that eventually surface at interchange communities be addressed as most continue as unorganized, unincorporated entities? Will local, state or federal agencies attempt to solve the law enforcement, sanitation and traffic problems occurring around busy interchanges? These and other difficult questions will demand more scholarly research and the attention of those policy-making authorities faced with the challenge of monitoring the developmental aspects of the interstate highway system until more is understood about the land use implications of the network.

# Policy implications of LESA factor and weight determination in Douglas County, Kansas

**Michael N. DeMers**

**The Land Evaluation and Site Assessment System (LESA) developed by the United States Department of Agriculture Soil Conservation Service is designed as an aid to local planning officials to protect important agricultural lands. Preliminary LESA development for Douglas County, Kansas indicates the overall usefulness of the model for its designated purpose within Douglas County. However, model development also indicates several inherent problems with the original system, stemming predominantly from arbitrary weight recommendations and predetermined factor suppositions which do not reflect the needs of a given planning area. The effect of these recommendations and suppositions are most evident when there is a conflict of scale due to incorporation of both national and local standards through the LESA model.**

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The author would like to thank Mr Price Banks and Mr David Guntert of the Douglas County Planning Office and Mr Wayne Kellum of the Douglas County Zoning Administration for their cooperation in this research.

In response to increasing demands for improved methods of protection for the nation's important agricultural lands the United States Department of Agriculture Soil Conservation Service began development of a system to enumerate the major planning factors and to rate each to ensure rational decision making. This Land Evaluation and Site Assessment (LESA) system is designed to '. . . determine the quality of land for agricultural uses and to assess sites or land areas for their agricultural economic viability'.[1] The scheme is designed as a binary planning model to include compatibility with both national land evaluation and classification schemes and local values and objectives.

The Land Evaluation subsystem is that portion of the LESA system which is designed to evaluate the relative value of land at the local level and to provide the compatibility of the system with national land classification schemes, in particular those which relate to protection of important agricultural lands. This subsystem is essentially a determination of the physical capability of the land to support viable agricultural production, although factors such as cash value for indicator crops and costs of land improvement are included. The Site Assessment subsystem of LESA incorporates factors of more local or regional importance which are more closely related to social and economic planning directives and needs assessment.

In the Land Evaluation subsystem, the soils are rated in groups ranging from best to worst for agricultural use based on a selected indicator crop for a given study area. From this evaluation a relative score is assigned, the best group being given a score of 100, while the remainder are assigned prorated lower scores. All of these scores are derived from the National Cooperative Soil Survey in cooperation with the Soil Conservation Service district conservationist, using a series of worksheets.[2] To avoid overprotection of the agricultural lands this total 100 points given to the Land Evaluation subsystem is generally considered to be no more than one-third of the total LESA scheme, although there is some allowance for variation.

The remaining portion of the scheme is a 200-point maximum evaluation of Site Assessment factors to complete the system.[3] The Site

[1]Soil Conservation Service, *National Agricultural Land Evaluation and Site Assessment Handbook*, 310–VI, United States Department of Agriculture, Washington, DC, USA, 1983.
[2]*Ibid.*
[3]*Ibid.*



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Assessment weights are assigned to each factor of the model, and are then given values based on the compliance with the condition of that factor as observed for each study region. Site Assessment is the sum of the products of factor value and factor weight. A final summary of these calculations is indicated by the following formulae:

Factor Score = Factor Value × Factor Weight
Site Assessment Score = Sum of Factor Scores
LESA Score = Site Assessment + Land Evaluation

Recommendations of the Soil Conservation Service for selection of Site Assessment factors include, but are not confined to, 15 proposed factors (Appendix 1). The weighting of each factor is left up to the local planners for their consideration. Once both the Land Evaluation (100 points possible) and the Site Assessment (200 points possible) are determined for a proposed site, the scores are added to arrive at a total score (300 points possible).[4] These scores are tabulated and filed manually and then checked against the following ratings:

| | |
|---|---|
| 300–250 | Very high protection efforts for agricultural use |
| 250–225 | High protection efforts for agricultural use |
| 225–200 | Moderate protection efforts for agricultural use |
| 200–0 | Low protection efforts for agricultural use |

The LESA document lists seven objectives:[5] (1) determination of land quality for agricultural uses; (2) differentiation of land quality classes for decision makers; (3) consistence of application within a given area; (4) protection of the integrity of national land classification systems; (5) flexibility to accommodate differences among areas; (6) usefulness for land protection programmes, land use planning and agricultural tax-assessment programmes; and (7) stability to prevent change due to fluctuations in interest rates, yields and prices. Although these seven objectives may have merit when tested individually, there is conflict when the national standards imposed by objective number four are superimposed on the local standards implicit in objective number five. This indicates an inherent flaw in the binary model itself which combines national standards through Land Evaluation and local standards through Site Assessment.

