

Technical Memorandum

June 23, 2022

Project# 26756

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From: Anusha Musunuru, Damian Stefanakis, Kittelson & Associates, Inc.

CC: Justin Horner, City of Berkeley; Karly Kaufman, Rincon Consultants, Inc.

RE: City of Berkeley Housing Element – Vehicle Miles Traveled (VMT) Impact Assessment Memorandum

INTRODUCTION

Kittelson and Associates (Kittelson) has prepared this vehicle miles traveled (VMT) impact assessment for the City of Berkeley Housing Element Update. This VMT assessment is based on Regional Housing Needs Allocation (RHNA) housing units developed by the City of Berkeley. Kittelson conducted the travel demand modeling with the Alameda County Transportation Commission (CTC) Countywide Model. The VMT assessment is based on the SB 743 requirements and City of Berkeley VMT Guidelines.

The 2023-2031 Draft RHNA estimates include a total of 19,098 units located in the sites inventory within 106 selected traffic analysis zones (TAZs) around the City. Travel forecasts were prepared for both existing 2020 model year and future 2040 cumulative model year conditions. Since the year 2031 represents the Housing Element buildout, VMT for year 2031 was interpolated between 2020 and 2040. VMT results were extracted at the citywide level based on the efficiency metric, VMT per Capita and total VMT. The results were compared to the Bay Area regionwide average to determine if the additional housing units as per the Housing Element Update contribute to a VMT impact under SB 743 and City guidelines.

The overall effect of adding 19,098 housing units in Berkeley in the locations identified by the TAZs in the city and region level VMT is to shorten trip lengths, promote mode choice to transit-related modes and reduce VMT per capita for the City under both 2020 plus project and 2040 plus cumulative project conditions. Kittelson evaluated the Housing Element Update at the programmatic level using an overall systemwide VMT assessment, i.e., considering all the TAZs within the city for evaluating the VMT impacts.

VMT THRESHOLDS

VMT thresholds are defined using recommendations from the California Office of Planning and Research (OPR) based on their final report, dated December 2018. Cities and counties could opt to develop their own methods, but CEQA impact criteria are generally consistent with OPR recommendations. The City of Berkeley's VMT Criteria and Thresholds were developed and published on June 29, 2020¹. This CEQA analysis is based on the City policy and supplemented with OPR recommendations (where applicable and necessary).

¹ City of Berkeley VMT Criteria and Thresholds, June 2020. Link: <https://berkeleyca.gov/sites/default/files/2022-02/VMT-Criteria-and-Thresholds.pdf>

The City of Berkeley has opted to compare VMT to the Bay Area regionwide average. Based on OPR and City guidelines, any development that does not immediately screen out for a VMT per capita assessment should produce a VMT per capita of 15% less than the baseline Bay Area regionwide average.

In the City of Berkeley, the screening criteria for CEQA Exemptions include the following for housing projects:

1. Within ½ mile of BART stations and Amtrak station,
2. Within ¼ mile of high-quality transit corridor, which has 15-minute frequency fixed-route bus service,
3. Contains 100% affordable housing,
4. All projects (housing related) expected to generate less than 836 daily VMT (usually around 20 residential units) are also exempt, and
5. All projects located in the low VMT areas, in a TAZ that has the household VMT per capita that is 15% lower than the baseline regional average.

VMT RESULTS

For Berkeley, VMT metrics are compared to the Bay Area regionwide average, and an impact is assessed if the project VMT per capita is higher than the established 15% below the regionwide average threshold. At the aggregate level, Table 1 through Table 3 indicates that the Housing Element Update project's overall VMT per capita produces lower VMT than 15% below the regionwide average (10.64 vs 19.31 in 2020, 10.86 vs 19.08 in 2031, and 11.03 vs 18.93 in 2040), and in aggregate is **less than significant** and does screen out from further VMT analysis and evaluation under CEQA.

Tables and figures of the VMT analysis are summarized below.

- Table 1 provides a summary of 2020 VMT per capita at the City, County, and Regionwide level.
- Table 2 provides a summary of 2040 VMT per capita at the City, County, and Regionwide level.
- Table 3 provides a summary of 2031 VMT per capita at the City, County, and Regionwide level.
- Figure 1 displays the sites inventory (except for the projected ADUs) by TAZ in the City of Berkeley.
- Figure 2 displays the 2020 households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 3 displays the 2040 households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 4 displays the 2020 population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 5 displays the 2040 population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 6 displays the households added as per housing element by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 6A displays the households added as per housing element by TAZ and color coded based on households added by TAZ in the City of Berkeley.
- Figure 7 displays the population added as per housing element by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 7A displays the population added as per housing element by TAZ and color coded based on population added by TAZ in the City of Berkeley.
- Figure 8 displays the 2020 plus project households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 9 displays the 2040 plus project households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.

- Figure 10 displays the 2020 plus project population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 11 displays the 2040 plus project population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.

Table 1. 2020 City, County, and Regionwide VMT per capita

Scenario	Households	Population	VMT	VMT/capita	15% Below
2020 No-Project					
City	52,293	128,004	1,436,244	11.22	
County	620,008	1,720,139	33,432,049	19.44	
Regionwide	2,887,140	7,915,267	180,468,151	22.80	19.38
2020 Plus Project					
City	71,391	175,466	1,867,472	10.64	
County	639,106	1,767,601	33,888,385	19.17	
Regionwide	2,906,238	7,962,729	180,855,141	22.71	19.31

SOURCE: KITTELSON & ASSOCIATES, INC., 2022

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
2020 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

Table 2. 2040 City, County, and Regionwide VMT per capita

Scenario	Households	Population	VMT	VMT/capita	15% Below
2040 No-Project					
City	55,366	141,068	1,607,349	11.39	
County	738,755	2,082,721	37,007,548	17.77	
Regionwide	3,431,389	9,626,790	215,286,847	22.36	19.01
2040 Plus Project					
City	74,464	188,530	2,078,822	11.03	
County	757,853	2,130,183	37,536,311	17.62	
Regionwide	3,450,487	9,674,252	215,459,688	22.27	18.93

SOURCE: KITTELSON & ASSOCIATES, INC., 2022

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
2040 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

