# Technical Memorandum

| To: | City of Ridgecrest and MKN Associates |
|---|---|
| From: | Ken Shuey, P.E., Provost & Pritchard |
| Subject: | City of Ridgecrest – Updated Flows and BOD Loading |
| Date: | July 10, 2021 |

Updated wastewater treatment plant data from the City of Ridgecrest for 2015 – 2020 was provided to supplement the data used by Provost & Pritchard in the preparation of the 2016 CWSRF Project Report (2016 Report). This memo focuses on updating the population, flow and BOD loading assumptions that were made in the 2016 Report.

## POPULATION

Census data provided the following population numbers:

| Year | Population | Growth |
|---|---|---|
| 2000 | 24,927 | |
| 2010 | 27,616 | 1.03% / year |
| 2020 | 29,217 | 0.57% / year |

The 2016 report assumed a growth rate of 1.8% per year based on Kern County population data, which yielded a projected 2020 population of 35,926. Historic population growth for the City has been very low and, in some cases, negative. Table 1 and Figure 1 summarize the historic (from 1985) population and projected population through 2050 under four scenarios:

1. Population assumptions made in the 2016 report at 1.8% growth.

2. Updated population assumptions using the 2020 census numbers and 1.8% growth.

3. Updated population assumptions using the 2020 census numbers and 1.2% growth.

4. Updated population assumptions using the 2020 census numbers and 0.8% growth.

The 2016 report used a 2010 population of 30,056. In researching data for 2010, the US Census reports the 2010 population for Ridgecrest was 27,616 (April 1, 2010) and the 2019 population was 28,937 (July 1, 2019). The differences in Table 1 between the 2010 through 2020 populations reflect this change. The US Census data summary for the Ridgecrest area can be found online here:

https://www.census.gov/quickfacts/fact/table/ridgecrestcitycalifornia/PST045219.

A copy of the US Census data and map are attached to this memo.

Table 1 – City of Ridgecrest Population

| Year | 2016 Report w/ 1.8% Growth | Updated 2020 Population w/ 1.8% Growth | Updated 2020 Population w/ 1.2% Growth | Updated 2020 Population w/ 0.8% Growth |
|---|---|---|---|---|
| 1985 | 21,700 | 21,700 | 21,700 | 21,700 |
| 1990 | 27,600 | 27,600 | 27,600 | 27,600 |
| 1995 | 27,900 | 27,900 | 27,900 | 27,900 |
| 2000 | 24,927 | 24,927 | 24,927 | 24,927 |
| 2005 | 26,666 | 26,272 | 26,272 | 26,272 |
| 2010 | 30,056 | 27,616 | 27,616 | 27,616 |
| 2015 | 32,860 | 28,417 | 28,417 | 28,417 |
| 2020 | 35,926 | 29,217 | 29,217 | 29,217 |
| 2025 | 39,278 | 31,943 | 31,013 | 30,405 |
| 2030 | 42,942 | 34,923 | 32,919 | 31,640 |
| 2035 | 46,949 | 38,181 | 34,942 | 32,926 |
| 2040 | 51,329 | 41,744 | 37,089 | 34,265 |
| 2045 | 56,118 | 45,638 | 39,368 | 35,657 |
| 2050 | 61,354 | 49,896 | 41,788 | 37,107 |

Figure 1 – City of Ridgecrest Population
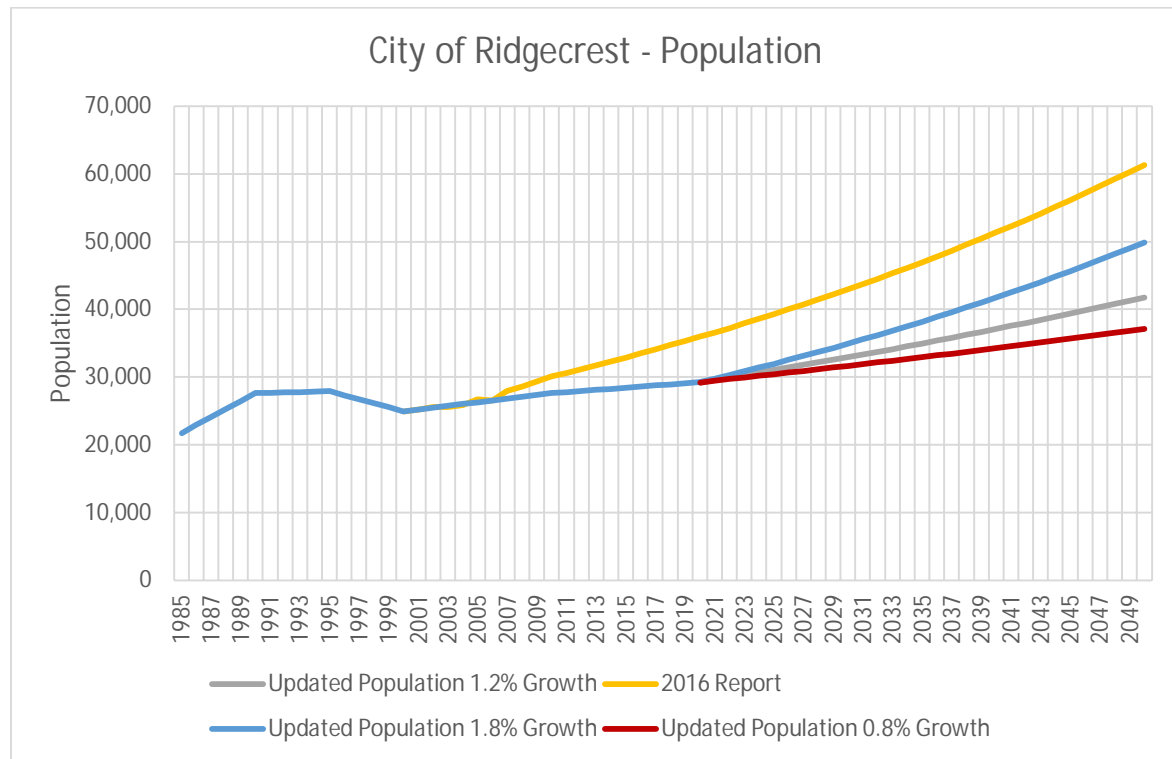
Two additional growth forecast references are included for comparison.