## Literature review

Wright *et al* illustrate an implementation of the LESA model, as originally designed, through examples from McHenry County, Illinois.[6] A similar implementation of LESA is demonstrated for Dekalb County, Illinois.[7] In each instance authors make no attempt to evaluate the results of the model, either from the standpoint of effects of the model on future land use patterns, or as an examination of the policy implications of its implementation. Adaptations of the model to study regions in Idaho, Oregon and Washington, however, do at least indicate its adaptability to a variety of ecological and cultural situations.[8] Results of this study, however, also indicate the vagueness of the final LESA score as a device for farmland protection. The research also concludes that there is a need to simplify and systematize the model to assure model repeatability and, more importantly, that it is preferable to restrict factors to those which have '. . . a direct effect on agricultural suitability'.

[4]See formula above.
[5]Soil Conservation Service, *op cit*, Ref 1.
[6]Lloyd E. Wright, Warren Zitzmann, Keith Young and Richard Googins, 'LESA – agricultural land evaluation and site assessment', *Journal of Soil and Water Conservation*, Vol 38, 1983, pp 82–86.
[7]Lloyd E. Wright, 'Agricultural Land Evaluation and Site Assessment (LESA): a new agricultural land protection tool in the USA', *Soil Survey and Land Evaluation*, Vol 4, 1984, pp 25–38.
[8]Richard W. Dunford, William G. Forrest, Ron Gill, Jonathan J. Halvorson, Hugh J. Hickerson, Liese Hunter, Russell W. Langridge, Dennis Row, John Theilacker, Daniel K. Tyler and Lloyd E. Wright, *Adapting the Agricultural Land Evaluation and Site Assessment (LESA) System in the Pacific Northwest*, A Western Rural Development Center Publication, Oregon State University, Corvallis, OR, USA, 1984.

Implementation of this scheme in Washington is meant as a case study of the LESA model itself.[9] The authors indicate three advantages of the Land Evaluation subsystem: incorporation of economic factors into land rating; sufficient class gradation for local decision making; and provision of a consistent, technically defensible, and uniformly applicable approach to rating agricultural soils which is flexible enough to reflect adequately local conditions. The two disadvantages they find with the system include the great amount of data necessary and the sensitivity of the rating to assumptions about crop prices, interest rates, and costs of fuel, equipment and corrective measures.

Research carried out by Williams attempts to use computer mapping techniques to systematize the LESA procedure.[10] Although this research indicates the usefulness of the automation technique for providing rapid, spatial LESA scores, it shows a need to define systematically the individual Site Assessment factors and factor weights so essential to the model's success. Two separate techniques have been developed to solve this problem. A tree-structured approach taken by Luckey both simplifies and systematizes the LESA approach in answer to the needs stated by Dunford *et al.*[11] DeMers demonstrates an iterative learning model approach, similar to that proposed by Nellis and Nicholson.[12] Both of these approaches have proven validity, and there is room for considering some combination of the two to improve their usefulness further.[13] However, results of this research indicate problems with combining national standards for decision making as suggested by the Land Evaluation subsystem and local standards for decision making as defined by the Site Assessment subsystem.

As Bolan and Nuttall indicate, the rules governing the interaction between different levels of decision making are not clear.[14] They illustrate their point with an example of a proposed urban expressway which is also a regional and national transportation link, and ask the question, '. . . should an urban neighborhood through which it (the expressway) will pass have a voice in its planning (including the power to reject it)? Should a neighborhood have complete autonomy and ultimate power in the planning of activities whose impacts spill over beyond its borders . . .' The question which must be addressed in any attempt to implement a scheme for agricultural land preservation such as LESA has nearly identical implications. Are the national needs for preservation of viable cropland at the national level to supercede the desires of the local government? If so, how does one weigh the regional versus the national need? And from this national need, how does one weigh the Land Evaluation portion of LESA against the Site Assessment?

Linowes and Allensworth list five good arguments for local control of planning: (1) the people closest to the problems can best solve them; (2) local control of planning assures the grassroots support that is vital to success; (3) land use controls are handled locally, and therefore planning should be also; (4) other key community development decisions are made locally, so it is natural that planning would be a local matter; and (5) local control over planning best conforms to the general nature of the distribution of powers in our federal system.[15]

There seems little sense in imposing national standards at the local level when the real power lies in the ability of the local governments to place zoning restrictions in their area of governance. As is stated by Allensworth, 'Land use is fundamentally a local matter . . .'.[16]

