



Measurement Section

Agricultural Land Analysis Procedure

December 19, 2011

Purpose

This procedure establishes the uniform process to be used in conducting analysis and determining a level of value for the agricultural and horticultural land (agricultural) class of property in the State of Nebraska. This procedure is intended to create consistent measurements of assessed values to ensure the existence of both intra-county and inter-county equalization. Any field liaison that determines a deviation from this procedure is necessary must communicate that deviation to and get approval from the Measurement Manager prior to the use of the deviation.

Prepare the Sales Data

Before beginning the analysis, it is important to ensure that the data is accurate. Export the roster of all agricultural land sales to excel. Review the reasons provided by the assessor for disqualifying sales. If the assessor explanations for excluding sales are missing or do not clearly describe why the sales are not arm's length, work with the assessor to ensure that sales are properly qualified and explained. Failure to properly identify arm's length transactions on the part of the county assessor will result in a review and possible inclusion pursuant to REG 12-003.04. Communication with the county is also necessary to ensure that all sales information is updated and correctly listed in the sales file.

Prepare the Analysis

Export the qualified minimally improved sales, using the Standard Agricultural Report to Excel and paste the data in the analysis spreadsheet. Enter the county's actual 2011 schedule of values (not the LCG averages) into the spreadsheet. Identify any additional value categories that the county recognizes (CRP, timber reduction, etc), and enter these acres and values into the spreadsheet. Compare the reported assessed value for the prior year to the what-if value produced by the spreadsheet. If significant differences (more than one percentage point) exist, research the cause of the difference and identify it in the spreadsheet so the difference between the two values is minimal.

Summary of Analysis

The summary of analysis is the initial output of the analysis and reflects areas of deficiency within the sample (areas of deficiency are explained in the next section). The summary of analysis should be completed by the field liaison and delivered to the applicable county assessor.

This gives the county assessor the opportunity to discuss possible areas of deficiency in the sample, and to begin identifying comparable areas in bordering counties.

Analysis Components

Market Areas

Each market area should be analyzed individually. If the market areas were not established using unique, value-driving characteristics, they should be discussed with the county assessor in an attempt to assign appropriate market areas per the requirements of §77-103.01. If the county assessor is unwilling to define market areas that conform to the requirements of statute, the liaison will analyze the market to ensure parcels with similar characteristics are grouped as they are treated in the marketplace.

In the event parcels with similar market influences are stratified separately and valued separately by the county assessor, the liaison must be prepared to identify and recommend adjustment to bring all parcels with similar characteristics to the same proportion of market value. Actions of the county assessor that result in disparate treatment of parcels within a common market are not considered to be in compliance with generally accepted mass appraisal practices. If the levels of value for the market areas that are not in statutory compliance are within the acceptable range, no recommendations for adjustment shall be made. However, the assessment practices of the county shall be brought to the attention of the Property Tax Administrator.

Adequacy of the Sample

In order to make the analysis a useful measure of the population, the sample must be adequate. For purposes of this analysis, a sample will be considered adequate when sufficient sales exist to be statistically reliable, contains a proportionate distribution of sales among each year of the study period, and is representative of the population consistent with land use.

- Statistically Sufficient Number of Sales

A sample will typically be considered to have a statistically sufficient number of sales when 30 or more sales exist. Since a sufficient number of sales depend on factors such as likeness of properties and size of the parcels involved, and dispersion of the ratios, exceptions to the 30 sale threshold may exist. Samples of sales may exist in which less than 30 sales are statistically reliable, such as is commonly the case in the Sandhills region, or in other homogeneous areas where market variation is minimal. Likewise, a sample greater than 30 sales could prove to be unreliable when the sales suggest disorganization among the market, or careless qualification procedures have included non-arm's length sales. Unreliable samples of more than 30 sales should be documented in the Reports and Opinions along with the rationale for determining unreliability.

-Time Distribution of Sample

In order to account for annual fluctuations in the agricultural land market and to ensure that level of value determinations are uniform and proportionate within the agricultural land class of property between political subdivisions, market areas, and counties, the sales distribution within the three year study period will be analyzed to ensure the median is not biased by an over represented time period.

Study year distribution must be analyzed for each market area as well for the entire county. A sample is generally considered to be proportionately distributed when the number of sales in each year differs by ten percentage points or less. See Figure 1.

Figure 1.

<u>Year</u>	<u>County Total</u>	<u>Market Area 1</u>	<u>Market Area 2</u>
1	24	6	18
2	43	7	36
3	<u>30</u>	<u>8</u>	<u>22</u>
	97	21	76

County Total: $10\% * 97 \text{ sales} = 10 \text{ sale tolerable difference}$; sample is not proportionate

Market Area 1: $10\% * 21 \text{ sales} = 2 \text{ sale tolerable difference}$; sample is proportionate

Market Area 2: $10\% * 76 \text{ sales} = 8 \text{ sale tolerable difference}$; sample is not proportionate

-Land Use

The accuracy of statistics as estimators of the population depends on the representativeness of the sample. Types of property should appear with approximately the same frequency in both the sample and the population. Ideally, the sample would be a miniature replica of the population. The primary use of the land use provides a standard means of comparing the sales file to the entire county when making representativeness determinations in agricultural land.