The Regional Growth Forecast for Kern Council of Governments, Methodology and Forecasts 2020 to 2050 (December 2019, https://www.kerncog.org/wp-content/uploads/2009/10/Kern_2020-2050_Regional_Growth_Forecast.pdf, Page 5, Regional Growth Forecast, Kern County) provides the following data:

| Year | Population | Growth | % Change/Year |
|------|-----------|--------|---------------|
| 2010 | 841,189 | | |
| 2020 | 927,500 | 86,311 | 0.98% |
| 2030 | 1,025,700 | 98,200 | 1.01% |
| 2040 | 1,126,000 | 100,300 | 0.94% |
| 2050 | 1,227,200 | 101,200 | 0.86% |

The 2018 Regional Transportation Plan and Sustainable Communities Strategy, Kern Council of Governments (Adopted: August 16, 2018, Page 3-11 for the Ridgecrest Community, https://www.kerncog.org/wp-content/uploads/2018/10/2018_RTP.pdf) provides the following data:

| Year | Population | Growth | % Change/Year |
|------|-----------|--------|---------------|
| 1980 | 15,929 | | |
| 1990 | 28,295 | 12,366 | 5.91% |
| 2000 | 24,927 | -3,368 | -1.26% |
| 2010 | 27,616 | 2,689 | 1.03% |
| 2017 | 28,349 | 733 | 0.37% |
| 2030 | 32,300 | 3,951 | 1.01% |
| 2042 | 37,870 | 5,570 | 1.33% |

## INFLUENT WASTEWATER FLOWS

Although population has increased between 2000 and 2020, influent wastewater flows measured at the WWTP (combined City and NAWS flows) have decreased. This is likely due to the ongoing drought conditions in the area and an emphasis on water conservation. Table 2 and Figure 2 summarize the historic average annual daily (AAD) flow from 2001 through 2020. Data is provided for City flows, NAWS flows and the total influent flow (City plus NAWS).

## Table 2 – City of Ridgecrest Average Annual Daily Flow

| Year | WWTP Influent Flows AAD Flow (mgd) | NAWS Flows AAD Flow (mgd) | City Flows AAD Flow (mgd) |
|------|------|------|------|
| 2001 | 2.52 | | |
| 2002 | 2.52 | | |
| 2003 | 2.58 | | |
| 2004 | 2.52 | | |
| 2005 | 2.51 | | |
| 2006 | 2.57 | | |
| 2007 | 2.49 | | |
| 2008 | 2.57 | | |
| 2009 | 2.55 | 0.747 | 1.80 |
| 2010 | 2.62 | 0.709 | 1.91 |
| 2011 | 2.46 | 0.756 | 1.70 |
| 2012 | 2.50 | 0.843 | 1.66 |
| 2013 | 2.30 | 0.636 | 1.66 |
| 2014 | 2.31 | | |
| 2015 | 2.18 | 0.657 | 1.52 |
| 2016 | 2.25 | 0.693 | 1.56 |
| 2017 | 2.44 | 0.609 | 1.83 |
| 2018 | 2.25 | 0.494 | 1.75 |
| 2019 | 2.21 | 0.537 | 1.67 |
| 2020 | 2.20 | 0.586 | 1.61 |

Figure 2 – City of Ridgecrest Average Annual Daily Flow
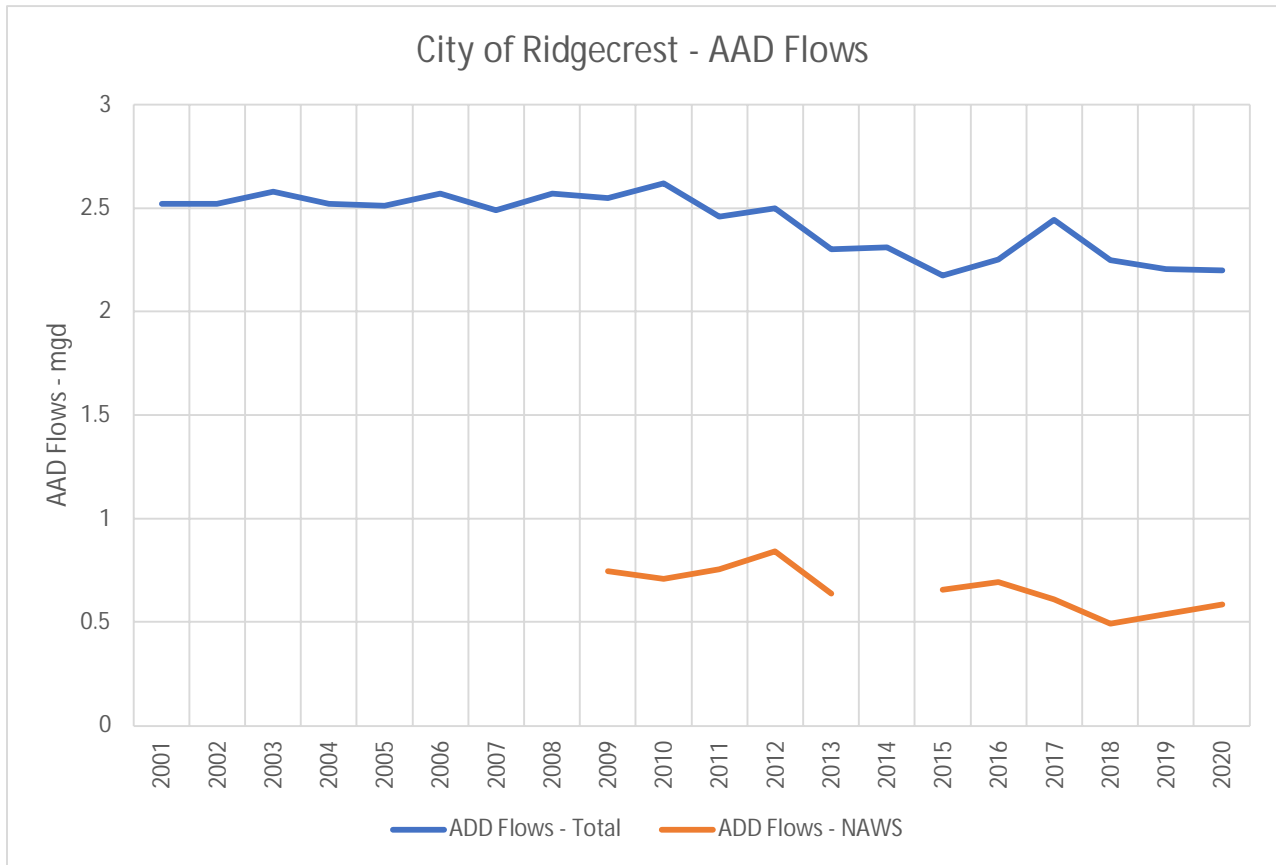
Influent wastewater per capita flow is also decreasing.  Table 3 and Figure 3 show the yearly annual average gallons per capita day flows from 2001 through 2020.  Data is shown as presented in the 2016 report and updated with recent population and flow data.  The 2016 report assumed a future annual average of 85 gallons per capita day (gpcd).  City flows have been at or below this number since 2013 and the per capita flow in 2020 was 75 gpcd.

Table 3 – City of Ridgecrest Average Annual Daily Flow per Capita

| Year | Per Capita Flow (gpcd) | |
|---|---|---|
| | 2016 Report | 2020 Data |
| 2001 | 99.9 | 100.0 |
| 2002 | 98.7 | 99.0 |
| 2003 | 100.8 | 100.3 |
| 2004 | 97.5 | 96.9 |
| 2005 | 94.1 | 95.5 |
| 2006 | 96.9 | 96.8 |
| 2007 | 89.1 | 92.9 |
| 2008 | 89.8 | 94.9 |
| 2009 | 86.9 | 93.2 |
| 2010 | 87.2 | 94.9 |
| 2011 | 80.4 | 88.6 |
| 2012 | 80.3 | 89.5 |
| 2013 | 72.5 | 81.9 |
| 2014 | 71.6 | 81.8 |
| 2015 | | 76.6 |
| 2016 | | 78.8 |
| 2017 | | 85.0 |
| 2018 | | 77.8 |
| 2019 | | 75.9 |
| 2020 | | 75.3 |

The per capita flow from the 2016 report was calculated based on a 2010 population of 30,056 and the per capita flow based on 2020 data was calculated on a 2010 population of 27,616.

