COMPARISON EVALUATION OF TWO TEST MODELS FOR IDENTIFYING SECONDARY RESOURCE LANDS

BY

MICHAEL J. McCALLISTER

A RESEARCH PAPER

SUBMITTED TO

THE DEPARTMENT OF GEOGRAPHY

IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE
DEGREE OF

MASTER OF SCIENCE

MAY 1987

DIRECTED BY

DR. JAMES R. PEASE

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ACKNOWLEDGEMENTS

I wish to thank my major professor, Dr. James R. Pease, Land Resource Management Specialist at the OSU Department of Geography for guidance and review of the research methodology, and organizational format of the paper.

I would especially like to thank Kent Howe, Lane County Planner, and the Lane County Planning Department for providing information, research data, and valuable staff time and feedback throughout the testing process. Finally, many thanks to Chris Jones, secretary in the Geography Department and Anne Moller for organizational support.

Abstract. A process to distinguish between primary and secondary resource lands is currently a concern of state and local land-use agencies in Oregon. Two approaches for identifying Secondary Resource Lands have been developed. The Land Conservation and Development (LCDC) staff, in conjunction with the County Planning Directors Association, have developed one model (December 1986 Model). This model has undergone a significant amount of testing in several counties. The second model, developed in the Geography Department at Oregon State University, has undergone limited testing in Lane and Linn counties.

This research paper examines the application of both the LCDC Model and the OSU Lot Specific Model on two large test sites in Lane County. The two different approaches using similar criteria provide a good opportunity to analyze and compare the application, effectiveness, and outcome of each model.

Introduction. Appropriately identifying secondary resource lands is currently a major concern in Oregon's land use planning program. Since the passage of Oregon Senate Bill 100 in 1973, a major emphasis has been placed on the protection of agricultural and forest resources. Statewide Land Use Goals 3 (agricultural) and 4 (forest) outline broad definitions of agricultural and forest lands. The broad definition presents three major problems. First, goal definitions include and protect agricultural and forestry lands with limited resource value. Second, conflicts arise between landowners and county officials over restrictions on rural development, especially in areas of poor resource potential.

Finally, no acceptable planning tools exist to make an appropriate distinction between primary and secondary resource lands. The Exceptions Process is not applicable to exempt land from Goals 3 and 4 because it is designed to allow development inappropriate for secondary lands. These planning problems have been the impetus for development of the secondary land designation process.

Identification of secondary lands is essentially a renewed interest in the Marginal Lands Act. The Marginal Lands Bill 237, was adopted by the Oregon Legislature in 1983. In addition, an alternative to Senate Bill 237 was the Land Evaluation Site Assessment (LESA) model proposed by the U.S. Soil Conservation Service in 1983, and adapted to Oregon's legal system and resource character by Oregon State University researchers.

Criteria in the Marginal Lands Act include tests for gross farm income, parcelization, and soil capability ratings. The model, provided as an option to county governments, allows some resource lands to be designated as "marginal." Adoption of the model requires certain criteria to be used for identification of marginal land, and in turn, places increased restrictions on primary resource lands.

The LESA Model utilizes criteria based on soil ratings, development conflict, and parcel size. Soil quality is characterized by a weighted soil potential rating and classified by landform (Bottomland, Foothills, Terrace). The conflict criteria are based on the number of dwelling units and size of contiguous parcels surrounding a subject lot. Parcel size is based on field sizes and farm unit sizes in a given agricultural area.

The LESA Model and the Marginal Lands Bill have had only limited use in most counties around the state. The LESA Model has been used to evaluate proposals for land use change in both Linn and Marion County. Time requirements to apply the LESA Model have prevented it from being used to identify secondary resource lands. The Marginal Lands Act has only been adopted in Washington and Lane County.

The new attempt to identify secondary lands started in 1985. The legislature required LCDC to "consider adoption of rules, amendment of the goals and recommendations for legislation that will provide a practical means of identifying secondary resource lands and allow specified uses of those lands." As stated in the LCDC Secondary Lands Package, "a secondary lands designation will recognize areas of small-scale and specialty farm and woodland use and encourage its clustering. This will prevent further division of large parcels in commercial farm and forest areas and establish an alternative place for such activities while preventing non-farm rural development." Identifying an appropriate designation process will potentially provide a valuable planning tool for problems associated with broad resource goal definitions.

The initial test draft of the LCDC Model was prepared in December, 1986. The draft is a result of considerable time and effort by the LCDC staff and County Planning Directors Association. Initially, the Planning Directors and the LCDC staff drafted separate models for testing purposes. The model currently being tested incorporates parts of LCDC's original proposal into the Planning Directors initial model.

The model is essentially an areal test with study boundaries defined by contiguous soils of a high, medium, or low rating. Various alternatives in the model use criteria based on parcel size, average parcel size, current land use, and a minimum block size. Land ownership units used in this model are lots or parcels as defined in ORS 215.010 (see Appendix A). Use of a standard soil rating and step-by-step designation process is to ultimately ensure uniform application of test procedures. Seven test counties have been chosen to test the proposed Secondary Lands Model: Coos, Josephine, Lane, and Marion counties in western Oregon, and Crook, Umatilla, and Union counties in eastern Oregon. Limited staff resources have prevented thorough testing in several counties. The LCDC criteria and accompanying flow chart are given in Appendix B.

The alternative model developed at OSU (November 1986) is a modification of the LESA Model. This lot-specific model is based on soil quality, parcelization, conflict of existing and potential uses, and a minimum block size. Land ownership units used in this model are contiguous ownership tax lots. The model consists of five criteria. Each criterion is applied to individual contiguous tax lots; satisfying any one of the five criteria qualifies the subject lot as "Secondary," providing the minimum block size of 640 acres is met. Provisions are made for allowing blocks of less than 640 acres to be designated "Secondary" (Criterion B). Limited testing of this model has been done in Linn and Lane counties by three geography students at OSU. As a result of the initial testing, revisions have been made in the criteria. Complete criteria for the lot-specific model (November 1986) are given in Appendix C.

Objectives. The primary objective of this paper is to compare the lot-specific model with LCDC's areal model on two large test sites in Lane County. Comparing the application, performance, and results will help identify the strengths and weaknesses of each model.

Identification of important issues deserving consideration at this point in the process and recommendations for strengthening the models' performance are included in this paper's objectives. A straightforward evaluation of the status of the Secondary Lands issue for both county and state planners, legislators, and the general public serves as a final objective of this paper.

It is not an objective of this paper to judge each model, but to provide constructive criticism so the models might be improved upon on the basis of this analysis.

DATA, METHODOLOGY, AND TEST SITES

Data Collection and Methodology. A significant amount of data gathering and analysis precedes application of each models' criteria. Four types of necessary data for the LCDC model include soils, zoning, identification of parcels and parcel size, and current land use. Data needed for the OSU model include soils, identification of contiguous ownership tax lots and tax lot size, and the number of dwelling units on each tax lot.

Initial base maps of each test site were produced on the Geographic Data System in Lane County. This system produced a 1:1500 scale computer generated map portraying existing tax lots. The system does not have the capability to generate a parcel map based on the revised 1985 ORS 215 definition. Identifying ORS

defined "Parcels" for application of the LCDC model was not practical using Lane County's information base. The best alternative to "Parcels" was contiguous ownership tax lots which correspond to the ownership unit used in the OSU model.* A zoning map of the same scale was also generated by the Geographic Data System.

To identify tax lot sizes and contiguous ownership, a computer printout of tax lot numbers, ownership names, and acreages were generated. Because the base map did not identify tax lot numbers, information from the printout was transferred to large scale assessor maps. Tax lots from the assessor maps were visually matched with tax lots on the base map and the contiguous ownership and tax lot acreage information was transferred.

Soils data were compiled from orthophoto maps, and enlarged to match the base map scale. Each soil type was then rated high, medium, or low using soil ratings prepared by soil scientists for LCDC. From this, a colored composite map was produced with the three tier classification. The second soil classification based on landforms necessary to apply the OSU model has not been developed in Lane County. Therefore, data developed in Linn County for application of the LESA model was used.

The computer generated base map provided information on existing dwelling units by color coding all tax lots under 20

*Note: "Tax lot" used in the remainder of this paper refers to contiguous ownership tax lots. This is the land ownership unit used for testing both models. "Parcels" refers to that as defined in ORS 215.

acres. Developed tax lots are coded blue, undeveloped tax lots are coded red. All tax lots over 20 acres are toned gray and dwelling units are not recorded. Aerial photographs were used to identify current land use in applying the LCDC model. Compilation of all the contiguous tax lots and acreages, zoning, soils, and existing dwelling units enabled the development of a series of map overlays necessary for application of both models' criteria.

Test Sites. Consultation with Lane County planning staff enabled two large study areas to be identified for comparing each model. One site is predominantly forest lands, the other, agricultural lands. Each test site appeared to have a mix of primary and secondary resource lands.

The Spencer Creek Test Site (Appendix D) consists of 30 sections of land southwest of the Eugene Urban Growth Boundary. The site is located in the foothills of the coast range, bordering the western edge of the Willamette Valley. Forest lands dominate the area except for a strip of Exclusive Farm Use (EFU) lands on the northern half of the site, and scattered islands of rural residential areas.

