# 2015
# RIO GRANDE COUNTY PROPERTY ASSESSMENT STUDY

WILDROSE
APPRAISAL, INCORPORATED
Audit Division

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Audit Division

September 15, 2015

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

**RE: Final Report for the 2015 Colorado Property Assessment Study**

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2015 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

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# 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.

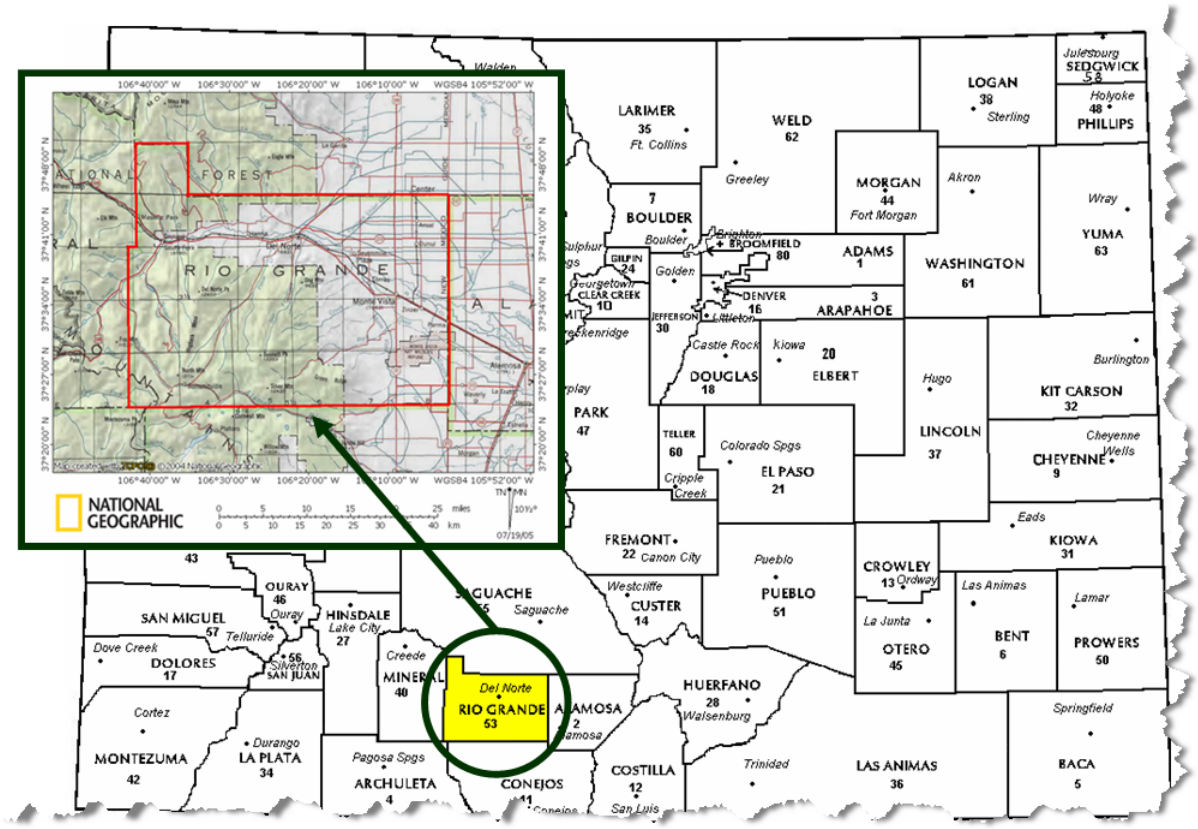
Statistical analysis is performed on vacant land, residential properties, commercial industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax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

Wildrose Audit has completed the Property Assessment Study for 2015 and is pleased to report its findings for Rio Grande County in the following report.

# REGIONAL/HISTORICAL SKETCH OF RIO GRANDE COUNTY

## Regional Information

Rio Grande County is located in the San Luis Valley region of Colorado. The San Luis Valley is a large, broad, alpine valley in the Rio Grande Basin of south-central Colorado. The valley is drained to the south by the Rio Grande River which rises in the San Juan Mountains to the west of the valley. The San Luis Valley includes Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache counties.



## Historical Information

Rio Grande County has a population of approximately 11,982 people with 13.14 people per square mile, according to the U.S. Census Bureau's 2010 census data. This represents a -3.47 percent change from the 2000 Census.

The gateway to the San Juan Mountains, Rio Grande County is one of the highlights of the San Luis Valley. The county covers 913 square miles ranging from around 7,000 feet on valley floor to numerous 13,000-foot peaks. The scenic landscape and close community make Rio Grande County a great place to vacation, work and live. There are three municipalities within the county, Monte Vista, Del Norte, and South Fork and all have been historically developed along the rail line that follows the Rio Grande River.

Monte Vista is the county's largest community situated on the valley floor and is the center of the agricultural aspect of the county. There are numerous festivals and events that take place in and around Monte Vista. The Monte Vista National Wildlife Refuge is a stop for migratory Sand Hill Cranes every year.