[9]Richard W. Dunford, R. Dennis Roe, Frederic R. Steiner, William R. Wagner and Lloyd E. Wright, 'Implementing LESA in Whitman County, Washington', *Journal of Soil and Water Conservation*, Vol 38, 1983, pp 87–89.
[10]T.H. Lee Williams, 'Implementing LESA on a geographic information system – a case study', *Photogrammetric Engineering and Remote Sensing*, Vol 51, No 12, 1985, 1923–1932.
[11]Donna Luckey, 'A comparative analysis of land evaluation systems for Douglas County', Unpublished Report, Office of Research Support, University of Kansas, Lawrence, KS, USA, 1984; Dunford *et al*, *op cit*, Ref 8.
[12]Michael N. DeMers, 'The formulation of a rule-based GIS framework for county land use planning', Doctoral Dissertation, University of Kansas, Lawrence, KS, USA, 1985; Lee Nellis and John K. Nicholson, 'Utah's "learning" approach to farmland protection', *Journal of Soil and Water Conservation*, Vol 40, 1985, pp 271–273.
[13]Donna Luckey and Michael N. DeMers, 'Comparative analysis of land evaluation systems for Douglas County', *Journal of Environmental Systems*, Vol 16, No 4, 1986–87, pp 259–278.
[14]Richard S. Bolan and Ronald L. Nuttall, *Urban Planning and Politics*, Lexington Books, Lexington, MA, USA, 1975.
[15]R. Robert Linowes and Don T. Allensworth, *The Politics of Land Use: Planning, Zoning and the Private Developer*, Praeger Special Studies in US Economic, Social, and Political Issues, Praeger, New York, NY, USA, 1973.
[16]Don T. Allensworth, *City Planning and Politics*, Praeger, New York, NY, USA, 1980.

Allensworth also states that, '. . . local governments do in fact have the chief responsibilities for planning and regulating land use in the United States . . .'. What impact might this acknowledged power have on implementation of land use planning procedures?

The Soil Conservation Service, in its design of LESA, indicates a desire both to cooperate with local planners and to have an input into the decision process. Specifically, the Land Evaluation subsystem is designed to enable the Soil Conservation Service to have some input into the decision process and yet allow local officials the controlling voice. Have they succeeded in this endeavour?

To establish this, it is necessary to examine critically a LESA prototype, within a well selected study region. Determination of the planner acceptability of the shared power design of LESA in agricultural land protection efforts will suggest its feasability for further implementation. The model will also suggest to what extent the planners in this study area are willing to accede the power inherent in the LESA system either by design of the LESA model itself, or in the subsequent use of the LESA score derived from such a model.

## Study area

Douglas County, Kansas is located in the north-eastern part of the state (Figure 1) and, although located nationally in a region which is not expected to experience dramatic growth, its proximity to the metropolitan areas of Kansas City to the east and Topeka to the west increases

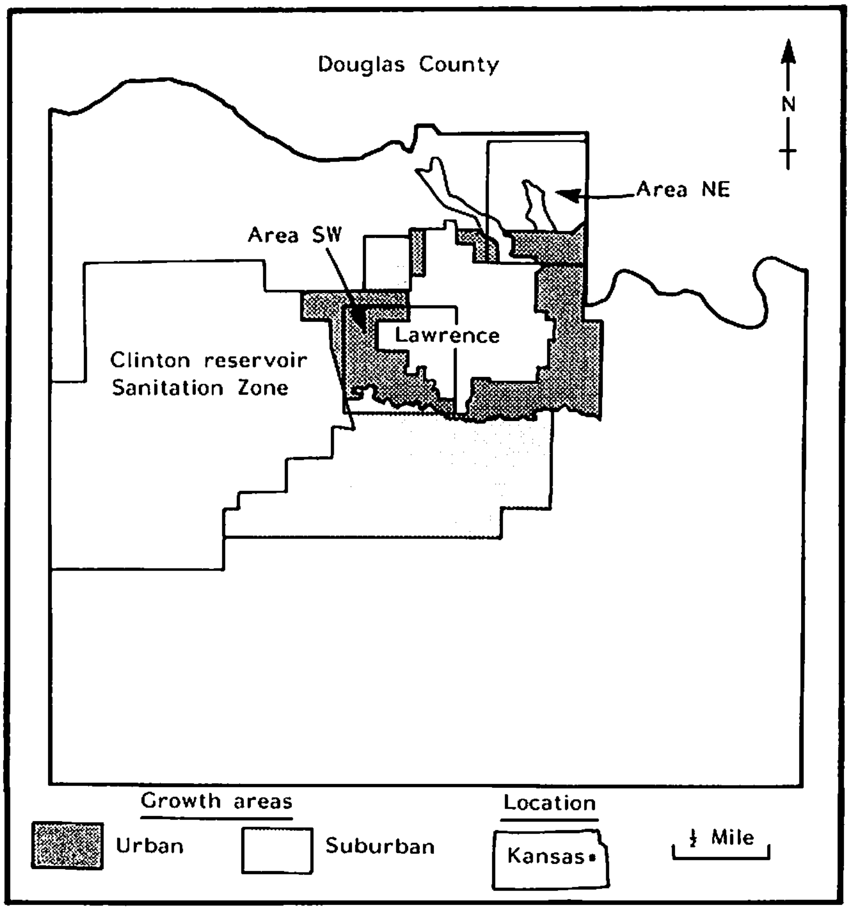


**Figure 1.** Douglas County study area.
*Source*: Donna Luckey, 'A comparative analysis of land evaluation systems for Douglas County', Unpublished Report, Office of Research Support, University of Kansas, Lawrence, KS, USA, 1984.

growth pressures. This location affords the presence of transportation centres, cultural facilities, extensive markets and the associated increase in non-farmland development.

