

SEPTEMBER 18, 2017

Californians for Energy Independence
c/o California Independent Petroleum
Association 1001 K Street, 6th Floor
Sacramento, CA 95814

Subject: Evaluation of the Effects of Buffer Zone Setbacks on Los Angeles County Oil and Gas Production

On behalf of the California Independent Petroleum Association (CIPA), Catalyst Environmental Solutions presents the findings of our analysis evaluating the potential effects of setback requirements on oil and gas production in Los Angeles County. In April 2017, the Los Angeles City Council President, Herb Wesson introduced a motion calling for a study analyzing the feasibility of a buffer zone or setback for wells located next to “sensitive land uses”, loosely defined in the motion as “homes, schools, hospitals, parks and public places”. Community activists have suggested a 2,500-foot buffer around all production wells in the city. We prepared this letter to summarize the potential effects of four specific setback scenarios on the production of oil in the County of Los Angeles. The four scenarios evaluated are: 1) 2,500 foot buffer, 2) 1,500 foot buffer, 3) 1,000 foot buffer, and 4) 500 foot buffer from “sensitive land uses”. Based on the results of our analysis, described in detail below, implementation of a 2,500-foot setback would result in an 75% shutdown of all oil and gas production wells in the County of Los Angeles. While the other three scenarios would reduce the number of affected wells slightly, even a 500-foot setback would result in an 56% shutdown of oil and gas production wells in the County.

ACTIVE PRODUCTION WELLS

Catalyst obtained the locations for all wells documented within the County from GIS shapefiles developed and maintained by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR). This total list includes wells classified as either active, buried, idle, new, or plugged both onshore and offshore. Of these, active wells (totaling 5,811) were isolated and filtered down to exclusively oil and gas production wells for the remainder of this analysis. Based on this filtering method, Catalyst determined that there are a total of 4,108 active oil and gas production wells located within the County limits (3,006 onshore and 1,102 offshore) (Figure 1). See Table 1 for additional information.

Table 1. Los Angeles County’s active well classifications and quantities.

Active Well Classification	Number of Wells in Los Angeles County
Oil & Gas	4,108
Steam Flood	48
Water Flood	1,468
Gas Storage	97
Observation	36
Water Disposal	38
Dry gas	6
Cyclic Steam / Water Flood	4
Water Source	6
Total	5,811

SELECTING SENSITIVE LAND USES

Catalyst used Los Angeles County Planning Department Zoning data to identify sensitive land uses as described in the City Council motion. As displayed in Table 2, we included in our analysis all land use categories that correspond to residential or community uses.

Table 2. Los Angeles County Zoning Classifications

Included in Sensitive Land Use		Excluded from Sensitive Land Use	
Beach Parks	Educational Institutions	Agriculture	Cemeteries
General Office Use	Hotels and Motels	Commercial and Services	Communication Facilities
Local Parks and Recreation	Mixed Urban	Extraction	Golf Courses
Mobile Homes and Trailer parks	Multi-Family Residential	Heavy Industrial	Industrial
Open Space and Recreation	Other Open Space and Recreation Residential	Light Industrial	Military Installation
Single Family Residential	Wildlife Prserves and Sanctuaries	Mixed Commercial and Industrial	Other Commercial
		Retail Stores and Commercial Services	Special Use Facilities
		Transportation	Transportation, Communication, and Utilities
		Utility Facilities	Vacant
		Water	Wholesaling and Warehousing

DETERMINING AFFECTED WELLS

Using GIS software, we overlaid the active oil and gas production wells with the sensitive land uses from the County land use planning data, and applied the four setback scenarios to identify which wells would be affected under each scenario. Figures 2 through 6 graphically present the results of this analysis. As shown in these figures and in Table 3 below, under the 2,500-foot setback scenario, 3,062 production wells in Los Angeles County would be affected. However, even minimizing the potential setback to 500-feet would only exclude 754 production wells (56% of all wells would still be affected). Therefore, reducing the size of the potential setback

scenario would not avoid adverse effects to production in the county. Under each scenario, the majority of wells affected are onshore wells; the subset of offshore production wells that would be affected under the four scenarios are located on Grisson Island near the Port of Long Beach.