Del Norte is a quaint town with a focus on its historic past. It is the county seat, home to the Rio Grande County Museum, and maintains a historic façade on its main street. Home to many small shops and boutiques, it is a beautiful place to shop and also provides recreational activity with climbing, hiking, and fishing close by.

The newest town in Rio Grande County is South Fork. South Fork is surrounded by the Rio Grande National Forest and other public lands and has easy access to Wolf Creek Ski Area. Developed as a logging center, it has become a gem of the Valley with a booming housing market, world class 18 hole golf course, and the distinction of being the Gateway to the Silver Thread scenic byway.
*(www.riograndecounty.org)*

# RATIO ANALYSIS

## Methodology

All significant classes of properties were analyzed. Sales were collected for each property class over the appropriate sale period, which was typically defined as the 18-month period between January 1, 2013 and June 30, 2014. Counties with less than 30 sales typically extended the sale period back up to 5 years prior to June 30, 2014 in 6-month increments. If there were still fewer than 30 sales, supplemental appraisals were performed and treated as proxy sales. Residential sales for all counties using this method totaled at least 30 per county. For commercial sales, the total number analyzed was allowed, in some cases, to fall below 30. There were no sale quantity issues for counties requiring vacant land analysis or condominium analysis. 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 Rio Grande County are:

| Rio Grande County Ratio Grid | | | | | |
|---|---|---|---|---|---|
| Property Class | Number of Qualified Sales | Unweighted Median Ratio | Price Related Differential | Coefficient of Dispersion | Time Trend Analysis |
| *Commercial/Industrial | N/A | N/A | N/A | N/A | N/A |
| Condominium | N/A | N/A | N/A | N/A | N/A |
| Single Family | 209 | 0.974 | 1.024 | 12.5 | Compliant |
| Vacant Land | 92 | 0.996 | 1.066 | 20.5 | Compliant |

**Due to the small number of sales, a procedural audit was performed.*

After applying the above described methodologies, it is concluded from the sales ratios that Rio Grande 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 Rio Grande County has complied with the statutory requirements to analyze the effects of time on value in their county. Rio Grande 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

Rio Grande 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 | N/A |
| Condominium | N/A |
| Single Family | Compliant |
| Vacant Land | Compliant |

## Conclusions

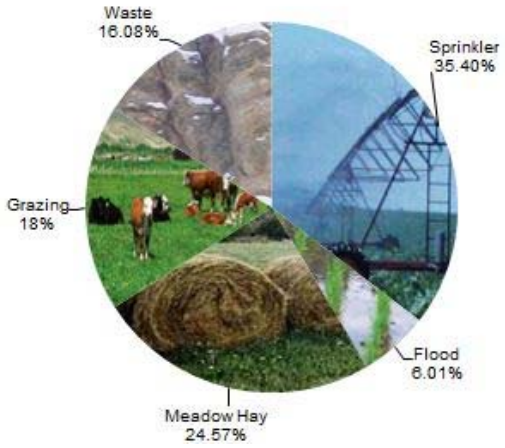
After applying the above described methodologies, it is concluded that Rio Grande County is reasonably treating its sold and unsold properties in the same manner.

## Recommendations

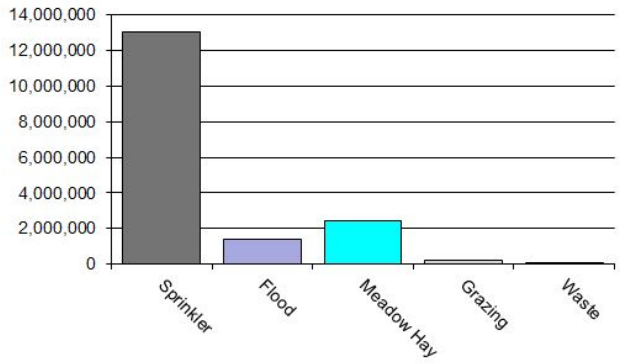
None

# 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:

| Rio Grande 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 | 66,877 | 184.52 | 12,339,849 | 13,015,449 | 0.95 |
| 4117 | Flood | 11,362 | 115.36 | 1,310,673 | 1,367,047 | 0.96 |
| 4137 | Meadow Hay | 46,413 | 52.58 | 2,440,175 | 2,440,175 | 1.00 |
| 4147 | Grazing | 33,869 | 6.77 | 229,343 | 229,343 | 1.00 |
| 4167 | Waste | 30,378 | 1.99 | 60,346 | 60,346 | 1.00 |
| **Total/Avg** | | **188,899** | **86.72** | **16,380,387** | **17,112,350** | **0.96** |

### 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

Rio Grande 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

Rio Grande 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
- Phone Interviews
- Personal Knowledge of Occupants at Assessment Date

Rio Grande 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.:

- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Rio Grande 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 2015 for Rio Grande County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 47 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.

The following subclasses were analyzed for Rio Grande County:

2130 Special Purpose
3115 Manufacturing/Processing
3215 Manufacturing/Processing

## Conclusions

Rio Grande County appears to be doing an excellent 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

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

## Subdivision Discounting

Subdivisions were reviewed in 2015 in Rio Grande County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14). Discounting procedures were applied to all subdivisions where less than 80 percent of all sites were sold using the present worth method. The market approach was applied where 80 percent or more of the subdivision sites were sold. An absorption period was estimated for each subdivision that was discounted. An appropriate discount rate was developed using the summation method. Subdivision land with structures was appraised at full market value.