Table 3. 2031 City, County, and Regionwide VMT per capita**

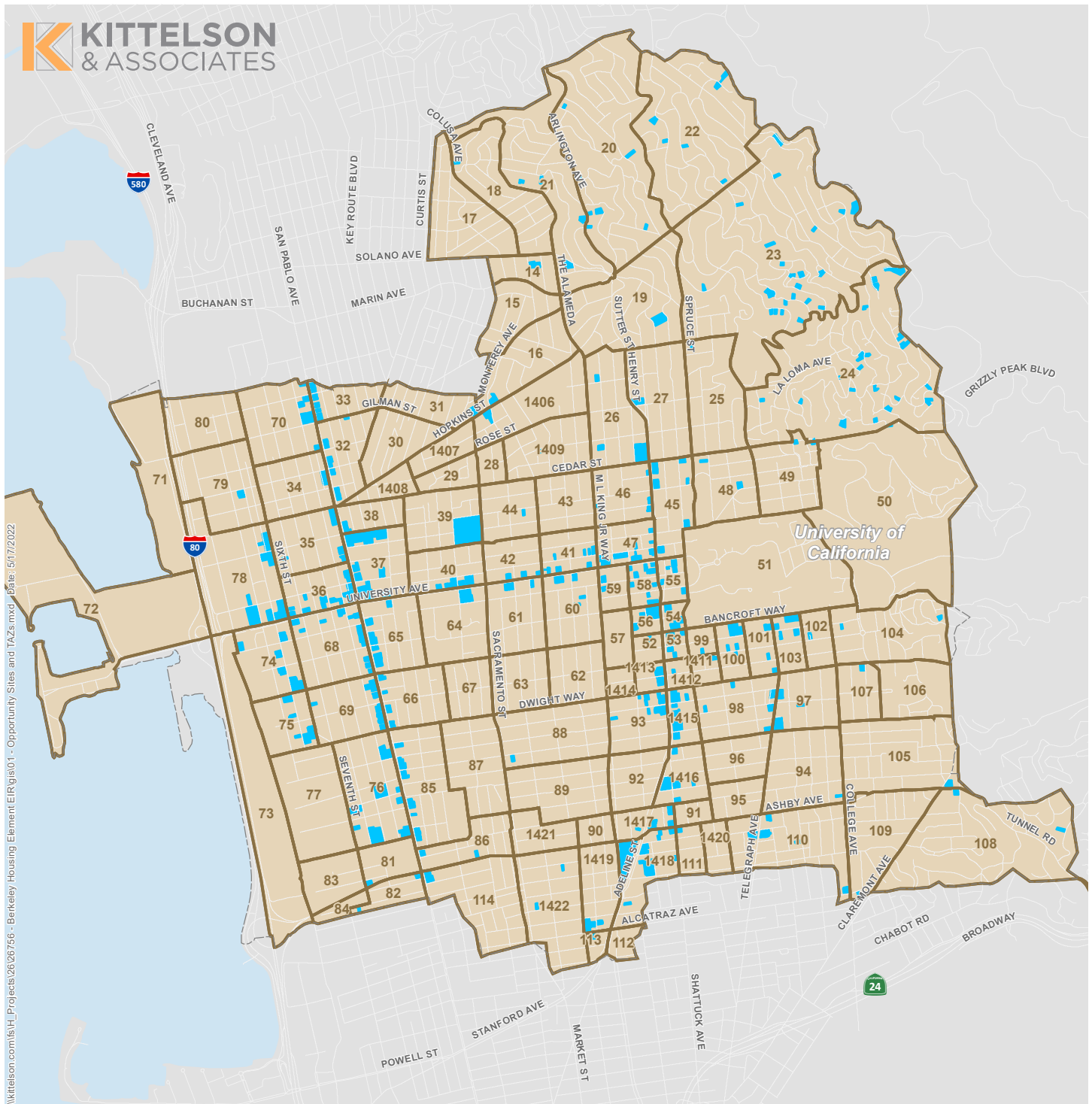
Scenario	Households	Population	VMT	VMT/capita	15% Below
2031 No-Project					
City	53,983	135,189	1,530,352	11.32	
County	685,319	1,919,559	35,398,573	18.44	
Regionwide	3,186,477	8,856,605	199,618,434	22.54	19.16
2031 Plus Project					
City	73,081	182,651	1,983,715	10.86	
County	704,417	1,967,021	35,894,744	18.25	
Regionwide	3,205,575	8,904,067	199,887,642	22.45	19.08

SOURCE: KITTELSON & ASSOCIATES, INC., 2022; **- INTERPOLATED RESULTS FROM 2020 & 2040.

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
2031 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

CONCLUSION

The VMT assessment for the Housing Element Update was conducted using the Alameda CTC Countywide model. RHNA housing units were added to the model in each TAZ that represent the sites inventory and projected ADUs. VMT per capita was extracted at the systemwide (City, County, and Regionwide) level for 2020 and 2040. Year 2031 was interpolated from the 2020 and 2040. The results indicate that at the programmatic level, the VMT associated with the additional residential units is more than 15% below the existing regionwide average.