Soils are predominantly rated high in the southwest quarter of the site, with remaining areas consisting mostly of medium soils. A mix of high and low density parcelization exists in each soil class. Tax lot sizes range up to 300 acres in the forest zones and 140 acres in the EFU zone. Field tests confirmed land uses as generally impacted forest lands with isolated areas of commercial forestry. EFU lands are predominantly small-scale farms utilized for non-irrigated cropland.

The Coburg Hills test site (Appendix E), located northwest of

Eugene includes 24 sections extending eight sections from east to west, and three sections north to south. Located between Junction City and Eugene, the eastern boundary borders Interstate 5, and the western boundary extends west of Highway 99 West. The Willamette River bisects the eastern middle half of the test site. Except for a small strip of low rated soils along the edge of the Willamette River, the middle one-third of the site is entirely high rated soils. An evenly dispersed mix of high and medium soils exist on the remaining land. High and low density parcelization exists along the major transportation corridors, on the high and medium mixed soils, and in strictly high rated soils near the Willamette River. All resource lands are zoned EFU, with commercial agriculture a dominant characteristic of the site. Like the Spencer Creek area, numerous islands of rural residential development exists.

The Spencer Creek site was chosen because of the mix of soils, parcelization, and combination of non-impacted and impacted forest lands, and EFU lands. This enabled testing of the LCDC Model on a variety of resource lands, and allowed a comparison of both models on the EFU lands. The dominant commercial agricultural character of the Coburg Hills site, as well as its potential secondary lands based on existing parcelization, soils, and development conflicts offer another diverse test site. The different characteristics of each test site will enable a good comparison of each model's results.

The LCDC Model: Conceptual and Practical Difficulties

Conceptually, the most difficult aspect of the criteria is the attempt to cover a broad range and variety of resource lands

in Oregon with one model. Although the soils acreages and minimum parcel size criteria vary for different regions, the average parcel size in both the medium soils test (B.3) and the parcelization test (B.5) apply to all study areas statewide. This assumes similar physical, development, and management characteristics of agricultural, farm forest, and forest lands in a very diverse state.

The parcelization test (B.5) irrespective of soils, provides a means to designate land as "Secondary" based solely on the average parcel size of a study area on a given resource land (10 acres EFU, 30 acres Farm/Forest, 40 acres Forest). This test has both conceptual and practical problems. In high soil areas, this test does allow some areas of small parcels to be correctly defaulted to a secondary designation. In medium soils areas, however, the average size test of 40 acres in the Forest zone (B.5) undercuts the medium soils test (B.3). The medium soils test (B.3) provides a linkage between soils and an average parcel size of less than 40 acres (with a 320 acre block size). The parcelization test (B.5) essentially nullifies this linkage in the Forest zone by allowing areas with an average parcel size of less than 40 acres to be designated secondary, regardless of soil type. Besides eliminating the main emphasis linking parcel size and soil type on forest lands, this test applied to any resource land assumes current zoning is appropriate. Another practical difficulty with this test arises when two zone designations apply to a single parcel. No guidelines or criteria address this situation.

The inclusion test (7.C) establishes criteria for parcels to

be retained or excluded from a study area based on soil acreages and parcel size. For medium and low soil study areas (7.C.1), the criteria excludes or retains a parcel from the study area based on the amount of high soils from Table A. The second step applies to those parcels meeting the soil requirement above, and again, excludes or includes the parcel from the study area based on the total acreage of all contiguous parcels (Table B).

For high and low soil areas (7.C.2), parcels are retained or excluded based on the amount of medium soils. Parcels containing less than the amount of medium soils in Table B are treated under the medium soils and parcelization test (B.3).

Both these criteria in the inclusion test involve a two step process. In many cases, a parcel is excluded from a test area with the first criterion and included back into the study area with the second criterion. This two-step revolving type process is conceptually confusing and practically very difficult to apply. The criterion is further confused by a dual reference to Table B. In 7.C.1, Table B is used in reference to acres of contiguous parcels. In 7.C.2., it is referred to as the amount of medium soils in a given parcel.

An "objective means to identify and designate Primary and Secondary lands" is one objective of this model. Application of the model demonstrated that several aspects are perhaps not objective. Study areas are defined by contiguous soils. Identifying this boundary is extremely arbitrary, may vary depending on the map scale, and is not likely to be consistent with each planner within a county. The arbitrariness of this criterion allows boundaries to be gerrymandered to include small

parcels of land and default a study area to a secondary designation.

The cut-off points used in Table A, Table B, and the average parcel size and 10 percent rule (B.6) are also not documented. While these may be appropriate numbers, there is no underlying rationale for them except for initial testing purposes. Refinement of the cut-off points may appropriately identify secondary lands, yet implementation of numbers lacking some scientific or rational basis may be difficult to qualify with the public or other concerned agencies.

Alternative tests to allow planners flexibility is a valuable asset in any land use model. However, the complexity and conceptual difficulties of the alternatives in this model make it difficult to compare and trace the results in each test area, or to be certain the criterion is consistently applied. This may prove a frustrating aspect of the model in the future for any type of review process undertaken by LCDC or other concerned agencies. Other practical problems evident in the LCDC Model primarily stem from data gathering and analysis. Scale differences of available base maps and soils maps make transformation or development of overlays difficult. The emphasis on soils acreage criteria in the LCDC Model makes this a crucial stage in gathering data.

Identifying legal parcels or contiguous ownerships used for this research is very time consuming. Actual time requirements for gathering both soils and ownership information depends on the size and scale of the study area, and level of accuracy and resource gathering techniques available.

A final difficulty in data gathering is interpretation of Table B. This table is based on current land use or acknowledged Comprehensive Plan designation if limited only to a specific type of resource use. In either case, field checks or current up-to-date aerial photographs are necessary. Field checks are often not feasible and many counties may not have current aerial photography.

The OSU Model: Conceptual and Practical Difficulties

The simplicity of this model has limited, but not completely eliminated conceptual and practical difficulties. As mentioned above, accurate transformation of soils information to a base map scale is a practical difficulty also present in this model.

One conceptual problem and concern with the LESA Model developed in 1983 is the conflict criteria. The criteria are based on existing conflict and does not effectively control future conflict that may affect resource lands. The Primary/Secondary Buffer Provision addresses this issue and establishes criteria within the secondary land to protect resource lands in the future. The buffer zone can be established using conflict criteria or natural (rivers, landforms) and man-made (roads) features of the landscape which are effective in protecting surrounding primary resource lands.

Gathering the current number and location of existing dwelling units is necessary to apply the conflict criteria. Although most counties record this information on large scale maps, accurate updates may be necessary. The use of medium (as used in this study) or small-scale maps require information to be transferred from the large-scale maps containing the data.

Unlike the LCDC Model, the OSU Model at the time it was tested only applies to agricultural lands. A recently revised draft of the OSU Model incorporates criteria for evaluating other resource lands. Looking ahead, conceptual problems may arise when trying to fit together this type of methodology and criteria to all resource lands. For example, should the criteria apply to Comprehensive Plan designations (EFU, Farm/Forest, Forest) or to actual use of the land? How will the conflict criteria apply to the boundary of two different types of resource lands? Forethought of these issues, and others, are necessary to complete the secondary land process for all resource lands using this methodology.

Compared Test Results of the LCDC and OSU Models

Results of each test enable a general comparison of the overall outcome of both models. Compared results focus on general differences and several specific tax lots of significant concern.

Spencer Creek Study Area. To reiterate, the test site consists of a mix of Forest, Farm/Forest, and EFU lands. The EFU-40 lands are in two large blocks of approximately 1850 and 547 acres. The site is entirely low and medium soils except for small isolated areas of high soils. The largest block of EFU land is located between and bordered extensively by rural residential areas. The smaller block is situated between rural residential areas, with a limited amount bordered by the exception areas.

Application of the OSU Model, irrespective of the minimum block size, defaulted all tax lots, except for one, to a secondary designation. The exception is a 45 acre tax lot with 90 percent high soils and surrounded on three sides with tax lots larger than

25 acres (Appendix F). Although the site is near an exception area, it is buffered by a 25 acre tax lot. Conflict criteria applied to this tax lot was not satisfied. The remaining land in both blocks of the EFU zone acquired a secondary designation because tax lots are smaller than the median typical field size (Criterion 2), or contained more than 60 percent medium or low soils and are smaller than the owned portion of the median farm unit size for the landform (Bottomland, Foothills, Terrace) on which it occurs (Criterion 4). Both areas of EFU land satisfied the minimum block size criterion. The 547 acre area, which is dominated by low soils, satisfies the minimum block size by inclusion of the surrounding exception area.

