FOREWORD

The appraisal of land is a major task in the administration of the assessment process for property taxation. Land values must be determined at the proper level of appraisal and uniformity to produce the full cash value of all real property in the State of Arizona. This Land Manual is a product of the Property Tax Division of the Arizona Department of Revenue, and is adopted for use by all Arizona County Assessors.

This manual describes the standard appraisal methods and techniques that are applied to the appraisal of land, as required by Arizona Revised Statutes. Land classified as agricultural by Arizona statute is valued by a statutory valuation method fully described the Department's Agricultural Manual and is not discussed in this Land Manual. Land in golf courses and shopping centers is valued using statutory methods described in the Department's Assessment Procedures Manual, while the statutory valuation of residential planned unit development common area land is discussed in the guideline, "Residential Common Areas."

The valuation of residential subdivisions, condominium and townhouse subdivisions, and unsubdivided land is specifically discussed in this manual. In addition, the appendices to this Land Manual discuss the methods of land legal description utilized in the State of Arizona.

This Land Manual supersedes all previously issued Land Manuals, memoranda, guidelines, and directives issued by the Department that may conflict with this manual. It is effective as of January 1, 2001.

Inquiries concerning this manual should be directed to the Property Tax Division of the Arizona Department of Revenue. Comments and suggestions concerning the manual are welcomed and may be submitted in writing to the following address:

Property Tax Division,
Arizona Department of Revenue
1600 West Monroe
Phoenix, AZ 85007

Attn: Assessment Standards & Equalization Section

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CHAPTER 1

INTRODUCTION

INTRODUCTION

Definition of an Appraisal. An appraisal is an opinion or an estimate of value. In Arizona, appraisals for tax purposes are ad valorem (according to value). The ad valorem appraisal produces a statement of "market value" or "full cash value." As used in this manual, these terms are synonymous if no statutory valuation method is prescribed.

Definition of Mass Appraisal. "Mass Appraisal of Real Property"[1], a publication by the International Association of Assessing Officers, authored by Robert J. Gloudemans, defines mass appraisal as the "systematic appraisal of groups of properties as of a given date using standardized procedures and statistical testing." Mass appraisal evolved out of the need for uniformity and consistency in ad valorem appraisals.

Additionally, Gloudemans points out in his book, "Improvements in mass appraisal accelerated with the introduction of computers in the 1950s, and these computers were first used primarily in large jurisdictions that could afford the expense. By the late 1980s, jurisdictions with 10,000 parcels could afford a system, including several workstations, a printer, and generic (general-purpose) software, capable of supporting their needs. Hardware and software improvements and cost reductions continue. The power of desktop computers and low costs have led many agencies to migrate to personal computers (PCs), often tied to a 'server' or other computers in networks." The integration of a mass appraisal system with a land record system, and geographic information system, have allowed users to effectively and efficiently implement mass appraisal.

Definition of Land. Legally defined, land comprises a portion of the earth's surface, together with the earth below it, the space above it, and all things annexed thereto by nature or by man. Economists define land as the surface of the earth, and all the natural resources and natural productive powers over which possession of the earth's surface gives man control. For the purpose of appraisal, land is defined as real property exclusive of improvements.

Definition of Improvements. Anything done to land with the intention of improving its value.

1. **Improvements-on-the-land.** Improvements constructed on a site to facilitate its use for a specific purpose. Improvements-on-the-land includes buildings, fences, and driveways,

[1] Copyright © 1999 by the International Association of Assessing Officers.

parking surfaces, retaining walls and similar items. Retaining walls that are constructed to make a site buildable may be considered as part of the land value.

2. **Improvements-to-the-land.** Improvements to make the land usable and/or prepare the property for the construction of improvements-on-the-land. Improvements-to-the-land includes sewers, drains, leveling, backfilling, compacting and other engineering activities, landscaping, and similar enhancements. In land valuation these items are considered in the value of the land and not as part of the building value.

3. **On-site improvements.** Improvements made “to” the building site/parcel that may include both improvements “on” the land as well as improvements “to” the land.