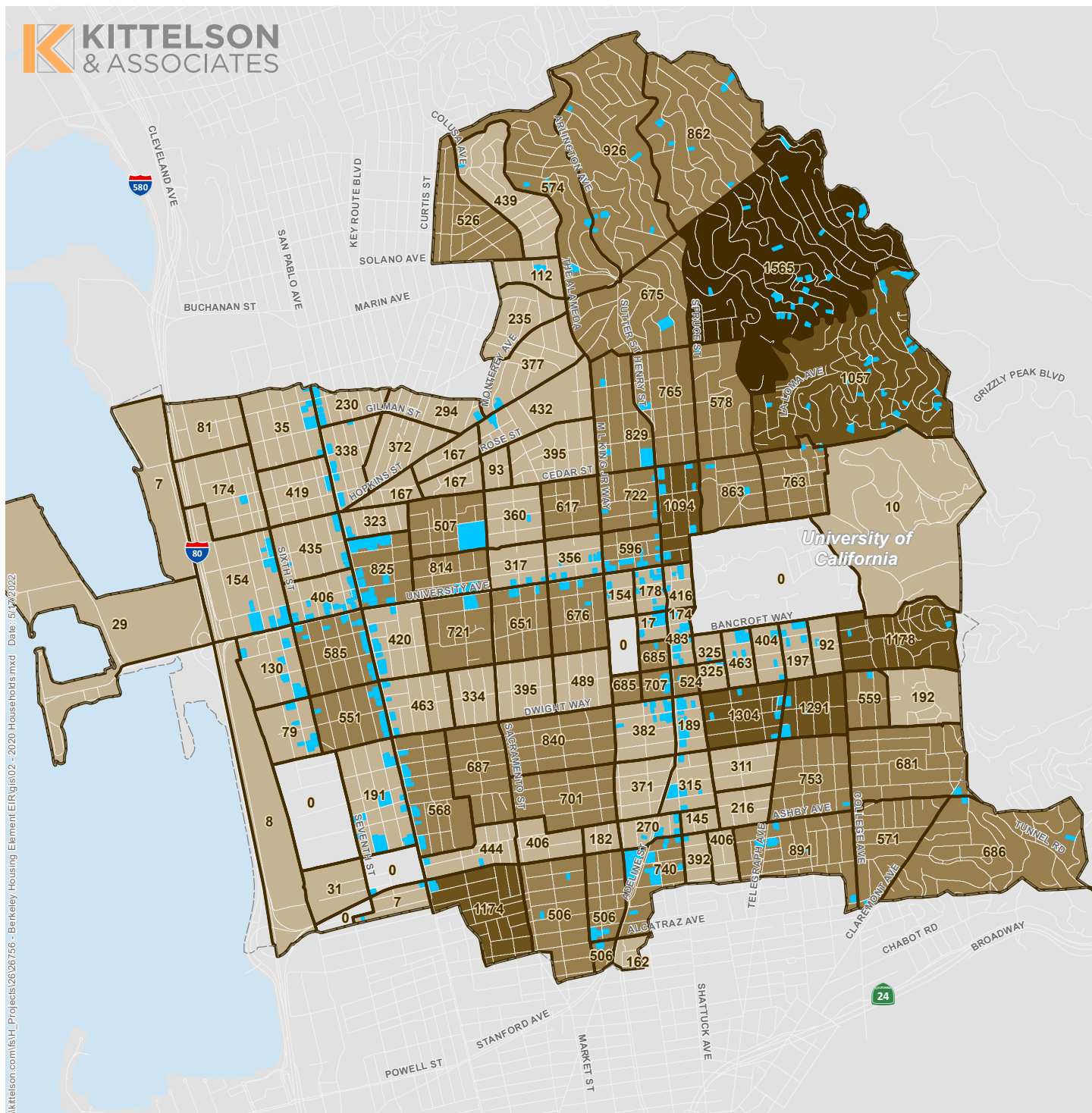


- Sites Inventory
- TAZs
- Berkeley City Boundary



Figure 1

Sites Inventory and TAZs Berkeley, California



2020 Households by TAZ

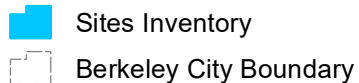
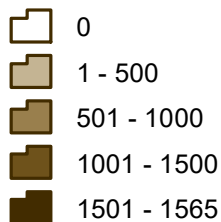
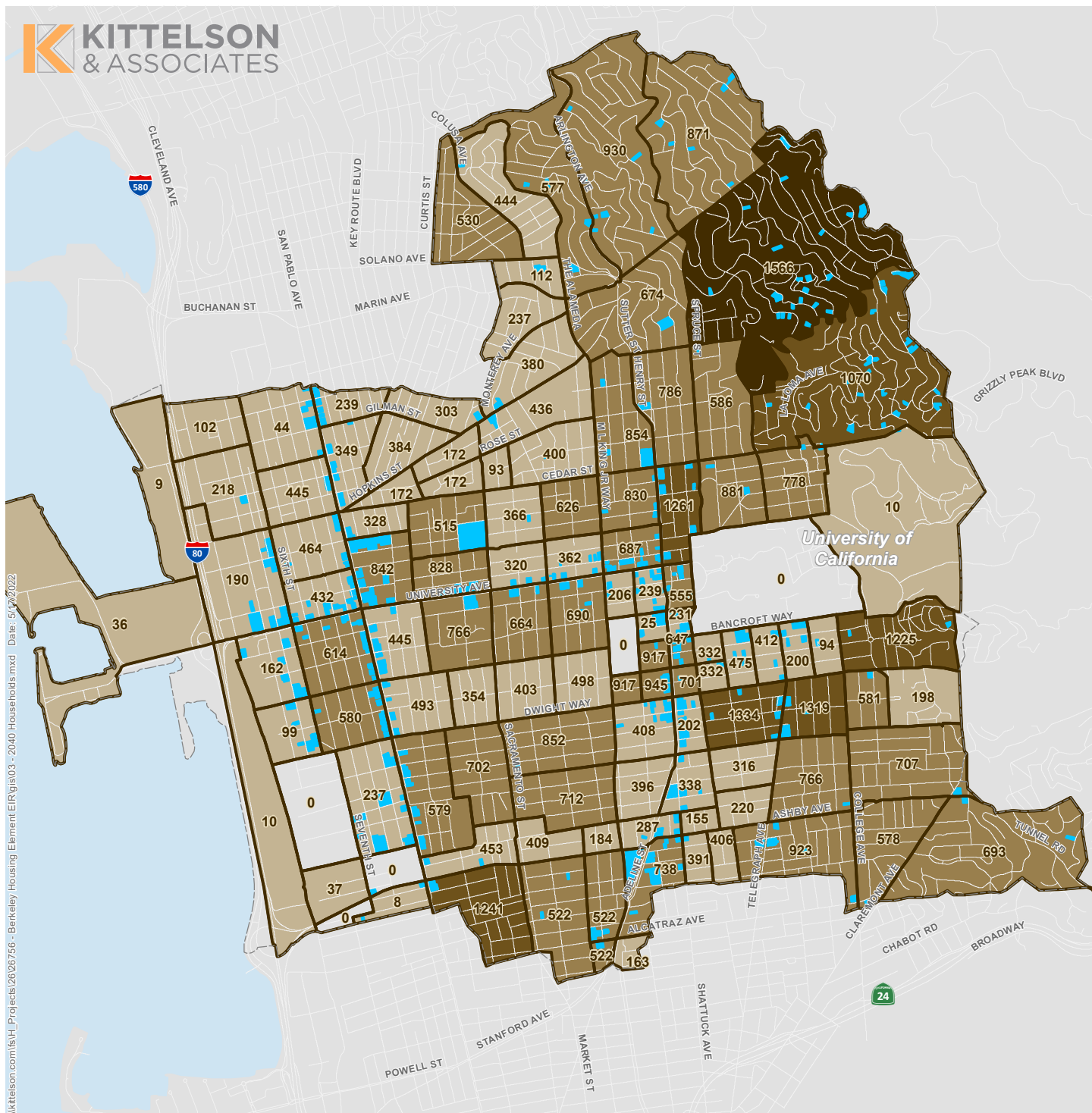