Application of the LCDC Model netted results similar to the OSU Model when applied to the EFU land. In the 547 acre block of EFU land, one tax lot of 120 acres maintained a primary designation, the remaining 427 acres defaulted to a secondary designation. The 120 acre tax lot stayed primary using the LCDC Model because it is dominated by medium soils and is over 80 acres. The remaining seven tax lots defaulted to a secondary designation, consisting of primarily low soils with an average parcel size of 61 acres. This average parcel size satisfies the criteria for a low soils study area (B.4). The OSU Model designated this entire area as secondary because of medium and low soils and small parcel sizes.

The larger block of EFU lands also show similar results to the OSU Model. Like the smaller block of EFU land, the exception is the tax lots with medium soils. Five medium soils tax lots between 81 and 170 acres, and the 45 acre tax lot with 90 percent

high soils, maintain a primary designation. The remaining tax lots default to a secondary designation based on minimum parcel size.

Coburg Hills Study Area. The agricultural character of this test site allowed both models to be applied to the entire study area. As mentioned above, all resource lands are zoned EFU 30 or 40. The middle third of the site is entirely high soils, except for a strip of low soils along the Willamette River, and the remaining land is a mix of high and medium soils.

Application of the OSU Model in the high soils area, irrespective of block size, defaulted five significant islands of land to a secondary designation. All tax lots in these islands defaulted on the basis of being smaller than the median typical field size for the landform on which they occur (Criterion 2). One island included less than 160 acres of total land. The remaining four islands are over 320 acres. Only one of the four satisfy the 640 acre minimum block size and retain a primary designation.

In the high and medium mixed soils, two areas over 640 acres consisting of large parcels defaulted to a secondary designation. These contiguous ownership tax lots, ranging from 40 to 180 acres, have 60 percent or more medium soils and are smaller than the owned portion of the median farm unit size for the landform on which they occur (Criterion 4). Both include a number of small parcels surrounding an exception area. A third area, consisting of 11 tax lots adjacent to a rural residential zone and transportation corridor, defaulted to a secondary designation but did not meet the minimum block size. The tax lots along the river consisting of high and low soils defaulted two blocks of land to a secondary designation using these criteria. Neither area met the

640 acre minimum block size and retained a primary designation.

Application of the LCDC Model revealed results similar to the OSU Model. All tax lots within the high soils area retained a primary designation as in the OSU Model. The parcelization test (B.5) applied to this area resulted in an average parcel size of 12 acres (two acres over the 10 acre minimum) and also retained a primary designation.

In the area of high and medium mixed soils, six areas defaulted to a secondary designation. Three areas are near a major transportation corridor or located adjacent to an exception area. Tax lots average less than 40 acres and consist of a majority of medium soils. The remaining areas consist of small parcels and just meet the 160 acre minimum block size. The area of large parcels in the high and medium soils maintained a primary designation with the LCDC Model because the tax lots are over 80 acres.

Two areas along the river consisting of high and low soils also defaulted to a secondary designation. Both areas matched closely with results of the OSU Model. Unlike the OSU Model, both areas satisfied the minimum block size of 160 acres and maintained a secondary designation.

In addition to the eight areas designated as secondary, three other areas in the high and medium soils area qualified for the same designation but did not meet the minimum block size of 160 acres. These three areas retain a primary designation, or may eventually be defaulted to secondary under the 10 percent rule (B.6).

Application of each model to agricultural resource land has

demonstrated some general differences. First, in medium soil areas the LCDC Model is more conservative than the OSU Model. Any tax lot over 80 acres with medium soils automatically retains a primary designation with the LCDC Model. The OSU Model stipulates a minimum lot size based on landforms (Bottomlands 147 acres, Terraces 228 acres, Foothills 148 acres) for tax lots with over 60 percent medium or low soils. Incorporation of parcel sizes documented in the LESA Model (Bottomlands 100 acres, Terraces 120 acres, Foothills 120 acres) into the OSU Model would reflect a more conservative approach for evaluating resource lands in medium soil areas. On the other hand, the OSU Model has a more conservative minimum block size for secondary land (640 acres) than does the LCDC Model (160 acres). Both models have very similar results less the differences in medium soil areas.

One important difference in both models is the outcome and location of tax lots designated primary with potential development conflict. The LCDC Model addresses conflict indirectly through average parcel sizes. In the Spencer Creek study area, all EFU lands designated as primary, using the LCDC Model, are at least partially if not extensively, bordered by exception areas. Application of this model to the remainder of the study area with forest and farm/forest land demonstrated similar results. A good example of this is two tax lots of 81 and 93 acres consisting of medium soils (Appendix G). The two parcels are located between three different exception areas and more than 70 percent of the adjacent tax lots are less than 20 acres. Maximum development of the exception areas and surrounding secondary land may allow conflict inappropriate for primary resource lands. This holds true

for several areas designated primary in both the Spencer Creek and Coburg Hills test sites. This may indicate a need to develop criteria in the LCDC Model which more directly address existing and potential development conflicts.

The OSU Model directly addresses conflict with one criterion (Criterion 3), and indirectly with another (Criterion 2). Defaulting tax lots less than the median typical field size, although probably unintended, established zones of secondary land around the perimeter of many exception areas of both test sites. Yet, this asset of the model is often eliminated because the exception area and proposed secondary land fails to meet the 640 acre minimum block size. However, provision is made for a county to reduce the minimum block size by documentation and findings of fact based on soils quality, parcelization, and conflict (Criterion B).

Several tax lots within the Coburg Hills area also indicate a need for revision of the OSU conflict criteria. For example, one area which received a secondary designation isolates four separate primary tax lots of 27, 34, 44 and 60 acres inside the zone (Appendix H). These four tax lots are bordered on 80 percent of their perimeter by tax lots less than ten acres including a portion of a rural residential zone. The conflict criteria did not default these four tax lots to secondary because the eight dwelling units within one-quarter mile criterion is not satisfied. The 27 acre tax lot is especially a concern, bordered on 40 percent of its perimeter by a rural residential zone. Because the criterion is based on surrounding tax lot sizes and existing dwelling units, the tax lot is not considered in conflict.

However, potential future development of existing surrounding lots without regard to some type of buffering provision would incur conflict on the subject lot based on this criterion. Revision of the conflict criteria may be necessary to reflect a more appropriate outcome.

CONCLUSION

The conclusion of this study is intended to 1) provide comments on the general strengths and weaknesses of each model, and 2) raise several issue questions needing consideration in the future development of the Secondary Lands Process.

The OSU and LCDC Models offer two different approaches attempting to accomplish similar goals. Both models utilize criteria based on parcelization, soils, and development conflicts. As this analysis demonstrated, results are very similar with each model. The major exceptions are treatment of large parcels in medium soils areas, and tax lots with existing or potential development conflicts.

The OSU Model, with an emphasis on objective criteria and lot specific sorting process offers a less complex approach to designate secondary lands than the LCDC Model. This is reflected in application of the criteria to study areas. The LCDC Model, with study areas based on contiguous soils, designates resource lands through a phased process and two-tiered criteria. The OSU Model applies criteria to each specific tax lot; satisfying any one of the five criteria qualifies a tax lot for a secondary designation, providing a minimum block size is met. Simplicity in the final product of either model may play an important role in adoption and acceptability of the process. A clear step-by-step procedure would greatly simplify the LCDC Model.

Administrative efficiency is also a necessary attribute of any model. No technique or methodology should be so demanding of manpower, money, or expertise that it is beyond the capacity of agencies to apply it. Data gathering for both models is very time consuming, and the differences in actual time requirements of each model are minimal. Overall, the OSU Model is likely to be more efficient because soil maps of the entire study area are not necessary. Individual tax lots can be evaluated directly from original soils maps or orthophoto maps. Planning officials expecting a quick and simple process for designating secondary lands may be dissatisfied. Identifying secondary lands is a complex problem and lack of expediency is an unavoidable weakness of each model.

Criteria in any model cannot be expected to cover all situations and circumstances. At the same time, anomalies in the system should not set back the whole designation process. The LCDC Model provides a process to get "close" results and then allows planners flexibility to handle anomolies by application of the ten percent rule (B.6). This rule allows an additional ten percent of the total secondary land acreage in the county to be defaulted to a secondary designation if it meets certain criteria.

The OSU Model handles anomalies by requiring documentation and findings of fact to LCDC to support the inclusion in a secondary zone a block of land or specific tax lot which does not conform to the criteria. The flexibility and leniency of the LCDC Model in handling anomalies has the potential to default a large amount of primary land to a secondary designation. Documentation

of all anomalies in either model is a trade-off between additional staff resources and objectively identifying secondary lands.

Four main issues raised during testing of both models concern 1) the overall spatial outcome of the designation process, 2) buffering provisions of primary lands, 3) designation of medium soils areas, and 4) effects of the "Parcel" definition. Another concern common to all four issues is equity. Prior to adoption and implementation of either model the equity issue deserves more forethought.

The outcome of both models establishes blocks of spatially scattered secondary resource lands throughout a county. Minimum block sizes for secondary zones are conceptually addressed in the OSU and LCDC Models. Yet neither model presents any basis for a minimum block size. How, or if indeed, secondary lands with no minimum block size or a 640 acre minimum block size will affect primary lands has received little attention in this process. The block size and overall spatial outcome of secondary lands may not only directly affect primary land by increases in surrounding development conflict, but may have indirect effects, such as increases in traffic and transportation networks, or increased restrictions of commercial crop spraying and commercial timber practices. Conceptually, a minimum block size seems appropriate; however, identifying the correct size is difficult. Further research may indicate varying block sizes for each type of resource land (Agriculture, Farm/Forest, Forest) is more appropriate than one size for all resource lands.