## Conclusions

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

## Recommendations

None

# 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.

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

Rio Grande 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

Rio Grande 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.

Rio Grande 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
- Local Telephone Directories, Newspapers or Other Local Publications
- Personal Observation, Physical Canvassing or Word of Mouth

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.

Rio Grande County submitted their personal property written audit plan and was current for the 2015 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
- Incomplete or inconsistent declarations
- Businesses with no deletions or additions for 2 or more years
- Non-filing Accounts - Best Information Available
- Accounts close to the $7,300 actual value exemption status
- Accounts protested with substantial disagreement

## Conclusions

Rio Grande 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

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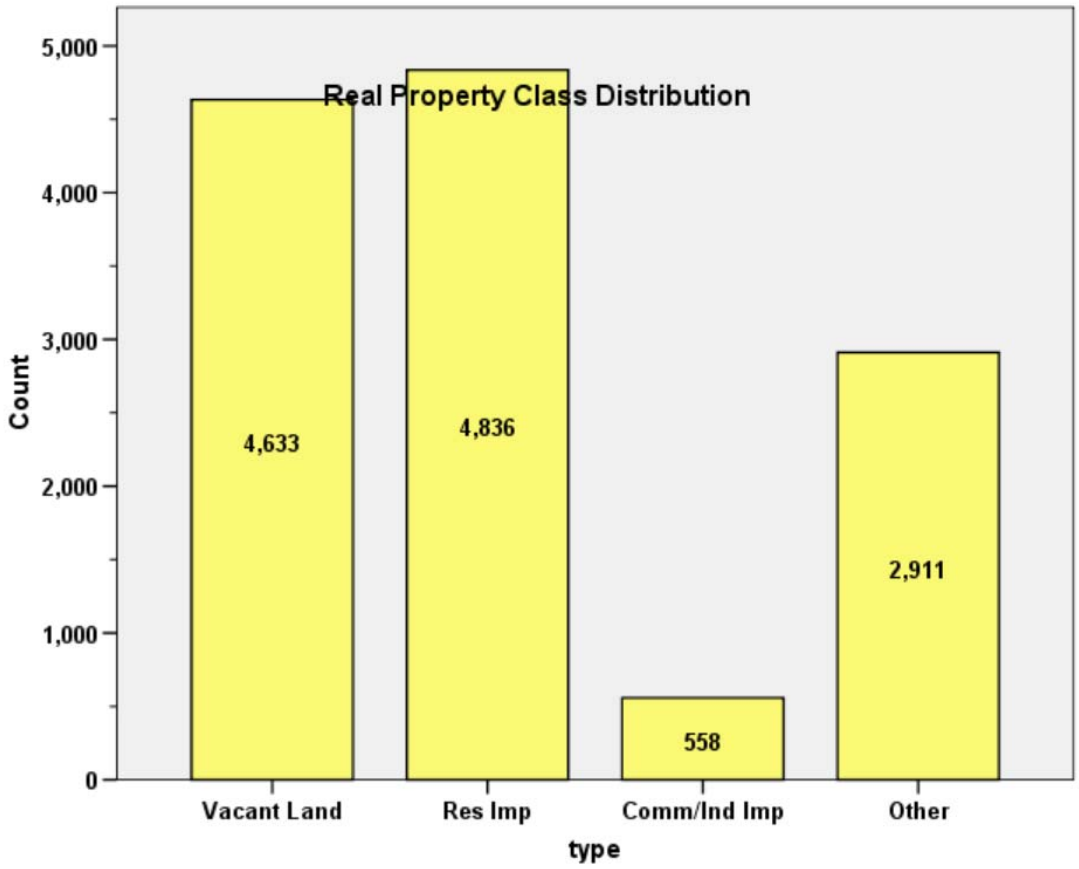
# APPENDICES

**STATISTICAL COMPLIANCE REPORT**
**FOR RIO GRAND COUNTY**
**2015**

## I. OVERVIEW

Rio Grande County is located in south central Colorado. The county has a total of 12,938 real property parcels, according to data submitted by the county assessor's office in 2015. 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) accounted for 77.6% of all vacant land parcels.

For residential improved properties, single family properties accounted for 95.9% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 4.6% of all such properties in this county.

