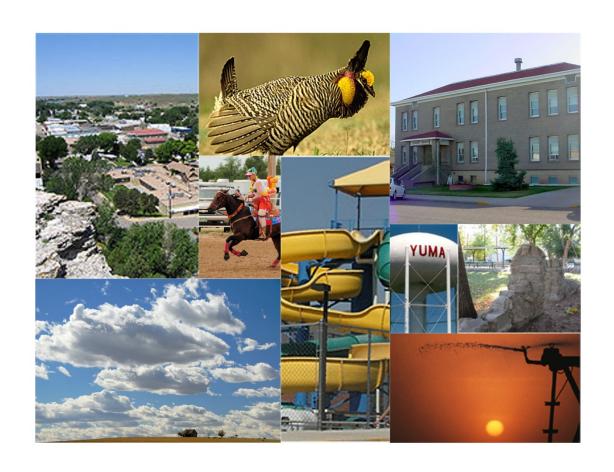


# 2019 YUMA COUNTY PROPERTY ASSESSMENT STUDY







September 15, 2019

Ms. Natalie Mullis Director of Research Colorado Legislative Council Room 029, State Capitol Building Denver, Colorado 80203

RE: Final Report for the 2019 Colorado Property Assessment Study

Dear Ms. Mullis:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2019 Colorado Property Assessment Study.

These reports are the result of two analyses: A procedural audit and a statistical audit.

The procedural audit examines all classes of property. It specifically looks at how the assessor develops economic areas, confirms and qualifies sales, develops time adjustments and performs periodic physical property inspections. The audit reviews the procedures for determining subdivision absorption and subdivision discounting. Valuation methodology is examined for residential properties and commercial properties. Procedures are reviewed for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests, and non-producing patented mining claims.

Statistical audits are performed on vacant land, residential properties, commercial/industrial properties and agricultural land. A statistical analysis is performed for personal property compliance on the eleven largest counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld. The remaining counties receive a personal property procedural study.

Wildrose Appraisal Inc. – Audit Division appreciates the opportunity to be of service to the State of Colorado. Please contact us with any questions or concerns.

Harry J. Fuller Project Manager

Harry J. Zulla

Wildrose Appraisal Inc. - Audit Division



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# INTRODUCTION



The State Board of Equalization (SBOE) reviews assessments for conformance to the Constitution. The SBOE will order revaluations for counties whose valuations do not reflect the proper valuation period level of value.

The statutory basis for the audit is found in C.R.S. 39-1-104 (16)(a)(b) and (c).

The legislative council sets forth two criteria that are the focus of the audit group:

To determine whether each county assessor is applying correctly the constitutional and statutory provisions, compliance requirements of the State Board of Equalization, and the manuals published by the State Property Tax Administrator to arrive at the actual value of each class of property.

To determine if each assessor is applying correctly the provisions of law to the actual values when arriving at valuations for assessment of all locally valued properties subject to the property tax.

The property assessment audit conducts a twopart analysis: A procedural analysis and a statistical analysis. The procedural analysis includes all classes of property and specifically looks at how the assessor develops economic areas, confirms and qualifies sales, and develops time adjustments. The audit also examines the procedures for adequately discovering, classifying and valuing agricultural outbuildings, discovering subdivision build-out subdivision discounting procedures. Valuation methodology for vacant land, improved properties commercial residential and properties is examined. Procedures for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests and non-producing patented mining claims are also reviewed.

Statistical analysis is performed on vacant land, residential properties, commercial industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax Administrator.

Wildrose Audit has completed the Property Assessment Study for 2019 and is pleased to report its findings for Yuma County in the following report.

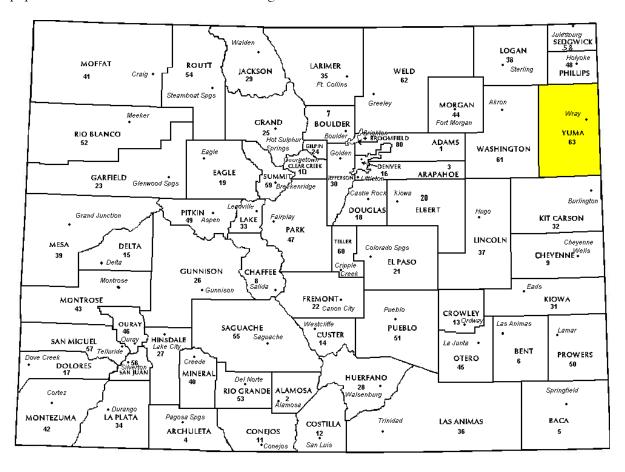


# REGIONAL/HISTORICAL SKETCH OF YUMA COUNTY

#### **Regional Information**

Yuma County is located in the Eastern Plains region of Colorado. The Eastern Plains of Colorado refer to the region on the east side of the Rocky Mountain. It is east of the population centers of the Front Range,

including Baca, Bent, Cheyenne, Crowley, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Morgan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma counties.





#### **Historical Information**

Yuma County had an estimated population of approximately 10,103 people with 4.3 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a 0.6 percent change from April 1, 2010 to July 1, 2016.

Yuma County was formed in 1889 from a portion of Washington County and is located on the Northeastern Colorado Plains with Nebraska and Kansas at its border. The County Seat resides in Wray, which was named an "All-America City" in 1993 by the National Civic League. The County offers moderate summers, crisp falls, cool winters and warm springs. The county averages 260 days of sunshine and 16.7" of annual rainfall.

Yuma County offers many opportunities for recreation. Boating and fishing are popular. Ponds, lakes and rivers are abundant, as is the wildlife. Hunters and nature lovers can see wild turkey, pheasant and deer. Visitors from all over come to Wray to view the unusual mating ritual of the Greater Prairie Chicken. Once an endangered species, the Greater Prairie Chicken has made a comeback in Northeast Colorado.