Figure 2

Total 2020 Households: 52,293

2020 Households
Berkeley, California



2040 Households by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 1566

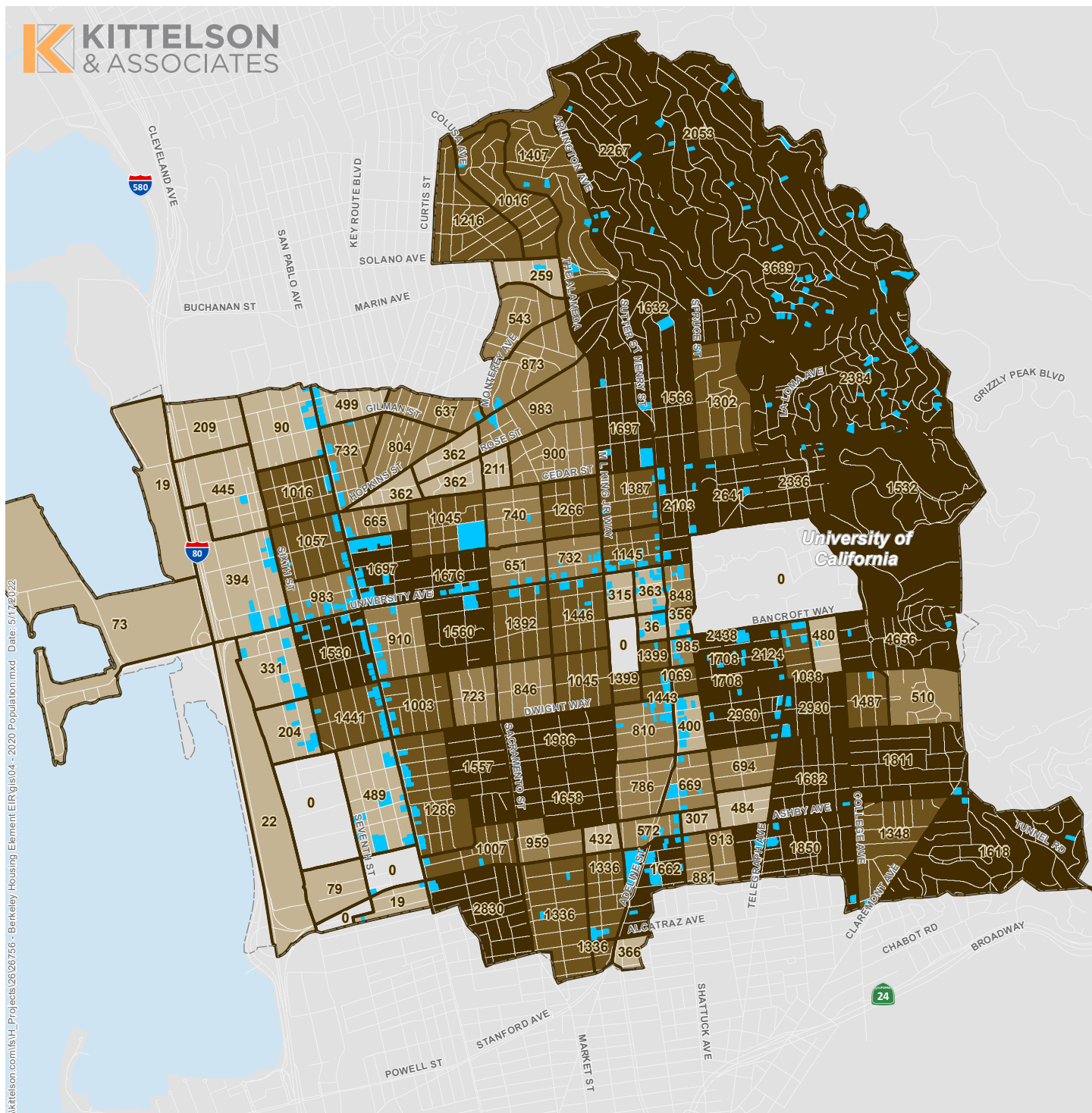
- Sites Inventory
- Berkeley City Boundary

0 4,000 Feet

Figure 3

Total 2040 Households: 55,366

2040 Households
Berkeley, California



2020 Population by TAZ

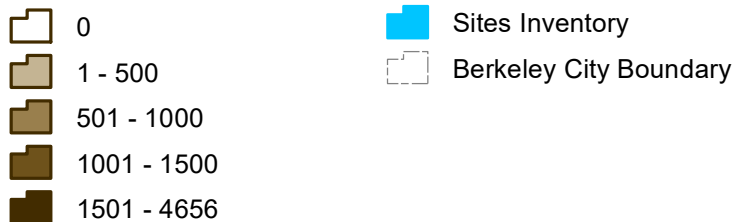
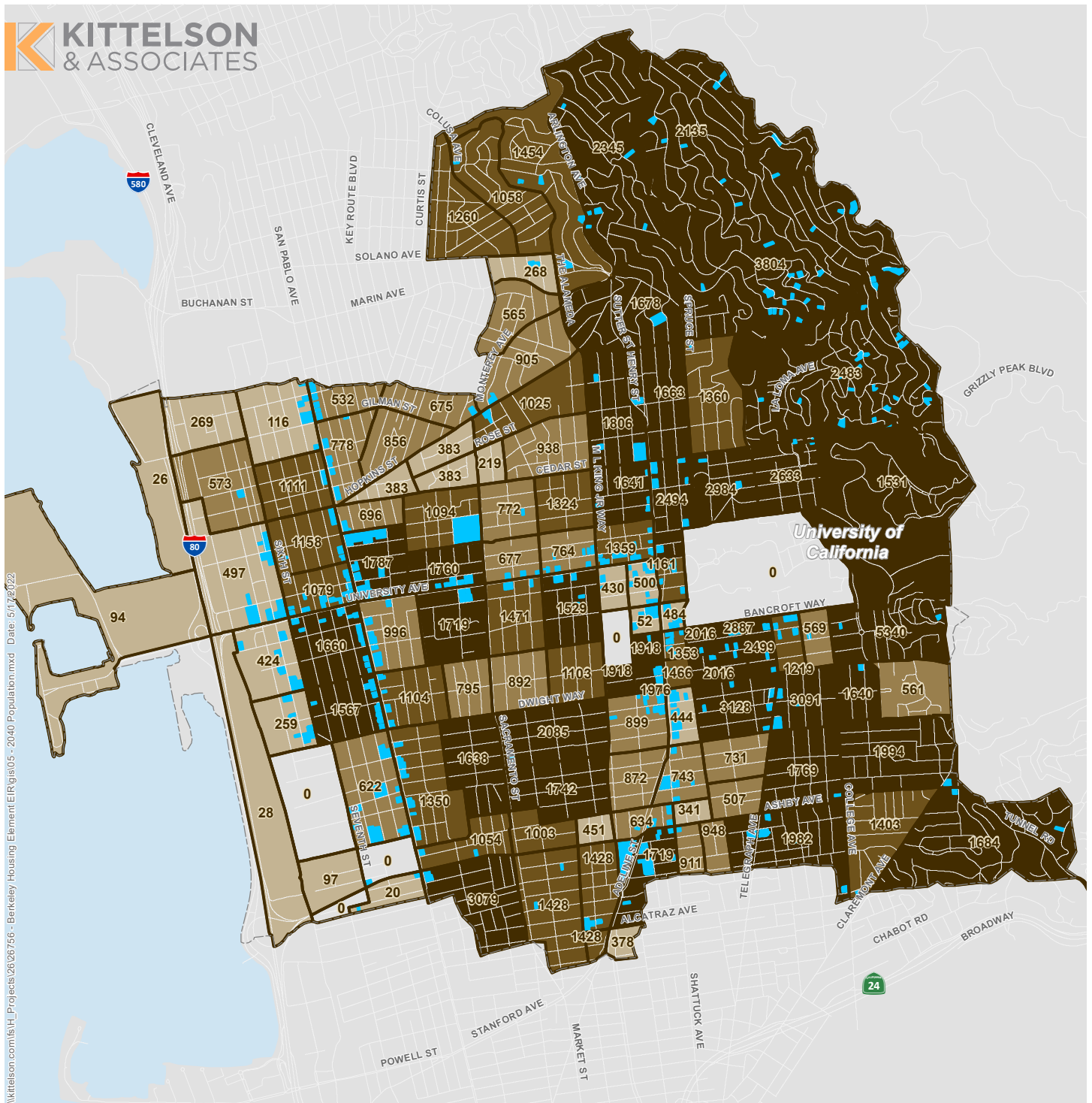