## II. DATA FILES

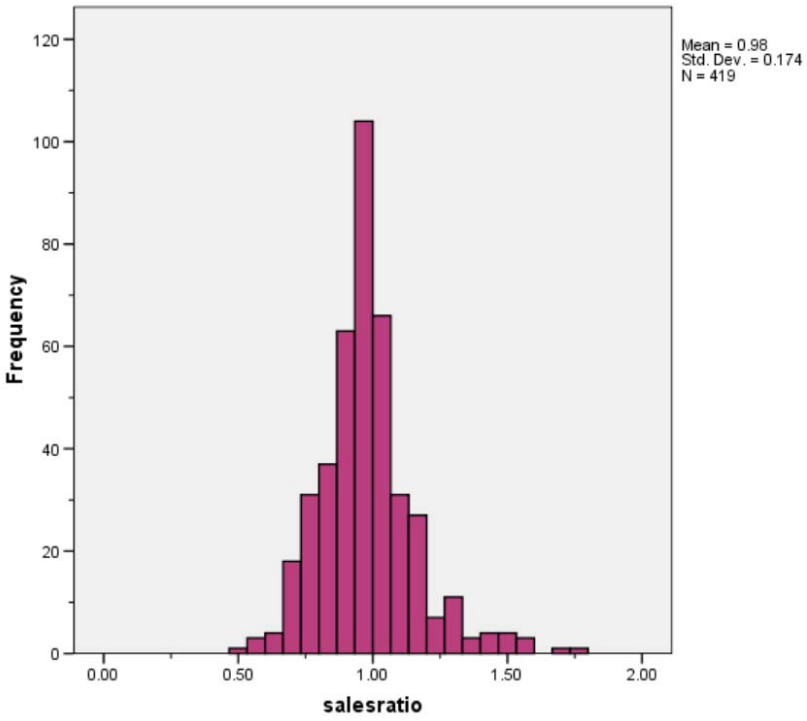
The following sales analyses were based on the requirements of the 2015 Colorado Property Assessment Study. Information was provided by the Rio Grande Assessor's Office in April 2015. The data included all 5 property record files as specified by the Auditor.

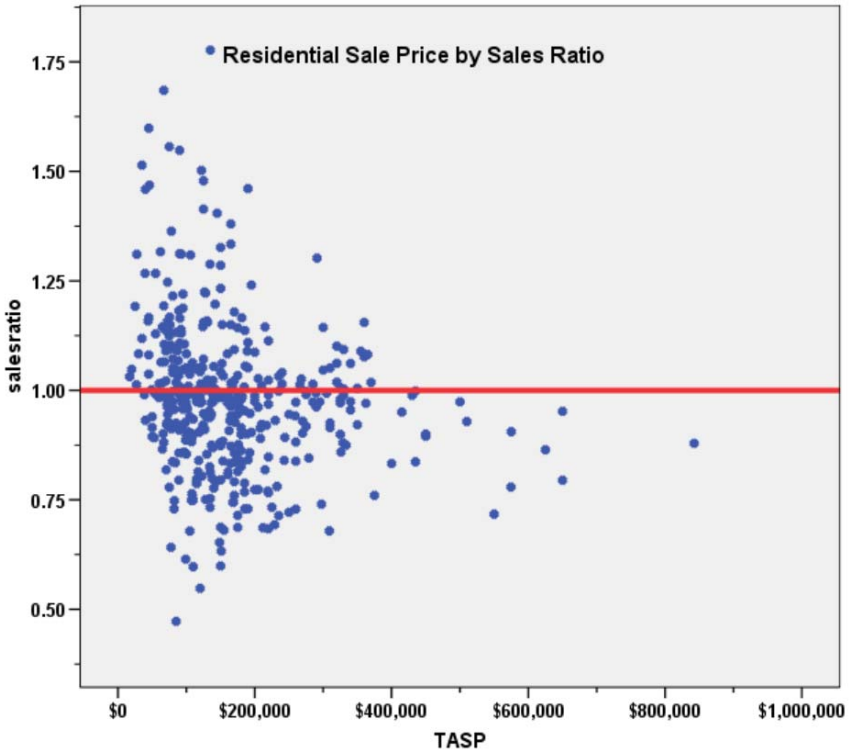
## III. RESIDENTIAL SALES RESULTS

There were 209 qualified residential sales for the 60 month period prior to June 30, 2014. These sales were analyzed as follows:

| | |
|---|---|
| Median | **0.974** |
| Price Related Differential | **1.024** |
| Coefficient of Dispersion | **.125** |

The following graphs describe further the sales ratio distribution for these properties:






The above graphs indicate that the distribution of the sale ratios was within state mandated limits.

**Residential Market Trend Analysis**

We next analyzed the residential dataset using the 60-month sale period for any residual market trending, with the following results:

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .978 | .017 | | 58.748 | .000 |
| | SalePeriod | 8.839E-5 | .000 | .009 | .181 | .856 |