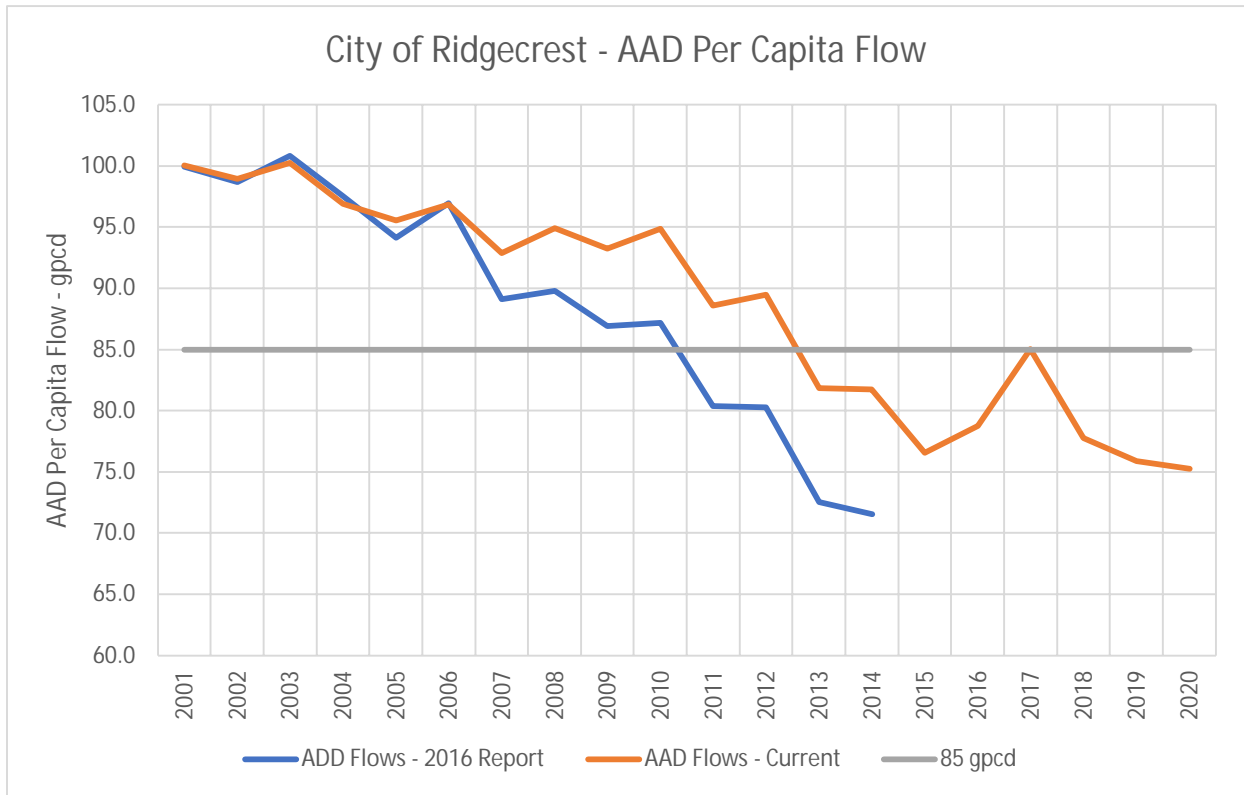Figure 3 – City of Ridgecrest Average Annual Daily Flow

Table 4 and Figure 4 present the historical and projected average annual daily (AAD) flow based on population growth of 1.8%, 1.2% and 0.8%, and an average annual per capita wastewater flow of 85 gpcd and 75 gpcd.

Table 4 – City of Ridgecrest Projected AAD Flows

| Year | Influent AAD Flow | | | | |
|------|------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | Historical | Projected @ 1.8% Growth & 85 gpcd | Projected @ 1.2% Growth & 85 gpcd | Projected @ 0.8% Growth & 85 gpcd | Projected @ 0.8% Growth & 75 gpcd |
| 2001 | 2.52 | | | | |
| 2002 | 2.52 | | | | |
| 2003 | 2.58 | | | | |
| 2004 | 2.52 | | | | |
| 2005 | 2.51 | | | | |
| 2006 | 2.57 | | | | |
| 2007 | 2.49 | | | | |
| 2008 | 2.57 | | | | |
| 2009 | 2.55 | | | | |
| 2010 | 2.62 | | | | |
| 2011 | 2.46 | | | | |
| 2012 | 2.50 | | | | |
| 2013 | 2.30 | | | | |
| 2014 | 2.31 | | | | |
| 2015 | 2.18 | | | | |
| 2016 | 2.25 | | | | |
| 2017 | 2.44 | | | | |
| 2018 | 2.25 | | | | |
| 2019 | 2.21 | | | | |
| 2020 | 2.20 | | | | |
| 2021 | | 2.53 | 2.51 | 2.50 | 2.21 |
| 2022 | | 2.57 | 2.54 | 2.52 | 2.23 |
| 2023 | | 2.62 | 2.57 | 2.54 | 2.24 |
| 2024 | | 2.67 | 2.60 | 2.56 | 2.26 |
| 2025 | | <u>2.72</u> | 2.64 | 2.58 | 2.28 |
| 2030 | | 2.97 | <u>2.80</u> | 2.69 | 2.37 |
| 2035 | | 3.25 | 2.97 | <u>2.80</u> | 2.47 |
| 2040 | | 3.55 | 3.15 | 2.91 | 2.57 |
| 2045 | | 3.88 | 3.35 | 3.03 | 2.67 |
| 2050 | | 4.24 | 3.55 | 3.15 | 2.78 |

The 2016 report assumed a Phase 1 design AAD capacity of 3.6 mgd. Assuming expansion planning would start when WWTP flows reached 80% or 2.9 mgd, the timing of this planning start would be as shown by the underlining in Table 4.

G:\Ridgecrest_City of-2030\203021001-WWTP Rpt Addendum\200 Technical\202 General\Population, Flow & BOD Update Memo\Ridgecrest Population, Flow & BOD Final for

City 07-10-21.docx

Note that the larger flow increases between 2020 (historical) and 2021 (projected) is due to the per capita flow used to calculate the AAD flow (75 gpcd recorded in 2020 and 85 gpcd assumed in 2021 and later).