Table 3. Results of Each Setback Scenario Analysis

Setback from Sensitive Land Use (Feet)	Number of Potentially Affected Wells (Shutdown)	Percentage of All Active Oil & Gas Production Wells in LA County	Percentage of Onshore Oil & Gas Production Wells in LA County	Percentage of Offshore Oil & Gas Production Wells in LA County
500	2,307	56%	77%	0.2%
1,000	2,611	64%	86%	1%
1,500	2,831	69%	89%	14%
2,500	3,062	75%	95%	18%

IMPACTS TO PRODUCTION

The API number of each well in the County was obtained from the GIS shapefile data gathered from DOGGR. Using total 2016 production values (in barrels/year for oil and MCF/year for gas) that are publicly available from the DOGGR 2016 Microsoft Access database downloaded from the DOGGR website, we calculated the potential production loss that could occur under each of the four scenarios (Table 4). Total oil production in Los Angeles County in 2016 was 21,288,280 barrels – 11,960,778 barrels produced onshore and 9,327,502 barrels produced offshore. As shown in the table, in 2016, 89% of onshore oil production would be lost under the 2,500-foot setback scenario, and more than half of the onshore oil production in the County (66%) would be lost under the 500-foot setback scenario.

Table 4. Los Angeles County oil and gas production loss under each setback scenario analyzed

Setback (Feet)	Total Production Loss from Setbacks		Total Onshore Production Loss		Total Offshore Production Loss	
	Oil (bbl)	Gas (MCF)	Oil (bbl)	Gas (MCF)	Oil (bbl)	Gas (MCF)
500	8,015,599	28,910,161	8,010,760	28,908,957	5,955	1,590
1,000	9,904,800	29,704,142	9,079,090	29,482,443	825,710	221,699
1,500	11,209,282	29,995,536	9,945,403	29,693,397	1,263,879	302,139
2,500	12,725,275	30,429,145	10,635,515	29,912,110	2,089,760	517,035

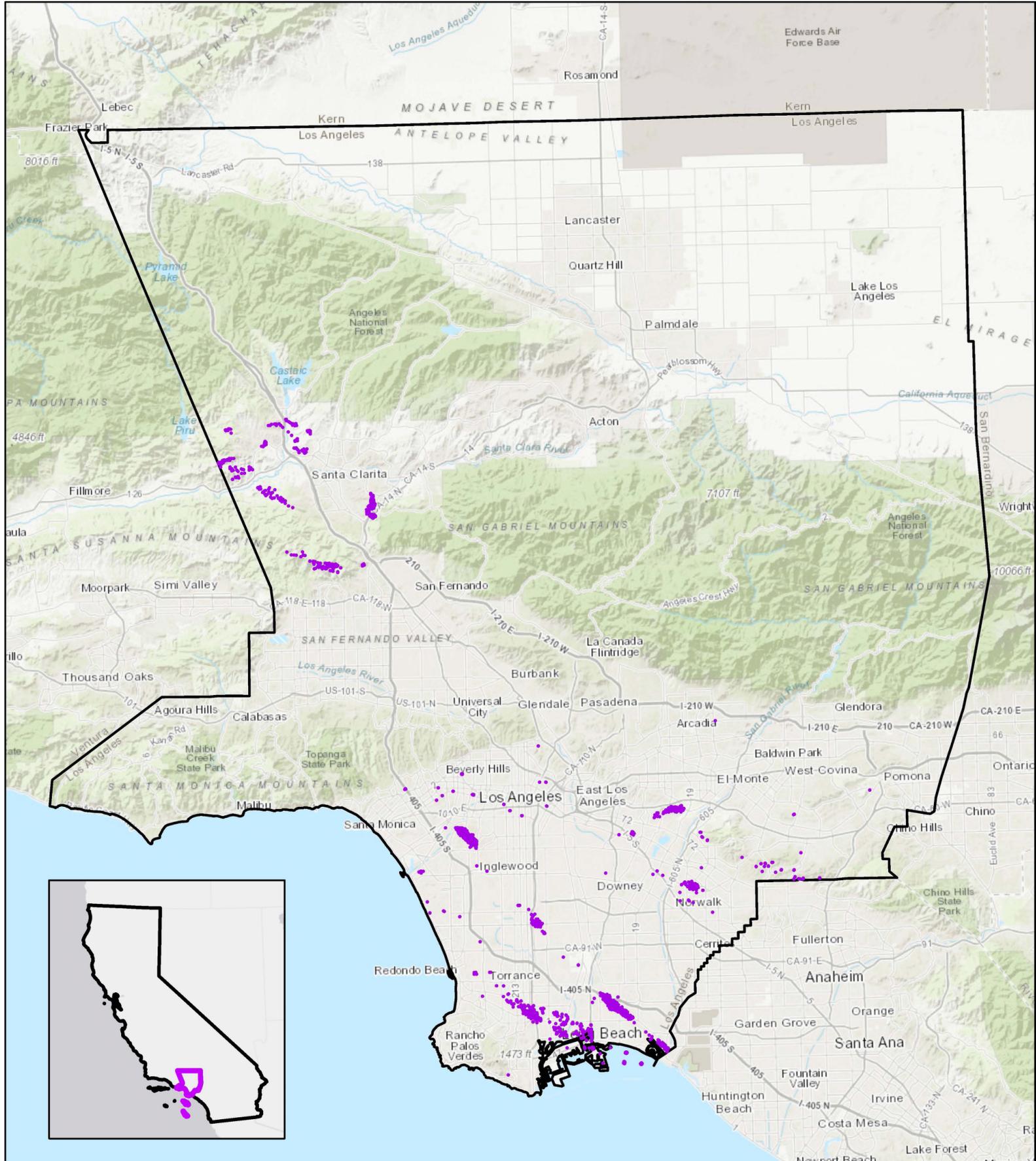
Catalyst appreciates the opportunity to assist Californians for Energy Independence and CIPA with this analysis. If you have any questions, or require any additional information, please feel free to contact me at mschwartz@ce.solutions or 818-387-5875.