The Wray museum has a fine Smithsonian exhibit of an ancient buffalo hunt as well as Indian and prehistoric artifacts. History buffs can visit the Beecher Island Battleground, the site of one of the most bitter battles in the Indian Wars between Cheyenne Dog Soldiers and the US Calvary.

(www.northeastrpd.org, www.yumacounty.net, www.wikipedia.org)



# RATIO ANALYSIS

#### Methodology

All significant classes of property were analyzed. Sales were collected for each property class over the eighteen month period from January 1, 2017 through June 30, 2018. Property classes with less than thirty sales had the sales period extended in six month increments up to an additional forty-two months. If this extended sales period did not produce the minimum thirty qualified sales, the Audit performed supplemental appraisals to reach the minimum.

Although it was required that we examine the median and coefficient of dispersion for all counties, we also calculated the weighted mean and price-related differential for each class of property. Counties were not passed or failed by these latter measures, but were counseled if there were anomalies noted during our analysis. Qualified sales were based on the qualification code used by each county, which were typically coded as either "Q" or "C." The ratio analysis included all sales. The data was trimmed for counties with obvious outliers using IAAO standards for data analysis. In

every case, we examined the loss in data from trimming to ensure that only true outliers were excluded. Any county with a significant portion of sales excluded by this trimming method was examined further. No county was allowed to pass the audit if more than 5% of the sales were "lost" because of trimming.

All sixty-four counties were examined for compliance on the economic area level. Where there were sufficient sales data, the neighborhood and subdivision levels were tested for compliance. Although counties are determined to be in or out of compliance at the class level, non-compliant economic areas, neighborhoods and subdivisions (where applicable) were discussed with the Assessor.

# Data on the individual economic areas, neighborhoods and subdivisions are found in the STATISTICAL APPENDIX.

#### **Conclusions**

For this final analysis report, the minimum acceptable statistical standards allowed by the State Board of Equalization are:

ALLOWABLE STANDARDS RATIO GRID				
Property Class	Unweighted Median Ratio	Coefficient of Dispersion		
Commercial/Industrial	Between .95-1.05	Less than 20.99		
Condominium	Between .95-1.05	Less than 15.99		
Single Family	Between .95-1.05	Less than 15.99		
Vacant Land	Between .95-1.05	Less than 20.99		



#### The results for Yuma County are:

Yuma County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Commercial/Industrial	32	0.989	0.995	4.4	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	172	0.991	1.021	12.7	Compliant
Vacant Land	N/A	N/A	N/A	N/A	N/A

After applying the above described methodologies, it is concluded from the sales ratios that Yuma County is in compliance with

SBOE, DPT, and Colorado State Statute valuation guidelines.

Recommendations



# TIME TRENDING VERIFICATION

#### Methodology

While we recommend that counties use the inverted ratio regression analysis method to account for market (time) trending, some counties have used other IAAO-approved methods, such as the weighted monthly median approach. We are not auditing the methods used, but rather the results of the methods used. Given this range of methodologies used to account for market trending, we concluded that the best validation method was to examine the sale ratios for each class across the appropriate sale period. To be specific, if a county has considered and adjusted correctly for market trending, then the sale ratios should remain stable (i.e. flat) across the sale period. If a residual market trend is detected, then the county may or may not have addressed market

trending adequately, and a further examination is warranted. This validation method also considers the number of sales and the length of the sale period. Counties with few sales across the sale period were carefully examined to determine if the statistical results were valid.

#### **Conclusions**

After verification and analysis, it has been determined that Yuma County has complied with the statutory requirements to analyze the effects of time on value in their county. Yuma County has also satisfactorily applied the results of their time trending analysis to arrive at the time adjusted sales price (TASP).

#### Recommendations



## SOLD/UNSOLD ANALYSIS

#### Methodology

Yuma County was tested for the equal treatment of sold and unsold properties to ensure that "sales chasing" has not occurred. The auditors employed a multi-step process to determine if sold and unsold properties were valued in a consistent manner.

We test the hypothesis that the assessor has valued unsold properties consistent with what is observed with the sold properties based on several units of comparison and tests. units of comparison include the actual value per square foot and the change in value from the previous base year period to the current base year. The first test compares the actual value per square foot between sold and unsold properties by class. The median and mean value per square foot is compared and tested for any significant difference. This is tested using non-parametric methods, such as the Mann-Whitney test for differences in the distributions or medians between sold and unsold groups. It is also examined graphically and from an appraisal perspective. Data can be stratified based on location and subclass. The second test compares the difference in the median change in value from the previous base year to the current base year between sold and unsold properties by class. The same combination of non-parametric and appraisal testing is used as with the first test. A third test employing a valuation model testing a sold/unsold binary variable while controlling for property attributes such as location, size, age and other attributes. determines if the sold/unsold variable is statistically and empirically significant. three tests indicate a significant difference between sold and unsold properties for a given class, the Auditor may meet with the county to determine if sale chasing is actually occurring,

or if there are other explanations for the observed difference.

If the unsold properties have a higher median value per square foot than the sold properties, or if the median change in value is greater for the unsold properties than the sold properties, the analysis is stopped and the county is concluded to be in compliance with sold and unsold guidelines. All sold and unsold properties in a given class are first tested, although properties with extreme unit values or percent changes can be trimmed to stabilize the analysis. The median is the primary comparison metric, although the mean can also be used as a comparison metric if the distribution supports that type of measure of central tendency.

The first test (unit value method) is applied to both residential and commercial/industrial sold and unsold properties. The second test is applied to sold and unsold vacant land properties. The second test (change in value method) is also applied to residential or commercial sold and unsold properties if the first test results in a significant difference observed and/or tested between sold and unsold properties. The third test (valuation modeling) is used in instances where the results from the first two tests indicate a significant difference between sold and unsold properties. It can also be used when the number of sold and unsold properties is so large that the nonparametric testing is indicating a false rejection of the hypothesis that there is no difference between the sold and unsold property values.