4. **Off-site improvements.** Improvements made outside of the building site/parcel boundary. Typical off-site improvements include such items as streets and utilities and in some instances may comprise a clubhouse, swimming pool or a tennis court.

Legal Definition of Value. Property tax in Arizona is an ad valorem tax based upon “full cash value”, which is the statutory standard for taxation purposes. A.R.S. § 42-11001(5) specifies "full cash value for property tax purposes means the value determined as prescribed by statute. If no statutory method is prescribed, full cash value is synonymous with market value, which means the estimate of value that is derived annually by using standard appraisal methods and techniques."

Statutory definition characteristics:

a) Full cash value is synonymous with market value.

b) Full cash value is an estimate that is derived annually.

c) Full cash value is derived by the use of standard appraisal methods and techniques, with exceptions where statutory methods are prescribed.

Statutory requirements of “full cash value” or “market value”. Current use of the property shall be included in the application of standard appraisal methods and techniques, and “if the methods and techniques prescribe using market data as an indication of market value, the price paid for future anticipated property value increments

shall be excluded". A.R.S. § 42-11054(B). As prescribed by Arizona law, current use has replaced "highest and best use" as the standard for market value appraisal.

Department of Revenue v. Transamerica Title Insurance Company. "Market value" has been defined by the court in the case of Department of Revenue v. Transamerica Title Insurance Company, Court of Appeals of Arizona, 570 p.2d 797, 117 Ariz 26 (1977). The court defined "market value," which is the basis for assessment of property taxes, as the highest price estimated in terms of money which property will bring if exposed for sale in an open market, allowing a reasonable time to find a purchaser who buys with knowledge of all uses to which it is adapted and for which it is capable of being used.

Burns v. Herberger. Decisions by the courts have addressed the statutory definition of "full cash value". In Burns v. Herberger, 498 p.2d 536, 17 Ariz. App. 462 (1972), the Court of Appeals decided that property must be appraised for ad valorem tax purposes with consideration of its current use as a modification of the "full cash value" definition.

Golder v. Department of Revenue. The Arizona Supreme Court further interpreted the statutory value standard in Golder v. Department of Revenue, State Bd. Of Tax Appeals, 599 P.2d 216, 123 Ariz. 260 (1979). The court decided that "current use" could reasonably be interpreted to include holding for investment purposes (speculative purposes). In the Golder case, the court agreed that "full cash value" means the price that a willing buyer will pay to a willing seller in a cash transaction. Thus, the court's decision in the Golder case requires the County Assessor to base assessment on cash sales, or to make appropriate adjustments to market data where few cash sales occur.

Economic Determinants of Value. Property has value when it possesses utility and scarcity. Its value is determined by the supply and demand for that type of property.

1. **Utility.** Utility may be defined in various ways. One definition is "the capacity to excite desire for possession." Some economists call it the quality of "wantedness." The British economist Alfred Marshall defined it as the want-satisfying power of the commodity. Utility is not the same as usefulness. Its nature is essentially psychological, and it depends on the views of buyers and sellers in a market. For instance, diamonds have utility because most people desire to possess them. This desire, in most cases, has little

to do with their usefulness as an industrial tool. Utility is subjective and need not be logical.

2. **Scarcity.** Scarcity is the other quality that gives property value. Air has utility, but because it is not scarce it is not an economic good. A commodity is scarce when it requires time and effort to obtain so that people must economize the use of it. Just as utility without scarcity does not lead to value, so scarcity without utility does not give value. Mosquitoes are scarce in winter, but as they possess no utility they have no value. Property has value because it yields or is expected to yield services that are scarce.

3. **Supply and demand.** Value is determined by the utility of the property, the purchasing power of those interested in acquiring it, the scarcity of the property, and the degree of difficulty involved in overcoming this scarcity. In other words, value is determined by supply and demand.

   a) A demand schedule is the most of a commodity that will be purchased at each different price. The demand schedule reflects the property's utility to individuals, and will vary with purchasing power and differences in taste. A supply schedule is a cost schedule indicating quantities producers will supply at different prices.