Figure 4 – City of Ridgecrest Projected AAD Flows
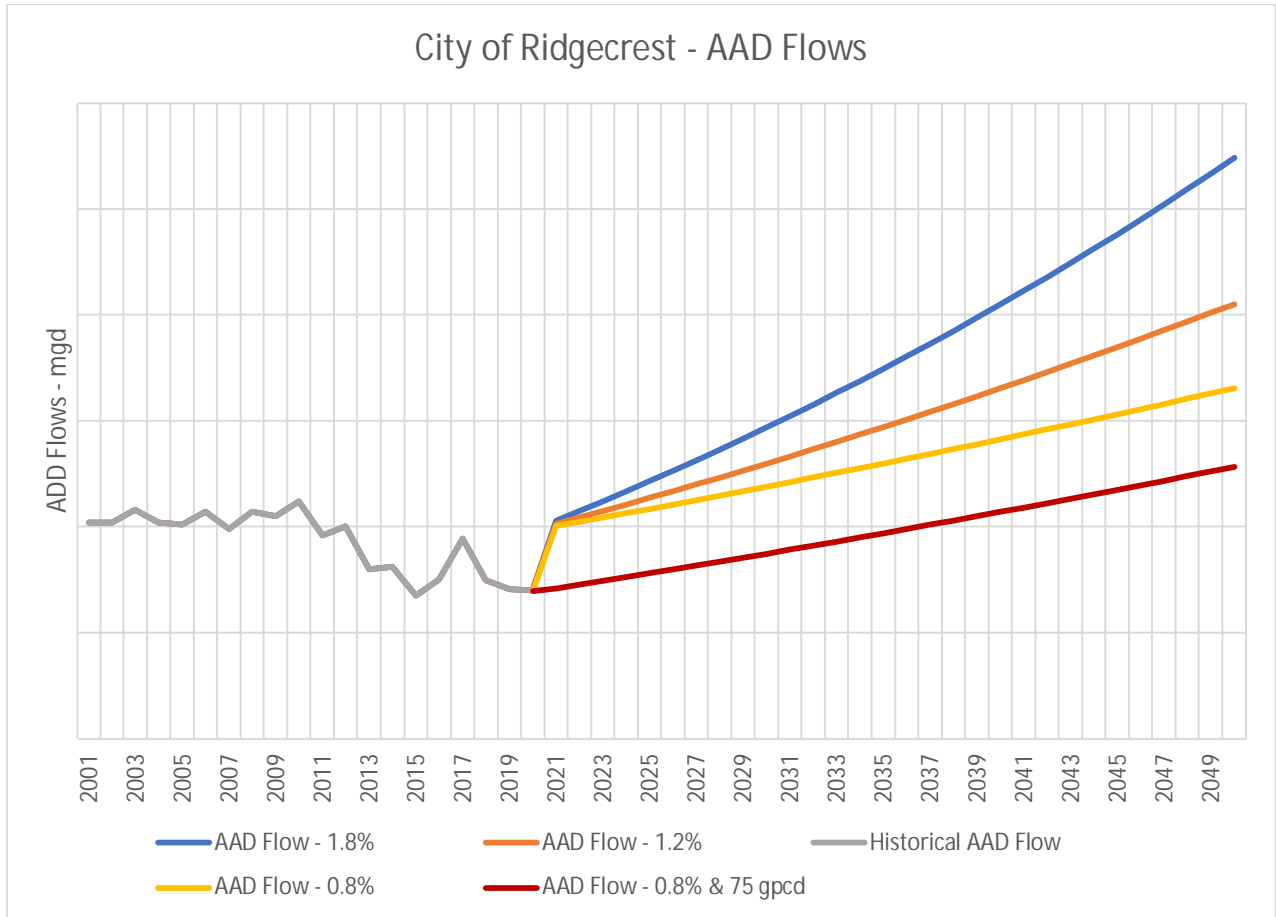
Average day maximum month (ADMM) flows are typically used for design of treatment facility components associated with loading (i.e. BOD, TSS and nitrogen). Table 5 and Figure 5 show the ratio of ADMM to AAD for the period from 2010 through 2020 for influent flows into the WWTP. This ratio has averaged 1.065. The 2016 report assumed a ratio for design purposes of 1.10. Note that the highest ratio occurred in 2017 and the lowest ratio occurred in 2018 (the following year).

Table 5 – City of Ridgecrest Ratio of ADMM:AAD

| Year | Flow - mgd | | Ratio |
| | AAD | ADMM | |
|------|------|------|-------|
| 2010 | 2.62 | 2.71 | 1.034 |
| 2011 | 2.46 | 2.55 | 1.037 |
| 2012 | 2.50 | 2.58 | 1.032 |
| 2013 | 2.30 | 2.52 | 1.096 |
| 2014 | 2.31 | 2.41 | 1.043 |
| 2015 | 2.18 | 2.27 | 1.043 |
| 2016 | 2.25 | 2.55 | 1.133 |
| 2017 | 2.44 | 2.85 | 1.167 |
| 2018 | 2.25 | 2.31 | 1.030 |
| 2019 | 2.21 | 2.32 | 1.054 |
| 2020 | 2.20 | 2.30 | 1.047 |

Figure 5 – City of Ridgecrest Ratio of ADMM:AAD
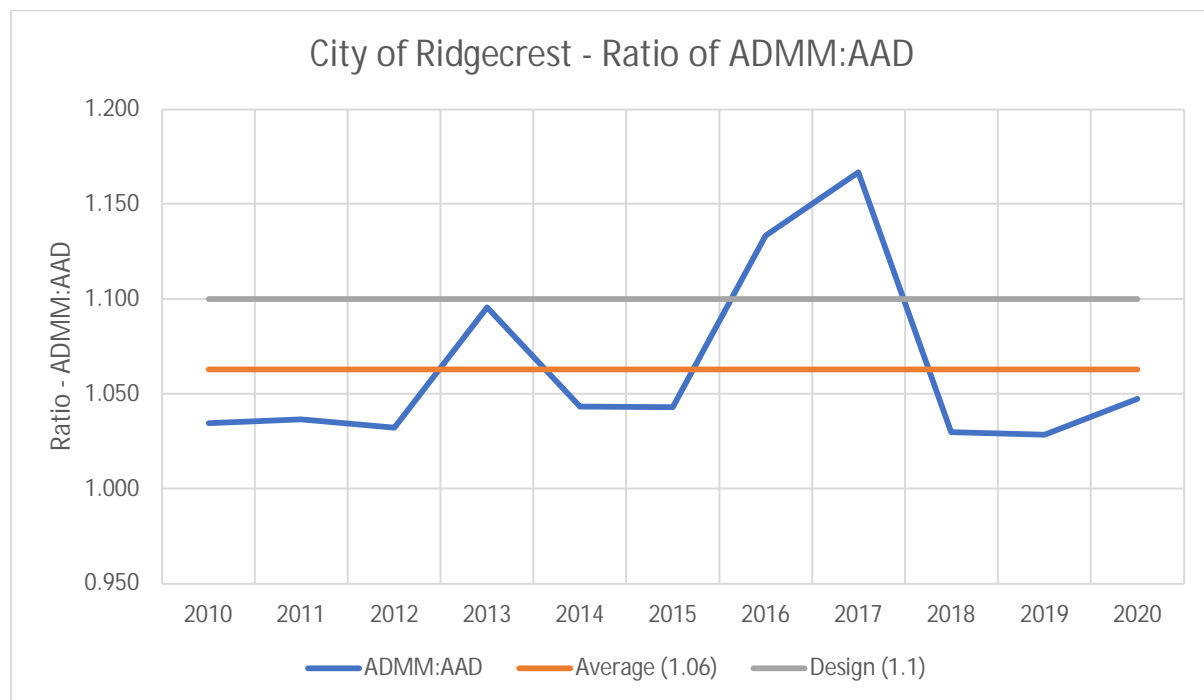
# BOD LOADING

Average daily maximum month (ADMM) influent BOD loading is typically used for design of process related equipment at a WWTP.  ADMM BOD loading at the City's WWTP has generally ranged from 188 mg/L to 260 mg/L for the period between 2005 and 2018 with one reading of 400 mg/L in 2010.  However, in 2019 and 2020, ADMM BOD was 370 mg/L and 320 mg/L respectively.  It is noted that AAD BOD concentrations also increased in 2019 and 2020.