Sincerely,

Megan Schwartz

Megan Schwartz

DIRECTOR OF REGULATORY COMPLIANCE AND PERMITTING



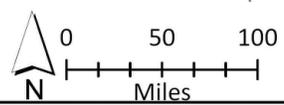
Legend
Active Oil & Gas Production Wells

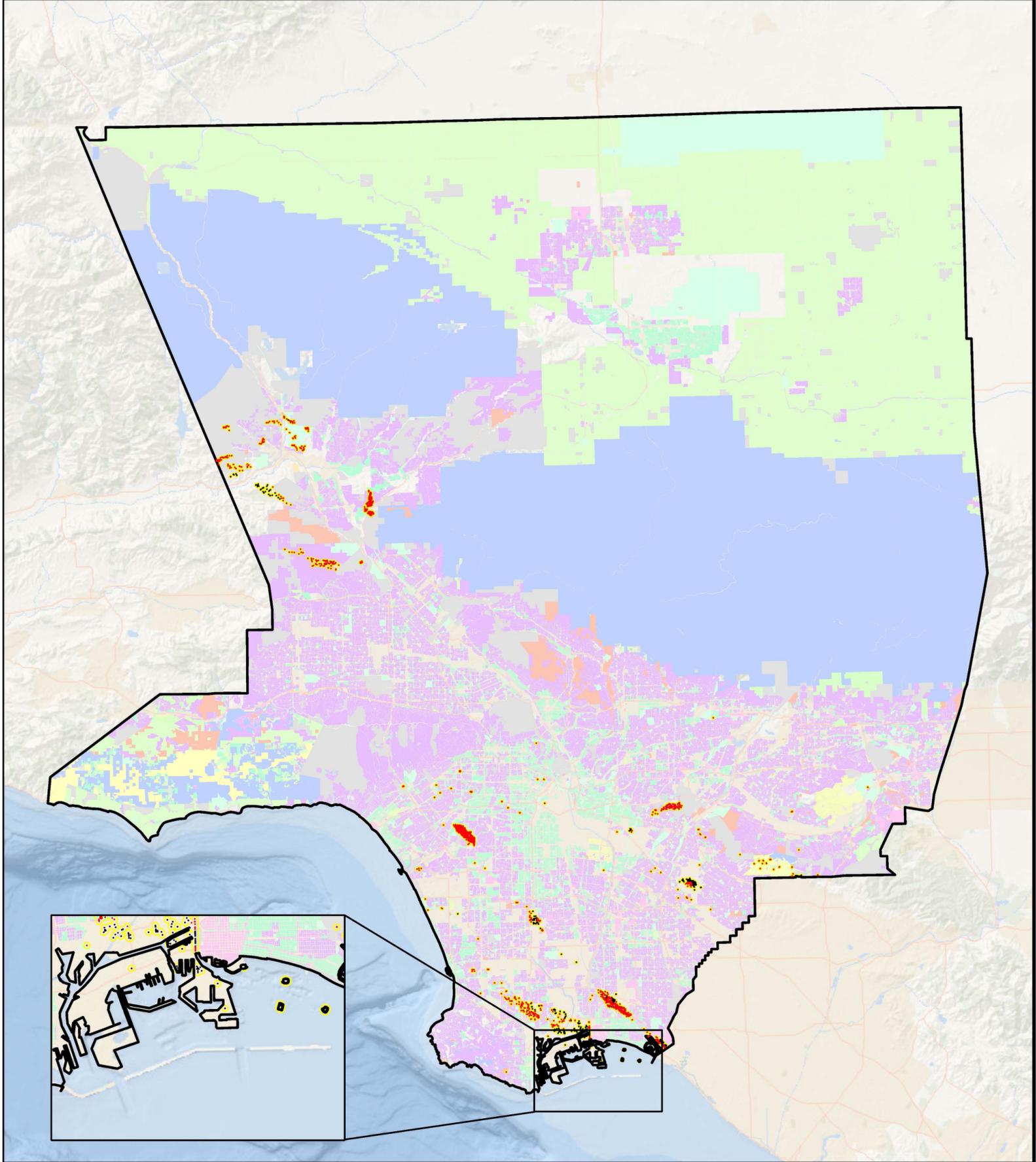
- Production Wells
- Los Angeles County Boundary

