2017
PITKIN COUNTY
PROPERTY ASSESSMENT
STUDY

WILDROSE
APPRAISAL, INCORPORATED
Audit Division

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APPRAISAL, INCORPORATED
Audit Division

September 15, 2017

Mr. Mike Mauer
Director of Research
Colorado Legislative Council
Room 029, State Capitol Building
Denver, Colorado 80203

RE: Final Report for the 2017 Colorado Property Assessment Study

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2017 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
Wildrose Appraisal Inc. – Audit Division

TABLE OF CONTENTS

INTRODUCTION

Colorado

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 two-part 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 and subdivision discounting procedures. Valuation methodology for vacant land, improved residential properties and commercial 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.

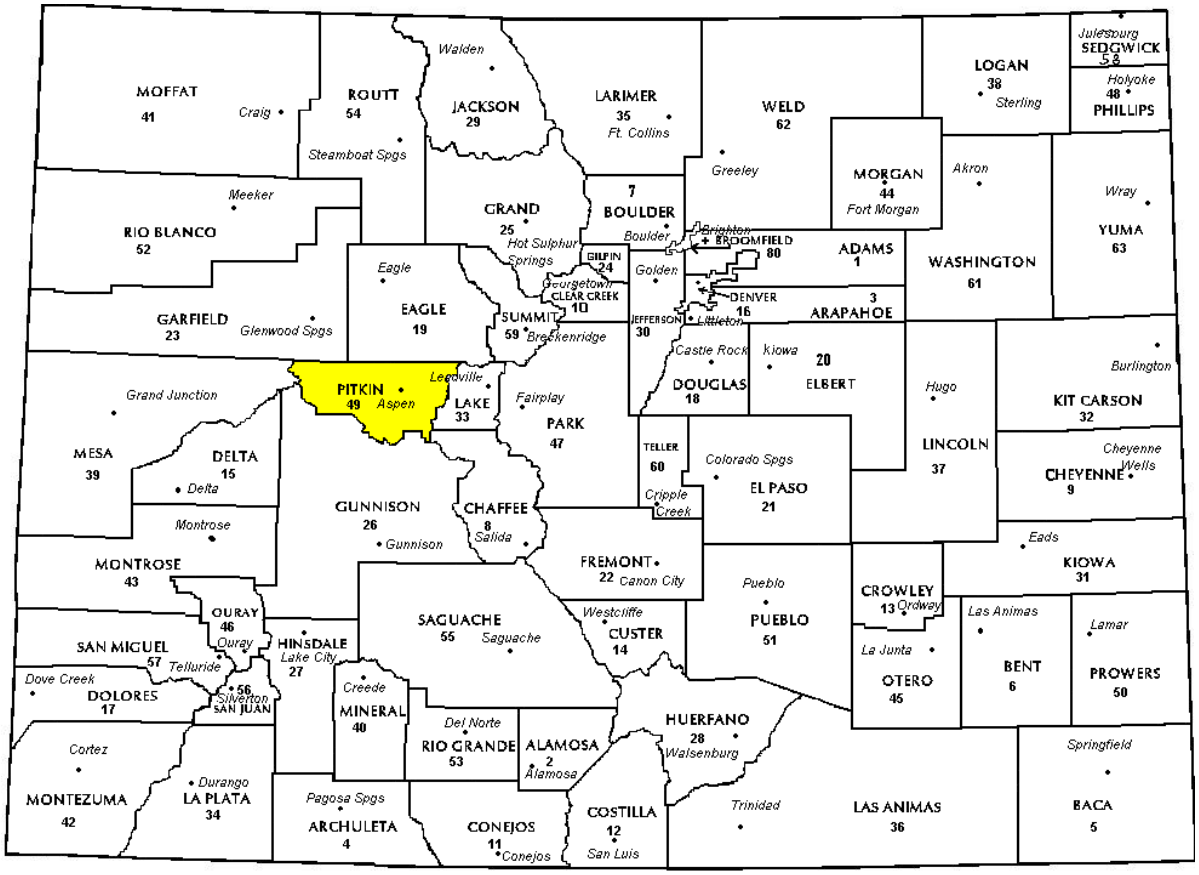
Statistical analysis is performed on vacant land, residential properties, commercial industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax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

Wildrose Audit has completed the Property Assessment Study for 2017 and is pleased to report its findings for Pitkin County in the following report.

REGIONAL / HISTORICAL SKETCH OF PITKIN COUNTY

Regional Information

Pitkin County is located in the Western Slope region of Colorado. The Western Slope of Colorado refers to the region west of the Rocky Mountains. It includes Archuleta, Delta, Dolores, Eagle, Garfield, Grand, Gunnison, Hinsdale, Jackson, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel, and Summit counties.



Historical Information

Pitkin County had an estimated population of approximately 17,752 people with 18.3 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a 3.5 percent change from April 1, 2010 to July 1, 2016.

Pitkin County was created in 1881 from a part of Gunnison County. The county was named for Governor Frederick W. Pitkin.