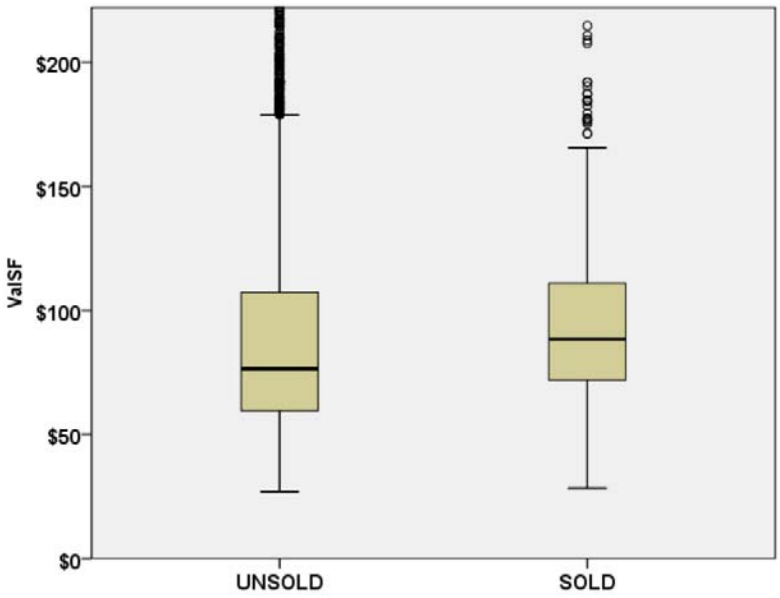
a. Dependent Variable: salesratio


The above analysis indicated that the assessor has adequately addressed market trending in the valuation of residential properties.

**Sold/Unsold Analysis**

In terms of the valuation consistency between sold and unsold residential properties, we compared the single family residence mean and median value per square foot for each group, as follows:

| Group | No. Props | Median Val/SF | Mean Cal/SF |
|---|---|---|---|
| Unsold | 3,877 | $77 | $89 |
| Sold | 411 | $89 | $98 |




**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 | .000 | Reject the null hypothesis. |

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

Given that the Mann-Whitney test indicated a significant difference statistically between sold and unsold single family residences, we next employed an econometric model that predicted the actual value for sold and unsold single family residences in Rio Grande County. A total of 4,288 single family residential properties were analyzed.

We developed a backwards regression model to test whether sold and unsold properties were valued differently by the assessor.

To do this, we included a binary variable for sold/unsold status. For the model, sold properties were coded "1" and unsold properties were coded "0." Other variables tested included living area, age, and economic area. The stepwise regression analysis adds variables to the model based on their contributory strength, as measured by their t or p values (depending on the test). At each step, a variable is added, and variables already in the model are re-evaluated to determine if they should remain in the model. After it is determined that adding additional variables will not improve the model's predicative or explanatory power, the process stops. Variables not included at this point are determined to not be significant. In this analysis, our primary focus was the sold/unsold variable previously described.

After 5 iterations, the following results were generated by the model:

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .738[a] | .545 | .544 | 80280.263 |
| 2 | .815[b] | .665 | .665 | 68881.240 |
| 3 | .834[c] | .695 | .695 | 65687.336 |
| 4 | .837[d] | .700 | .700 | 65188.548 |
| 5 | .837[e] | .701 | .701 | 65055.137 |
| 6 | .838[f] | .702 | .701 | 65011.660 |

a. Predictors: (Constant), LIVeAREA

b. Predictors: (Constant), LIVeAREA, ECON4

c. Predictors: (Constant), LIVeAREA, ECON4, AGE

d. Predictors: (Constant), LIVeAREA, ECON4, AGE, ECON2

e. Predictors: (Constant), LIVeAREA, ECON4, AGE, ECON2, ECON3

f. Predictors: (Constant), LIVeAREA, ECON4, AGE, ECON2, ECON3, ECON5

**Ratio Statistics for Unstandardized Predicted Value / CURRTOT**

| Median | Price Related Differential | Coefficient of Dispersion |
|---|---|---|
| 1.012 | 1.069 | .301 |

Although the COD was above 16%, for the purposes of this model (i.e. testing the significance of the sold/unsold variable), the results were sufficient. The median ratio was within the 0.95 to 1.05 compliance range, indicating little or no bias.

The model at Step 5 did not include the Sold/Unsold variable, indicating that it did not make a significant difference in the model whether the properties were sold or unsold. Based on this finding, we concluded that the assessor valued sold and unsold residential properties consistently in 2015.

## IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

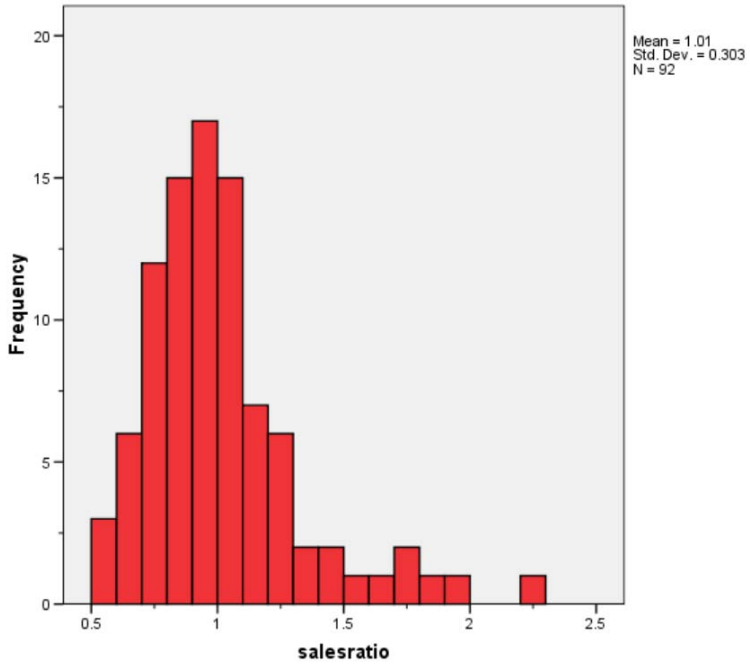
The County did not have enough qualified commercial/industrial sales to be statistically significant. A procedural audit was completed for taxable year 2015. This analysis reviewed all qualified commercial sales. Information was gathered concerning class of property, year built, improvement size, type and quality of construction, condition at the time of sale, sale date and amount and the Assessor value. The audit then determined sale price per square foot and the sales ratio. The audit concluded that the County is in compliance due to the lack of substantive data to support a revaluation decision.