A minimum block size may also present equity problems in implementation of the process. Tax lots with similar physical

characteristics receive a primary or secondary resource designation based on the character of surrounding land. Explaining this rationale to a private landowner may prove difficult.

A final spatial and equity issue concerns whether or not testing can be applied to parts of the county, or to the whole county. Procedures in the LCDC Model requires testing of all potential secondary resource lands if the ten percent rule (B.6) to handle anomalies is applied. The OSU Model is intended to be tested on parts of the county. Research is being conducted by several OSU students to develop criteria for screening potential secondary lands to identify areas where thorough secondary testing should be applied. This would eliminate applying the secondary land test to all resource lands, and address the equity concerns by providing criteria to objectively evaluate all EFU, F/F, and Forest lands

Closely related to spatial concerns is the issue of identifying and buffering primary lands from secondary and rural residential land conflicts. Analysis presented above show the LCDC Model's indirect approach to buffering is not an effective mechanism for identifying conflict. The OSU Model also needs revision, but the specific criteria has the potential to directly address conflicting uses.

In order to effectively buffer the primary lands and revise the criteria, the accepted and appropriate uses allowed in the secondary zone need to be identified. The density or parcel size allowed will affect development of a buffering provision. Large minimum parcel sizes in the secondary zone will require different buffering provisions than small minimum parcel sizes. Without

agreement on acceptable and appropriate uses in the secondary zone by all concerned agencies, the designation process is useless.

The buffer provision also presents equity problems. Implementation of the provision may impose tighter restrictions on secondary land adjacent to primary land, than on land well inside the secondary zone. Implementing a variety of planning options, such as purchasing development rights or density transfers, may be necessary to establish an effective and acceptable buffering provision around primary resource lands.

The ownership unit used for designating resource lands may be a crucial factor in appropriately identifying secondary lands. The LCDC Model utilizes the 1985 definition of Parcel (ORS 215). The OSU Model uses tax lots of contiguous ownership. Further investigation to determine how utilizing tax lot, parcel, or contiguous parcel ownership, affect, alter, or more appropriately identify secondary lands may be helpful. The best ownership unit is fair, practical for counties to use, and appropriately identifies secondary land.

One of the most apparent problems in the whole testing process is identifying a linkage between medium soils and parcel size which distinguishes primary and secondary land. There are three alternatives worth consideration for solving this problem. The first alternative is to reduce the three tier (High, Medium, Low) soil classification to two tiers. Allow counties to rate soils as commercial or non-commercial, or as primary or secondary. This essentially protects the best soils for commercial use; remaining soils would default to a secondary designation regardless of parcel size. Identifying the critical linkage

between medium soils and parcel size would be eliminated.

Another alternative is to maintain the three tier soil classification and designate medium soil parcels by a method used in Josephine County. This process assigns a composite rating based on the quality of soil and the amount of each type of soil. This weighted average is based on specific soil types, not a classification system, and more objectively and accurately reflects the resource production of the entire parcel. A drawback to this process is the additional staff resources required to individually rate all medium soil parcels. Criteria in the OSU Model alleviates some of the staff time by establishing a minimum acreage size for any tax lot. Only tax lots larger than the minimum acreage would be subject to testing with this weighted soil rating.

The final alternative is to continue testing criteria in the OSU and LCDC Models. This linkage is likely to be identified only by agreement of all those concerned and not by actual resource potential.

A process to appropriately identify secondary lands is a valuable land planning tool for state and county planning agencies. Both models evaluated in this research are a major step towards reaching that goal. Each model has different concepts and criteria emphasized to potentially make an appropriate designation of secondary lands. Various strengths and weaknesses are also apparent in both models. Extensive research and testing to develop the strengths and minimize the weaknesses of these models is anticipated before either is satisfactory. Testing and forethought of the issues discussed and other potential consequences of

designating large amounts of land as secondary, and the impacts it may have on the rural character, natural environment, and primary resource lands of the state should be considered.

The Legislature only required LCDC to "consider" the Secondary Land Process. The whole process is essentially a resource philosophy that must be agreed upon by planners and resource experts around the state. Yet, it should not be compromised to the point of affecting appropriate and realistic results. A secondary lands process which cannot appropriately identify secondary lands will cause irreversible impacts on primary resource land and hinder the political environment and credibility of land-use planning in Oregon. Meeting the goals of the Secondary Lands Package will be a positive step for both Oregon and other state planning programs.

REFERENCES

Hart, Robert N. Secondary Lands Evaluation Memorandum. Josephine County Planning Office, Grants Pass, Or., January 19, 1986.

Holoch, Richard Dale. "Field Evaluations of Parcel-Specific and Areal Applications of Senate Bill 237 Marginal Lands Criteria." Research Paper. Oregon State University, 1984.

Land Conservation and Development Commission, Oregon's Statewide Planning Goals. Salem, Or., 1985.

Land Conservation and Development Commission, Secondary Lands Package Memorandum. Salem, Or., December 5, 1986.

Oregon State University Extension Service, Profiles of Commercial Agriculture for the Southern Willamette Valley, District II, Linn County. Oregon State University, Department of Geography. Special Report 696.

APPENDIX A

Definition of a Parcel - ORS 215.010

215.010 Definitions for ORS Chapter 215. As used in ORS Chapter 215, the terms defined in ORS 92.010 shall have the meanings given therein, except that "parcel":

(1) Includes a unit of land created:
**(a) By partitioning land as defined in ORS 92.010
(b) In compliance with all applicable planning, zoning, and partitioning ordinances and regulations; or
(c) By deed or land sales contract, if there were no applicable planning, zoning or partitioning ordinances or regulations.

(2) Does not include a unit of land created solely to establish a separate tax account.

**ORS 92.010
(8) "Partitioned Land" means to divide land into two or more parcels of land within a calendar year, but does not include:
(a) A division of land resulting from a lien foreclosure, foreclosure of a recorded contract for the sale of real property or the creation of cemetery lots; or
(b) An adjustment of a property line by the relocation of a common boundary where an additional unit of land is not created and where the existing unit of land reduced in size by the adjustment complies with any applicable zoning ordinances.

APPENDIX B

LCDC Secondary Lands Designation Criteria and Flow Chart
(December 5, 1986 Package)

B. Objective Means to Identify and Designate Primary and Secondary Lands

1. The following test are to enable the identification and designation of Primary and Secondary Lands. The process is based on the location of study areas with primarily one soil rating under section B.7 and a further assessment of the areas parcelization and adjacent development pattern under sections B.2 to 6.

2. Areas with a High soil rating shall be designated as Primary farm or forest lands except when included within acknowledged exceptions or as provided for in Sections B.3 to 6.

3. Areas with a Medium soil rating that are not designated as Secondary land under this section shall be designated as Primary Farm or Forest lands.

a. Statewide areas with a Medium soil rating may be designated as Secondary lands if:
   (1) The area does not include a parcel of 80 acres or larger (western Oregon) or 160 acres (eastern Oregon); and
   (2) The area is at least 320 acres with an average parcel size of 10 to 40 acres; or
   (3) The area is at least 640 acres with an average parcel size of 40 to 80 acres; or

b. In eastern Oregon, Medium soil areas may be designated as Secondary lands as follows:
   (1) The area is rangeland that is not necessary for viable operation of an existing commercial ranch. Rangeland is not necessary if it provides AUM's that can be provided for elsewhere on the ranch without range improvements.

*Note for Western Counties: As an alternative test, minimum areas of at least 160 or 320 acres should be used in addition to the 320 and 640 acres set forth in (a)(2) and (3) above.

4. Areas with a Low soil rating may be designated as Secondary land except as follows:

a. As Primary land when they comprise a contiguous area larger than 320 acres with an average parcel size of 240 acres or more (western Oregon) or 640 acres or more (eastern Oregon);

b. The exception in (a) above does not apply in eastern

Oregon when the land:
(1) Is within three miles of an acknowledged urban growth boundary;
(2) Existing roads are adequate to serve the resulting development; and
(3) Domestic sewer and water can be provided on-site.

*Note for Western Counties: As an alternative test, halve the parcel sizes in 4(a) above to 160, and 120 acres respectively.

5. An area may be designated as secondary land regardless of the type of soils it includes when:

a. The area is at least 320 acres; and

b. The average parcel size within the area is not greater than the following:
(1) 10 acres if the area is within an acknowledged EFU zone;
(2) 40 acres if the area is within an acknowledged primary forest land zone;
(3) 30 acres if the area is within an acknowledged farm/forest designation not zoned EFU; and

c. The area does not include a parcel of 80 acres or larger (western Oregon) or 160 acres or larger (eastern Oregon).

*Note for Western Counties: As an alternative test, a minimum of 160 acres should be used in addition to the 320 acres in 5(a) above.