These tests were supported by both tabular and graphics presentations, along with written documentation explaining the methodology used.



Sold/Unsold Results				
Property Class	Results			
Commercial/Industrial	Compliant			
Condominium	N/A			
Single Family	Compliant			
Vacant Land	N/A			

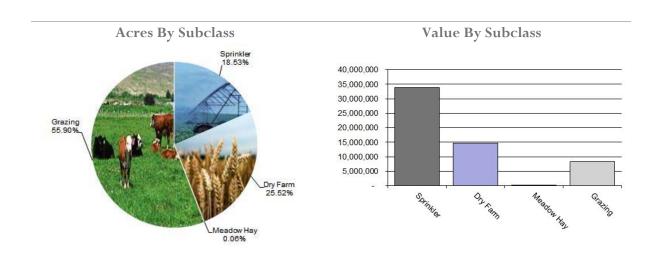
#### Conclusions

After applying the above described methodologies, it is concluded that Yuma County is reasonably treating its sold and unsold properties in the same manner.

#### Recommendations



# AGRICULTURAL LAND STUDY



#### **Agricultural Land**

County records were reviewed to determine major land categories such as irrigated farm, dry farm, meadow hay, grazing and other lands. In addition, county records were reviewed in order to determine if: photographs are available and are being used; soil conservation guidelines have been used to classify lands based on productivity; crop rotations have been documented; typical commodities and yields have been determined; orchard lands have been properly classified and valued; expenses reflect a ten year average and are typical landlord expenses; grazing lands have been properly classified and valued; the number of acres in each class and subclass have been determined; the capitalization rate was properly applied. Also, documentation was required for the valuation methods used and developed locally yields, carrying capacities, and expenses. Records were also checked to ensure that the commodity prices and expenses, furnished by the Property Tax Administrator (PTA), were applied properly.

(See Assessor Reference Library Volume 3 Chapter 5.)

#### Conclusions

An analysis of the agricultural land data indicates an acceptable appraisal of this property type. Directives, commodity prices and expenses provided by the PTA were properly applied. County yields compared favorably to those published by Colorado Agricultural Statistics. Expenses used by the county were allowable expenses and were in an acceptable range. Grazing lands carrying capacities were in an acceptable range. The data analyzed resulted in the following ratios:



	Yuma County Agricultural Land Ratio Grid					
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4107	Sprinkler	265,608	127.37	33,830,602	34,097,844	0.99
4127	Dry Farm	365,851	40.06	14,655,399	15,065,745	0.97
4137	Meadow Hay	800	40.47	32,373	32,373	1.00
4147	Grazing	801,318	10.35	8,292,485	8,292,485	1.00
Total/Avg		1,433,577	39.63	56,810,859	57,488,447	0.99

#### Recommendations

None

# **Agricultural Outbuildings**

#### Methodology

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.74 through 5.77 were being followed.

#### **Conclusions**

Yuma County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of agricultural outbuildings.

#### Recommendations



#### **Agricultural Land Under Improvements**

#### Methodology

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.19 and 5.20 were being followed.

#### **Conclusions**

Yuma County has used the following methods to discover land under a residential improvement on a farm or ranch that is determined to be not integral under 39-1-102, C.R.S.:

- Questionnaires
- Field Inspections
- Phone Interviews
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Yuma County has used the following methods to discover the land area under a residential improvement that is determined to be not integral under 39-1-102, C.R.S.:

- Property Record Card Analysis
- Questionnaires
- Field Inspections
- Phone Interviews
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Yuma County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of land under residential improvements that may or may not be integral to an agricultural operation.

#### Recommendations



### SALES VERIFICATION

#### According to Colorado Revised Statutes:

A representative body of sales is required when considering the market approach to appraisal.

(8) In any case in which sales prices of comparable properties within any class or subclass are utilized when considering the market approach to appraisal in the determination of actual value of any taxable property, the following limitations and conditions shall apply:

(a)(I) Use of the market approach shall require a representative body of sales, including sales by a lender or government, sufficient to set a pattern, and appraisals shall reflect due consideration of the degree of comparability of sales, including the extent of similarities and dissimilarities among properties that are compared for assessment purposes. In order to obtain a reasonable sample and to reduce sudden price changes or fluctuations, all sales shall be included in the sample that reasonably reflect a true or typical sales price during the period specified in section 39-1-104 (10.2). Sales of personal property exempt pursuant to the provisions of sections 39-3-102, 39-3-103, and 39-3-119 to 39-3-122 shall not be included in any such sample.

(b) Each such sale included in the sample shall be coded to indicate a typical, negotiated sale, as screened and verified by the assessor. (39-1-103, C.R.S.)

The assessor is required to use sales of real property only in the valuation process.

(8)(f) Such true and typical sales shall include only those sales which have been determined on an individual basis to reflect the selling price of the real property only or which have been adjusted on an individual basis to reflect the selling price of the real property only. (39-1-103, C.R.S.)

Part of the Property Assessment Study is the sales verification analysis. WRA has used the above-cited statutes as a guide in our study of the county's procedures and practices for verifying sales.

WRA reviewed the sales verification procedures in 2019 for Yuma County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 79 sales listed as unqualified.

All of the sales in the unqualified sales sample had reasons that were clear and supportable.

For residential, commercial, and vacant land sales with considerations over \$100,000, the contractor has examined and reported the ratio of qualified sales to total sales by class and performed the following analyses of unqualified sales:

The contractor has examined the manner in which sales have been classified as qualified or unqualified, including a listing of each step in the sales verification process, any adjustment procedures, and the county official responsible for making the final decision on qualification.