Table 6 summarizes the historical BOD loading (AAD and ADMM), and Figures 6 and 7 present the AAD and ADMM BOD loadings in both mg/L and pounds per day (lbs/day).

Table 6 – City of Ridgecrest Historical BOD Loading

| Year | AAD | | | ADMM | | | | |
|------|-----|--|--|------|--|--|--|--|
| | Flow | BOD | | Flow | BOD | | | |
| | | | | | | | *2016 projected for design* | |
| | mgd | mg/L | lbs/day | mgd | mg/L | lbs/day | mg/L | lbs/day |
| 2005 | 2.51 | 158 | 3,307 | | 200 | 4,187 | | |
| 2006 | 2.57 | 150 | 3,215 | | 200 | 4,287 | | |
| 2007 | 2.49 | 166 | 3,438 | | 250 | 5,659 | | |
| 2008 | 2.57 | 138 | 2,839 | | 200 | 4,937 | | |
| 2009 | 2.55 | 132 | 2,814 | | 230 | 5,198 | | |
| 2010 | 2.62 | 150 | 3,259 | 2.71 | 400 | 9,111 | *270* | *6,102* |
| 2011 | 2.46 | | | 2.55 | | | *270* | *5,742* |
| 2012 | 2.50 | | | 2.58 | | | *270* | *5,810* |
| 2013 | 2.30 | 111 | 2,129 | 2.52 | 188 | 3,951 | *270* | *5,675* |
| 2014 | 2.31 | 162 | 2,121 | 2.41 | 211 | 4,241 | *270* | *5,427* |
| 2015 | 2.18 | 157 | 2,843 | 2.27 | 250 | 4,731 | *270* | *5,109* |
| 2016 | 2.25 | 160 | 2,996 | 2.55 | 260 | 5,532 | *270* | *5,744* |
| 2017 | 2.44 | 138 | 2,805 | 2.85 | 240 | 5,707 | *270* | *6,420* |
| 2018 | 2.25 | 133 | 2,485 | 2.31 | 190 | 3,667 | *270* | *5,211* |
| 2019 | 2.21 | 191 | 3,503 | 2.27 | 370 | 6,999 | *270* | *5,107* |
| 2020 | 2.20 | 226 | 4,142 | 2.30 | 320 | 6,146 | *270* | *5,186* |

Detailed Summary of 2015 – 2020 Monthly BOD Concentrations (mg/L)

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|------|------|------|------|------|------|
| January | 250 | 130 | 160 | 190 | 370 | 320 |
| February | 200 | 260 | 210 | 120 | 200 | 250 |
| March | 210 | 170 | 240 | 95 | 340 | 370 |
| April | 120 | 160 | 170 | 160 | 200 | 220 |
| May | 180 | 190 | 170 | 170 | 170 | 170 |
| June | 130 | 76 | 89 | 140 | 62 | 210 |
| July | 120 | 120 | 52 | 120 | 260 | 220 |
| August | 120 | 150 | 130 | 67 | 47 | 190 |
| September | 150 | 160 | 83 | 156 | 100 | 180 |
| October | 120 | 160 | 78 | 53 | 97 | 180 |
| November | 160 | 79 | 150 | 130 | 270 | 180 |
| December | 120 | 260 | 120 | 190 | 170 | 220 |
| Average - mg/L | 157 | 160 | 138 | 133 | 191 | 226 |
| Max Month – mg/L | 250 | 260 | 240 | 190 | 370 | 370 |

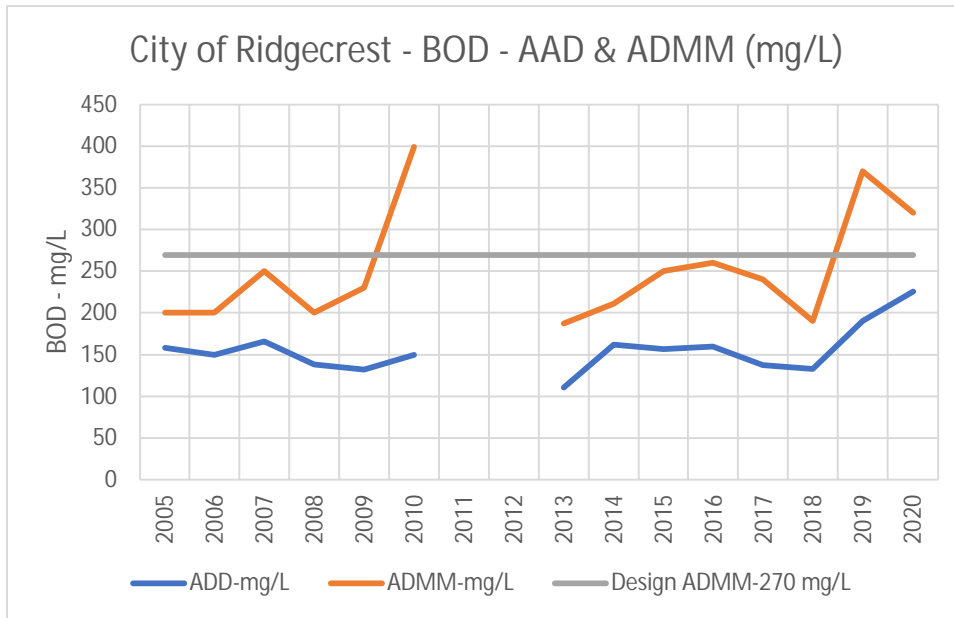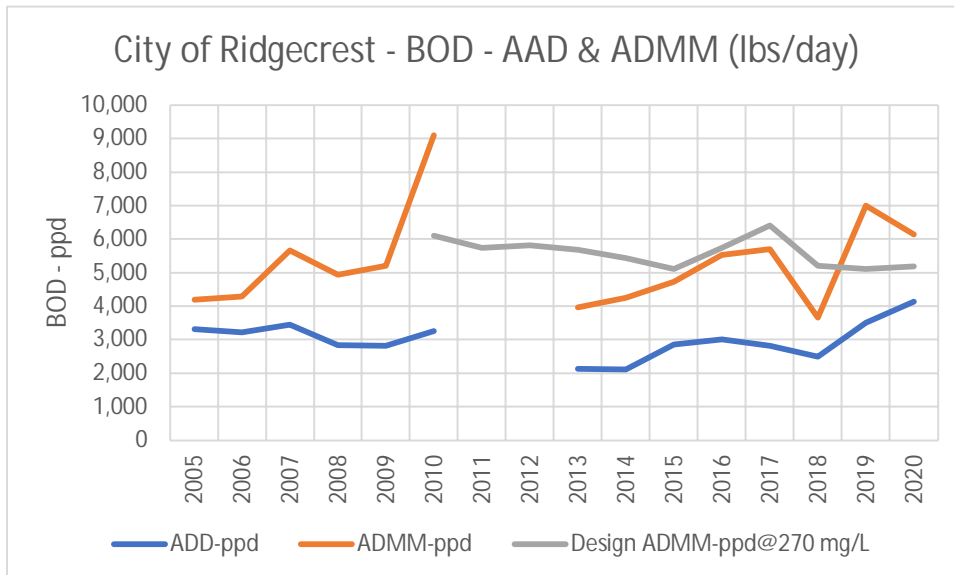Figure 6 – City of Ridgecrest BOD – AAD & ADMM (mg/L)