The county seat is Aspen, named by town site surveyor, B. Clark Wheeler, for the quaking aspen trees growing in the area. Originally named Ute City, the community was renamed Aspen in 1880 and in its peak production years of 1891 and 1892 surpassed Leadville as the United States' most productive silver-mining district.

Aspen's development as a ski resort first flickered in the 1930s when investors conceived of a ski area, but the project was interrupted by World War II. Friedl Pfeifer, a member of the 10th Mountain Division who had trained in the area, returned to the area and linked up with industrialist Walter Paepcke and his wife Elizabeth. The Aspen Skiing Corporation was founded in 1946 and the town quickly became a well-known resort.

The city sits along the southeast (upper) end of the Roaring Fork Valley, along the Roaring Fork River, a tributary of the Colorado River. It is surrounded by mountain and wilderness areas on three sides: Red Mountain to the north, Smuggler Mountain to the east, and Aspen Mountain to the south.

(www.Wikipedia.org, William Bright, Colorado Place Names, 3rd Edition, Johnson Books, 2004, p. 141 and 11)

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, 2015 through June 20, 2016. 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. For the largest 11 counties, the residential ratio statistics were broken down by economic area as well.

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 Pitkin County are:

Pitkin County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Commercial/Industrial	40	1.000	0.985	8.7	Compliant
Condominium	465	0.998	1.034	8.4	Compliant
Single Family	456	0.999	1.028	11.4	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 Pitkin County is in compliance with SBOE, DPT, and Colorado State Statute valuation guidelines.

Recommendations

None

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 Pitkin County has complied with the statutory requirements to analyze the effects of time on value in their county. Pitkin County has also satisfactorily applied the results of their time trending analysis to arrive at the time adjusted sales price (TASP).

Recommendations

None

SOLD/UNSOLD ANALYSIS

Methodology

Pitkin 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. The 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. The model determines if the sold/unsold variable is statistically and empirically significant. If all 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 non-parametric 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	Compliant
Single Family	Compliant
Vacant Land	N/A

Conclusions

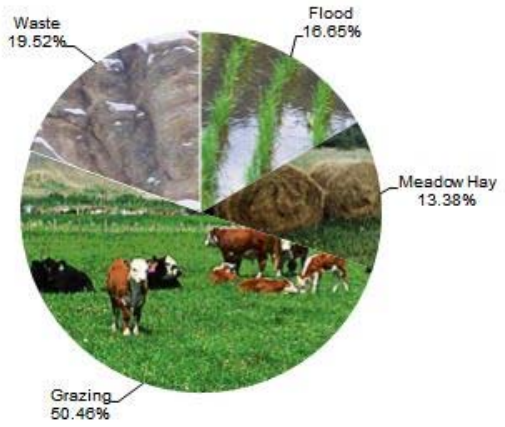
After applying the above described methodologies, it is concluded that Pitkin County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

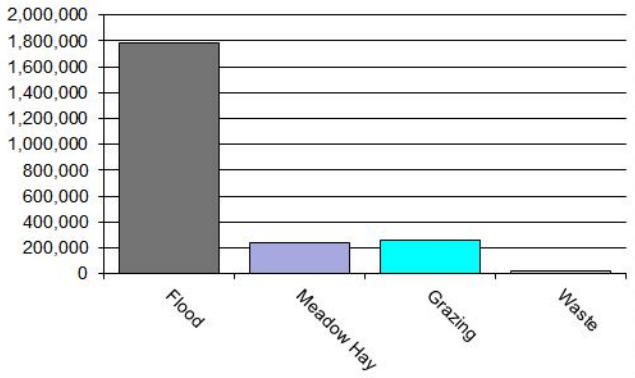
None

AGRICULTURAL LAND STUDY

Acres By Subclass



Value By Subclass



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: Aerial 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 any locally developed 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:

Pitkin County Agricultural Land Ratio Grid						
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4117	Flood	7,262	245.35	1,781,742	1,676,516	1.06
4137	Meadow Hay	5,836	41.50	242,214	242,214	1.00
4147	Grazing	22,013	11.94	262,909	262,909	1.00
4167	Waste	8,517	2.22	18,923	18,923	1.00
Total/Avg		**43,628**	**52.85**	**2,305,789**	**2,200,562**	**1.05**

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

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

Recommendations

None

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

Pitkin 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

Pitkin 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.:

- Field Inspections
- In-Person Interviews with Owners/Tenants
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Pitkin 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

None

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 2017 for Pitkin County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 32 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 $500, 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 indicating that sales data are inadequate, fail to reflect typical properties, or have been disqualified for insufficient cause. In addition, the contractor has reviewed the disqualified sales by assigned code. If there appears to be any inconsistency in the coding, the contractor has conducted further analysis to 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.

Pitkin County did not qualify for in-depth subclass analysis.

Conclusions

Pitkin 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

None

ECONOMIC AREA REVIEW AND EVALUATION

Methodology

Pitkin County has submitted a written narrative describing the economic areas that make up the county's market areas. Pitkin 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 Pitkin 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

None

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

VACANT LAND

Pitkin County is exempt from the Vacant Land Subdivision Discount Study.