Farming in the county is based on cash crops and livestock, with approximately 50% of farm income arising from cash crops.[17] In the past 15 years Douglas County has lost over 40000 acres of productive farmland (13% of its total area) to the Clinton Lake and Park, rural and industrial development and expansion.[18] This decrease in farm acreage and the subsequent increase in acreage for urban uses has typified the state of the county's land use.[19] Lawrence is one of the most rapidly growing cities in the US, and the rural townships have already passed their predicted population for the year 2000. This further aggravates the competition for an ever decreasing land base. With these pressures there is a demonstrated need for a planning tool like that of the LESA system in Douglas County to preserve the best agricultural lands.

Recent interest by the Lawrence–Douglas County Planning Commission (LCPC) in the development of a LESA system for possible implementation provided the impetus for LESA research in this area. Two databases have been developed at the University of Kansas Department of Geography for inclusion into an automated geographic information system. This work, outlined by Luckey, employs the two areas of study, each five by six kilometres in size (Figures 2 and 3).[20]

These areas, one in the north-east portion of the county and one in the south-west both have characteristics making them suitable for study. The north-west area is adjacent to the city of Lawrence, the Kansas River, the Lawrence Municipal Airport and is a proposed site for an industrial park. The south-west portion exhibits many of the physiographic types in the county, including the Wakarusa floodplain wooded areas, the cuesta complexes and glacially drained plains. This portion is also located in an area which is experiencing increased development due to the completion of the Clinton Reservoir.[21]

Within these two areas individual sites were selected previously for evaluation of historical LESA scores (Figures 2 and 3).[22] These sites were selected to correspond to a historical database composed of zoning permits for non-agricultural uses. A sample of these sites, with a variety of different physical, cultural and economic conditions, was selected from each area for later testing against the permits and other indications of planner decision making in the area. This ready database provided an ideal arena within which to develop a LESA model and to examine both the implications of this model to the region and the dispositions of the planners involved in its creation.

## LESA model for Douglas County, Kansas

The development of a workable LESA model for Douglas County, Kansas[23] is based on the original LESA scheme as implemented by the Douglas County Working Group.[24] The methodology includes approaches to enumerate appropriate LESA factors, factor weights, and to incorporate factor interrelationships. Testing includes planner surveys and comparative techniques to evaluate the learning model.

The initial step in LESA development requires separate creation of Land Evaluation utilizing the prescribed tables and procedures.[25] Douglas County, Kansas has a soil survey which includes all of the necessary information for this determination.[26] Land Evaluation is a

[17]Kansas State Board of Agriculture, *Farm Facts*, Topeka, KS, USA, 1972.
[18]T.H. Lee Williams, John Ackerman, Brian Brisco, Tsao Chu, Michael DeMers, John Hutchinson, Sungpo Jung, Randal McKinley, Robert McMaster, Elizabeth Roth and Robert Yoos, 'The agricultural Land Evaluation and Site Assessment (LESA) system: an automated approach', 48th North American Wildlife and Natural Resources Conference, Radisson Muelbach, Kansas City, MO, USA, 1983.
[19]Harold P. Dickey, Jerome L. Zimmerman, Robert O. Plinsky and Richard D. Davis, *Soil Survey of Douglas County, Kansas*, Soil Conservation Service, United States Department of Agriculture, Washington, DC, USA, 1977.
[20]Luckey, *op cit*, Ref 11.
[21]*Ibid.*
[22]*Ibid.*
[23]DeMers, *op cit*, Ref 12.
[24]Lawrence–Douglas County Planning Commission, 'Preliminary list of site assessment criteria', Internal memo, Lawrence, KS, USA, 1983.
[25]Soil Conservation Service, *op cit*, Ref 1.
[26]Dickey *et al*, *op cit*, Ref 19.