Charts displayed in the analysis compare land use based on number of acres for each market area and for the entire county, as reported in the Form 45, Abstract of Assessment. The general degree of representativeness acceptable for this analysis is any comparison in which the profile of the county and the profile of the sales differ by a margin of 10 percentage points or less.

In Figure 2 below, Sample A is not a representative sample, while Sample B is a representative sample based on the 10 percent threshold.

Figure 2.

	<u>County Percent of Acres by Land Use</u>	<u>Sample A</u>	<u>Sample B</u>
Irrigated	56%	78%	60%
Dry	14%	5%	18%
Grass	28%	17%	22%
Other	2%	0%	0%

Source: Prior year Abstract of Assessment, Form 45 and State Sales File.

Determining Comparable Areas

During the initial visit with the county assessor, discuss the market areas and determine the unique market characteristics of each. Once the characteristics of the parcels in each market area have been defined, the same characteristics should be sought out in the neighboring area. Characteristics considered may include (but are not limited to) legal restrictions such as NRD restrictions, non-agricultural influences (special valuation), parcel size, soil make-up, and topography.

Market analysis has determined the time factor (change in value over time) and the current use (as a surrogate for most probable use) are meaningful subclasses for comparison to the population. Other distinguishing characteristics as defined above may create the need for separate market areas or additional subgroups within the County.

Develop a Pool of Comparable Sales

For the identified comparable areas, query the state sales file to identify sales in adjoining counties. The sales should be stratified by geo code so all sales within six miles of the subject county's border are identified. In cases where a county has an adjoining geo code less than six miles, the comparable area should extend into the next geo code until the area is a total of six miles from the subject county border. The process of identifying the pool of comparable sales can best be done in cooperation with the county assessor. Any concerns or opinions of the assessor regarding the comparability of surrounding areas or specific sales should be considered by the liaison.

Determination of Adequacy

Before expanding the sample, the liaison must determine if the Base (County) Sample is adequate. No expansion of the sample is necessary for this method when all thresholds are met.

If the sample is determined to be inadequate, deficiencies within the sample must be identified and corrected by adding comparable sales before statistics can be deemed reliable.

In the first attempt to add sales to the sample, the liaison should review the sales that were previously determined to be non-qualified with the assessor. Arm's length, substantially changed sales involving land use changes after the sale could be used in the analysis if an assessed value can be created to reflect the parcel as it existed when sold. Substantially changed sales should not be used however if a premium was paid to convert the property to an alternative use. For example, a grass parcel where trees are removed and irrigation is added should not be used to measure the grass parcels that do not have similar potential. Conversely, a 160 acre grass sale with a house subsequently added to the parcel could be a valid sale if the house assessment and farm home site are removed from the analysis. This is accomplished by applying the county's schedule of values to the acre classification at the time of sale. These sales should be added to the analysis to correct deficient areas.

Selecting Comparable Sales

In situations where deficiencies remain after adding substantially changed and/or other types of previously rejected sales then comparable sales from adjoining counties are necessary to expand the sample. The first step in selecting comparable sales is to define the comparable area from which can sales can be drawn.

Before selecting comparable sales, further stratification must be done by sale date and land use in a way that would correct deficiencies for time distribution and representation at the same time. For example, if the sample contains a deficient number of sales in the third year of the study period and is also under represented for irrigated land, then the pool of available sales should be comprised of irrigated sales from the third year of the study period that occurred within six miles of the subject county's border. Caution must be taken, however, to ensure the time distribution of sales does not bias the statistical inferences drawn on land use strata.

Selecting Sales from the Pool

Once the pool of available sales has been narrowed by stratification, sales will be selected from the pool for inclusion in the sample until the sample is determined to be adequate. Array the stratified sales based on their proximity to the subject county, from one to six miles. Starting with the sales closest to the subject county, select sales with a majority land use (MLU) of 80% or more; add sales until the sample meets the minimum thresholds previously identified. When a sufficient number of MLU sales are not available to achieve the thresholds, mixed use sales should be included. The mixed use sales should also be selected based on their proximity to the subject county/market area and consideration given to percent of land use.

It is important to note that when possible the thresholds should be achieved for all three tests (size, distribution, and representation); therefore, it may be necessary to bring in extra sales in one of the tests, so that the minimum threshold can be achieved for another test. For example, if only three sales are needed to achieve the acceptable distribution of sales, but five sales are needed to achieve both time distribution and representation thresholds, then all five sales should be added.

When Insufficient Comparable Sales Exist

The preferred method of correcting the deficiency is to supplement the sample with comparable sales from surrounding counties. In some instances a limited number of comparable sales may exist. In these occurrences other methods, with approval of the measurement manager, may be employed to ensure a statistically valid sample of sales is created.