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 Chapter 39-1-103 (17)(a) (II) C.R.S. 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 granted under lease, permit, license, concession, contract, or other agreement.

Pitkin County has been reviewed for their procedures and adherence to guidelines when assessing and valuing agricultural, commercial and ski area 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

Pitkin 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

None

PERSONAL PROPERTY AUDIT

Pitkin 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.

Pitkin 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
- Internet

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.

Pitkin County submitted their personal property written audit plan and was current for the 2017 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:

- Businesses in a selected area
- Accounts with obvious discrepancies
- New businesses filing for the first time
- Accounts with greater than 10% change
- Incomplete or inconsistent declarations
- Accounts with omitted property

- Same business type or use
- Businesses with no deletions or additions for 2 or more years
- Non-filing Accounts - Best Information Available
- Accounts close to the $7,400 actual value exemption status

Conclusions

Pitkin 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

None

WILDROSE AUDITOR STAFF

Harry J. Fuller, *Audit Project Manager*

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Steve Kane, *Audit Statistician*

Carl W. Ross, *Agricultural/Natural Resource Analyst*

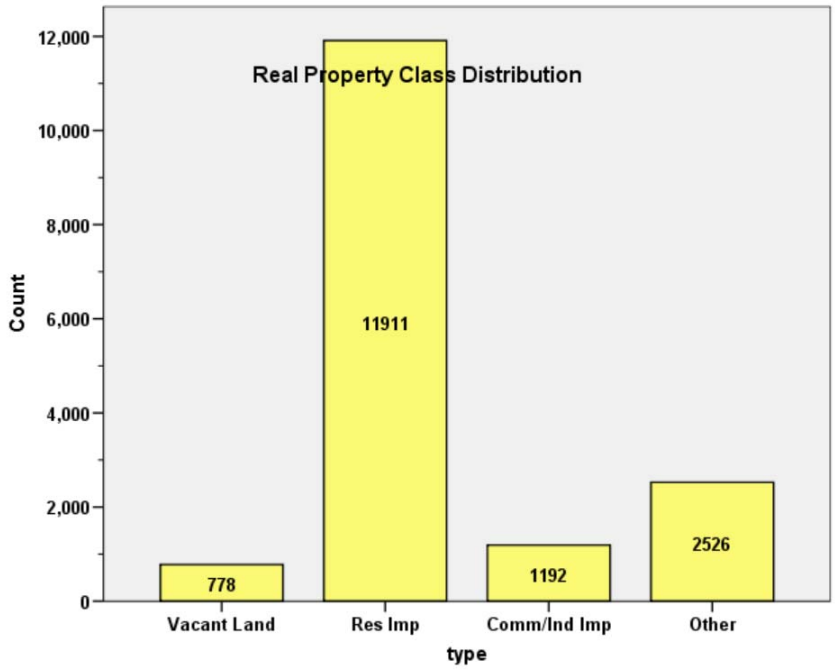
J. Andrew Rodriguez, *Field Analyst*

APPENDICES

STATISTICAL COMPLIANCE REPORT FOR PITKIN COUNTY 2017

I. OVERVIEW

Pitkin County is a mountain resort located in western Colorado. The county has a total of 16,316 real property parcels, according to data submitted by the county assessor's office in 2017. 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 and 1212) accounted for 56.4% of all vacant land parcels. Because there are fewer than 1,200 vacant land parcels, this county is exempt from statistical compliance analysis.

For residential improved properties, single family properties accounted for 44.2% of all residential properties. Residential condominiums accounted for 49.9% of all residential improved properties. Based on the guidelines for the state audit statistical compliance analysis, we will analyze residential condominiums separately.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 7.3% of all such properties in this county.

II. DATA FILES

The following sales analyses were based on the requirements of the 2017 Colorado Property Assessment Study. Information was provided by the Pitkin Assessor's Office in May 2017. The data included all 5 property record files as specified by the Auditor.

III. RESIDENTIAL SALES RESULTS

There were 921 qualified residential sales for the 24 month period prior to June 30, 2016. The sales ratio analysis was analyzed as follows:

Residential Non-Condominiums (456 Sales)

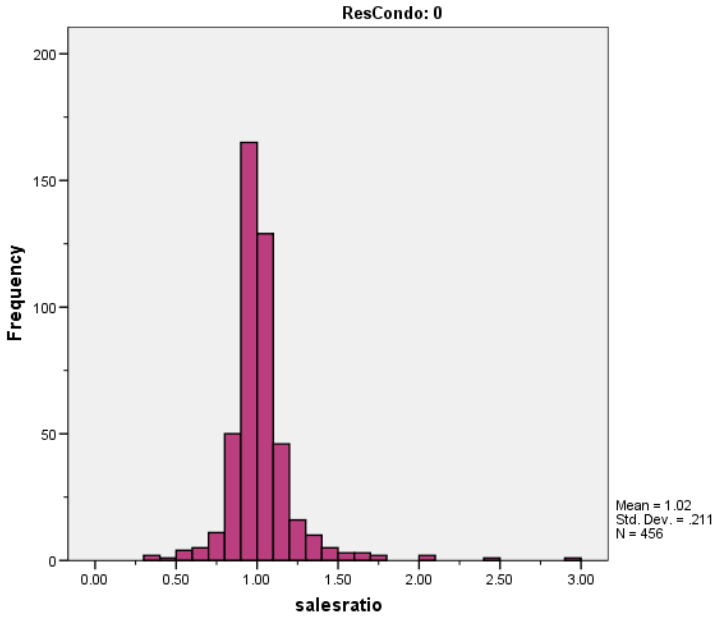
Median	**0.999**
Price Related Differential	**1.028**
Coefficient of Dispersion	**11.4**