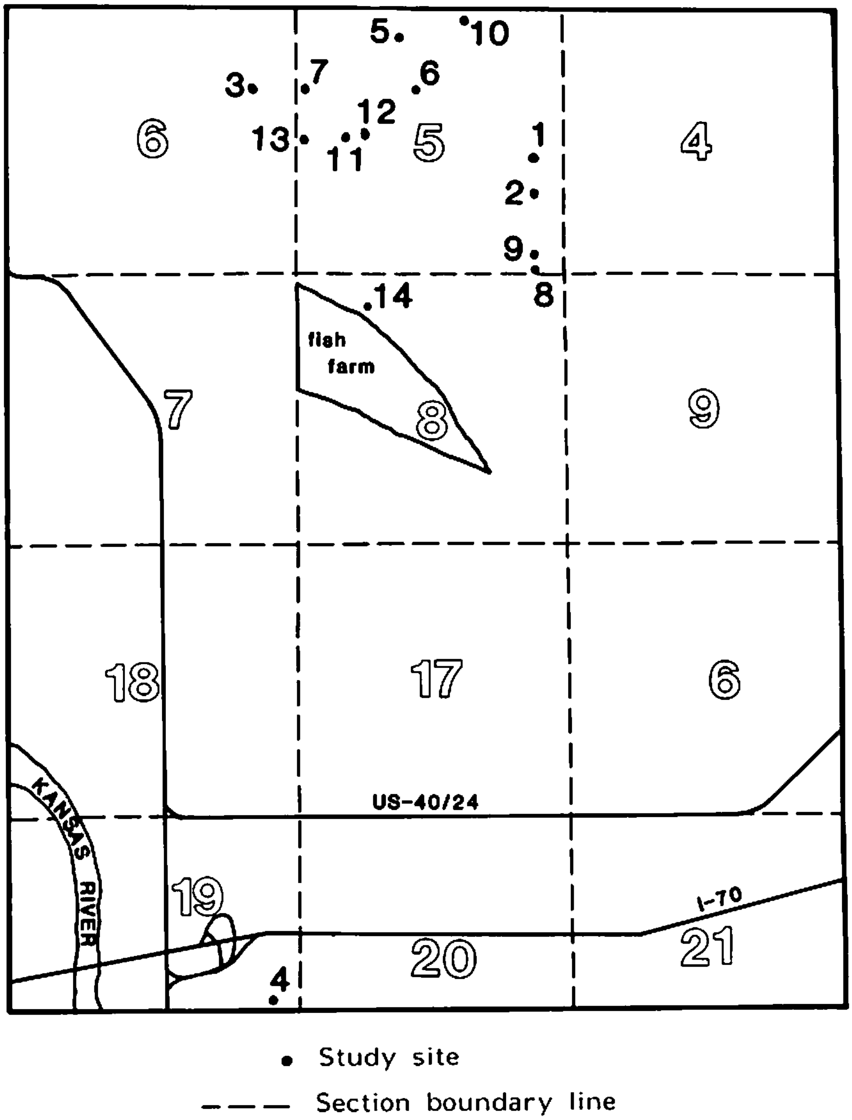


**Figure 2.** Area of the north-east study sites.

combination of the interdependent soils, vegetation and slope data, and is given a weight corresponding to the planners' needs. This procedure has been completed for Douglas County.[27]

Presented with the completed Land Evaluation and a preliminary set of Site Assessment factors previously determined by the decision makers in Douglas County, development of the model could begin. The approach is an iterative model, allowing opportunity for the planners to change their minds, and also provides a formal procedure for selection of factor weights as mutually exclusive entities since the factor relationships are structured using a cross-impact matrix. Further model operation occurs through the application of the Kane Simulation Model which indicates the effect of factor interaction over a period of time. Incorporation of these established dynamics and interactions establishes the final LESA model.[28]

[27]Lawrence–Douglas County Planning Commission, *op cit*, Ref 24.

[28]Michael M. DeMers, 'A knowledge base acquisition strategy for expert geographic information system development', in Bruce K. Opitz, ed, *Geographic Information Systems in Government*, Vol 2, A. Deepak, Hampton, VA, USA, 1986, pp 837–850.

## Evaluating LESA in Douglas County, Kansas

As a beginning model LESA was felt to be applicable to the problems facing Douglas County. A variety of techniques were initiated to extract

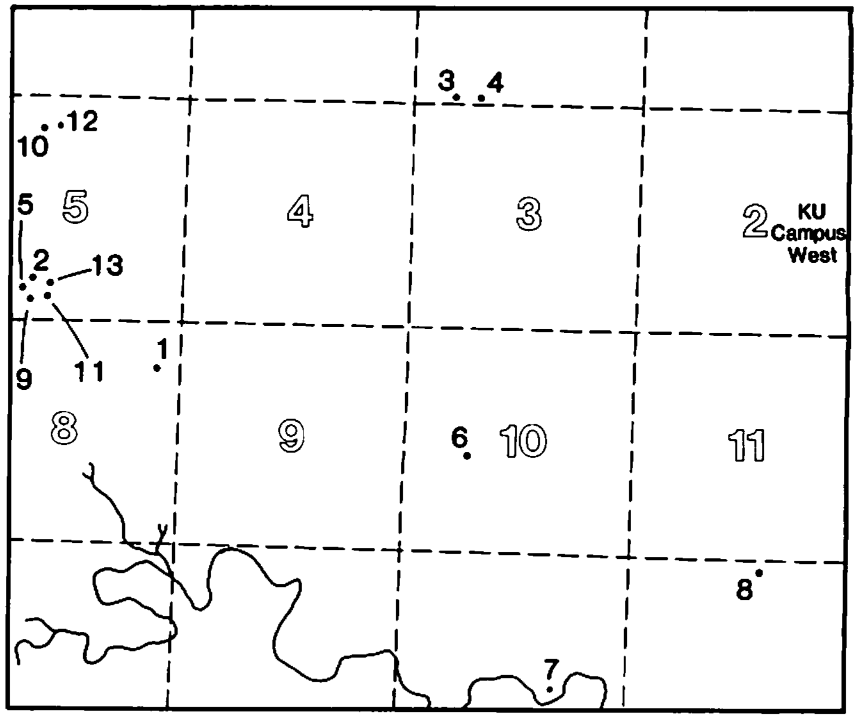


**Figure 3.** Area of the south-west study sites.

factors and factor weightings for LESA determinations in Douglas County from a select group of local planners and zoning administrators.[29] The original LESA model was used as the starting point for model development. However, the planners were uncomfortable not only with the individual factors, but also with the arbitrary one-third of the model suggested for application to Land Evaluation.