6. An additional ten (10) percent may be designated Secondary land beyond the total which otherwise qualifies under Sections B.1 to 5 as follows:

a. As adjustments to the boundary of areas to be designated as Secondary land because of topography, ownership patterns or natural or human barriers; or

b. As separate areas of at least 160 acres within acknowledged plan areas of Agriculture or Mixed Agriculture/Forestry where the resulting secondary lands designation and development will not force a significant change in or significantly increase the cost of accepted farming or forest practices on adjacent lands designated as Primary lands; and either
(1) The area is composed of soils rated High or Medium which are dependent on irrigation but where irrigation is not possible because it is not available in the foreseeable future or because of the presence of human obstacles such as roads, ditches, powerlines, towers or natural features such as uneven terrain; or
(2) The area is composed of parcels smaller than the

typical field sizes set forth in Table "C"; or (Table "C" will be provided at the meeting next week)
(3) The area contains parcels of such slope or shape that standard agricultural equipment and accepted farming practices are not possible.

*Note: Please identify separately those lands designated as Secondary lands using this test (Section B.6).

7. To designate lands as primary or secondary lands, the following procedures are needed to enable the identification of qualified study areas with primarily one soil rating and to establish the borders of such areas along property boundaries. Soil mapping unit boundaries rarely follow property lines and in most instances it is not practical toplace a dual designation on a single property. Thus it is necessary to establish standards on whether to include or exclude parcels with more than one soil rating from a study area.

More importantly, it is necessary to separate and exclude parcels with a significant amount of High rated soils from Medium and Low rated soil areas. These procedures are as follows:

a. Identify study areas primarily composed of high, medium, or low rated soils for the purpose of designation as primary or secondary lands under Sections 1 and 5;

b. Study areas of Medium or Low rated soils shall be converted to a parcel specific boundary if necessary to exclude High rated soils from the periphery of the study area. Determining a study area's parcel specific boundary shall be done as follows:
(1) Each parcel bisected by the study area boundary may be either included or excluded from the proposed area based on the amount of High rated soils within the parcel.
(2) Those parcels which include an amount of High rated soils equal to or greater than the acreage set forth in Table "A" may remain as part of the study area and be designated the same as the other soils within the proposed area.
(3) Parcels shall be those lots or parcels defined in ORS 215.010.

c. Inclusions of soils with a different rating shall be retained or excluded from a study area as follows:
(1) Within Medium and Low areas, parcels may be retained which include an amount of High soils less than the acreages set forth in Table "A." Those parcels which include an amount of High soils equal to or greater than those set forth in Table "A" shall be measured in their entirety and treated as separate areas if the size of all contiguous parcel(s) is equal to or greater than the acreages in Table "B."
(2) Within High and Low areas, parcels may be retained

which include an amount of Medium soils less than the acreages set forth in Table "B." Those parcels which include an amount of Medium soils equal to or greater than those set forth in Table "B" shall be measured in their entirety and treated as separate areas under Section 3 above.

(3) All cohesive mapping units of Low soils less than 40 acres in High soils areas or 80 acres in Medium soil areas shall be retained and be designated the same as the area it is within. All cohesive mapping units of Low soils equal to or larger than these acreages may be treated as separate areas under Section 4 above.

d. After parcels with the high soils are excluded from the periphery of a study area and other inclusions are either excluded or retained, the study area shall be measured to determine if it meets the minimum sizes set forth in Sections 1 and 5.

e. Areas shall include the following even if in an adjacent county:

(1) Adjacent acknowledged exception areas except that the exception areas cannot be used to determine the average parcel sizes set forth in Sections 1 to 6; and

(2) Adjacent lands composed of soils with same soil rating as the area being tested.

*Note: For the purposes of the initial testing of this proposal, Section B.7(e) need not be followed with regard to lands in adjacent counties.

TABLE "A"

Land Use **	Eastern Oregon	Southern Oregon	Coastal	Willamette Valley
Irrigated or flooded cropland	40	10	20	20
Non-irrigated cropland/pasture	80	20	40	30
Rangeland	160	160	N/A	N/A
Mixed farm/forest	80	20	40	30
Primary forest lands	40	40	20	20

** "Land use" means the current use of the land or acknowledged plan designation if limited to this specific type of resource use.

TABLE "B"

Land Use **	Eastern Oregon	Southern Oregon	Coastal	Willamette Valley
Irrigated or flooded cropland/pasture rated "high	160	40	80	80
Irrigated or flooded cropland.pasture rated "medium"	320	320	320	320
Non-irrigated cropland or pasture rated "high"	320	80	160	120
Non-irrigated cropland or pasture rated "medium"	320	320	320	320
Rangeland rated "high"	320	320	N/A	N/A
Rangeland rated "medium"	640	640	N/A	N/A
Mixed farm/ forest rated "high"	320	80	160	120
Mixed farm/ forest rated "medium"	320	320	320	320
Forest land rated "high"	160	160	80	80
Forest land rated "medium"	320	320	320	320

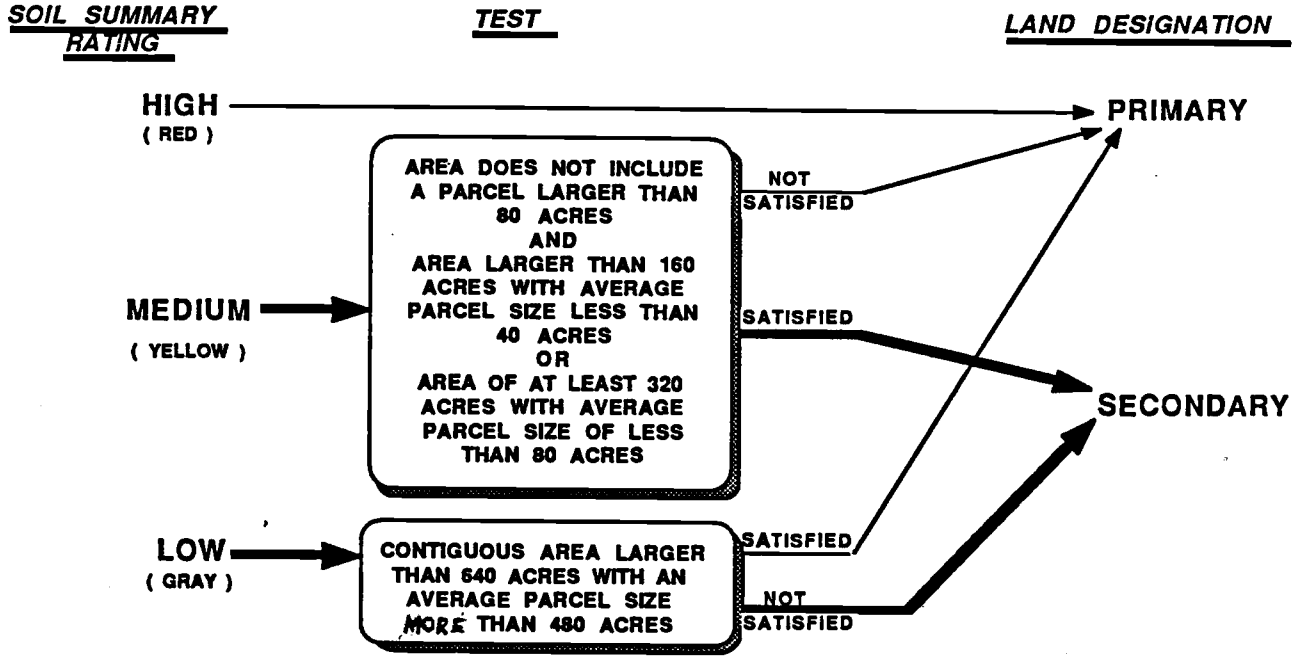
** "Land Use" means the current use of the land or acknowledged plan designation if limited to this specific type of resource use.