The first method preferred involves expanding the parameter around the county from which sales are drawn. Before sales are drawn from additional areas however, the area should be reviewed for comparability of the relevant characteristics of the subject county.

In situations where no other comparable sales exist in neighboring counties, subject county sales can be randomly eliminated from the over-represented area. This should be accomplished by assigning a random number to identify each sale, arraying the assigned numbers, and removing the amount of sales required to meet the minimum thresholds. Caution must be taken when eliminating sales to ensure that other substrata are not stripped of a sufficient number of sales. In general, a lesser degree of precision will have to be accepted when removing qualified sales from the subject county.

Evaluate the Sample

After expanding the sample with comparable sales in attempt to meet the identified thresholds, the liaison must determine if the statistical calculations produced from the analysis are reasonably reliable. Generally, a sample with a minimum of 30 sales and a COD of 25% or less will be considered reliable. If 30 comparable sales are not available or when the COD exceeds 25%, additional analysis will be necessary to determine if the statistics are reliable.

Additional Analysis:

The liaison shall consider additional professionally accepted methods for determining if the existing sample of sales is a reliable indicator of the level, or if other information is available to identify a level of value. These methods may include, but not be limited to the following:

- Expanding the sample to include all comparable sales available and randomly excluding from the entire pool (including subject county sales) to meet the identified thresholds will

produce a statistical indicator that can be compared to the initial sample created. While many of these sales may have already been included in the expansion effort to get a sufficient number of sales, this expanded sample may provide an additional test regarding the overall level of value, and determination of the quality of assessment. Additional tests may be necessary to determine acceptability of small samples.

- Comparison of assessed values to neighboring counties with similar markets aids in identifying if comparable areas are equalized. If the comparable area is sufficiently represented by sales, the additional determination that the values are at certain proportion of market value can be drawn.
- Identifying the general movement of the market in the area, and comparing the historical assessed value change to the area in question may provide an indicator that assessed values have mirrored the increases in the market. Caution should be taken to insure that the general market movement is identified and that it is not restricted to a small portion of the general market that is, or could be, influenced by outlier sales.
- Weighting the ratios by majority land use, may provide an additional indicator of the level of value for the class or subclass. Weighting by percent majority land use would reduce the weight given to outlier sales that are of mixed use, but could additionally overweight outliers that are a high percentage of a particular land use. Small acreage sales of a high land use percentage should also be identified and mitigated as these ratios could be given a greater weight than sales more typical of the parcels in the local market.

The conclusions of the additional analysis should be adequately described in the correlation section of the Reports and Opinions to inform the reader of the analysis performed the strengths or limitations identified, and the resulting opinion of the liaison based on the additional analysis.

Peer Review

The field liaison will provide completed spreadsheet documentation to the Peer Review Committee. A review by the Peer Review Committee will include discussion with the liaison and a detailed review of each county/market area to ensure consistent program accomplishment of sales review, utilization of comparable sales, agland analysis, and measurement/determination of level of value by all field liaisons. The Peer Review Committee will provide guidance to the field liaisons and report their findings to the Measurement Manager.

Preliminary Report

The preliminary report to the assessor will include a listing of all sales used in the ratio studies for the subject county. The report will also include preliminary statistics using the county's qualified sales as well as any comparable sales added. The comparable sales' assessed values used in the ratio study will be calculated using the schedule of values from the subject county in place for 2011. This information shall be provided to the assessor by January 31st.

Final Analysis

Once the assessor has determined the new assessed values, input the values into the spreadsheet to calculate the final statistics. If the COD is above 25% conduct additional testing as described above. Communicate to the assessor the statistical results produced by the final analysis as soon as reasonably practical.

Preparation of Statistical Profiles

The final statistical report can be created after the subject county assessor has filed the Assessed Value Update. The statistical profile will be generated using the state sales file and will use the values certified by the assessor as the source for the subject county values. Any sales that were imported from neighboring counties must be valued using the subject county's schedule of values and entered into the sales file. After entering the values of all imported sales, run the statistical report from the sales file to ensure that it is reasonably similar to the statistics produced in the analysis spreadsheet.

Determining the Level of Value

When the final statistical profile has been completed, the liaison will correlate all relevant information to make level of value determinations as well as recommendations for non-binding adjustments. The liaison should consider their knowledge of the subject county and surrounding area, any assessment actions taken by the assessor, and all other relevant information when making level of value determinations. The rationale should be adequately explained in the correlation section of the Reports and Opinions. Additional analysis should be described in detail, and references made to the statistical results of such analysis. It is sufficient to rely on statistics generated from spreadsheets and not necessary to reproduce expanded samples using the sales file.

Determination of the quality of assessment will be based on the knowledge of the liaison of the counties assessment practices and are not necessarily based strictly on the calculated coefficient of dispersion or price related differential.

Final Reminder

Any deviations from this policy must be communicated to and approved by the Measurement Manager. Also, this procedure document is to be used by the measurement staff of the Department of Revenue. Any other person wishing to use this document as intended, should contact the Department of Revenue to obtain a thorough understanding of this procedure before drawing any conclusions based on this document alone.