Residential Condominiums (465 Sales)

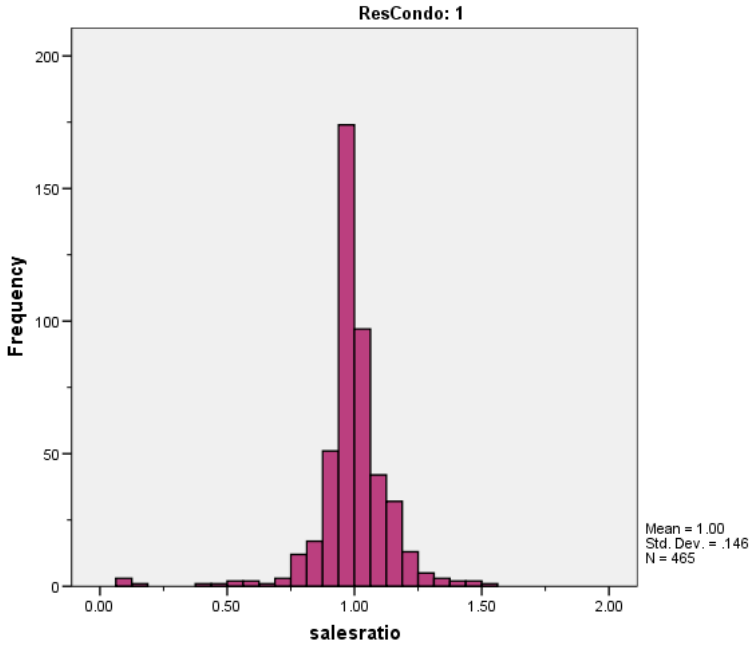
Median	**0.998**
Price Related Differential	**1.034**
Coefficient of Dispersion	**8.4**

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 these properties:

Residential Non-Condominiums



Residential Condominiums



The above graphs indicate that the distribution of the sale ratios was within state mandated limits. No sales were trimmed.

Residential Market Trend Analysis

We next analyzed the residential dataset using the 24-month sale period for any residual market trending. We stratified the sales by residential non-condominiums and residential condominiums (0 = residential non-condominiums, 1 = residential condominiums), with the following results:

Coefficients[a]

ResCondo	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
0	1	(Constant)	1.021	.020		50.365	.000
		SalePeriod	.000	.001	.006	.134	.894
1	1	(Constant)	.961	.014		69.091	.000
		SalePeriod	.003	.001	.132	2.874	.004

a. Dependent Variable: salesratio

Although the above results indicate that residential condominiums had a statistically significant trend, the magnitude of this trend was marginal at best.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median actual value per square foot for 2017 between each group, stratified by residential non-condominiums and condominiums, as follows:

Type	Group	N	Median SPSF	Mean SPSF
Non-Condo	**Unsold**	5,398	$800	$1,033
	Sold	448	$951	$1,139
Condos	**Unsold**	5,354	$719	$826
	Sold	449	$934	$1,042

Given the difference between sold and unsold residential non-condominium and condominium sold and unsold properties, we next examined the change in actual value from taxable years 2016 to 2017 for each group as follows:

Type	Group	N	Median Pct Chg	Mean Pct Chg
Non-Condo	**Unsold**	5,505	1.11	1.15
	Sold	456	1.17	1.21
Condos	**Unsold**	5,481	1.08	1.11
	Sold	465	1.14	1.18

Given the still significant difference between sold and unsold condominiums in the above overall comparison, we examined the change in value by residential neighborhood and found overall consistency. The following table indicates the mean and median change in value for sold/unsold properties for neighborhoods with at least 6 sales:

Report

DIFF

NBHD	sold	N	Median	Mean
101001.00	UNSOLD	303	1.16	1.19
	SOLD	23	1.22	1.27
102020.00	UNSOLD	92	1.18	1.18
	SOLD	13	1.28	1.32
102050.00	UNSOLD	72	1.32	1.31
	SOLD	8	1.28	1.38
102052.00	UNSOLD	25	1.25	1.27
	SOLD	6	1.48	1.51
103015.00	UNSOLD	61	1.08	1.14
	SOLD	6	1.05	1.06
103102.00	UNSOLD	53	1.07	1.16
	SOLD	6	1.07	1.09
104011.00	UNSOLD	77	1.33	1.34
	SOLD	10	1.41	1.46
104051.00	UNSOLD	15	1.11	1.16
	SOLD	7	1.10	1.12
105001.00	UNSOLD	87	1.02	1.03
	SOLD	6	1.08	1.08
106011.00	UNSOLD	116	1.08	1.09
	SOLD	10	1.08	1.26
107021.00	UNSOLD	120	1.24	1.25
	SOLD	13	1.30	1.29
107031.00	UNSOLD	170	1.09	1.12
	SOLD	20	1.10	1.11
107041.00	UNSOLD	189	1.16	1.19
	SOLD	13	1.11	1.18
107061.00	UNSOLD	84	.98	1.06
	SOLD	6	.98	1.02
108056.00	UNSOLD	38	1.19	1.19
	SOLD	8	1.20	1.24
108061.00	UNSOLD	76	1.09	1.17
	SOLD	6	1.10	1.21
109031.00	UNSOLD	64	1.01	1.06
	SOLD	8	1.01	1.02
111016.00	UNSOLD	32	1.02	1.04
	SOLD	7	1.03	1.05
111027.00	UNSOLD	34	.97	1.00
	SOLD	7	.94	.97
111030.00	UNSOLD	57	1.03	1.04
	SOLD	8	1.10	1.09
510101.10	UNSOLD	63	1.06	1.06
	SOLD	9	1.10	1.20
511202.01	UNSOLD	118	1.11	1.15
	SOLD	12	1.10	1.22
511204.01	UNSOLD	55	1.14	1.15
	SOLD	9	1.23	1.20

Based on the second test results, we concluded that the assessor valued sold and unsold residential properties consistently.

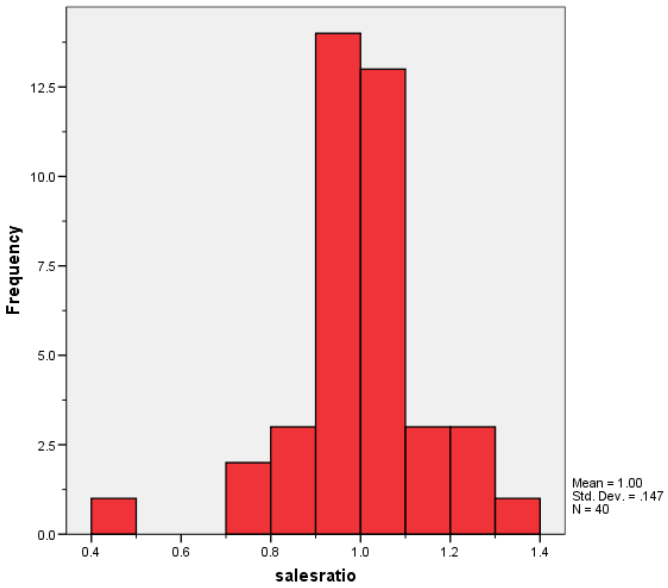
IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

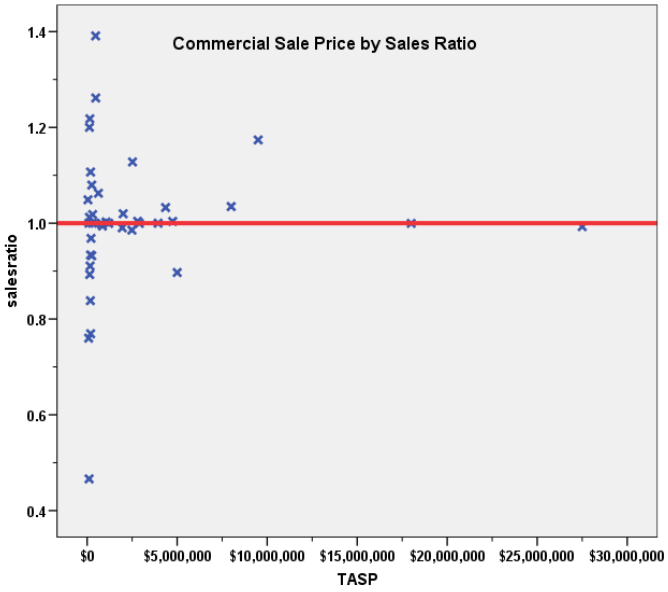
There were 41 qualified commercial and industrial sales in the 24-month sale period ending June 30, 2016. One sale was trimmed for its extreme sale ratio, resulting in 40 sales used for this analysis.

The sales ratio analysis was analyzed as follows:

Median	**1.000**
Price Related Differential	**0.985**
Coefficient of Dispersion	**8.7**