SEC.LAND.PAC.120386

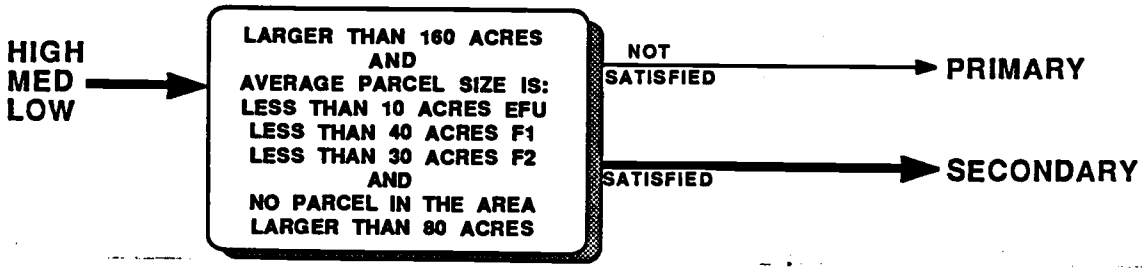
SECONDARY LANDS TESTING

Rural Lands Study

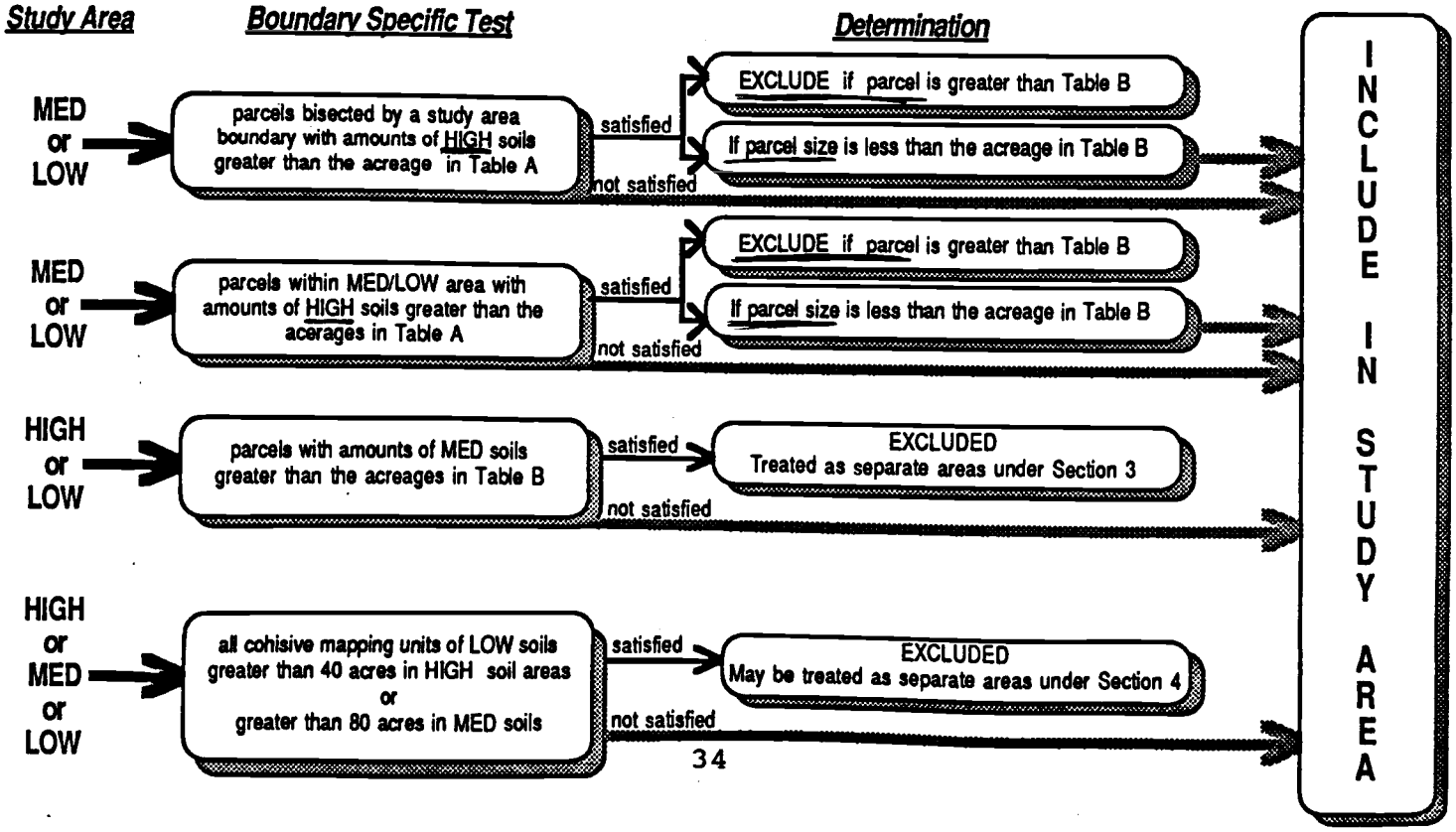
V.B(1-4) Identification/designation of Primary and Secondary Lands



V.B(5) All Soils Ratings



V.B.(7)



APPENDIX C

OSU Secondary Lands Criteria (November 1986, Initial Draft)
Note: As a result of initial testing, revisions have been made to this criteria. A second draft was developed in May 1987.

Proposed criteria for Lot Specific Evaluation of Agricultural Lands.

A. LCDC will review county proposal for secondary land designations in accordance with the following standards based on soils quality, parcelization, and conflict of existing uses. This review may consist of a review of all parcels or a random sample of parcels within the proposed secondary zone.

Parcels may be designated for secondary resource use:

1. That are part of a block of land consisting of 640 acres (block size could be adjusted; perhaps regionalized). The block may include acknowledged exception areas; AND

2. That are less than the median typical field size for the landform on which they occur (20 acres-foothills, 30 acres-bottomland, 40 acres-terrace);* OR

3. That are within one-quarter mile of eight or more dwelling units on small parcels not adjacent to the subject lot** and bordered on 40 percent or more of the perimeter by small parcels that have a dwelling unit on the parcel (Conflict Criteria); OR

4. That consist of at least 60 percent medium or low soils (or an equivalent measure) and that are smaller in size than the owned portion of the median farm unit size for the landform on which it occurs (148 acres-foothills, 174 acres-bottomlands, 228 acres-terrace)*. OR

5. That consist entirely of low soils.

B. Special Cases. For any block of secondary land or any parcel in a proposed secondary zone which does not meet the above criteria, the county must submit documentation and findings of fact to LCDC to support its inclusion in the secondary zone. The findings will show why, based on soils quality, parcelization, and conflict, the block or parcel should be designated secondary lands. LCDC will then rule on each block or parcel.

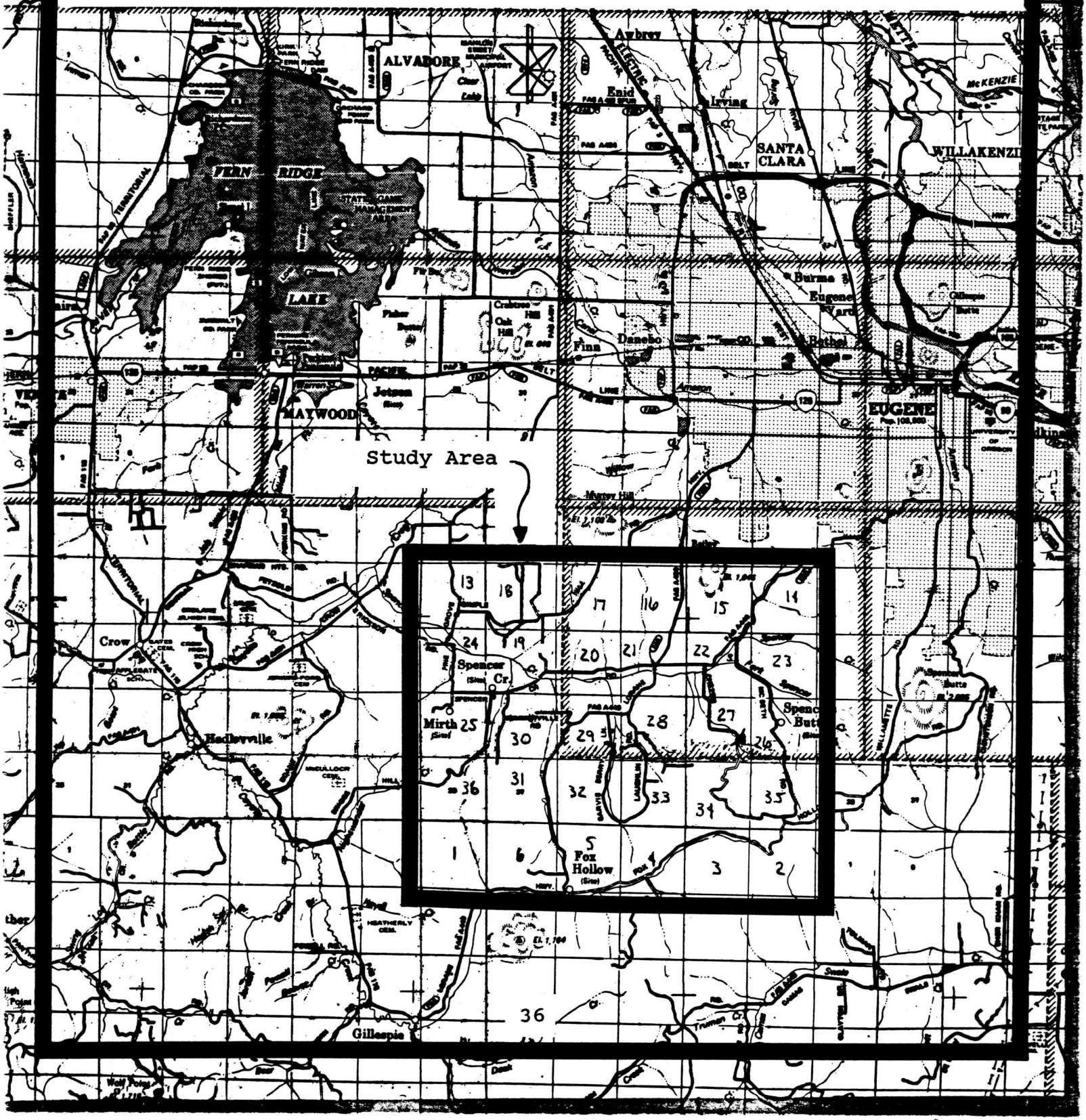
C. Primary/Secondary Buffer Provision. The boundary between primary and secondary lands shall be designated so that the resulting density of the proposed secondary block, when fully developed, will not exceed eight dwelling units on smalls parcels within one-quarter mile of a parcel within the primary zone, and not more than 40 percent of the perimeter of the parcel within a primary zone will be bordered by small parcel(s). A buffer zone may be established, if necessary, to achieve this standard.