When less than 50 percent of sales are qualified in any of the three property classes (residential, commercial, and vacant land), the contractor analyzed the reasons for disqualifying sales in any subclass that constitutes at least 20 percent of the class, either by number of properties or by value, from the prior year. The contractor has



reviewed with the assessor any analysis sales indicating that data inadequate, fail to reflect typical properties, or have been disqualified for insufficient cause. In addition, the contractor has reviewed disqualified sales by assigned code. If there appears to be any inconsistency in the coding, the contractor has conducted further analysis determine if the sales included in that code have been assigned appropriately.

If 50 percent or more of the sales are qualified, the contractor has reviewed a statistically significant sample of unqualified sales, excluding sales that were disqualified for obvious reasons.

The following subclasses were analyzed for Yuma County:

2112 Merchandising

2130 Special Purpose

2135 Warehouse/Storage

2230 Special Purpose

2235 Warehouse/Storage

3115 Manufacturing/Processing

3120 Manufacturing/Milling

3215 Manufacturing/Processing

#### Conclusions

Yuma County appears to be doing a good job of verifying their sales. WRA agreed with the county's reason for disqualifying each of the sales selected in the sample. There are no recommendations or suggestions.

#### Recommendations



# ECONOMIC AREA REVIEW AND EVALUATION

#### Methodology

Yuma County has submitted a written narrative describing the economic areas that make up the county's market areas. Yuma County has also submitted a map illustrating these areas. Each of these narratives have been read and analyzed for logic and appraisal sensibility. The maps were also compared to the narrative for consistency between the written description and the map.

#### Conclusions

After review and analysis, it has been determined that Yuma County has adequately

identified homogeneous economic areas comprised of smaller neighborhoods. Each economic area defined is equally subject to a set of economic forces that impact the value of the properties within that geographic area and this has been adequately addressed. Each economic area defined adequately delineates an area that will give "similar values for similar properties in similar areas."

#### Recommendations



# NATURAL RESOURCES

#### **Earth and Stone Products**

#### Methodology

Under the guidelines of the Assessor's Reference Library (ARL), Volume 3, Natural Resource Valuation Procedures, the income approach was applied to determine value for production of earth and stone products. The number of tons was multiplied by an economic royalty rate determined by the Division of Property Taxation to determine income. The income was multiplied by a recommended Hoskold factor to determine the actual value. The Hoskold factor is determined by the life of the reserves or the lease. Value is based on two variables: life and tonnage. The operator determines these since there is no other means to obtain production data through any state or private agency.

#### **Conclusions**

The County has applied the correct formulas and state guidelines to earth and stone production.

#### Recommendations

None

#### **Producing Oil and Gas**

#### Methodology

Assessors Reference Library (ARL) Volume 3, Chapter 6: Valuation of Natural Resources

#### STATUTORY REFERENCES

Section § 39-1-103, C.R.S., specifies that producing oil or gas leaseholds and lands are valued according to article 7 of title 39, C.R.S.

#### Actual value determined - when.

(2) The valuation for assessment of leaseholds and lands producing oil or gas shall be determined as provided in article 7 of this title. § 39-1-103, C.R.S.

Article 7 covers the listing, valuation, and assessment of producing oil and gas leaseholds and lands.

#### Valuation:

#### Valuation for assessment.

- (1) Except as provided in subsection (2) of this section, on the basis of the information contained in such statement, the assessor shall value such oil and gas leaseholds and lands for assessment, as real property, at an amount equal to eighty-seven and one-half percent of:
- (a) The selling price of the oil or gas sold there from during the preceding calendar year, after excluding the selling price of all oil or gas delivered to the United States government or any agency thereof, the state of Colorado or any agency thereof, or any political subdivision of the state as royalty during the preceding calendar year;
- (b) The selling price of oil or gas sold in the same field area for oil or gas transported from the premises which is not sold during the preceding calendar year, after excluding the selling price of all oil or gas delivered to the United States government or any agency thereof, the state of Colorado or any agency thereof, or any political subdivision of the state as royalty during the preceding calendar year.

#### § 39-7-102, C.R.S.

#### Conclusions

The county applied approved appraisal procedures in the valuation of oil and gas.

#### Recommendations



# VACANT LAND

#### **Subdivision Discounting**

Subdivisions were reviewed in 2019 in Yuma County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14) and by applying the recommended methodology in ARL Vol 3, Chap 4. Subdivision Discounting in the intervening year can be accomplished by reducing the absorption period by one year.

#### Conclusions

Yuma County has implemented proper procedures to adequately estimate absorption periods, discount rates, and lot values for qualifying subdivisions.

#### Recommendations



# POSSESSORY INTEREST PROPERTIES

#### **Possessory Interest**

Possessory interest property discovery and valuation is described in the Assessor's Reference Library (ARL) Volume 3 section 7 in accordance with the requirements of C.R.S. Chapter 39-1-103 (17)(a)(II)Possessory Interest is defined by the Property Tax Administrator's Publication ARL Volume 3, Chapter 7: A private property interest in government-owned property or the right to the occupancy and use of any benefit in government-owned property that has been under lease, permit, concession, contract, or other agreement.

Yuma County has been reviewed for their procedures and adherence to guidelines when assessing and valuing agricultural and

commercial possessory interest properties. The county has also been queried as to their confidence that the possessory interest properties have been discovered and placed on the tax rolls.

#### Conclusions

Yuma County has implemented a discovery process to place possessory interest properties on the roll. They have also correctly and consistently applied the correct procedures and valuation methods in the valuation of possessory interest properties.

#### Recommendations



# PERSONAL PROPERTY AUDIT

Yuma County was studied for its procedural compliance with the personal property assessment outlined in the Assessor's Reference Library (ARL) Volume 5, and in the State Board of Equalization (SBOE) requirements for the assessment of personal property. The SBOE requires that counties use ARL Volume 5, including current discovery, classification, documentation procedures, current economic lives table, cost factor tables, depreciation table, and level of value adjustment factor table.

