nesting event were not remarkable enough for redwood ecologists, the site where the nest tree occurred burned in a wildfire that year, and the chick survived. As this one bird's nesting success shows, the viability in the coast redwood forest habitat for condors may be linked to the presence of fire as a source of canopy complexity in this habitat.

The Yurok Tribe started a long process in 2003 with the aim of condor reintroduction in both their territory and throughout the Pacific Northwest,[8] a region that North America's largest bird has not occupied in more than a century. This is a sacred species for the Yurok. Its feathers are used and its songs are sung in the World Renewal ceremony, in which Yuroks pray and fast to balance the world. The condor is also critical for a flourishing ecosystem. In the absence of sufficient large mammalian carnivores, condors do the work of removing large, decaying carcasses from the ecosystem. They can tear tough hides to open carcasses and make them accessible to other scavengers. The Yurok's collaborative effort and partnership with the National Park Service, Redwood National Park (RNP), and the US Fish and Wildlife Service started a National Environmental Policy Act (NEPA) process.[9] The objective is to evaluate a range of alternatives and environmental effects for establishing a condor release facility in RNP within the condors' historical northern range and breeding areas, including the possible designation of these condors as an experimental population. Reintroducing a new population of condors into the biologically diverse ecosystem of RNP and the surrounding area has a very real potential to aid in the species' long-term recovery.

Hydrology

The hydrology of an area describes the flow of water across and through the land. Lakes, ponds, streams, wetlands, and springs are just a few examples of an area's hydrological features. The presence of these features tends to increase the humidity of a local site and can make it more resistant to the effects of fire. In the case of ponds and lakes, their availability as water sources for fire suppression is also important.

Humboldt County's hydrologic features are abundant. Humboldt Bay is nestled into the coast at the county's midpoint, and is the only deep-water port between San Francisco and Coos Bay, Oregon. Thousands of waterways flow through the region, from small ephemeral streams to large creeks and rivers, eventually making their way to the Pacific Ocean. Noteworthy rivers running through the county are the South Fork Eel, Eel, Mattole, Van Duzen, Mad, South Fork Trinity, Trinity, and the Klamath. Redwood Creek is a significant watershed that runs through half the length of the county. These watersheds can be grouped into four larger basins: Klamath-Trinity, Mad-Redwood, Eel, and Mattole.

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[7] Condors and Redwood Fire Management: Big Birds in Tall Trees. Coast Redwood Ecology and Management. Retrieved on April 19, 2018 from *https://redwood.forestthreats.org/condors.htm*

[8] The Yurok Tribe Condor Program. The Yurok Tribe. Retrieved on April 19, 2018 from *http://www.yuroktribe.org/departments/selfgovern/wildlife_program/condor/condorproject.htm*

[9] Reintroduce California Condors to Northwestern California. Redwood National Park, National Park Service. Retrieved on April 19, 2018 from *https://parkplanning.nps.gov/projectHome.cfm?projectID=66364*

Geology

The bedrock geology of Humboldt County is divided generally into two provinces: the Klamath Mountains province in the northeast, and the Coast Ranges province in the central and southwest portion of the county. The dividing line between the two provinces is the South Fork Mountain Ridge, which separates the Trinity River basin from the Mad River and Redwood Creek drainages.

The Klamath Mountains province is an area beginning in northeastern Humboldt County and extending east of the County line with high alpine peaks, some attaining elevations of 8,000 feet or more. The province is drained by the Klamath and Trinity Rivers and farther north by the Smith River. Rocks in the Klamath Mountains province are generally older than those in the Coast Ranges. Rocks of sedimentary origin such as sandstone, chert, slate, and schist occur abundantly, with occasional granite intrusions.

The Coast Ranges province is the dominant geologic province in the county, trending northwest and drained by the Mad, Eel, and Mattole River drainages. The Franciscan and Yager complexes dominate inland, with sand and other alluvial deposits dominating in the lower reaches of the river basins and the area surrounding Humboldt Bay.