Figure 7 – City of Ridgecrest BOD – AAD & ADMM (lbs/day)



## SUMMARY AND RECOMMENDATIONS

Based on the 2020 US Census data for the Ridgecrest area, the 2020 population of 29,217 is 6,700 or 17.8% less than projected in the 2016 report. At a 1.8% growth rate, this results in a 2050 population of 49,896 or 11,458 fewer than projected in the 2016 report. Over the past 20 years, historic population growth has been at 1.0% or less. The area's population growth and/or

decline is highly dependent on staffing levels at NAWS China Lake, which is at best difficult to predict.

Coupled with the lower than predicted population growth rate is a declining per capita wastewater flow. There has been a steady decline in AAD per capita wastewater flow since the early 2000's when per capita flows were 100 gpcd. 2020 per capita wastewater flows were 75 gpcd. This decline is likely due to the ongoing drought in the state and associated water conservation initiatives undertaken by the State and the area water purveyors. The 2016 report recognized the decline and recommended a design per capita flow of 85 gpcd. Further reduction of per capita flows may be warranted as shown in Table 4 and Figure 4.

The declining per capita flow has been accompanied by an increase in the concentration of biochemical oxygen demand (BOD) in the influent wastewater. BOD is measured both in concentration (mg/L) and total loading (lbs/day). Total loading in calculated as follows:

$$BOD_{(lbs/day)} = Concentration_{(mg/L)} \times Flow_{(mgd)} \times 8.34$$

Maximum month BOD loading is typically used as a criterion in WWTP process design. As per capita flows decrease, BOD concentrations typically increase – the amount of organic material typically remains the same but the water diluting it is less. In 2017 the maximum month daily flow was 2.85 mgd and the BOD concentration was 240 mg/L yielding a BOD loading of 5,707 lbs/day. In 2020 the maximum month flow dropped to 2.3 mgd and the BOD concentration increased to 320 mg/L yielding a BOD loading of 6,146 lbs/day.

The 2016 report recommended a maximum month design BOD concentration of 270 mg/L, which was higher than any recorded maximum month concentration (except for 2010) until 2019. 2019 and 2020 maximum month BOD concentrations were 370 mg/L and 320 mg/L, respectively. Average annual BOD concentrations for those two years were also higher than previous years – 191 mg/L and 226 mg/L, respectively.

The 2016 report recommended the following Phase 1 design criteria:

Table 7 – 2016 Report Phase 1 Design Criteria

| Design Criteria | Phase 1 Value |
| --- | --- |
| Flow - AAD (mgd) | 3.6 |
| Flow - ADMM (mgd) | 4.0 |
| Ratio - ADMM:AAD | 1.1 |
| Flow - AAD (gpcd) | 85 |
| BOD Concentration - ADMM (mg/L) | 270 |
| Population Served (calculated) | 42,353 |
| BOD Loading @ ADMM Flow & 270 mg/L (lbs/day) | 8,917 |
| Year Capacity Reached (at 1.8% growth) | 2041 |
| Year Capacity Reached (at 1.2% growth) | 2052 |

There are four variables that must be addressed in determining the new WWTP design criteria. They are:

1. Average daily maximum month (ADMM) flow.
2. Per capita wastewater flow.
3. Growth rate and desired design life.
4. BOD concentration.

Based on recent (2015 – 2020) data provided by the City, the population, AAD and ADMM flows and per capita wastewater flow assumptions in the 2016 report are higher than the values currently experienced at the WWTP.  The new WWTP would not reach 80 % of the Phase 1 design capacity of 3.6 mgd (2.9 mgd) until 2029 (assuming a 1.8% growth rate and 85 gpcd) or 2033 (assuming a 1.2% growth rate and 85 gpcd).  If the growth rate is reduced to 0.8% and per capita wastewater flows to 75 gpcd, 80% of design capacity would not be reached until 2055.

However, based on the past two years (2019 and 2020) of data, the BOD concentration at ADMM flow of 270 mg/L assumed in the 2016 report may be low.  If the design BOD concentration were increased to 320 mg/L, the BOD loading would increase to 10,568 lbs/day.  If the new WWTP was designed using 270 mg/L and experienced 320 mg/L, the new WWTP's design capacity would be reached in 2037 at a 1.8% growth rate and 2045 at a 1.2% growth rate.

The downside of designing for higher BOD concentration (320 mg/L) is the cost of larger blowers and aeration capacity that might not be used until later in the WWTP's life.  Designing for a lower BOD concentration (270 mg/L) could result in a plant upgrade/expansion 4 to 7 years sooner.  Unless the City believes the BOD concentrations reported for 2019 and 2020 are abnormally high and are not representative of future concentrations, we recommend that the design ADMM BOD concentration be increased to 320 mg/L.

If ADD and ADMM design flows for Phase 1 remain at 3.6 mgd and 4.0 mgd respectively, treatment capacity will be provided through 2041 even at a 1.8% growth rate and more likely through 2052 at a 1.2% growth rate, or even well beyond 2060 if 0.8% population growth and 75 gpcd AAD flows are experienced.  ADD and ADMM flows for Phase 2 would remain at 5.4 and 5.9 mgd and will be used primarily for reserving space on the site for the Phase 2 treatment components.