It was believed that allowing such a large portion of the model to be determined by the quality of the soils would only be applicable in areas with a wide variety of soil potentials. As Dunford *et al* point out, the Site Assessment portion could be tripled or halved if a county wanted to increase or decrease its weight.[30] They further state that these changes are valid, depending upon local objectives.

Discussion ensued during LESA model development as to what weight to assign the Land Evaluation factor. Although the LESA model normally allows for the fractional modification of the weight of this factor, the planners felt that they should not be restricted in any way as to what percentage of the model to assign to Land Evaluation. It was their observation that the national scheme (Land Evaluation) did not allow for non-agricultural land development in regions with overall very high quality soils, and yet increased the probability of such development in regions with very poor soils, contradicting the study done by Dunford *et al*.[31] At this point the group decided to eliminate the two-part model and include Land Evaluation as only one among a number of factors.

An observer of the final LESA values determined by the Douglas County group will note that Land Evaluation is given a total of approximately 8 points out of a possible 300 for the LESA system (Appendix 1). This works out to less than 3% of the total model determined by the Land Evaluation subsystem. Discussions with the planners indicated that they might be willing to increase this value

[29]DeMers, *op cit*, Ref 12.
[30]Dunford *et al*, *op cit*, Ref 9.
[31]*Ibid*.

somewhat, recognizing its importance to the planning mission. However, a glance at the factor weights indicates a decided preference for those factors which are under the direct control of the planners.

A closer look is warranted here. Of the 300 points possible for the entire LESA model, these planners have allocated the following values to the following factors over which they have control:

(1) Distance from City Limits: 40.55 points. This factor is under the control of the local authorities since they have the power of annexation, thus the power of veto for designated land uses.
(2) Within a Designated Growth Area: 29.72 points. The local authorities define the designated growth area in the first place.
(3) Compatibility with the Comprehensive Plan: 31.38 points. The comprehensive plan is designed by the local authorities.
(4) Sanitary Sewer System Availability: 29.36 points. Sewer system availability is largely under the control of the local authorities through zoning, and since they are the primary source of sewerage.
(5) Urban Water System Availability: 26.62 points. The local authority is in control of the primary water system.
(6) Compatibility of the proposed use with the surrounding area: 25.75 points. Although this is not a directly controllable factor, it is certainly a judgement factor which gives the power back to the local authorities.
(7) Combined factors dealing with zoning (PZAN, ZOS and ZLAS): 36.10 points. Zoning is a fundamental power of the local authorities to control land use.

This gives a total of nearly 220 points of the 300 possible under either direct or discretionary power of the city planners. Combined with other factors which could be interpreted in a slanted manner, or tangentially controlled by the planners, it is obvious that they are not about to allow the reigns of power to be subverted by whatever evaluation system that is designed.

Selection of the weights assigned to the Land Evaluation and Site Assessment factors is not the only method by which the planners might assume control of their own land planning while still using LESA. Once LESA values have been determined, it is ultimately up to the planners as to how to interpret them. If, for example, low LESA scores were to predominate in their area, thus corresponding to low protection efforts, the planning staff could decide to lower the ratings against which these values are checked, thus making more of these low values fit neatly within moderate or even high protection efforts. For example the values could be modified to look more like this:

| | |
|---|---|
| 200–300 | Very high protection efforts |
| 100–200 | High protection efforts |
| 50–100 | Moderate protection efforts |
| 0–50 | Low protection efforts |

The planners indicated many times that they were well qualified to plan or to zone the land in their area. Since they felt they were in tune with the nature of their area, and with the political reality of their area, they should be qualified to make proper decisions based on this expertise. Whether their knowledge of the facts is accurate or whether these individuals were, in fact, well qualified to plan their area is not the question. What is important is that they, as the controlling body, chose to reject the Land Evaluation portion of the LESA model as relatively unimportant and were unwilling to sacrifice their authority to make decisions. They further have designed a system of site assessment which ultimately lends itself to their control.

## Conclusions

It is obvious that not only does an inherent separation exist between the jurisdictional attributes of the two LESA subsystems, but the underlying participant viewpoints themselves influence their attributes. Land Evaluation is predominantly a national subsystem, while Site Assessment could be categorized as a local subsystem. The planners in Douglas County – as indicated by their extremely low weight assignment of the LE subsystem – indicate their desire to maintain control of land use planning in their area.