Figure 4

Total 2020 Population: 128,004

2020 Population
Berkeley, California



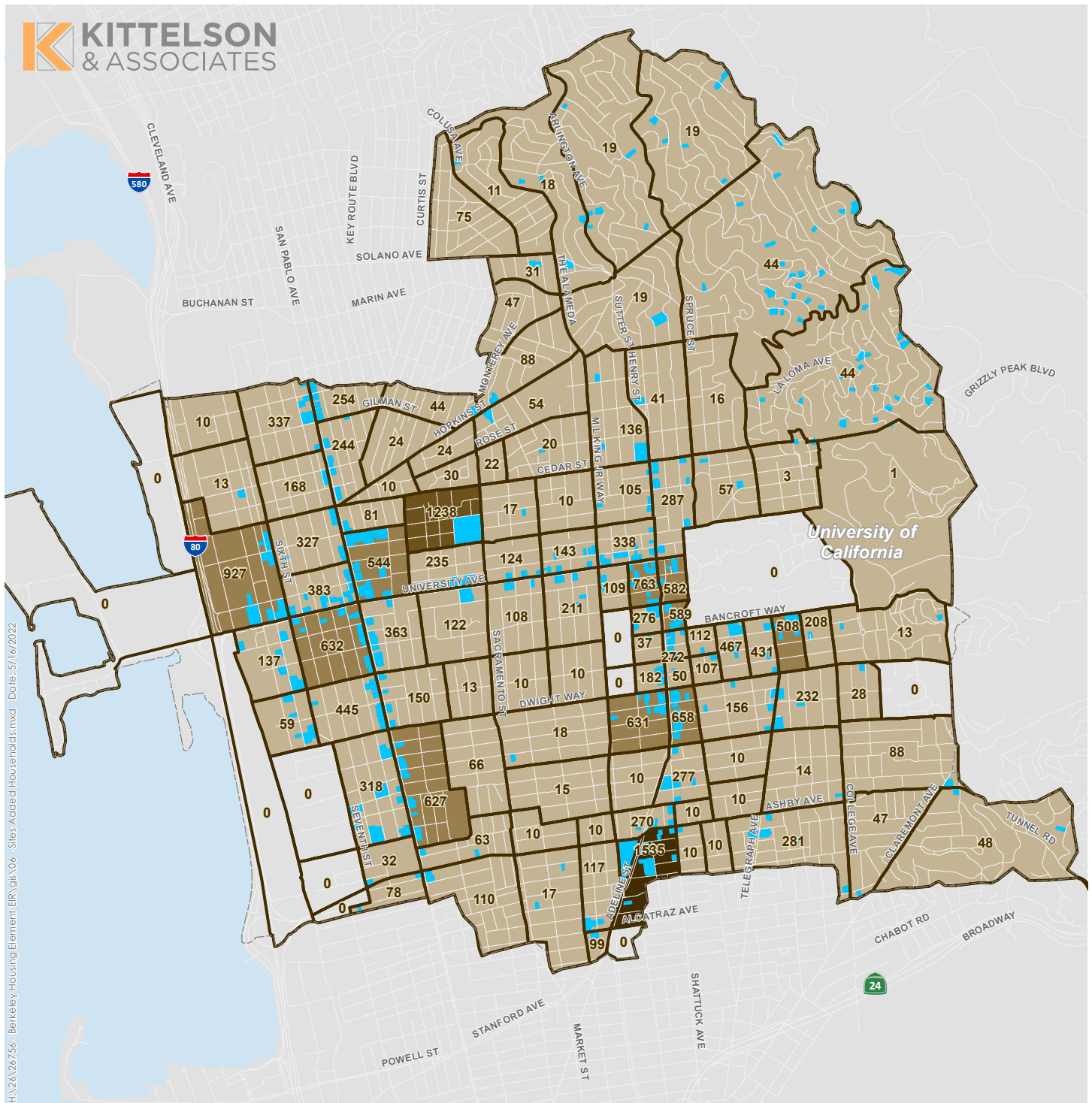
2040 Population by TAZ



Figure 5

Total 2040 Population: 141,068

2040 Population
Berkeley, California



Households Added as per Housing Element by TAZ

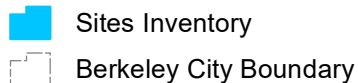
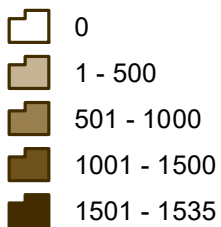