A Microsoft Teams conference was held on June 24, 2021 with Mike Nunley and Jason Wilson, MKN Associates and Ron Strand and Travis Reed, City of Ridgecrest.  This memo was reviewed and all agreed with the conclusions and recommendations for design flows (ADD and ADMM design flows for Phase 1 at 3.6 mgd and 4.0 mgd respectively) and influent BOD concentrations of 320 mg/L.  Our work on the project report addendum will continue based on these recommendations.
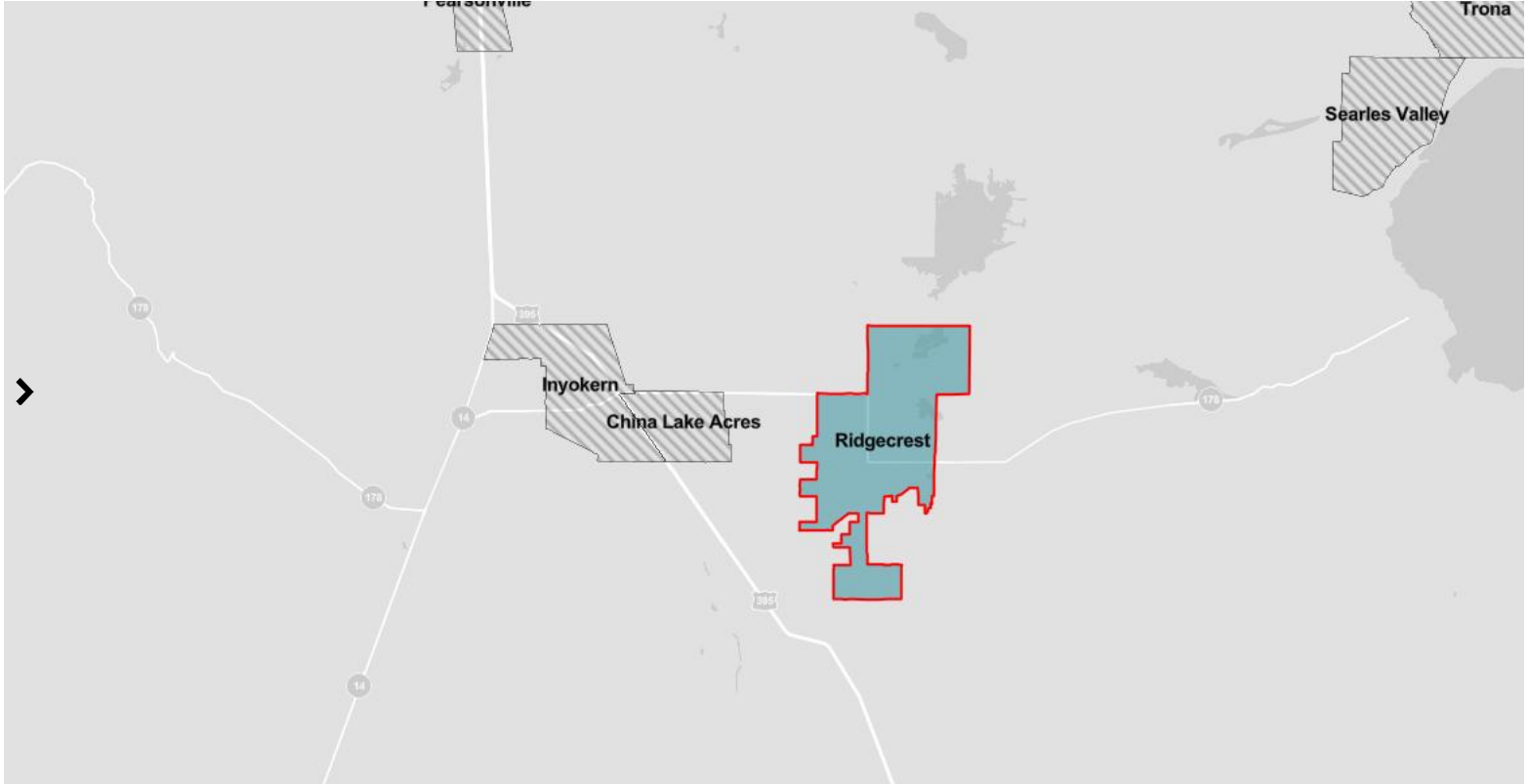

Attachments:

        US Census Data & Map

## QuickFacts

**Ridgecrest city, California**

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.
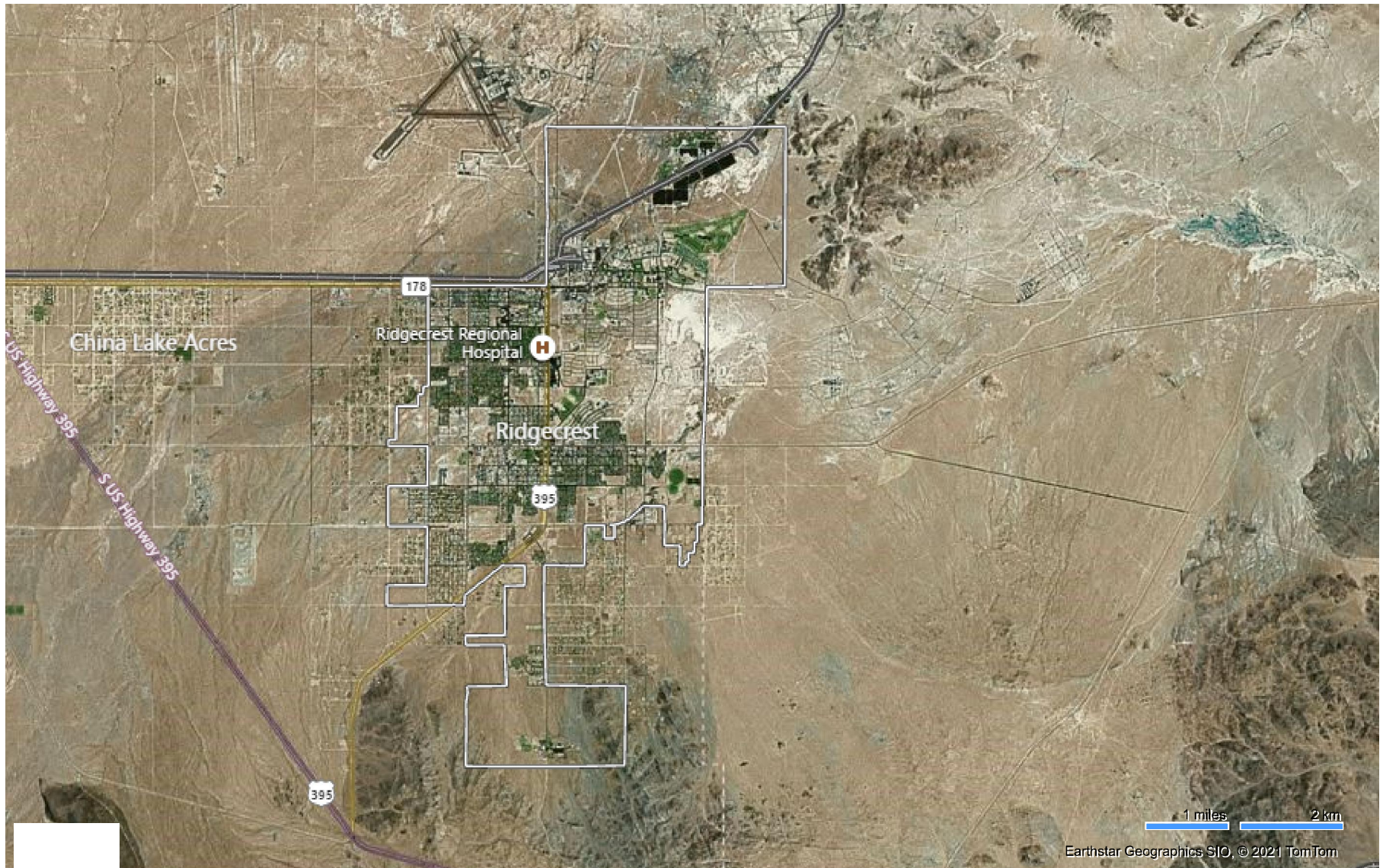
**Map**