LA COUNTY PRODUCTION WELLS

Figure 1

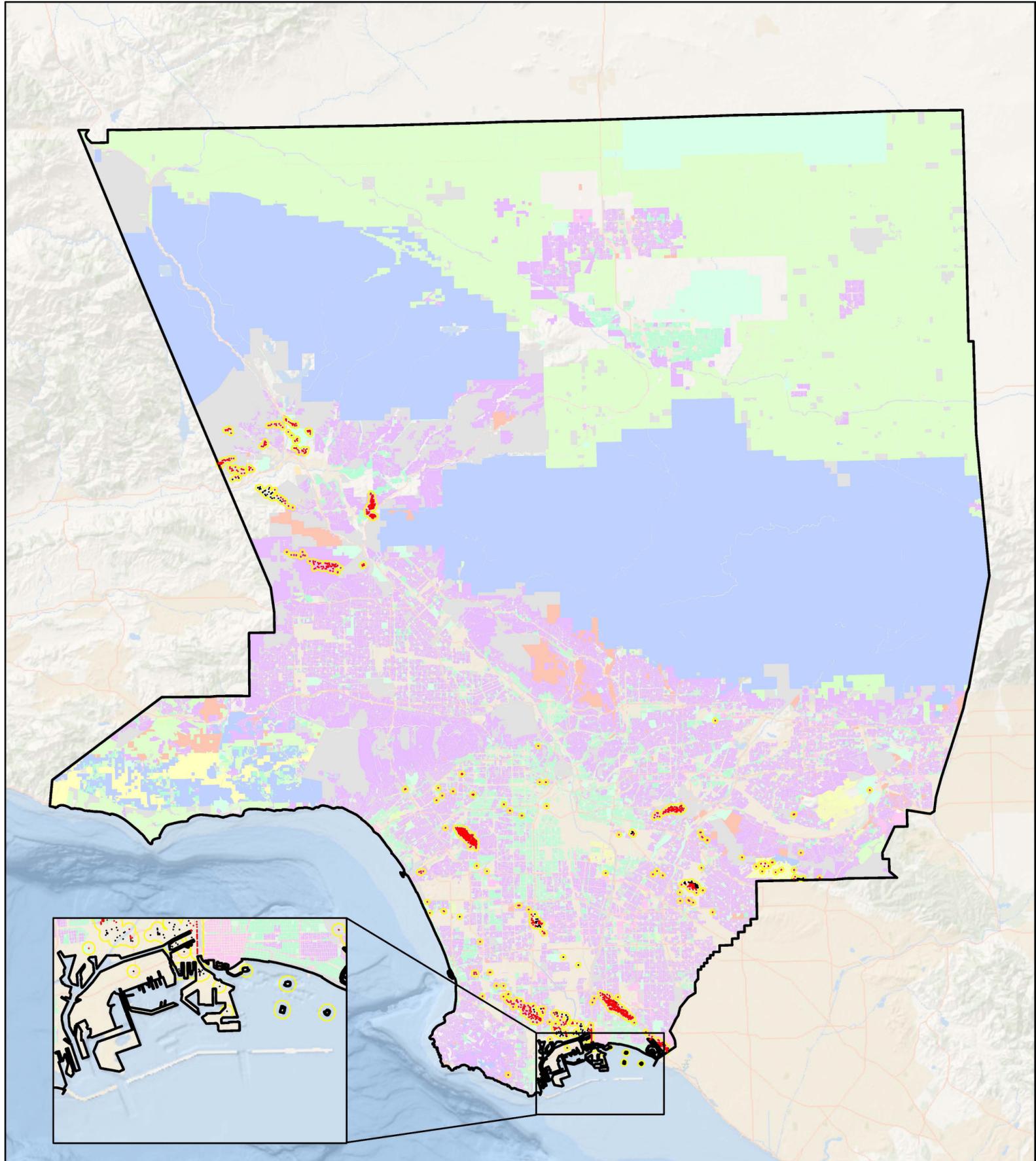
California Independent Petroleum Association
 Oil & Gas Production Well Setback Analysis
 Date: September 17, 2017