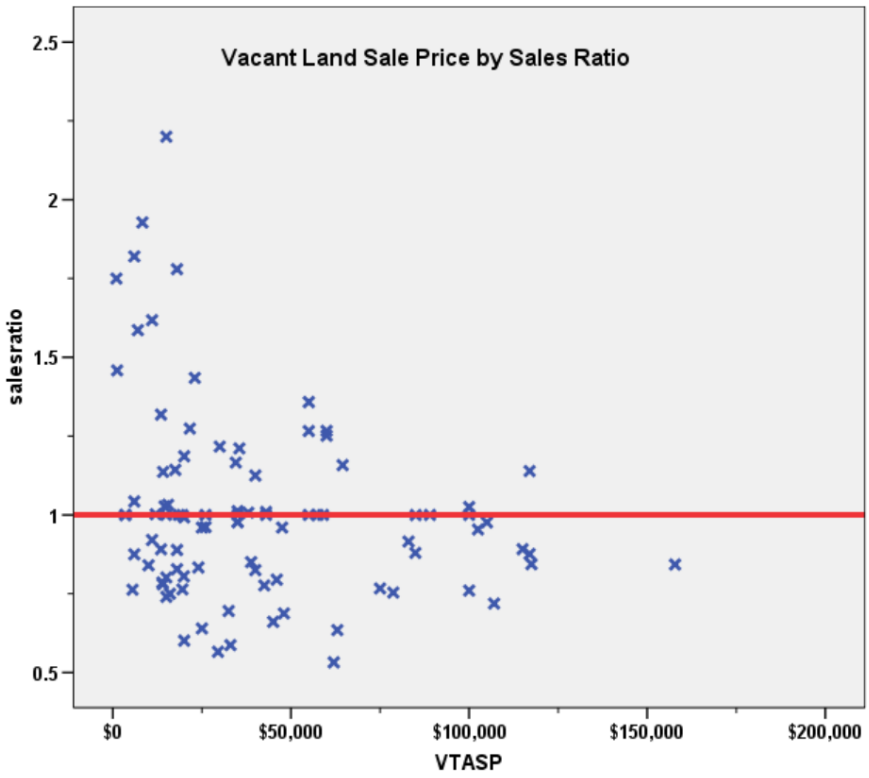
## V. VACANT LAND SALE RESULTS

There were 97 qualified vacant land sales for the 60 month period prior to June 30, 2014. We trimmed 5 sales with extreme ratios, resulting in a final set of 92 sales. These sales were analyzed as follows:

| | |
|---|---|
| Median | **0.996** |
| Price Related Differential | **1.066** |
| Coefficient of Dispersion | **.205** |

The above tables indicate that the Rio Grande County vacant land sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:





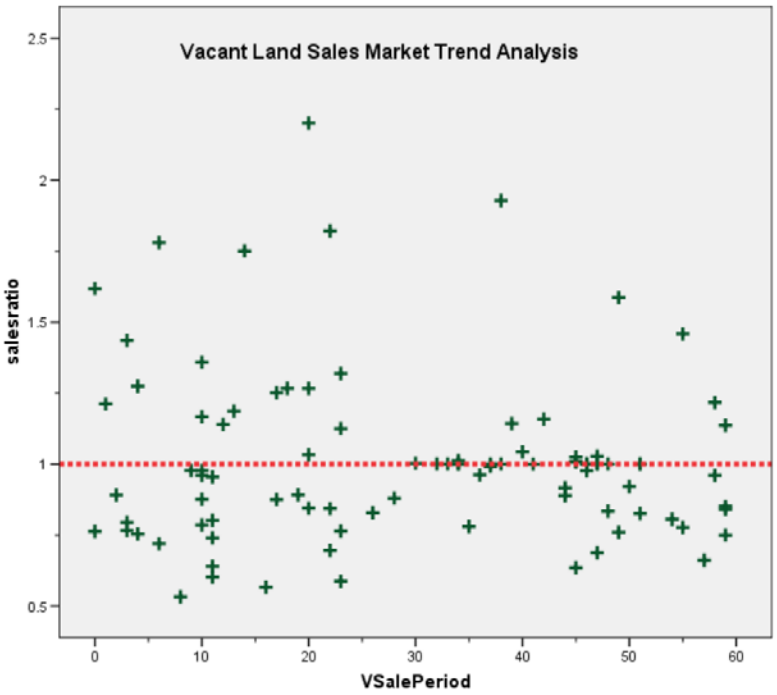

## Vacant Land Market Trend Analysis

The assessor did not apply any market trend adjustment to the vacant land dataset. The 92 vacant land sales were analyzed, examining the sale ratios across the 60 month sale period with the following results:

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.054 | .061 | | 17.383 | .000 |
| | VSalePeriod | -.001 | .002 | -.087 | -.825 | .411 |

a. Dependent Variable: salesratio




The market trend results indicated no statistically significant trend. We concur that no market trend adjustments were warranted for properties in this class for Rio Grande County.