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





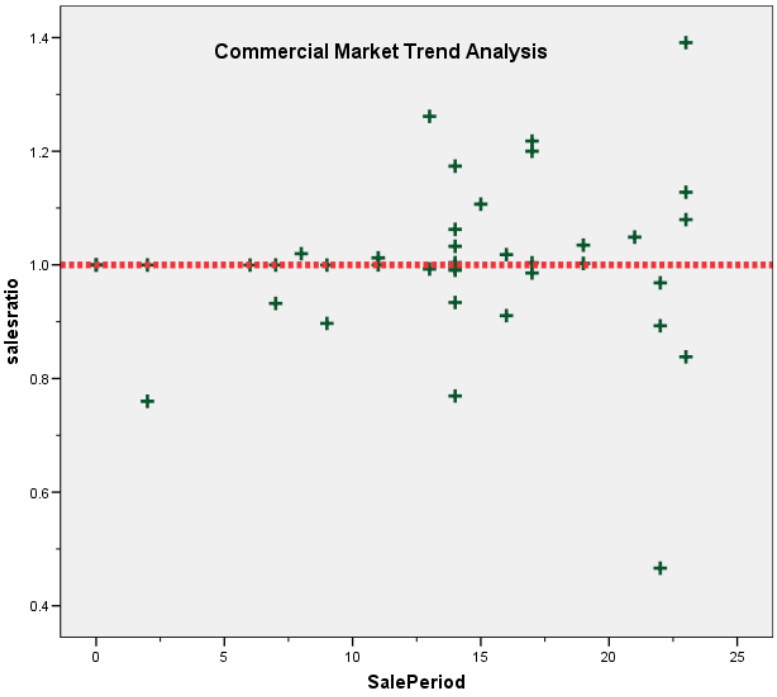
Commercial Market Trend Analysis

The 40 commercial sales were analyzed, examining the sale ratios across the 24 month sale period with the following results:

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.971	.057		17.178	.000
	SalePeriod	.002	.004	.102	.631	.532

a. Dependent Variable: salesratio



The market trend results indicated no statistically significant trend. We concluded that the assessor has adequately addressed market trending for commercial and industrial sales.

Sold/Unsold Analysis

We compared the 2017 actual value per square foot between sold and unsold commercial properties to determine if the assessor was valuing each group consistently, as follows:

Group	N	Median Chg Val	Mean Chg Val
Unsold	807	$706	$933
Sold	32	$782	$997

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VALSF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.677	Retain the null hypothesis.

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

Based on the above results, there was no evidence that sold properties were valued consistently higher than unsold properties.

V. VACANT LAND SALE RESULTS

Based on the guidelines of the 2017 audit, vacant land properties were exempt from analysis.

VI. AGRICULTURAL IMPROVEMENTS ANALYSIS

The final statistical verification concerned the assigned actual values for agricultural residential improvements. We compared the actual value per square foot rate for this group and compared it to rates assigned to residential single family improvements in Pitkin County.

Report

IMPVALSF

ABSTRIMP	N	Median	Mean
1212.00	89	$150.92	$201.01
4277.00	31	$125.05	$208.61

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of IMPVALSF is the same across categories of ABSTRIMP.	Independent-Samples Mann-Whitney U Test	.354	Retain the null hypothesis.

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

VII. CONCLUSIONS

Based on this statistical analysis, there were no significant compliance issues concluded for Pitkin County as of the date of this report for residential, commercial/industrial and agricultural residential properties.

STATISTICAL ABSTRACT
Residential

Ratio Statistics for CURRTOT / TASP

ResCondo	Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion
		Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound		
0	1.024	1.004	1.043	.999	.995	1.003	95.6%	.996	.975	1.016	1.028	.114
1	.996	.982	1.009	.998	.996	.999	95.9%	.963	.935	.992	1.034	.084

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 distribution for the ratios

Commercial

Ratio Statistics for CURRTOT / TASP

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
1.003	.956	1.050	1.000	.994	1.018	96.2%	1.018	.983	1.054	.985	.087	14.7%

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.

Residential Median Ratio Stratification

Sale Price (0 = Non-Condominiums, 1 = Condominiums)

Case Processing Summary

ResCondo			Count	Percent
0	SPRec	$100K to $150K	2	0.4%
		$150K to $200K	8	1.8%
		$200K to $300K	8	1.8%
		$300K to $500K	49	10.7%
		$500K to $750K	48	10.5%
		$750K to $1,000K	19	4.2%
		Over $1,000K	322	70.6%
	Overall		456	100.0%
	Excluded		0	
	Total		456	
1	SPRec	$100K to $150K	6	1.3%
		$150K to $200K	8	1.7%
		$200K to $300K	26	5.6%
		$300K to $500K	72	15.5%
		$500K to $750K	86	18.5%
		$750K to $1,000K	45	9.7%
		Over $1,000K	215	46.2%
		$50K to $100K	7	1.5%
	Overall		465	100.0%
	Excluded		0	
	Total		465	

Ratio Statistics for CURRTOT / TASP

ResCondo	Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	$100K to $150K	1.863	.995	.337	47.7%
	$150K to $200K	1.065	1.007	.171	37.0%
	$200K to $300K	.996	.996	.117	16.4%
	$300K to $500K	1.001	.998	.086	11.6%
	$500K to $750K	1.006	.995	.127	20.6%
	$750K to $1,000K	1.007	1.002	.086	16.4%
	Over $1,000K	.998	1.020	.111	20.7%
	Overall	.999	1.028	.114	21.3%
1	$100K to $150K	1.066	1.013	.115	19.6%
	$150K to $200K	.987	.997	.056	8.8%
	$200K to $300K	1.006	1.002	.061	8.2%
	$300K to $500K	1.000	1.000	.068	9.5%
	$500K to $750K	.997	.998	.088	12.6%
	$750K to $1,000K	1.000	1.006	.131	20.7%
	Over $1,000K	.996	1.022	.081	16.0%
	$50K to $100K	1.004	1.004	.047	8.2%
	Overall	.998	1.034	.084	14.6%