The personal property audit standards narrative must be in place and current. A listing of businesses that have been audited by the assessor within the twelve-month period reflected in the plan is given to the auditor. The audited businesses must be in conformity with those described in the plan.

Aggregate ratio will be determined solely from the personal property accounts that have been physically inspected. The minimum assessment sample is one percent or ten schedules, whichever is greater, and the maximum assessment audit sample is 100 schedules.

For the counties having over 100,000 population, WRA selected a sample of all personal property schedules to determine whether the assessor is correctly applying the provisions of law and manuals of the Property Tax Administrator in arriving at the assessment levels of such property. This sample was selected from the personal property schedules audited by the assessor. In no event was the sample selected by the contractor less than 30 schedules. The counties to be included in this study are Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo, and Weld. All other counties received a procedural study.

Yuma County is compliant with the guidelines set forth in ARL Volume 5 regarding discovery procedures, using the following methods to discover personal property accounts in the county:

- Public Record Documents
- MLS Listing and/or Sold Books
- Chamber of Commerce/Economic Development Contacts
- Local Telephone Directories, Newspapers or Other Local Publications
- Personal Observation, Physical Canvassing or Word of Mouth
- Questionnaires, Letters and/or Phone Calls to Buyer, Seller and/or Realtor
- Building Permits/Activity Notices
- Inventories/Inspections
- Declarations
- Internet/Facebook

The county uses the Division of Property Taxation (DPT) recommended classification and documentation procedures. The DPT's recommended cost factor tables, depreciation tables and level of value adjustment factor tables are also used.

Yuma County submitted their personal property written audit plan and was current for the 2019 valuation period. The number and listing of businesses audited was also submitted and was in conformance with the written audit plan. The following audit triggers were used by the county to select accounts to be audited:

- Accounts with obvious discrepancies
- New businesses filing for the first time
- Incomplete or inconsistent declarations
- Accounts with omitted property



- Businesses with no deletions or additions for 2 or more years
- Non-filing Accounts Best Information Available
- Accounts close to the \$7,700 actual value exemption status
- Accounts protested with substantial disagreement
- BIA Accounts
- Accounts w/Shipping Containers

#### Conclusions

Yuma County has employed adequate discovery, classification, documentation, valuation, and auditing procedures for their personal property assessment and is in statistical compliance with SBOE requirements.

#### Recommendations



# WILDROSE AUDITOR STAFF

Harry J. Fuller, Audit Project Manager

Suzanne Howard, Audit Administrative Manager

Steve Kane, Audit Statistician

Carl W. Ross, Agricultural/Natural Resource Analyst

J. Andrew Rodriguez, Field Analyst



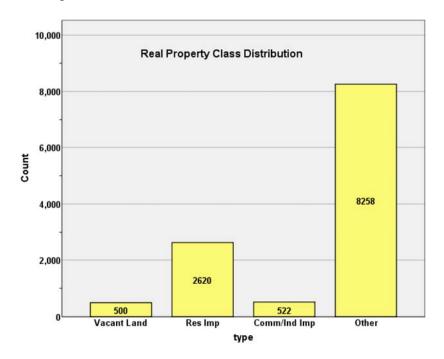
# STATISTICAL APPENDIX



#### STATISTICAL COMPLIANCE REPORT FOR YUMA COUNTY 2019

#### I. OVERVIEW

Yuma County is an agricultural county located in eastern Colorado. The county has a total of 11,900 real property parcels, according to data submitted by the county assessor's office in 2019. The following provides a breakdown of property classes for this county:



The vacant land class of properties was dominated by residential land. Residential lots (coded 100 or 1112) accounted for 56.4% of all vacant land parcels, while mobile home land accounted for 14.4%. Based on the number of vacant land parcels in Yuma County, we were not required to analyze this class of property for audit compliance.

For residential improved properties, single family properties accounted for 95.4% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 4.4% of all such properties in this county.

#### II. DATA FILES

The following sales analyses were based on the requirements of the 2019 Colorado Property Assessment Study. The data included all 5 property record files as specified by the Auditor.



#### III. RESIDENTIAL SALES RESULTS

There were 172 qualified residential sales for the 18-month period prior to June 30, 2018. The sales ratio analysis was analyzed as follows:

Median	0.994
Price Related Differential	1.021
Coefficient of Dispersion	12.7

We next stratified the sale ratio analysis by economic, neighborhood, and subdivision. The minimum count for this analysis was 10 sales. The following are the results of this stratification analysis:

**Economic Area Ratio Statistics for CURRTOT / TASP** 

		Price Related	Coefficient of
Group	Median	Differential	Dispersion
100.00	.999	1.001	.131
200.00	.993	1.028	.136
300.00	.988	1.006	.111
400.00	1.008	1.060	.164
Overall	.994	1.021	.127

All EA's were in compliance in terms of the median sale ratio and all but EA 400 were in compliance in terms of the COD. Please note that Economic Area 400 had only 19 sales and was just over the 15.99 COD threshold.

We examined all neighborhoods with at least 20 sales in terms of their median sales ratio and COD:

Neighborhood Area
Ratio Statistics for CURRTOT / TASP

		Price Related	Coefficient of
Group	Median	Differential	Dispersion
20040	1.006	1.029	.121
20050	.999	1.028	.129
30030	1.001	1.030	.157
30040	.992	1.000	.085
30050	.967	1.002	.116

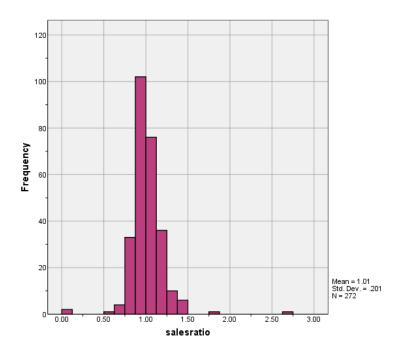
All neighborhoods with at least 20 sales were in compliance in terms of the median sales ratio and COD.