The weights assigned to the Site Assessment factors by the local planning group reinforce this conclusion, indicating a decided preference for those factors which can be controlled at the local level. Paramount among these factors are those which allow zoning regulations either to restrict or allow non-agricultural development. Other selected factors for which the planners indicated preference include those factors which are not quantitatively defined, but are more subject to interpretation, thus placing them in control of the local regulating authorities.

Finally, the use of a final LESA score is also within the jurisdictional bounds of the local authorities. LESA scores can be adjusted upwards or downwards to correspond to local perceived needs and desires. As such the LESA score is only as useful for protecting important agricultural lands as the local participants will allow.

As a model, LESA provides an ample framework within which local planners might design their own land use. However, since LESA has no legal enforcement under which to mandate the local decision makers to conform to national needs, its use and manipulation are clearly left in the hands of the region in which it is implemented. As such, LESA is only a guide, indicating some useful factors and proposed numerical value assignments. Its ultimate usefulness can only be determined by the wise use of LESA concepts and designs.

These different national and local needs addressed by the two model subsystems must somehow be balanced if they are to be met. Since the ultimate control of a model such as LESA is at the local level, then it is up to the Soil Conservation Service district conservationist to impress the local decision makers with the importance of national conservation of the agricultural resource base. This can be done during development of the Land Evaluation subsystem by designating not only the quality of the soils, but also a proposal for the proportion of the model controlled by Land Evaluation. Further, an indication of how this relates to the local region as part of a national resource base would aid local planners in seeing the broader view.

Ultimately, no planning tool is any better than the individuals who use it. The need for dialogue between planners and conservationists is paramount for success of the LESA model. It is also important that exclusionary principles be applied to especially sensitive or important resources so that no manipulation of LESA scores or ratings might jeopardize these lands. At present LESA has no such provision.

# Appendix 1 Final LESA model for Douglas County

1) Percent of area in agriculture within 0.5 mile (Original Weight 9.04;[a] Weight 7.81) (PAAN)

| Value | Condition |
|---|---|
| 10 | 63–100% of area in agriculture |
| 5 | 35–62% of area in agriculture |
| 0 | 0–34% of area in agriculture |

2) Land in agriculture adjacent to site (Original Weight 11.3;[a] Weight 13.67) (LAAS)

| Value | Condition |
|---|---|
| 10 | all sides of site in agriculture |
| 7.5 | one side of site adjacent to non-agricultural land |
| 5 | two sides of site adjacent to non-agricultural land |
| 2.5 | three sides of site adjacent to non-agricultural land |
| 0 | the site surrounded by non-agricultural land |

3) Size of farm (based on needed size unit to permit feasible operation) (Original Weight 7.91 for size of farm or site;[a] Weight 1.29) (SOF)

| Value | Condition |
|---|---|
| 10 | 12 acres or more |
| 8 | 8–11.9 acres |
| 6 | 4–7.9 acres |
| 4 | 2–3.9 acres |
| 2 | 1–1.9 acres |
| 0 | less than 1 acre |

4) Size of site (Original Weight 7.91 for size of farm or site;[a] Weight 1.60) (SOS)

| Value | Condition |
|---|---|
| 10 | 12 acres or more |
| 8 | 8–11.9 acres |
| 6 | 4–7.9 acres |
| 4 | 2–3.9 acres |
| 2 | 1–1.9 acres |
| 0 | less than 1 acre |

5) Average size of land parcels within 1 mile of site (Original Weight 10.17;[a] Weight 1.77) (ASNP)

| Value | Condition |
|---|---|
| 10 | 12 acres or more |
| 8 | 8–11.9 acres |
| 6 | 4–7.9 acres |
| 4 | 2–3.9 acres |
| 2 | 1–1.9 acres |
| 0 | less than 1 acre |

6) Agrivestment in real property improvements within 2 miles (Original Weight 11.3;[a] Weight 6.88) (AV)

| Value | Condition |
|---|---|
| 10 | high level of investment in farm facilities (long-term) |
| 5 | moderate level of investment |
| 0 | diminishing level of investment |

7) Percent of land zoned agriculture within 0.5 mile of the site (Original Weight 11.3;[a] Weight 6.89) (PZAN)

| Value | Condition |
|---|---|
| 10 | 90 or more |
| 7.5 | 75–89 |
| 5 | 50–74 |
| 2.5 | 25–49 |
| 0 | less than 25 |

8) Zoning of the site (Original Weight 11.3 for zoning of site and land adjacent to site;[a] Weight 6.89) (ZOS)

| Value | Condition |
|---|---|
| 10 | site zoned agriculture |
| 6 | ¼ of site zoned low density residential |
| 3 | ½ of site zoned residential, commercial or industrial |
| 0 | site zoned residential, commercial or industrial |