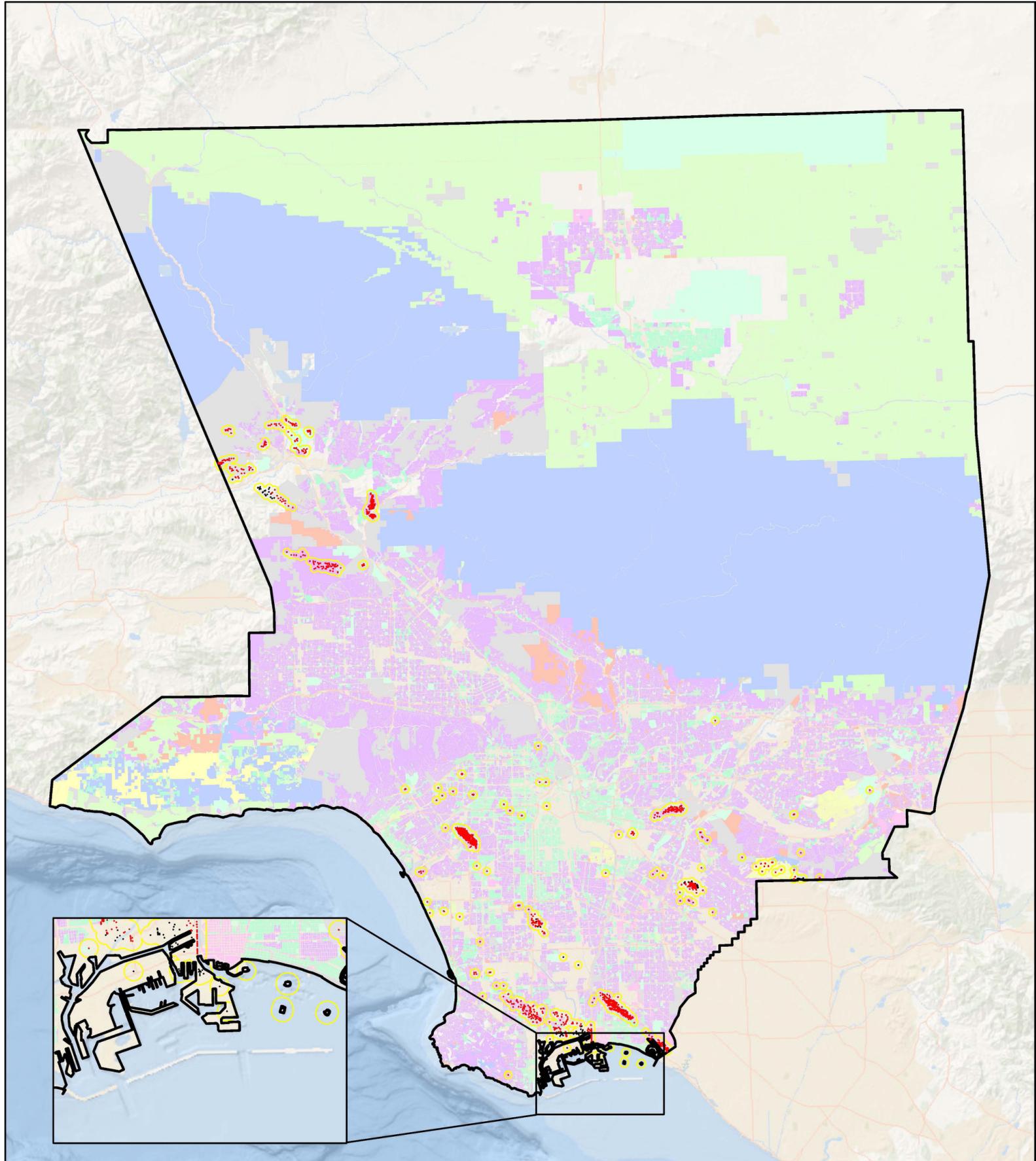


Legend

<ul style="list-style-type: none"> • Production wells affected by setback • Production wells unaffected by setback — Los Angeles County Boundary □ 500 Ft. Setback 	<p>Zoning Classification</p> <ul style="list-style-type: none"> □ Beach Parks □ Educational Institutions □ General Office Use □ Hotels And Motels □ Local Parks And Recreation □ Mixed Urban 	<ul style="list-style-type: none"> □ Mobile Homes And Trailer Parks □ Multi-Family Residential □ Open Space And Recreation □ Other Open Space And Recreation □ Residential □ Single Family Residential □ Wildlife Preserves And Sanctuaries 	<p>500 FT. SETBACK</p> <p>Figure 2 California Independent Petroleum Association Oil & Gas Production Well Setback Analysis Date: September 17, 2017</p> <p>0 50 100 Miles</p> <p>Catalyst ENVIRONMENTAL SOLUTIONS</p>
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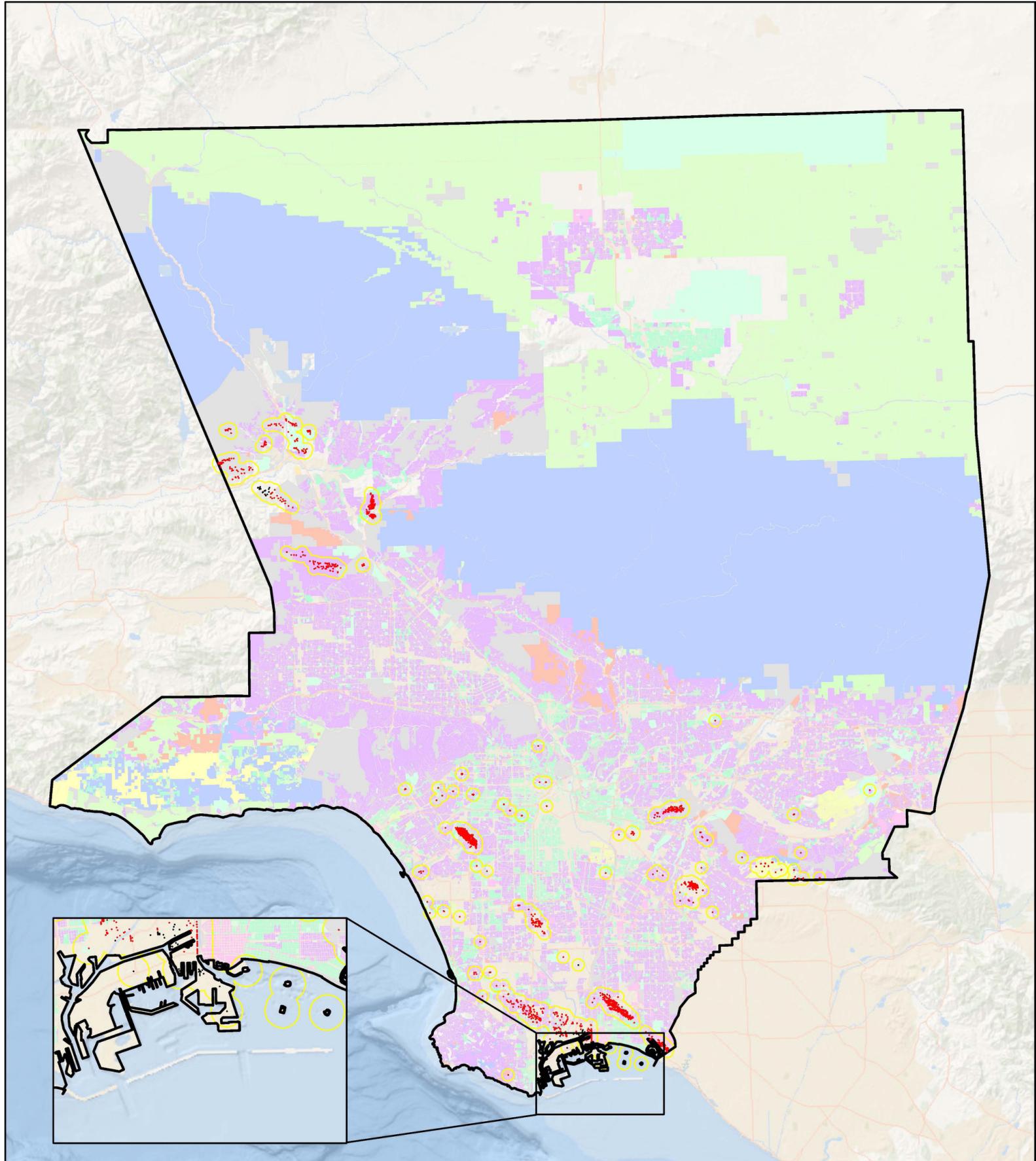