Subclass (0 = Non-Condominiums, 1 = Condominiums)

Case Processing Summary

ResCondo			Count	Percent
0	ABSTRIMP	.00	2	0.4%
		1212.00	404	88.6%
		1215.00	5	1.1%
		1225.00	1	0.2%
		1231.00	44	9.6%
	Overall		456	100.0%
	Excluded		0	
	Total		456	
1	ABSTRIMP	1230.00	465	100.0%
	Overall		465	100.0%
	Excluded		0	
	Total		465	

Ratio Statistics for CURRTOT / TASP

ResCondo	Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.00	.920	.997	.052	7.4%
	1212.00	1.000	1.031	.117	21.7%
	1215.00	.995	1.107	.177	33.1%
	1225.00	.965	1.000	.000	.
	1231.00	.996	.992	.084	16.5%
	Overall	.999	1.028	.114	21.3%
1	1230.00	.998	1.034	.084	14.6%
	Overall	.998	1.034	.084	14.6%

Improvement Age (0 = Non-Condominiums, 1 = Condominiums)

AgeRec

ResCondo			Frequency	Percent	Valid Percent	Cumulative Percent
0	Valid	0	9	2.0	2.0	2.0
		Over 100	13	2.9	2.9	4.8
		75 to 100	3	.7	.7	5.5
		50 to 75	27	5.9	5.9	11.4
		25 to 50	210	46.1	46.1	57.5
		5 to 25	178	39.0	39.0	96.5
		5 or Newer	16	3.5	3.5	100.0
		Total	456	100.0	100.0	
1	Valid	Over 100	9	1.9	1.9	1.9
		50 to 75	40	8.6	8.6	10.5
		25 to 50	346	74.4	74.4	84.9
		5 to 25	64	13.8	13.8	98.7
		5 or Newer	6	1.3	1.3	100.0
		Total	465	100.0	100.0	

Case Processing Summary

ResCondo			Count	Percent
0	AgeRec	0	9	2.0%
		Over 100	13	2.9%
		75 to 100	3	0.7%
		50 to 75	27	5.9%
		25 to 50	210	46.1%
		5 to 25	178	39.0%
		5 or Newer	16	3.5%
	Overall		456	100.0%
	Excluded		0	
	Total		456	
1	AgeRec	Over 100	9	1.9%
		50 to 75	40	8.6%
		25 to 50	346	74.4%
		5 to 25	64	13.8%
		5 or Newer	6	1.3%
	Overall		465	100.0%
	Excluded		0	
	Total		465	

Improved Area (0 = Non-Condominiums, 1 = Condominiums)

Case Processing Summary

ResCondo			Count	Percent
0	ImpSFRec	0	2	0.4%
		LE 500 sf	7	1.5%
		500 to 1,000 sf	16	3.5%
		1,000 to 1,500 sf	38	8.3%
		1,500 to 2,000 sf	72	15.8%
		2,000 to 3,000 sf	101	22.1%
		3,000 sf or Higher	220	48.2%
	Overall		456	100.0%
	Excluded		0	
	Total		456	
1	ImpSFRec	LE 500 sf	73	15.7%
		500 to 1,000 sf	189	40.6%
		1,000 to 1,500 sf	117	25.2%
		1,500 to 2,000 sf	36	7.7%
		2,000 to 3,000 sf	30	6.5%
		3,000 sf or Higher	20	4.3%
	Overall		465	100.0%
	Excluded		0	
	Total		465	

Ratio Statistics for CURRTOT / TASP

ResCondo	Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	0	.920	.997	.052	7.4%
	LE 500 sf	.875	1.172	.422	80.7%
	500 to 1,000 sf	1.014	1.138	.158	30.2%
	1,000 to 1,500 sf	.957	1.112	.095	14.8%
	1,500 to 2,000 sf	.996	1.011	.080	11.9%
	2,000 to 3,000 sf	1.000	1.015	.112	18.8%
	3,000 sf or Higher	1.001	1.038	.115	22.3%
	Overall	.999	1.028	.114	21.3%
1	LE 500 sf	.996	1.112	.086	16.8%
	500 to 1,000 sf	.998	1.062	.094	16.1%
	1,000 to 1,500 sf	.996	1.008	.071	11.2%
	1,500 to 2,000 sf	.998	1.010	.100	16.3%
	2,000 to 3,000 sf	.997	1.009	.062	10.9%
	3,000 sf or Higher	.999	1.027	.065	12.2%
	Overall	.998	1.034	.084	14.6%

Improvement Quality (0 = Non-Condominiums, 1 = Condominiums)