4. **Anticipation.** The principle of anticipation states that market value equals the present value of future benefits. Commercial development of land creates income, and the anticipated net incomes capitalized into present value equals the market value. The future rents attributed to vacant residential land capitalized into present value equals the market value of vacant residential land.

5. **Substitution.** A property's value tends to be set by the cost of acquiring an equally desirable substitute. The price, presence, and availability of other land or alternative investments determine the demand for land, and subsequently the value of the land. The principle of substitution provides that the sale price of a property is indicative of the market value of similar properties. The principle assumes that in a competitive market all properties that are close substitutes have approximately the same value and that competitive market properties that have a perfect degree of substitution would have exactly the same value.

Actually, identical properties do not exist, but reasonable substitutes for a property does exist. Due to the nature of the real estate market, and the characteristic of bargaining of most sales, nearly perfect economic substitutes frequently sell for different amounts. Recognizing the non-existence of perfect economic substitutes and the bargaining of most sales, the appraiser places emphasis on the value range. A value range more realistically describes the market value of real estate than a value point. An appraiser attempts to make a reasonable estimate of value that lies somewhere within that value range. Moreover, the range varies with different types of properties. The range will contract for properties in a homogeneous area, and the range will expand for properties in a heterogeneous area.

6. **Surplus productivity.** Income remaining after the costs of labor, capital, and management have been paid from revenue equals surplus productivity. Recognizing land as a fixed asset, surplus productivity exists in the short run, and owners of land might be the beneficiaries of surplus productivity even in the long run. Based on the method of surplus productivity, the residual after the satisfaction of labor, capital, and management equals land value.

7. **Change.** Again, recognizing land as a fixed asset, the dynamic forces of the economy, political environment, and demographics influence the value of land.

The aforementioned definitions and court decisions form a foundation that the remainder of the manual builds upon to explain land valuation. However, in Arizona an appraiser must also consider statutorily mandated valuation methods.

Statutory Valuation Methods. Golf courses, shopping centers, qualified residential common areas, and agricultural land have valuation methods determined by statute. See Part 2, Chapter 2 of the Assessment Procedures Manual published by the Department of Revenue for a discussion of mandated approaches for golf courses and shopping centers. The Agricultural Manual, published by the Department of Revenue, discusses the statutory valuation of agricultural land. For a complete discussion of valuation of qualified common areas, see the Arizona Department of Revenue Property Tax Division Guideline, entitled “Residential Common Areas”.

CHAPTER 2

ANALYZING AND ADJUSTING SALES DATA

ANALYZING SALES DATA

Arms Length Transaction. The first step of a sales analysis requires the verification of the sales. “Arms length transaction” sales qualify for analysis to determine market value. In the "Uniform Standards of Professional Appraisal Practice" (The Appraisal Foundation 1996, 10), market value is defined as follows: The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. "Market value" has been defined by the court in the case of Department of Revenue v. Transamerica Title Insurance Company, Court of Appeals of Arizona, Division 2, 570 p.2d 797, 117 Ariz 26 (1977). The court defined "market value," which is the basis for assessment of property taxes, as the highest price estimated in terms of money which property will bring if exposed for sale in an open market, allowing a reasonable time to find a purchaser who buys with knowledge of all uses to which it is adapted and for which it is capable of being used.

Some of the factors that must be considered before accepting the sale as a valid measure of market value include the following:

1. Was the sale between members of the same family or units of the same business? Such transactions tend to be not truly "arm's-length."
2. Was the sale to or from a governmental agency? As above, these sales tend to not be "arm's-length."
3. Was the sale a sheriff's sales or sold at auction for taxes?
4. Was the seller over-motivated to sell? Was the seller in need of a quick sale?
5. Was the buyer over-motivated to buy? The buyer had to find a place quickly.
6. Did either party appear to take advantage of the other or have knowledge not common to both parties?

Answers to each of the above questions give the appraiser pertinent information to determine the "arm's-length" nature or validity of the transaction. They do not necessarily invalidate the sale; rather they should cause the appraiser to study the sale more closely.