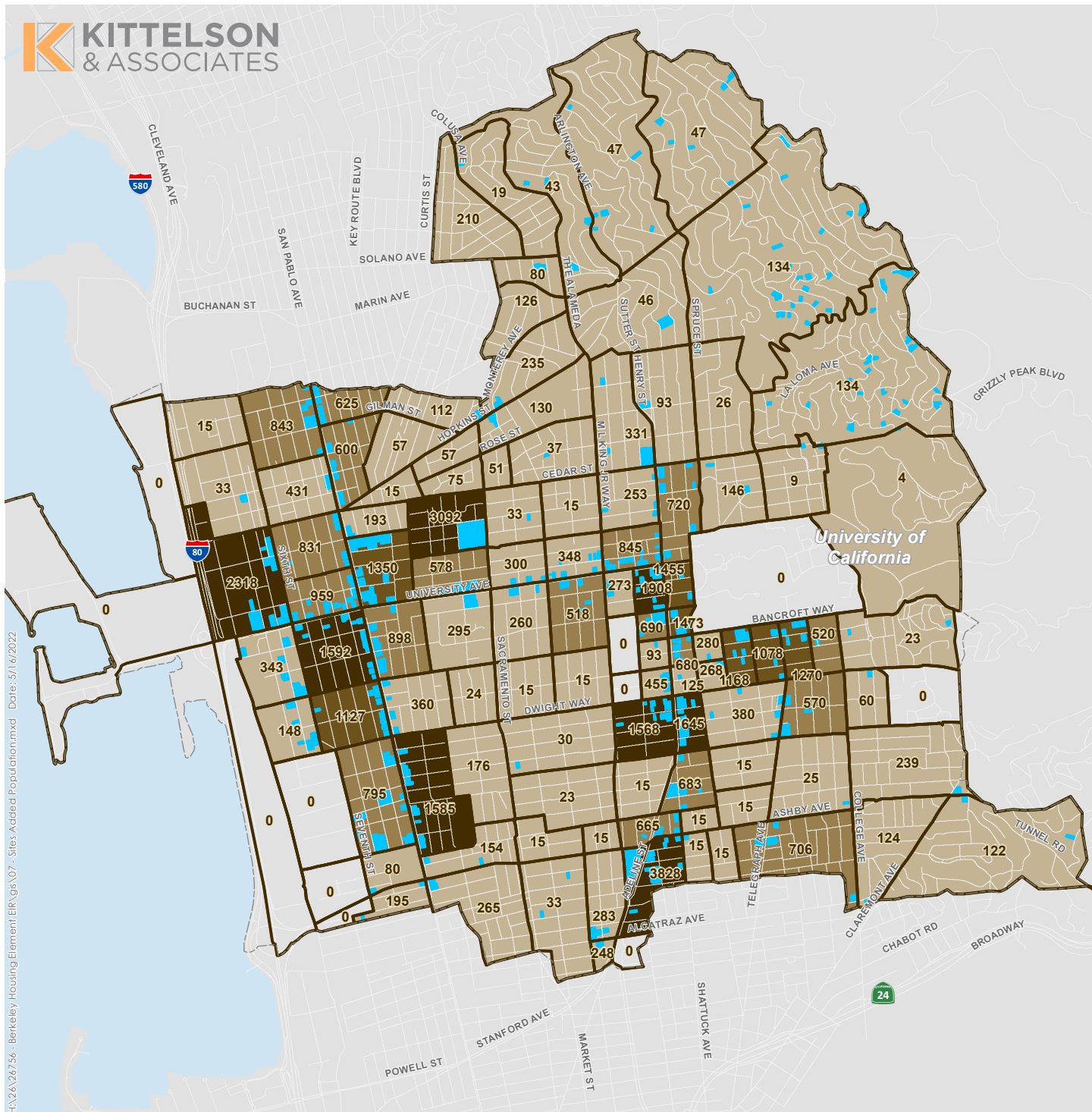


Figure 6

Total Added Households per
Housing Element by TAZ: 19,098

Sites Added Households
Berkeley, California



**Population Added as per
Housing Element by TAZ**

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 3828

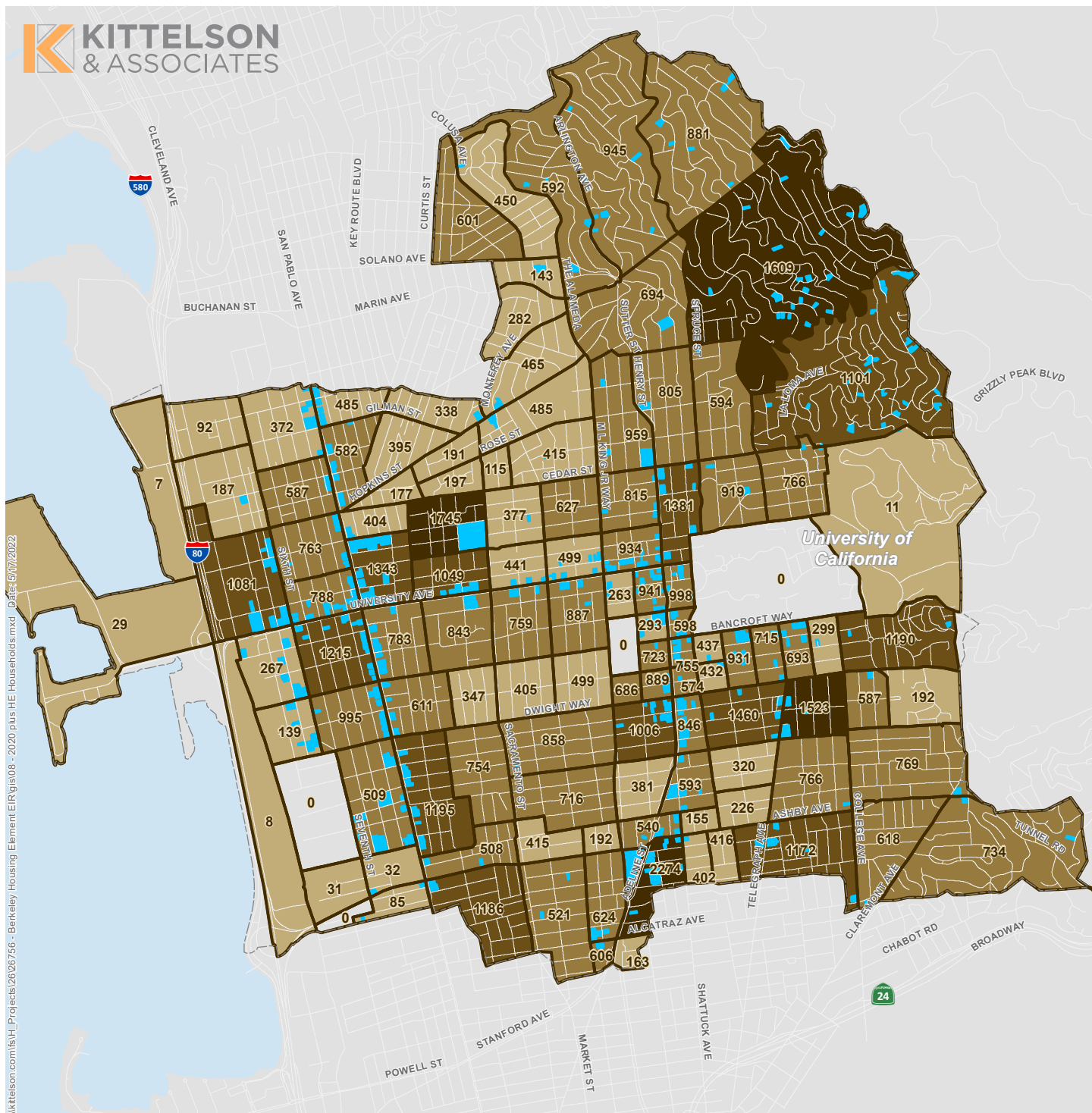
- Sites Inventory
- Berkeley City Boundary