**Sold/Unsold Analysis**

We compared the median change in actual value between 2014 and 2015 for vacant land properties to determine if sold and unsold properties were valued consistently, as follows:

| Group | N | Median | Mean |
|---|---|---|---|
| **Unsold** | 4,546 | 1.00 | 0.96 |
| **Sold** | 92 | 1.00 | .097 |

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of DIFF is the same across categories of sold. | Independent-Samples Mann-Whitney U Test | .756 | Retain the null hypothesis. |

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

The above results indicated that sold and unsold vacant land properties were valued consistently overall.

## V. 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 Rio Grande County.

The following indicates that agricultural residential improvements were valued in a manner similar to the single family residential improvements in this county:

**Descriptives**

| ABSTRIMP | | | Statistic | Std. Error |
|---|---|---|---|---|
| ImpSF SFR | Mean | | $71.16 | $.515 |
| | 95% Confidence Interval for Mean | Lower Bound | $70.15 | |
| | | Upper Bound | $72.17 | |
| | 5% Trimmed Mean | | $68.91 | |
| | Median | | $65.23 | |
| | Variance | | 1164.803 | |
| | Std. Deviation | | $34.129 | |
| | Minimum | | $4 | |
| | Maximum | | $286 | |
| | Range | | $281 | |
| | Interquartile Range | | $37 | |
| | Skewness | | 1.163 | .037 |
| | Kurtosis | | 2.220 | .074 |
| Ag Res | Mean | | $72.36 | $2.726 |
| | 95% Confidence Interval for Mean | Lower Bound | $66.97 | |
| | | Upper Bound | $77.74 | |
| | 5% Trimmed Mean | | $70.44 | |
| | Median | | $65.93 | |
| | Variance | | 1218.554 | |
| | Std. Deviation | | $34.908 | |
| | Minimum | | $6 | |
| | Maximum | | $202 | |
| | Range | | $197 | |
| | Interquartile Range | | $46 | |
| | Skewness | | .856 | .190 |
| | Kurtosis | | .880 | .377 |

## VI. CONCLUSIONS

The results from the early reporting analysis indicate that residential, vacant land and agricultural residential properties in Rio Grande County were compliant with Colorado State Audit guidelines.

## STATISTICAL ABSTRACT
## Residential

**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 |
| .981 | .964 | .997 | .974 | .963 | .986 | 96.0% | .957 | .942 | .973 | 1.024 | .126 | 17.7% |

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.

## Vacant Land

**Ratio Statistics for CURRLND / VTASP**

| 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 |
| 1.012 | .949 | 1.075 | .996 | .916 | 1.000 | 95.3% | .949 | .903 | .995 | 1.066 | .205 | 30.0% |

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

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| SPRec | LT $25K | 3 | .7% |
| | $25K to $50K | 19 | 4.5% |
| | $50K to $100K | 106 | 25.3% |
| | $100K to $150K | 103 | 24.6% |
| | $150K to $200K | 87 | 20.8% |
| | $200K to $300K | 55 | 13.1% |
| | $300K to $500K | 38 | 9.1% |
| | $500K to $750K | 7 | 1.7% |
| | $750K to $1,000K | 1 | .2% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
|---|---|---|---|---|
| | | | | Median Centered |
| LT $25K | 1.048 | .990 | .051 | 9.8% |
| $25K to $50K | 1.083 | 1.007 | .158 | 21.4% |
| $50K to $100K | 1.006 | 1.003 | .123 | 17.6% |
| $100K to $150K | .973 | .997 | .142 | 20.3% |
| $150K to $200K | .955 | .999 | .117 | 15.8% |
| $200K to $300K | .942 | .995 | .107 | 14.0% |
| $300K to $500K | .977 | 1.002 | .075 | 10.1% |
| $500K to $750K | .864 | .999 | .082 | 10.3% |
| $750K to $1,000K | .879 | 1.000 | .000 | .% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Sub-Class

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| ABSTRIMP | 1212 | 411 | 98.1% |
| | 1215 | 2 | .5% |
| | 1230 | 6 | 1.4% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
|---|---|---|---|---|
| | | | | Median Centered |
| 1212 | .974 | 1.024 | .125 | 17.8% |
| 1215 | 1.231 | 1.017 | .066 | 9.3% |
| 1230 | .945 | 1.026 | .108 | 18.3% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Age