<p>Legend</p> <p>Active Oil & Gas Production Wells</p> <ul style="list-style-type: none"> • Production wells affected by setback • Production wells unaffected by setback — Los Angeles County Boundary □ 1000 Ft. Setback 		<p>Zoning Classification</p> <ul style="list-style-type: none"> □ Beach Parks □ Educational Institutions □ General Office Use □ Hotels And Motels □ Local Parks And Recreation □ Mixed Urban 	<p>Zoning Classification</p> <ul style="list-style-type: none"> □ Mobile Homes And Trailer Parks □ Multi-Family Residential □ Open Space And Recreation □ Other Open Space And Recreation □ Residential □ Single Family Residential □ Wildlife Preserves And Sanctuaries 	<p>1,000 FT. SETBACK</p> <p>Figure 3</p> <p>California Independent Petroleum Association Oil & Gas Production Well Setback Analysis Date: September 17, 2017</p> <p>0 50 100 Miles</p> <p>N</p>
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Legend

<ul style="list-style-type: none"> • Production wells affected by setback • Production wells unaffected by setback — Los Angeles County Boundary □ 1500 Ft. Setback 	<p>Zoning Classification</p> <ul style="list-style-type: none"> □ Beach Parks □ Educational Institutions □ General Office Use □ Hotels And Motels □ Local Parks And Recreation □ Mixed Urban 	<ul style="list-style-type: none"> □ Mobile Homes And Trailer Parks □ Multi-Family Residential □ Open Space And Recreation □ Other Open Space And Recreation □ Residential □ Single Family Residential □ Wildlife Preserves And Sanctuaries 	<p>1,500 FT. SETBACK</p> <p>Figure 4 California Independent Petroleum Association Oil & Gas Production Well Setback Analysis Date: September 17, 2017</p> <p>0 50 100 Miles</p> <p>N</p> 
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Legend

<ul style="list-style-type: none"> • Production wells affected by setback • Production wells unaffected by setback — Los Angeles County Boundary □ 2500 Ft. Setback 	<p>Zoning Classification</p> <ul style="list-style-type: none"> □ Beach Parks □ Educational Institutions □ General Office Use □ Hotels And Motels □ Local Parks And Recreation □ Mixed Urban 	<ul style="list-style-type: none"> □ Mobile Homes And Trailer Parks □ Multi-Family Residential □ Open Space And Recreation □ Other Open Space And Recreation □ Residential □ Single Family Residential □ Wildlife Preserves And Sanctuaries 	<p>2,500 FT. SETBACK</p> <p>Figure 5 California Independent Petroleum Association Oil & Gas Production Well Setback Analysis Date: September 17, 2017</p> <p>0 50 100 Miles</p> <p>Catalyst ENVIRONMENTAL SOLUTIONS</p>
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