Figure 7

**Total Added Population per
Housing Element by TAZ: 47,443**

**Sites Added Population
Berkeley, California**



Plus HE Households by TAZ

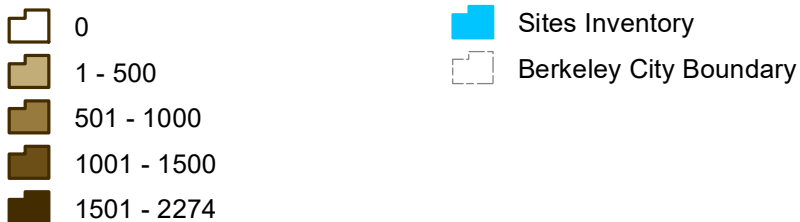
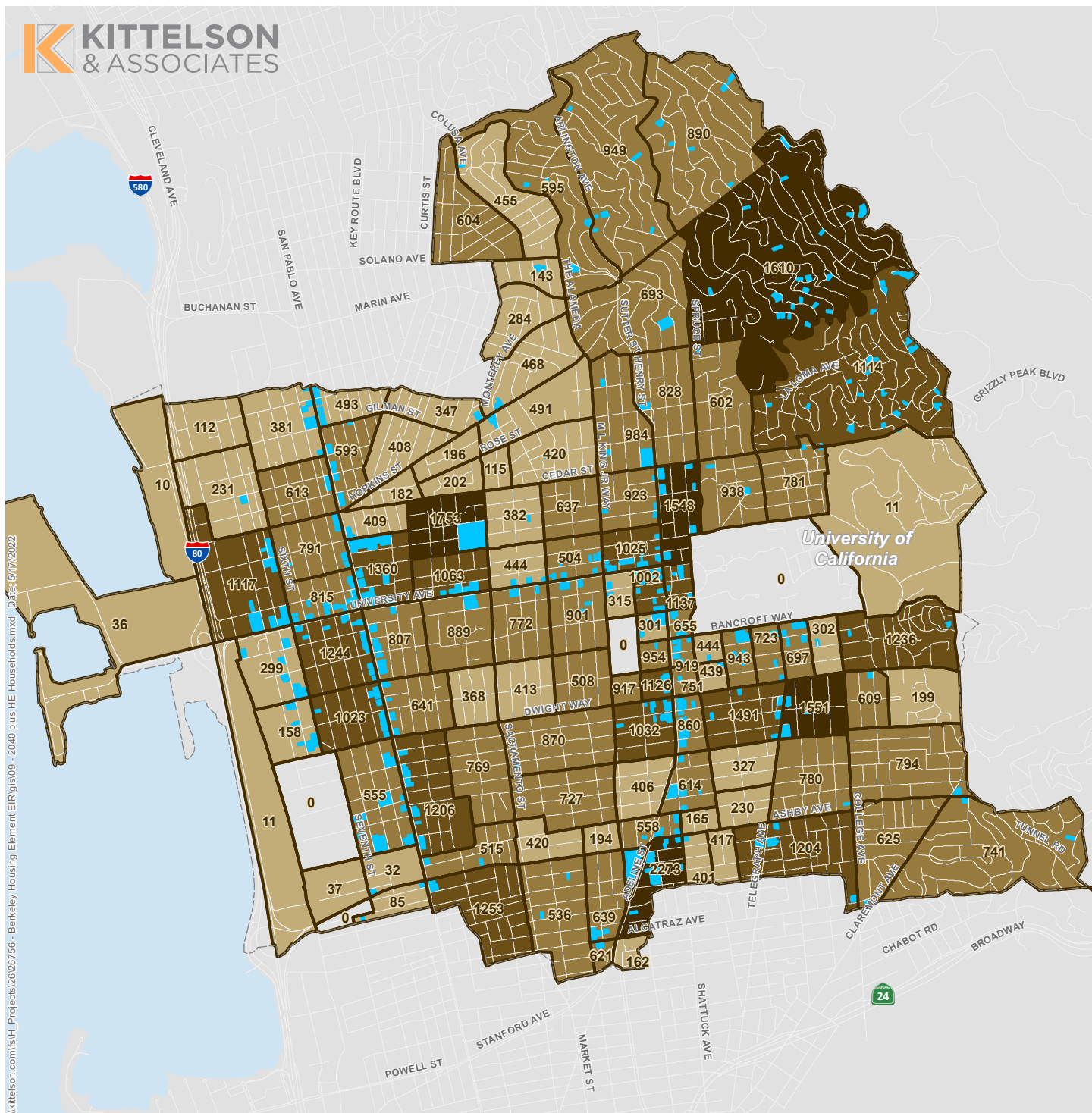