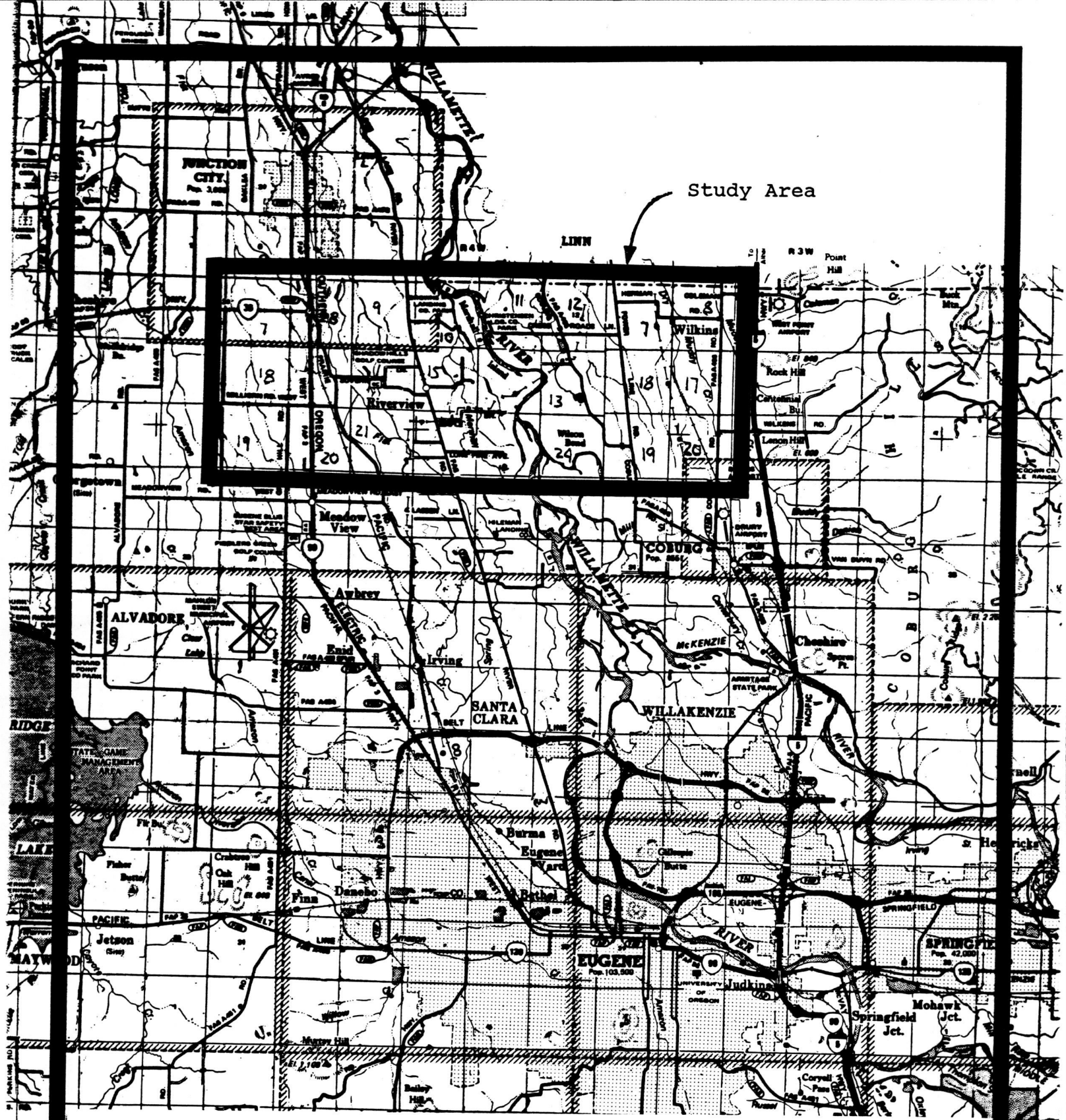
* Figures based on data contained in Profiles of Commercial Agriculture Counties may use local data with methodology approved by LCDC.
** Figures based on Linn County LESA Model.
Note: Small parcels are defined as less than the typical field size for the landform, given in criterion 2.

APPENDIX D

Location Map: Spencer Creek Test Site (15,360 acres) includes:

Township 18 South, Range 4 West, Sections 14-23, 26-35
Township 18 South, Range 5 West, Sections 13, 24, 25, 36
Township 19 South, Range 4 West, Sections 2-6
Township 19 South, Range 5 West, Section 1

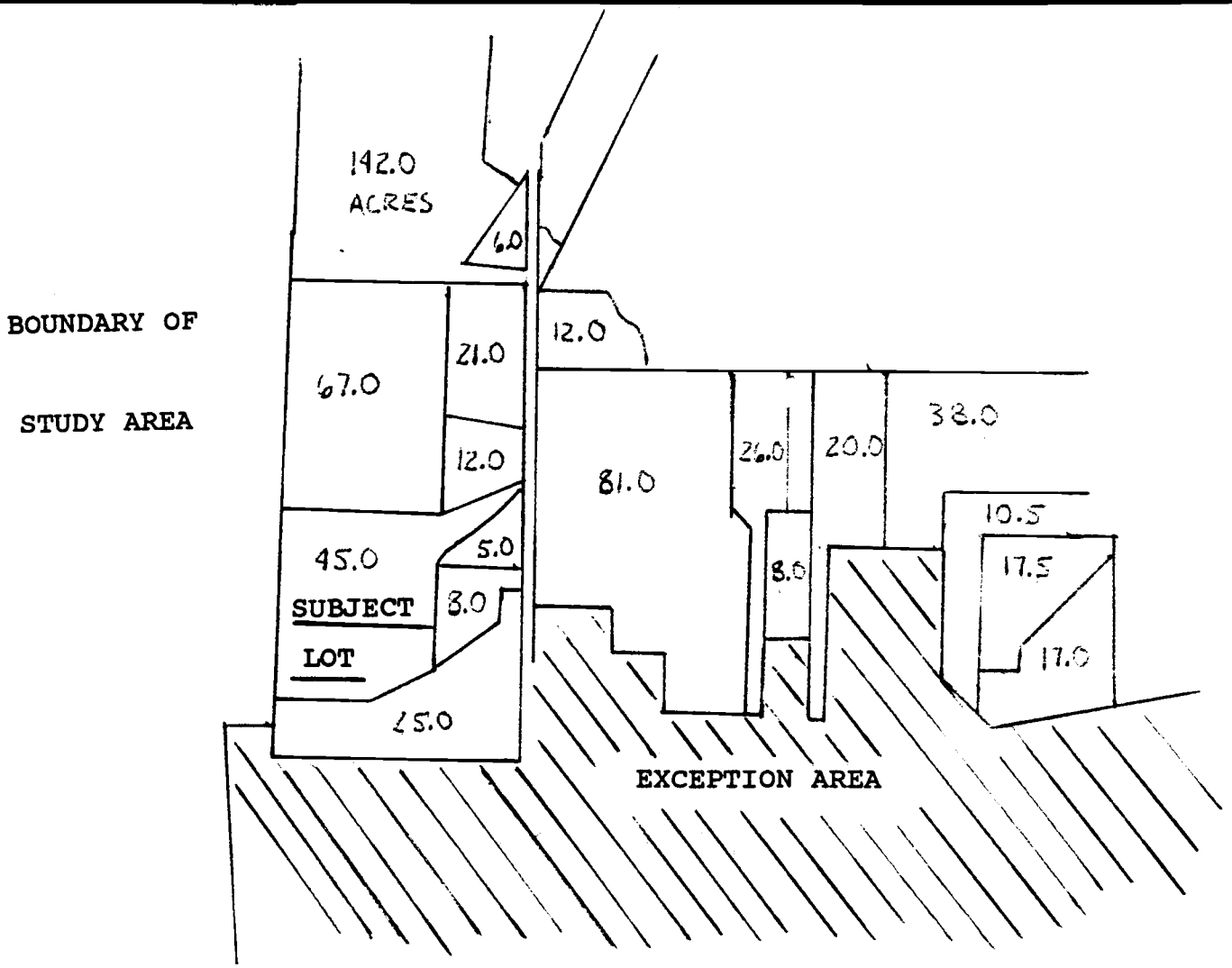




APPENDIX E

Location Map: Coburg Hills Test Site (15,360 acres) includes:

Township 16 South, Range 3 West, Section 7, 8, 17-20
Township 16 South, Range 4 West, Sections 7-24



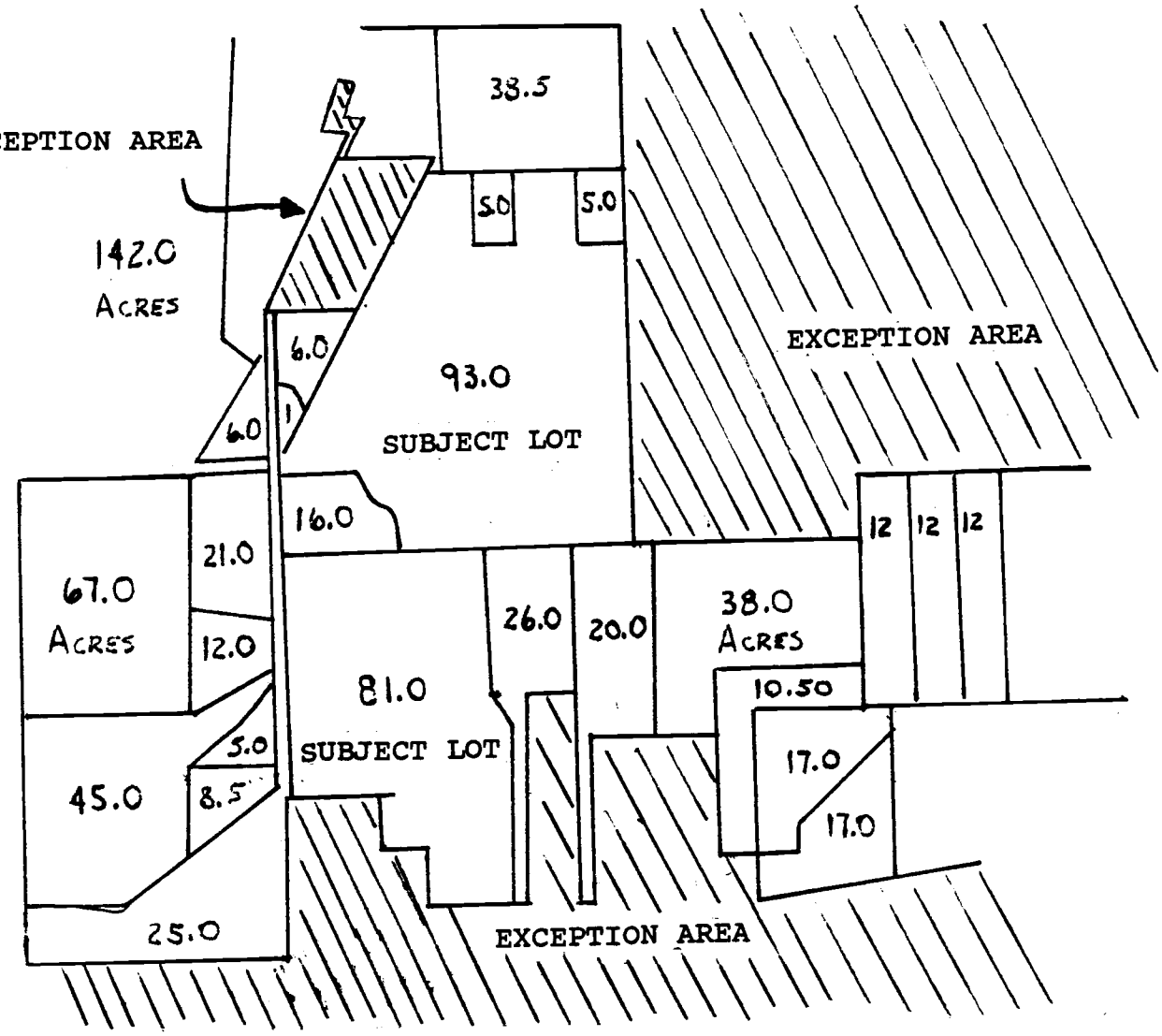
APPENDIX F

(From Spencer Creek Study Area)

Site Characteristics

1. Subject Lot
   - 45 acres
   - Predominately high soils
   - Zoned EFU
   - Primary designation using OSU criteria, secondary using LCDC criteria

2. Surrounding Tax Lots
   - Predominately medium soils
   - Zoned EFU
   - Secondary designation (except for 81 acre lot) using LCDC criteria, all lots secondary using OSU criteria



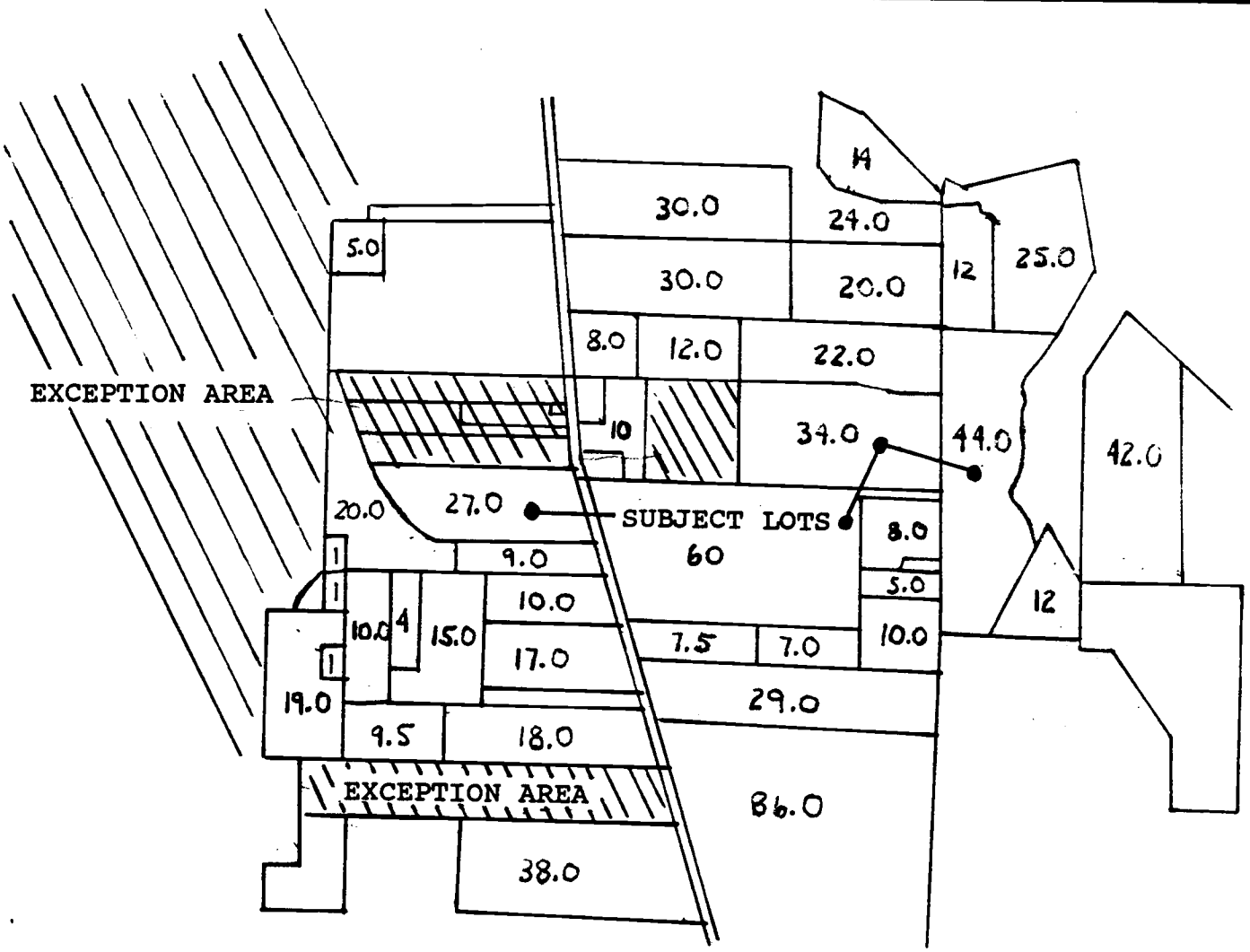
APPENDIX G

(From Spencer Creek Study Area)

Site Characteristics

1. Subject Tax Lots
   - 81 and 93 acres
   - Predominately medium soils
   - Zoned EFU
   - Bordered extensively by exception areas
   - Primary designation using LCDC criteria, secondary using OSU criteria

2. Surrounding Tax Lots
   - Predominately medium soils
   - Zoned EFU
   - Secondary designation using LCDC and OSU criteria



APPENDIX H

(From Coburg Hills Study Area)

Site Characteristics

1. Subject Tax Lots
   - 27, 34, 44, 60 acres (27 acre special concern)
   - Predominately high soils
   - Zoned EFU
   - Primary designation using OSU and LCDC criteria
   - Isolated by secondary zone using OSU criteria, and borders exception areas using both criteria

2. Surrounding Tax Lots
   - Predominately high soils
   - Zoned EFU
   - Secondary designation using OSU criteria, primary using LCDC criteria