**Population estimates, July 1, 2019, (V2019)**



☐ 5,001 - 7,400  ☐ 7,401 - 11,168  ☐ 11,168 - 19,250  ☐ 19,261 - 40,897  ☐ 40,913 - 8,336,817  ☐ X

Populations below 5,000 are not in QuickFacts and therefore Not Selectable

☐ Selectable    ☐ Not Selectable

China Lake Acres

178

Ridgecrest Regional Hospital Ⓗ

Ridgecrest

395

395

S US Highway 395

1 miles    2 km

Earthstar Geographics SIO, © 2021 TomTom

Data from: Wikipedia · Freebase

# QuickFacts

**Ridgecrest city, California**

QuickFacts provides statistics for all states and counties, and for cities and towns with a **population of 5,000 or more**.

## Table

| All Topics ▼ | Ridgecrest city, California |
|---|---|
| **Population estimates, July 1, 2019, (V2019)** | **28,973** |
| 👤 **PEOPLE** | |
| **Population** | |
| **Population estimates, July 1, 2019, (V2019)** | **28,973** |
| Population estimates base, April 1, 2010, (V2019) | 27,616 |
| Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019) | 4.9% |
| Population, Census, April 1, 2010 | 27,616 |
| Population, Census, April 1, 2020 | X |
| **Age and Sex** | |
| Persons under 5 years, percent | ⚠ 4.9% |
| Persons under 18 years, percent | ⚠ 26.5% |
| Persons 65 years and over, percent | ⚠ 13.5% |
| Female persons, percent | ⚠ 50.2% |
| **Race and Hispanic Origin** | |
| White alone, percent | ⚠ 77.1% |
| Black or African American alone, percent   (a) | ⚠ 4.3% |
| American Indian and Alaska Native alone, percent   (a) | ⚠ 0.9% |
| Asian alone, percent   (a) | ⚠ 5.9% |
| Native Hawaiian and Other Pacific Islander alone, percent   (a) | ⚠ 0.3% |
| Two or More Races, percent | ⚠ 4.8% |
| Hispanic or Latino, percent   (b) | ⚠ 21.6% |
| White alone, not Hispanic or Latino, percent | ⚠ 64.8% |
| **Population Characteristics** | |
| Veterans, 2015-2019 | 3,062 |
| Foreign born persons, percent, 2015-2019 | 8.7% |
| **Housing** | |
| Housing units, July 1, 2019, (V2019) | X |
| Owner-occupied housing unit rate, 2015-2019 | 63.2% |
| Median value of owner-occupied housing units, 2015-2019 | $180,300 |
| Median selected monthly owner costs -with a mortgage, 2015-2019 | $1,390 |
| Median selected monthly owner costs -without a mortgage, 2015-2019 | $411 |
| Median gross rent, 2015-2019 | $879 |
| Building permits, 2020 | X |
| **Families & Living Arrangements** | |
| Households, 2015-2019 | 10,974 |
| Persons per household, 2015-2019 | 2.60 |
| Living in same house 1 year ago, percent of persons age 1 year+, 2015-2019 | 83.6% |
| Language other than English spoken at home, percent of persons age 5 years+, 2015-2019 | 18.7% |
| **Computer and Internet Use** | |
| Households with a computer, percent, 2015-2019 | 89.8% |
| Households with a broadband Internet subscription, percent, 2015-2019 | 83.3% |
| **Education** | |
| High school graduate or higher, percent of persons age 25 years+, 2015-2019 | 89.9% |
| Bachelor's degree or higher, percent of persons age 25 years+, 2015-2019 | 28.4% |
| **Health** | |
| With a disability, under age 65 years, percent, 2015-2019 | 11.9% |
| Persons without health insurance, under age 65 years, percent | ⚠ 3.9% |
| **Economy** | |
| In civilian labor force, total, percent of population age 16 years+, 2015-2019 | 60.3% |
| In civilian labor force, female, percent of population age 16 years+, 2015-2019 | 55.0% |
| Total accommodation and food services sales, 2012 ($1,000)   (c) | 45,159 |
| | 122,721 |

| | |
|---|---|
| Total health care and social assistance receipts/revenue, 2012 ($1,000)   (c) | |
| Total manufacturers shipments, 2012 ($1,000)   (c) | D |
| Total merchant wholesaler sales, 2012 ($1,000)   (c) | D |
| Total retail sales, 2012 ($1,000)   (c) | 272,370 |
| Total retail sales per capita, 2012   (c) | $9,616 |

**Transportation**

| | |
|---|---|
| Mean travel time to work (minutes), workers age 16 years+, 2015-2019 | 14.7 |

**Income & Poverty**

| | |
|---|---|
| Median household income (in 2019 dollars), 2015-2019 | $69,577 |
| Per capita income in past 12 months (in 2019 dollars), 2015-2019 | $32,499 |
| Persons in poverty, percent | ⚠ 12.7% |

## 🏭 BUSINESSES

**Businesses**

| | |
|---|---|
| Total employer establishments, 2019 | X |
| Total employment, 2019 | X |
| Total annual payroll, 2019 ($1,000) | X |
| Total employment, percent change, 2018-2019 | X |
| Total nonemployer establishments, 2018 | X |
| All firms, 2012 | 1,572 |
| Men-owned firms, 2012 | 718 |
| Women-owned firms, 2012 | 637 |
| Minority-owned firms, 2012 | 461 |
| Nonminority-owned firms, 2012 | 1,021 |
| Veteran-owned firms, 2012 | 211 |
| Nonveteran-owned firms, 2012 | 1,237 |

## 🌐 GEOGRAPHY

**Geography**

| | |
|---|---|
| Population per square mile, 2010 | 1,329.9 |
| Land area in square miles, 2010 | 20.77 |
| FIPS Code | 0660704 |

About datasets used in this table

**Value Notes**

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ❶ icon to the row in TABLE view to learn about sampling error.

The vintage year (e.g., V2019) refers to the final year of the series (2010 thru 2019). *Different vintage years of estimates are not comparable.*

**Fact Notes**
- **(a)** Includes persons reporting only one race
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
- **(b)** Hispanics may be of any race, so also are included in applicable race categories

**Value Flags**
- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
- **F** Fewer than 25 firms
- **D** Suppressed to avoid disclosure of confidential information
- **N** Data for this geographic area cannot be displayed because the number of sample cases is too small.
- **FN** Footnote on this item in place of data
- **X** Not applicable
- **S** Suppressed; does not meet publication standards
- **NA** Not available
- **Z** Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and F Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.