Figure 8

Total 2020+HE Households: 71,391

**2020 Plus HE Households
Berkeley, California**



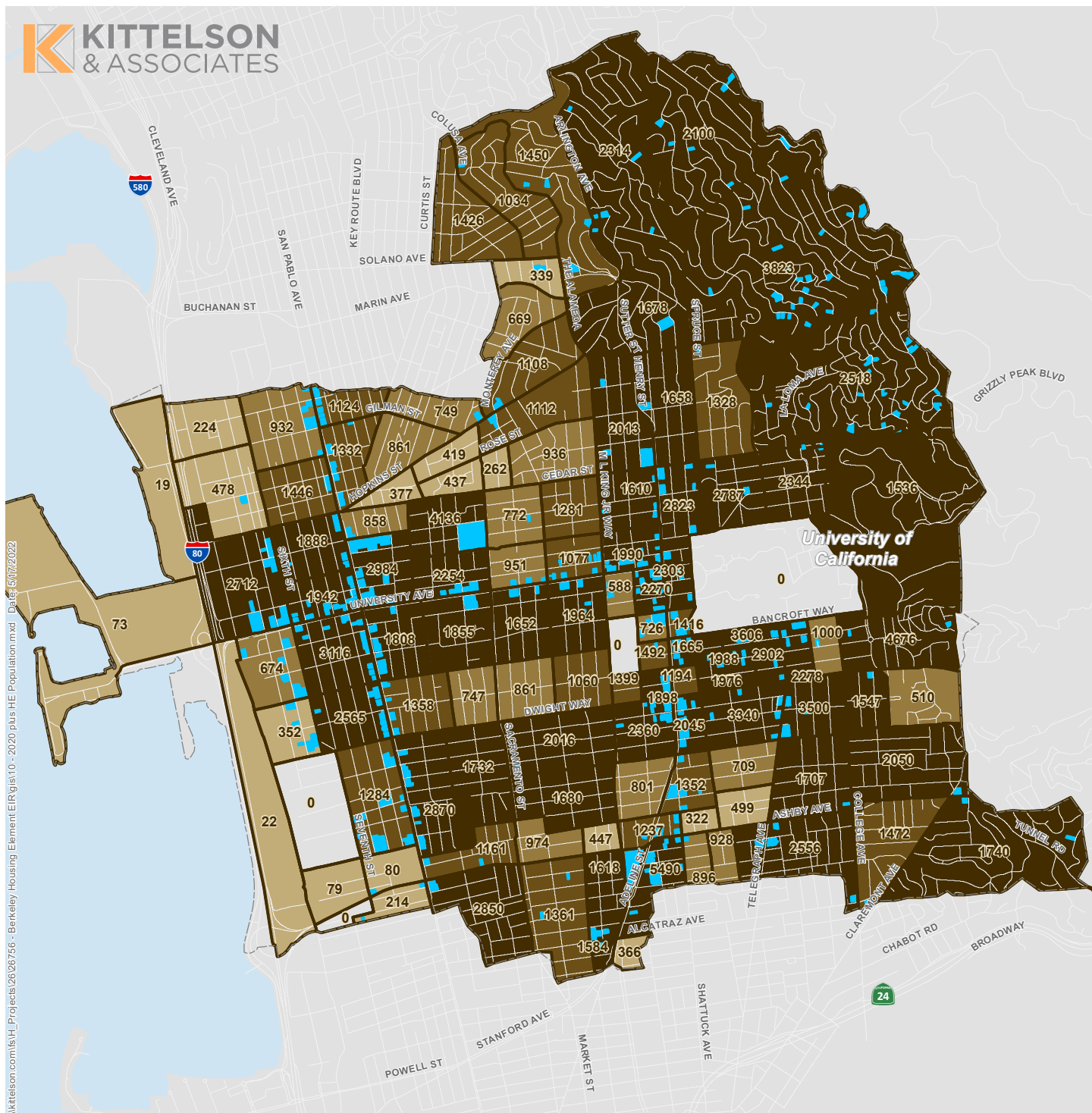
Plus HE Households by TAZ



Figure 9

Total 2040+HE Households: 74,464

**2040 Plus HE Households
Berkeley, California**



Plus HE Population by TAZ

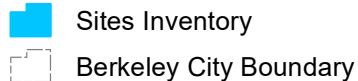
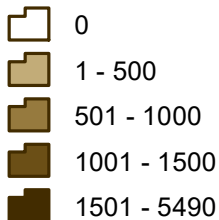
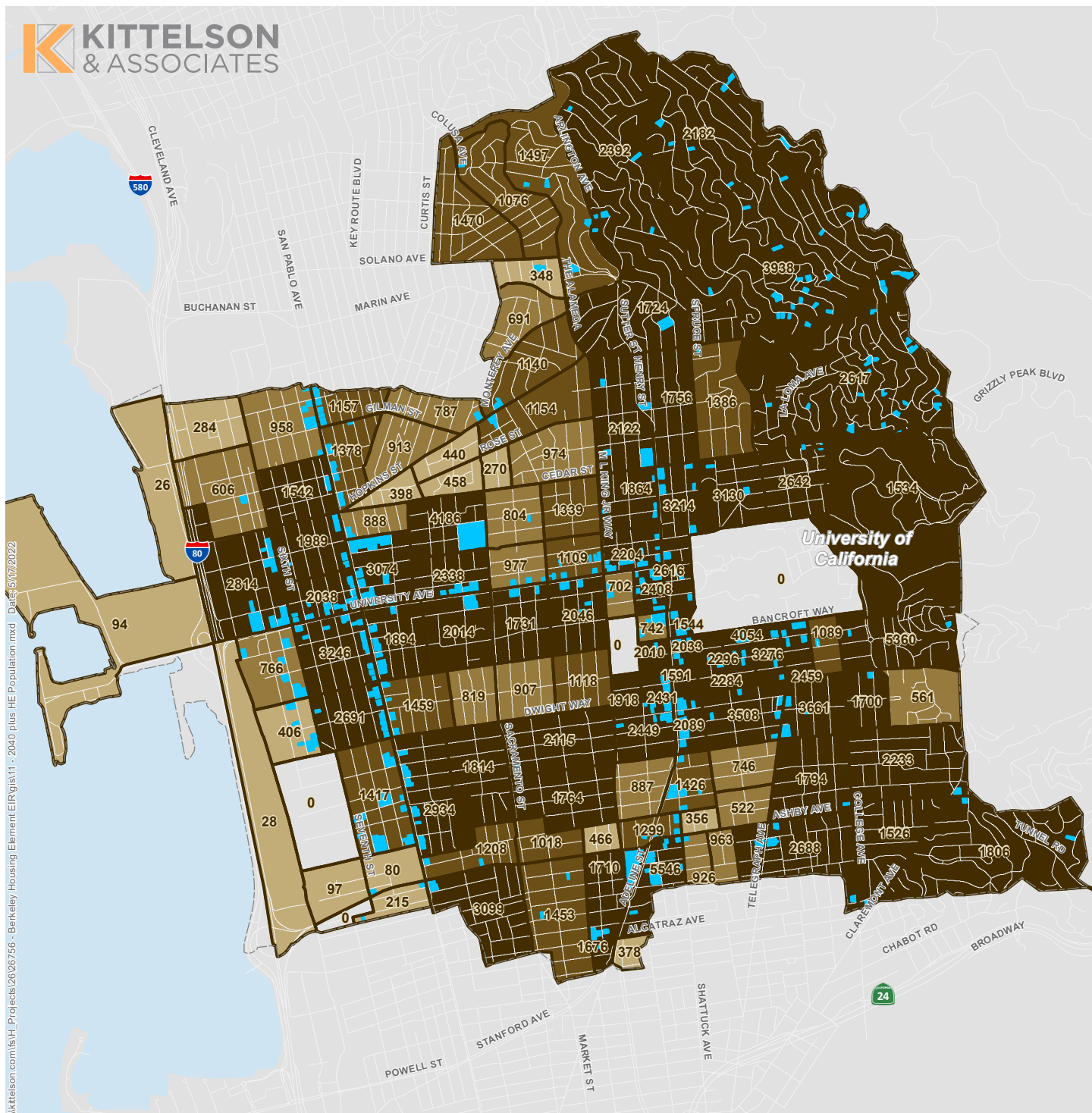


Figure 10

Total 2020+HE Population: 175,466

**2020 Plus HE Population
Berkeley, California**



Plus HE Population by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 5546

- Sites Inventory
- Berkeley City Boundary

0 4,000 Feet

Figure 11

Total 2040+HE Population: 188,530

**2040 Plus HE Population
Berkeley, California**