#### **Subdivision**

There were no subdivisions with 20 or more sales.

The above ratio statistics were in compliance with the standards set forth by the Colorado State Board of Equalization (SBOE) for the overall residential sales. The following graphs describe further the sales ratio distribution for all of these properties:







The above graphs indicate that the distribution of the sale ratios was within state mandated limits, and that there were no significant price-related differential issues. No sales were trimmed.

#### **Residential Market Trend Analysis**

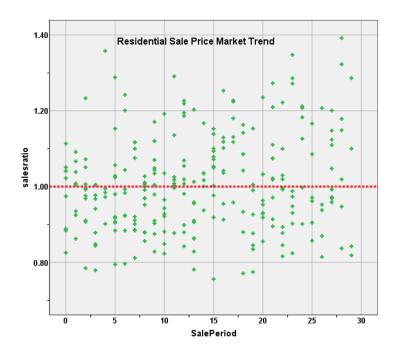
We next analyzed the residential dataset using the 18-month sale period, with the following results:



#### Coefficients<sup>a</sup>

		Unstandardized	Coefficients	Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	.950	.023		40.844	.000
	SalePeriod	.004	.001	.180	3.003	.003

a. Dependent Variable: salesratio



The above analysis indicated that there was a significant market trend, but the magnitude of the trend at 0.3 percent per month was marginal. We have contacted the assessor's office to notify them to carefully monitor residential market trends in their county. We therefore concluded that there was no significant market trending in the residential sale data.

#### Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median actual value per square feet for 2019 between each group, as follows:

<b>Report</b> VALSF			
sold	N	Median	Mean
UNSOLD	2351	\$54	\$61
SOLD	270	\$67	\$71

Given that there was some difference between sold and unsold residential properties, we also compared the mean and median percent change in actual value between taxable years 2018 and 2019 for both groups, as follows:



# Report

DIFF			
sold	N	Median	Mean
UNSOLD	2350	1.10	1.34
SOLD	272	1.11	1.18

Overall, the class level comparison indicated no significant difference using the change in value test.

Using the second test (change in value), we next stratified the comparison by economic area:

#### Report

D	I	F	F

ECONAREA	ECONAREA sold		Median	Mean	
100.00	UNSOLD	435	.99	1.01	
	SOLD	42	1.03	1.08	
200.00	UNSOLD	716	1.09	1.09	
	SOLD	93	1.10	1.13	
300.00	UNSOLD	972	1.13	1.12	
	SOLD	118	1.14	1.17	
400.00	UNSOLD	181	1.44	1.47	
	SOLD	19	1.53	1.64	

When stratified by economic area, we noted no consistent pattern where sold and unsold properties were valued differently.

We next examined sold and unsold residential properties using the second test for neighborhoods with at least 10 sales:

#### Report

#### **DIFF**

NBHD	sold	N	Median	Mean
10010	UNSOLD	236	.96	.98
	SOLD	18	.96	1.02
10020	UNSOLD	65	1.04	1.04
	SOLD	14	1.04	1.06
		79	1.04	1.05
20020	UNSOLD	68	1.00	1.02
	SOLD	11	1.00	.98
		79	1.00	1.02
20040	UNSOLD	236	1.09	1.09



	SOLD	27	1.09	1.10
20050	UNSOLD	304	1.11	1.11
	SOLD	42	1.11	1.17
30030	UNSOLD	185	1.15	1.15
	SOLD	24	1.15	1.17
30040	UNSOLD	245	1.07	1.07
	SOLD	41	1.07	1.15
30050	UNSOLD	432	1.13	1.13
	SOLD	46	1.14	1.19

The above results indicate that sold and unsold residential properties were valued in a consistent manner for neighborhoods with at least 10 sales.

Finally, we compared sold and unsold residential properties by subdivisions with at least 10 sales, as follows:

Report
DIFF

SUBDIVNO	sold	N	Median	Mean
10	UNSOLD	82	1.11	1.11
	SOLD	13	1.12	1.20
3003	UNSOLD	91	1.07	1.09
	SOLD	11	1.08	1.16
3004	UNSOLD	93	1.09	1.10
	SOLD	15	1.07	1.13

Again, the median change in value for sold and unsold residential properties was similar for the three residential subdivisions with at least 10 sales.

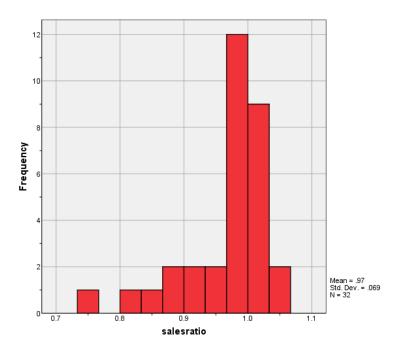
#### IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

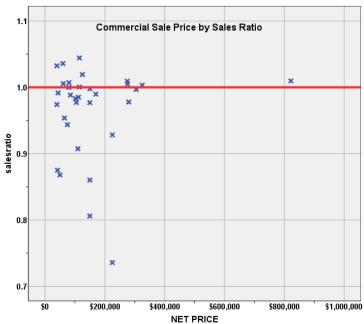
There were 32 qualified commercial/industrial sales for the 60-month period prior to June 30, 2018. The sales ratio analysis was analyzed as follows:

Median	0.989
Price Related Differential	0.995
Coefficient of Dispersion	4.40

The above table indicates that the Yuma County commercial/industrial sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:







#### **Commercial Market Trend Analysis**

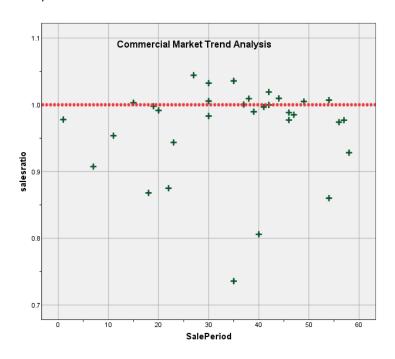
The assessor did not apply any market trend adjustment to the commercial dataset. The 32 commercial sales were analyzed, examining the sale ratios across the 60-month sale period with the following results:



#### Coefficients<sup>a</sup>

		Unstandardized	Coefficients	Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	.956	.031		30.426	.000
	SalePeriod	.000	.001	.058	.319	.752

a. Dependent Variable: salesratio



The market trend results indicated no statistically significant trend. We therefore concluded that the assessor has adequately addressed market trending in the commercial/industrial valuation in Yuma County.