9) Zoning of land adjacent to site (Original Weight 11.3 for zoning of site and land adjacent to site;[a] Weight 10.38) (ZLAS)

| Value | Condition |
|---|---|
| 10 | all sides of site zoned agriculture |
| 7.5 | 1 side zoned low density residential |
| 5 | 2 sides zoned residential, commercial or industrial |
| 2.5 | 3 sides zoned residential, commercial or industrial |
| 0 | site surrounded by land zoned residential, commercial or industrial |

10) Availability of land zoned for proposed use (Original Weight 6.78;[a] Weight 8.27) (AZPU)

| Value | Condition |
|---|---|
| 10 | undeveloped land zoned for proposed use is beyond the primary growth areas of the incorporated city |
| 5 | undeveloped land zoned for proposed use is beyond the suburban growth areas of the city |
| 0 | no zoned land available for proposed use (this point value can only be assigned when parcel is within the primary or suburban growth areas) |

11) Availability of non-farmland or less productive land as an alternative site within area of consideration (Original Weight 9.04;[a] Weight 7.18) (ALPU)

| Value | Condition |
|---|---|
| 10 | large amount available |
| 5 | moderate amount available |
| 0 | not available |

12) Need for additional urban land (Original Weight 4.52;[a] Weight 7.14) (NMUL)

| Value | Condition |
|---|---|
| 10 | vacant, buildable land within city limits, capable of accommodating proposed use |
| 0 | little or no vacant land remaining within city limits to accommodate the proposed use |

13) Compatability of proposed use with surrounding area (Original Weight 11.3;[a] Weight 25.75) (CPUA)

| Value | Condition |
|---|---|
| 10 | not compatible – high intensity uses |
| 5 | somewhat compatible but not totally |
| 0 | compatible |

14) Does the property have unique topographic, historic or groundcover features or unique scenic qualities (Original Weight 10.17;[a] Weight 4.99) (POUQ)

| Value | Condition |
|---|---|
| 10 | all of the site |
| 5 | part of the site |
| 0 | none of the site |

15) Is the property adjacent to land that has unique topographic, historic or groundcover features or scenic qualities (Original Weight 10.17;[a] Weight 4.36) (ALUQ)

| Value | Condition |
|---|---|
| 10 | on all sides of the site |
| 7.5 | three sides of the site |
| 5 | two sides of the site |
| 2.5 | one side of the site |
| 0 | none of the site is adjacent to these unique features |

16) Land within 100-year flood zone (Original Weight 10.17;[a] Weight 1.84) (LWFZ)

| Value | Condition |
|---|---|
| 10 | 81–100% |
| 7.5 | 61–80% |
| 5 | 41–60% |
| 2.5 | 21–40% |
| 0 | 0–20% |

17) Compatibility with an adopted comprehensive plan (Original Weight 11.3;[a] Weight 31.38) (CWCP)

| Value | Condition |
|---|---|
| 10 | incompatible |
| 5 | compatible with the intent of the plan but not with the plan map |
| 0 | totally compatible with the intent of plan and plan map |

18) Within a designated growth area (Original Weight 11.3;[a] Weight 29.72) (WDGA)

| Value | Condition |
|---|---|
| 10 | rural area |
| 6 | Clinton Reservoir Sanitation Zone |
| 3 | suburban growth area |
| 0 | primary growth area |

19) Distance from city limits (Original Weight 7.91;[a] Weight 40.55) (DFCL)

| Value | Condition |
|---|---|
| 10 | more than 1 mile |
| 7.5 | ½ to 1 mile |
| 5 | ¼ to ½ mile |
| 2.5 | < ¼ mile |
| 0 | adjacent |

20) Transportation accessibility (Original Weight 7.91;[a] Weight 5.08) (TRAN)

| Value | Condition |
|---|---|
| 10 | limited transportation access dominated by rural township roads |
| 6 | access to improved county roads or highway within suburban growth areas |
| 3 | access to improved county roads or highway within primary growth area |
| 0 | access to full range of transportation services |

21) Urban water distribution system with available capacity (Original Weight 9.04;[a] Weight 26.62) (UWSA)

| Value | Condition |
|---|---|
| 10 | no water within 1 mile |
| 7.5 | water within ¾ mile |
| 5 | water within ½ mile |
| 2.5 | water within ¼ mile |
| 0 | water at the site |

22) Central sanitary sewerage system with available capacity (municipal system or established sewer benefit district) (Original Weight 9.04;[a] Weight 29.36) (SSSA)

| Value | Condition |
|---|---|
| 10 | no sewer line within ½ mile |
| 7.5 | sewer line within ¾ mile |
| 5 | sewer line within ½ mile |
| 2.5 | sewer line within ¼ mile |
| 0 | sewer line adjacent to site |

23) Land evaluation (Original Weight 100;[a] Weight 8.63)[b]

| Value | Condition |
|---|---|
| 10 | soils group I |
| 8 | soils group II |
| 7 | soils group III |
| 5 | soils groups IV and V |
| 1 | soils group VI |
| 0 | soils groups VII and VIII |

*Notes:* [a]Original weight adjusted to 200 points for comparison; [b]Derived from original Land Evaluation scores.