Nebraska Department of REVENUE PROPERTY ASSESSMENT

Measurement Section

Agricultural Land Analysis Procedure

February 14, 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.

Three Approaches

To ensure that level of value determinations are based upon consideration of the various factors inherent in the agricultural market and based on information produced by credible samples, the following approaches shall be conducted and considered:

- Approach 1 (the base sample) - includes all qualified agricultural sales within the subject county, within the defined study period, in which the non-productive land is assessed at less than 5% of the selling price.

- Approach 2 (the random inclusion sample) - includes the base sample, as defined above, which is expanded for adequacy, representativeness, and proportionality until the determined minimum thresholds have been met.

- Approach 3 (the six mile expansion) - includes the base sample, as defined above, which is expanded to include all sales from comparable areas within 6 miles of the county border. This expanded sample is then analyzed and sales are randomly excluded to achieve, representativeness, and proportionality until the determined minimum thresholds have been met.

This procedure provides guidance in developing the expanded samples and correlating the three approaches to determine the appropriate level of value for the agricultural class of property in each county.

Summary of Analysis

To begin the analysis, export the Standard Agricultural Report from the sales file, and copy it into the Expanded Ag Analysis Template in Excel to produce a 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. The county assessor is given the opportunity to discuss 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 10 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 analysis of the distribution of the sales around the median, exceptions to the 10 sale threshold may exist. Samples of sales may exist in which less than 10 sales are statistically reliable or a sample greater than 10 sales could prove to be unreliable. Circumstances outside the 10 sale threshold should be documented and discussed with the measurement manager and final determinations subsequently explained within the correlation section of the Reports and Opinions for that county. Unreliable samples of more than 10 sales should be documented in the Reports and Opinions for that county.

-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.

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

County Total: 10% * 97 sales = 10 sale tolerable difference; sample is not proportionate
Market Area 1: 10% * 21 sales = 2 sale tolerable difference; sample is proportionate
Market Area 2: 10% * 76 sales = 8 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.

	County Percent of Acres by Land Use	Sample A	Sample B
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 CRP contracts, 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. 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. To ensure no bias or selective exclusion of arm's length sales exists, each liaison will review the agricultural non-qualified sales rosters within the liaison area to ensure all arm's length sales are included in the analysis. 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.

Method 1: Base Sample

The Base Sample is created from the sales file by generating a statistical report that contains the vacant and minimally improved sales within the subject county for the defined study period.

Method 2: Random Inclusion of Sales

Determination of Adequacy

Before expanding the sample in Method 2, the liaison must determine if the Base 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 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 affect 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 randomly selected from the pool for inclusion in the sample until the sample is determined to be adequate. To randomly select the sales, a number will be assigned to each sale using the RANDBETWEEN function in the Microsoft Excel worksheet. Arraying these sales by the randomly assigned numbers will establish an order of inclusion. The sales will then be added to the analysis in order to meet the minimum thresholds previously identified.

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.

Method 3: Random Exclusion of Sales

The final sampling method consists of all sales from the base sample plus all sales within six miles of the county border or from comparable boundaries within six miles.

Determination of Adequacy

After expanding the sample in Method 3, a determination of adequacy should be made. If the expanded sample is determined to be adequate, statistics can be calculated using the entire sample. Inadequate samples should be expanded beyond the six mile threshold if comparability exists in an attempt to create an adequate sample.

Randomly Excluding Sales

The comparable sales should first be stratified by sale date and land use in a way that would correct deficiencies for time distribution and representation at the same time. Caution must be taken to ensure the time distribution of sales does not bias the statistical inferences drawn of land use strata. Once the sales have been stratified by overrepresented characteristics, they should be randomly removed until the thresholds have been met. The same process for random selection that was described in Method 2 is used.

As in Method 2, it is important that whenever possible, thresholds should be achieved for all three components (size, distribution, and representation); therefore, it may be necessary to randomly remove extra sales in one of the tests, so that the threshold can be achieved for another test.

When Insufficient Comparables 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. Disproportionality created from the addition of sales from the comparable areas outside the county should result in the random elimination of imported sales.

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.

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 from each method 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.

Preparation of Statistical Profiles

The final statistical reports can be created after the subject county assessor has filed the Assessed Value Update. The statistical profiles for each method 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. For Methods 2 and 3, 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.

Correlation of Level of Value

When the final statistical profiles have been completed, the liaison will correlate all relevant information to make level of value determinations as well as recommendations for non-binding adjustments.

Since each sampling method contains inherent strengths and weaknesses, the liaison should fully analyze any discrepancies in the calculated statistics produced from the three samples and determine which statistic(s) are the most reliable. 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.

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.