#### **Sold/Unsold Analysis**

We compared the median change in the actual value per square foot for sold and unsold commercial properties between taxable years 2018 and 2019 to determine if the assessor was valuing each group consistently. While this is a challenge to prove in this county, given the small number of sales and the overall small number and diversity of commercial/industrial properties in general, the following results indicate that both groups were valued in a consistent manner:

Report
DIFF

טורר			
sold	N	Median	Mean
UNSOLD	489	1.04	1.28
SOLD	32	1.03	1.04



#### **Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of DIFF is the sam across categories of sold.	Independent- Samples Mann- Whitney U Test	.541	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

#### **V. CONCLUSIONS**

Based on this statistical analysis, there were no significant compliance issues concluded for Yuma County as of the date of this report.



#### **STATISTICAL ABSTRACT**

#### **Residential**

#### Ratio Statistics for CURRTOT / TASP

	95% Confidence Interval for Mean			95% Confidence Interva		95% Confidence Interval for Weighted Mean Weighted Mean					Coefficient of Variation	
Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
1.010	.986	1.034	.994	.974	1.007	95.5%	.990	.970	1.009	1.021	.127	19.9%

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

#### Commercial/Industrial

#### Ratio Statistics for CURRTOT / NET PRICE

	95% Confiden Me	ce Interval for an		95% Cor	ifidence Interval fo	r Median		95% Confidence Interval for Weighted Mean				Coefficient of Variation
Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
.965	.940	.990	.989	.974	1.003	98.0%	.970	.939	1.001	.995	.044	7.2%

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

#### **Vacant Land**

Not applicable



#### Residential Median Ratio Stratification

#### **Sale Price**

#### **Case Processing Summary**

		Count	Percent
SPRec	LT \$25K	3	1.1%
	\$25K to \$50K	19	7.0%
	\$50K to \$100K	72	26.5%
	\$100K to \$150K	70	25.7%
	\$150K to \$200K	50	18.4%
	\$200K to \$300K	45	16.5%
	\$300K to \$500K	13	4.8%
Overall		272	100.0%
Excluded		0	
Total		272	

#### **Ratio Statistics for CURRTOT / TASP**

				Coefficient of
		Price Related	Coefficient of	Variation
Group	Median	Differential	Dispersion	Median Centered
LT \$25K	1.075	1.251	.508	102.5%
\$25K to \$50K	1.042	.999	.148	18.7%
\$50K to \$100K	1.013	1.005	.135	19.0%
\$100K to \$150K	.996	.998	.118	18.0%
\$150K to \$200K	.971	1.001	.120	19.2%
\$200K to \$300K	.967	1.000	.106	13.2%
\$300K to \$500K	1.000	.998	.048	7.5%
Overall	.994	1.021	.127	20.3%

#### **Subclass**

		Count	Percent
ABSTRIMP	.00	2	0.7%
	1212.00	267	98.2%
	1339.88	1	0.4%
	1712.00	1	0.4%
	4278.00	1	0.4%
Overall		272	100.0%
Excluded		0	
Total		272	



#### **Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.017	1.074	.659	93.2%
1212.00	.993	1.021	.121	18.6%
1339.88	1.171	1.000	.000	
1712.00	1.008	1.000	.000	
4278.00	1.005	1.000	.000	
Overall	.994	1.021	.127	20.3%

# Age Case Processing Summary

		Count	Percent
AgeRec	0	2	0.7%
	Over 100	60	22.1%
	75 to 100	55	20.2%
	50 to 75	56	20.6%
	25 to 50	64	23.5%
	5 to 25	34	12.5%
	5 or Newer	1	0.4%
Overall		272	100.0%
Excluded		0	
Total		272	

#### **Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.017	1.074	.659	93.2%
Over 100	1.001	1.022	.134	17.0%
75 to 100	.993	1.038	.132	27.0%
50 to 75	.990	1.013	.092	11.6%
25 to 50	.996	1.012	.127	16.3%
5 to 25	.986	1.022	.108	18.6%
5 or Newer	1.117	1.000	.000	
Overall	.994	1.021	.127	20.3%

# Improved Area Case Processing Summary

		Count	Percent
ImpSFRec	0	2	0.7%
	LE 500 sf	1	0.4%
	500 to 1,000 sf	12	4.4%
	1,000 to 1,500 sf	74	27.2%
	1,500 to 2,000 sf	77	28.3%
	2,000 to 3,000 sf	55	20.2%
	3,000 sf or Higher	51	18.8%
Overall		272	100.0%
Excluded		0	
Total		272	



#### **Ratio Statistics for CURRTOT / TASP**

				Coefficient of
		Price Related	Coefficient of	Variation
Group	Median	Differential	Dispersion	Median Centered
0	.017	1.074	.659	93.2%
LE 500 sf	.974	1.000	.000	
500 to 1,000 sf	.884	1.008	.132	20.0%
1,000 to 1,500 sf	1.005	1.034	.128	18.8%
1,500 to 2,000 sf	.992	1.028	.130	23.3%
2,000 to 3,000 sf	.997	1.015	.113	15.1%
3,000 sf or Higher	1.002	1.004	.093	12.6%
Overall	.994	1.021	.127	20.3%