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| AgeRec | Over 100 | 50 | 11.9% |
| | 75 to 100 | 41 | 9.8% |
| | 50 to 75 | 64 | 15.3% |
| | 25 to 50 | 97 | 23.2% |
| | 5 to 25 | 156 | 37.2% |
| | 5 or Newer | 11 | 2.6% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
|---|---|---|---|---|
| | | | | Median Centered |
| Over 100 | .916 | 1.046 | .138 | 20.0% |
| 75 to 100 | .975 | 1.036 | .115 | 16.5% |
| 50 to 75 | .979 | 1.034 | .132 | 16.8% |
| 25 to 50 | .983 | 1.019 | .152 | 22.2% |
| 5 to 25 | .984 | 1.023 | .100 | 14.6% |
| 5 or Newer | .884 | 1.014 | .172 | 21.1% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Improved Area

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| ImpSFRec | LE 500 sf | 5 | 1.2% |
| | 500 to 1,000 sf | 54 | 12.9% |
| | 1,000 to 1,500 sf | 149 | 35.6% |
| | 1,500 to 2,000 sf | 121 | 28.9% |
| | 2,000 to 3,000 sf | 77 | 18.4% |
| | 3,000 sf or Higher | 13 | 3.1% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
|---|---|---|---|---|
| | | | | Median Centered |
| LE 500 sf | 1.017 | 1.012 | .084 | 13.0% |
| 500 to 1,000 sf | .931 | 1.050 | .156 | 22.7% |
| 1,000 to 1,500 sf | .986 | 1.033 | .127 | 17.8% |
| 1,500 to 2,000 sf | .971 | 1.022 | .122 | 17.9% |
| 2,000 to 3,000 sf | .987 | 1.017 | .110 | 15.6% |
| 3,000 sf or Higher | .974 | 1.039 | .096 | 13.1% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Improvement Quality

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| QUALITY | 0 | 15 | 3.6% |
| | 1 | 212 | 50.6% |
| | 2 | 156 | 37.2% |
| | 3 | 33 | 7.9% |
| | 4 | 3 | .7% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation: Median Centered |
|---|---|---|---|---|
| 0 | .932 | 1.111 | .188 | 24.9% |
| 1 | .983 | 1.027 | .132 | 18.6% |
| 2 | .973 | 1.011 | .119 | 17.3% |
| 3 | .962 | 1.020 | .085 | 11.1% |
| 4 | .906 | .999 | .032 | 4.9% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Improvement Condition

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| CONDITION | 0 | 15 | 3.6% |
| | 1 | 212 | 50.6% |
| | 2 | 156 | 37.2% |
| | 3 | 33 | 7.9% |
| | 4 | 3 | .7% |
| Overall | | 419 | 100.0% |
| Excluded | | 0 | |
| Total | | 419 | |

**Ratio Statistics for CURRTOT / TASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
|---|---|---|---|---|
| | | | | Median Centered |
| 0 | .932 | 1.111 | .188 | 24.9% |
| 1 | .983 | 1.027 | .132 | 18.6% |
| 2 | .973 | 1.011 | .119 | 17.3% |
| 3 | .962 | 1.020 | .085 | 11.1% |
| 4 | .906 | .999 | .032 | 4.9% |
| Overall | .974 | 1.024 | .126 | 17.9% |

## Vacant Land Median Ratio Stratification

### Sale Price

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| SPRec | LT $25K | 42 | 45.7% |
| | $25K to $50K | 23 | 25.0% |
| | $50K to $100K | 19 | 20.7% |
| | $100K to $150K | 7 | 7.6% |
| | $150K to $200K | 1 | 1.1% |
| Overall | | 92 | 100.0% |
| Excluded | | 0 | |
| Total | | 92 | |

**Ratio Statistics for CURRLND / VTASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation: Median Centered |
|---|---|---|---|---|
| LT $25K | 1.000 | 1.051 | .269 | 39.4% |
| $25K to $50K | .977 | 1.006 | .149 | 20.4% |
| $50K to $100K | 1.000 | 1.015 | .162 | 22.4% |
| $100K to $150K | .891 | .999 | .101 | 14.8% |
| $150K to $200K | .843 | 1.000 | .000 | .% |
| Overall | .996 | 1.066 | .205 | 30.5% |

## Subclass

**Case Processing Summary**

| | | Count | Percent |
|---|---|---|---|
| ABSTRLND | 100 | 82 | 89.1% |
| | 200 | 1 | 1.1% |
| | 520 | 1 | 1.1% |
| | 530 | 1 | 1.1% |
| | 1112 | 6 | 6.5% |
| | 1135 | 1 | 1.1% |
| Overall | | 92 | 100.0% |
| Excluded | | 0 | |
| Total | | 92 | |

**Ratio Statistics for CURRLND / VTASP**

| Group | Median | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation: Median Centered |
|---|---|---|---|---|
| 100 | 1.000 | 1.073 | .219 | 31.8% |
| 200 | .754 | 1.000 | .000 | .% |
| 520 | .962 | 1.000 | .000 | .% |
| 530 | 1.043 | 1.000 | .000 | .% |
| 1112 | .977 | 1.008 | .088 | 18.0% |
| 1135 | 1.009 | 1.000 | .000 | .% |
| Overall | .996 | 1.066 | .205 | 30.5% |