Case Processing Summary

ResCondo			Count	Percent
0	QUALITY	1	2	0.4%
		2	19	4.2%
		3	123	27.5%
		4	94	21.0%
		5	93	20.8%
		6	65	14.5%
		7	9	2.0%
		23	3	0.7%
		24	9	2.0%
		25	24	5.4%
		26	7	1.6%
	Overall		448	100.0%
	Excluded		8	
	Total		456	
1	QUALITY	20	5	1.1%
		30	128	27.5%
		40	105	22.6%
		50	145	31.2%
		60	71	15.3%
		70	11	2.4%
	Overall		465	100.0%
	Excluded		0	
	Total		465	

Ratio Statistics for CURRTOT / TASP

ResCondo	Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	1	1.006	1.007	.012	1.7%
	2	1.016	1.020	.091	11.8%
	3	.992	1.069	.103	15.8%
	4	1.013	1.032	.132	27.9%
	5	.999	1.040	.115	20.4%
	6	1.000	1.024	.112	18.4%
	7	.978	1.006	.074	12.6%
	23	.881	1.005	.087	14.7%
	24	.997	.989	.044	6.9%
	25	.998	1.007	.075	16.4%
	26	.991	1.010	.144	26.5%
	Overall	.999	1.024	.111	20.2%
1	20	1.026	1.024	.046	7.2%
	30	.996	1.152	.092	18.5%
	40	.997	1.018	.073	11.5%
	50	.999	1.015	.085	13.2%
	60	.996	1.023	.079	13.0%
	70	1.000	1.050	.134	22.3%
	Overall	.998	1.034	.084	14.6%

Commercial Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	$25K to $50K	1	2.5%
	$50K to $100K	2	5.0%
	$100K to $150K	5	12.5%
	$150K to $200K	5	12.5%
	$200K to $300K	4	10.0%
	$300K to $500K	3	7.5%
	$500K to $750K	1	2.5%
	$750K to $1,000K	3	7.5%
	Over $1,000K	16	40.0%
Overall		40	100.0%
Excluded		0	
Total		40	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
$25K to $50K	1.049	1.000	.000	.
$50K to $100K	.880	.988	.136	19.3%
$100K to $150K	1.012	.977	.209	30.8%
$150K to $200K	.911	1.000	.095	13.9%
$200K to $300K	.984	.999	.045	6.5%
$300K to $500K	1.261	.978	.099	15.5%
$500K to $750K	1.063	1.000	.000	.
$750K to $1,000K	1.000	1.000	.002	0.4%
Over $1,000K	1.001	.999	.033	6.3%
Overall	1.000	.985	.087	14.7%

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	1548.00	1	2.5%
	1712.00	2	5.0%
	1716.00	2	5.0%
	1721.00	1	2.5%
	1726.00	2	5.0%
	1728.50	1	2.5%
	2212.00	3	7.5%
	2220.00	3	7.5%
	2240.00	1	2.5%
	2245.00	24	60.0%
Overall		40	100.0%
Excluded		0	
Total		40	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1548.00	1.261	1.000	.000	.
1712.00	1.060	1.056	.064	9.0%
1716.00	1.097	.956	.070	9.9%
1721.00	1.003	1.000	.000	.
1726.00	1.213	1.150	.147	20.8%
1728.50	1.000	1.000	.000	.
2212.00	1.004	1.007	.036	7.5%
2220.00	1.000	1.005	.006	1.3%
2240.00	1.000	1.000	.000	.
2245.00	.997	.966	.097	15.6%
Overall	1.000	.985	.087	14.7%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	0	6	15.0%
	Over 100	7	17.5%
	50 to 75	3	7.5%
	25 to 50	16	40.0%
	5 to 25	6	15.0%
	5 or Newer	2	5.0%
Overall		40	100.0%
Excluded		0	
Total		40	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.874	1.004	.198	28.1%
Over 100	1.000	.999	.003	0.5%
50 to 75	1.128	.982	.082	14.8%
25 to 50	1.019	1.033	.071	12.0%
5 to 25	1.006	.953	.101	16.1%
5 or Newer	.993	1.002	.007	1.0%
Overall	1.000	.985	.087	14.7%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	14	35.0%
	500 to 1,000 sf	8	20.0%
	1,000 to 1,500 sf	3	7.5%
	1,500 to 2,000 sf	2	5.0%
	2,000 to 3,000 sf	3	7.5%
	3,000 sf or Higher	10	25.0%
Overall		40	100.0%
Excluded		0	
Total		40	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	.979	.966	.133	19.9%
500 to 1,000 sf	1.006	1.002	.054	7.2%
1,000 to 1,500 sf	1.000	1.000	.000	0.0%
1,500 to 2,000 sf	1.066	1.003	.058	8.2%
2,000 to 3,000 sf	.986	1.028	.036	6.5%
3,000 sf or Higher	1.026	1.061	.086	15.0%
Overall	1.000	.985	.087	14.7%

Improvement Quality

Case Processing Summary

		Count	Percent
QUALITY	3	14	41.2%
	4	19	55.9%
	5	1	2.9%
Overall		34	100.0%
Excluded		6	
Total		40	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
3	1.016	.988	.108	15.8%
4	1.000	1.015	.036	6.5%
5	1.000	1.000	.000	.
Overall	1.001	1.008	.066	11.4%