#### Quality

#### **Case Processing Summary**

		Count	Percent
QUALITY	•	2	0.7%
	Average	253	93.0%
	Fair	11	4.0%
	Low	6	2.2%
Overall		272	100.0%
Excluded		0	
Total		272	

#### **Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.017	1.074	.659	93.2%
Average	.997	1.014	.112	15.4%
Fair	.901	1.055	.154	19.2%
Low	1.034	1.462	.378	71.1%
Overall	.994	1.021	.127	20.3%

#### Condition

		Count	Percent
CONDITION		2	0.7%
	Average	257	94.5%
	Badly Worn	4	1.5%
	Fair	9	3.3%
Overall		272	100.0%
Excluded		0	
Total		272	



#### **Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.017	1.074	.659	93.2%
Average	.996	1.015	.113	15.4%
Badly Worn	1.139	1.202	.388	76.1%
Fair	.969	1.070	.166	20.6%
Overall	.994	1.021	.127	20.3%

#### **Commercial Median Ratio Stratification**

#### **Sale Price**

#### **Case Processing Summary**

		Count	Percent
SPRec	\$25K to \$50K	5	15.6%
	\$50K to \$100K	7	21.9%
	\$100K to \$150K	11	34.4%
	\$150K to \$200K	1	3.1%
	\$200K to \$300K	5	15.6%
	\$300K to \$500K	2	6.3%
	\$750K to \$1,000K	1	3.1%
Overall		32	100.0%
Excluded		0	
Total		32	

#### Ratio Statistics for CURRTOT / NET PRICE

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
\$25K to \$50K	.974	1.004	.058	8.1%
\$50K to \$100K	1.000	1.001	.023	3.4%
\$100K to \$150K	.983	1.005	.048	7.7%
\$150K to \$200K	.990	1.000	.000	
\$200K to \$300K	.978	.991	.072	12.8%
\$300K to \$500K	1.000	1.000	.003	0.5%
\$750K to \$1,000K	1.010	1.000	.000	
Overall	.989	.995	.044	7.4%

#### Subclass

		Count	Percent
ABSTRIMP	1880.67	1	3.1%
	2212.00	7	21.9%
	2220.00	11	34.4%
	2225.00	1	3.1%
	2230.00	6	18.8%
	2235.00	6	18.8%
Overall		32	100.0%
Excluded		0	
Total		32	



#### **Ratio Statistics for CURRTOT / NET PRICE**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1880.67	.998	1.000	.000	
2212.00	.977	.979	.034	5.5%
2220.00	1.005	1.001	.031	5.1%
2225.00	.954	1.000	.000	
2230.00	.991	1.017	.069	12.4%
2235.00	.986	1.001	.058	9.9%
Overall	.989	.995	.044	7.4%

#### Age

#### **Case Processing Summary**

		Count	Percent
AgeRec	Over 100	8	25.0%
	75 to 100	3	9.4%
	50 to 75	6	18.8%
	25 to 50	10	31.3%
	5 to 25	5	15.6%
Overall		32	100.0%
Excluded		0	
Total		32	

#### Ratio Statistics for CURRTOT / NET PRICE

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	.994	.997	.035	5.4%
75 to 100	.977	.996	.024	4.9%
50 to 75	.995	1.003	.026	4.4%
25 to 50	.953	.993	.083	10.9%
5 to 25	1.003	.994	.011	1.6%
Overall	.989	.995	.044	7.4%

#### **Improved Area**

		Count	Percent
ImpSFRec	500 to 1,000 sf	1	3.1%
	1,000 to 1,500 sf	3	9.4%
	1,500 to 2,000 sf	5	15.6%
	2,000 to 3,000 sf	11	34.4%
	3,000 sf or Higher	12	37.5%
Overall		32	100.0%
Excluded		0	
Total		32	



#### **Ratio Statistics for CURRTOT / NET PRICE**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
500 to 1,000 sf	.875	1.000	.000	
1,000 to 1,500 sf	1.006	1.029	.049	10.2%
1,500 to 2,000 sf	.977	.996	.038	6.4%
2,000 to 3,000 sf	.983	1.004	.050	9.9%
3,000 sf or Higher	.999	.998	.026	4.0%
Overall	.989	.995	.044	7.4%

#### Quality

#### **Case Processing Summary**

		Count	Percent
QUALITY	Average	31	96.9%
	Fair	1	3.1%
Overall	-	32	100.0%
Excluded		0	
Total		32	

#### Ratio Statistics for CURRTOT / NET PRICE

				Coefficient of
		Price Related	Coefficient of	Variation
Group	Median	Differential	Dispersion	Median Centered
Average	.988	.995	.046	7.5%
Fair	.998	1.000	.000	
Overall	.989	.995	.044	7.4%

#### Condition

#### **Case Processing Summary**

		Count	Percent
CONDITION	Average	30	93.8%
	Fair	2	6.3%
Overall	-	32	100.0%
Excluded		0	
Total		32	

#### **Ratio Statistics for CURRTOT / NET PRICE**

		Price Related	Coefficient of	Coefficient of Variation
Group	Median	Differential	Dispersion	Median Centered
Average	.989	.995	.047	7.7%
Fair	.986	.993	.012	1.7%
Overall	.989	.995	.044	7.4%



#### **Economic Area**

#### **Case Processing Summary**

		Count	Percent
ECONAREA	200	12	37.5%
	300	20	62.5%
Overall		32	100.0%
Excluded		0	
Total		32	

# Ratio Statistics for CURRTOT / NET PRICE

Group	Median	Price Related Differential	Coefficient of Dispersion
200	.993	.997	.040
300	.984	.994	.047
Overall	.989	.995	.044

#### **Vacant Land Median Ratio Stratification**

Not applicable