Factors Affecting Land Values. Appraisers analyze economic, social, legal, governmental, political, physical, environmental, and locational factors that influence land values.

1. **Economic factors.** To analyze land sales, an appraiser evaluates economic demand variables such as employment levels, wage rates, income levels and purchasing power, the availability of financing, interest rates, and transaction costs. Supply variables can vary substantially between areas, and they include the quantity of available land, development costs, construction costs, and financing costs. The relationship of the local economy, the regional economy, and the national economy require scrutiny by the appraiser to properly identify the effects of all the variables on land sale prices.

2. **Social factors.** People have the basic desire for territory and companionship. Also, cost and prestige of certain locations motivate people to desire one location over another. The social factors of age distributions, education, crime rates, and pride of ownership, need consideration when analyzing land use patterns and land sales.

3. **Legal, governmental, and political factors.** Local, regional, and national policies require evaluation to determine any effect on land sales prices in a given area. These policies affect the demand for land, and thus help drive sales prices. Policies on taxation, zoning, land use controls, and rent controls can hasten land development or retard economic growth. The presence of amenities such as access, egress, schools, public transportation, and fire and police protection influences demand and land sales price.

4. **Physical, environmental, and locational factors.** Site and situation attributes enable the appraiser to analyze and determine patterns and trends in land value.

    a) Site attributes establish value by allowing the owner to use the inherent resources and features of the land. Common features for consideration in an analysis include size, topography, and view.

    b) Situation attributes establish value by virtue of proximity or accessibility to other resources such as the central business district, a shopping center, a school, a freeway, a waterfront, a sewage treatment plant, or a dump.

Stratification. In the appraisal of land, stratification clusters homogeneous properties according to area, zoning, neighborhood, and subarea. The categorizing of properties by zoning or probable use, location, and similar market influences produces useful groupings. These groupings allow the appraiser to apply values derived from market land sales to land parcels with similar characteristics or competing uses in the same area. These inferred values, based on market analysis and stratification reflect market value.

ADJUSTMENTS TO SALES PRICES

Adjustment Techniques. The occurrence of sale price adjustments for atypical financing, for time, and for property characteristics towards the characteristics of the benchmark establishes value based in the market. Market analysis that precipitates the appropriate adjustments shows what the comparable property would have sold for by eliminating differences between the comparable property and the subject property. Techniques to apply adjustments to comparable sales include adding and subtracting dollars, adding and subtracting percentages, and multiplying percentages. Lump sum dollar amount adjustments applied in any order will not distort the adjusted sales price. Percentage adjustments require the appraiser to make adjustments for land sales in sequence by first adjusting for atypical financing, then time of sale, followed by location, and finally, physical characteristics.

1. **Atypical financing.** Sales prices distorted by atypical financing require an adjustment first. In the case of land valuation, adjustments to sales price merit consideration when the lender and seller are the same party, the buyer assumes an existing mortgage or lease, the seller pays points, or the buyer pays existing tax liability. The appraiser should analyze the down payment and the rate of interest with a “seller carryback” or contract for sale arrangement. A sale with a seller financing at an interest rate above or below the market rate of interest would need an adjustment to reflect the market.

    a) **The amount of the down payment.** A low down payment could suggest an overstatement of the total sales price while a large down payment could indicate a firm sale price. With no down payment the buyer takes little or no risk, hence the seller might seek to compensate by increasing the sale price. If the amount of the down payment shows consistency with other similar properties exposed to the same market with similar financing, then the sale price requires no adjustment.

b) **The amount of interest.** Generally, a financial institution will assign a market interest rate to the mortgage, so the sales price requires no adjustment. If a loan held in total or in part by the seller, it requires further study to see if the interest rate falls within a normal range for the market at the time of the sale. When a seller participates in setting both the sales price and the interest rate, the seller typically adjusts the sale price upward for lower than normal interest rates and downward for higher than normal interest rates.

Example. The property had a nominal sales price of $325,000 with 20 percent down and with seller financed interest of 8 percent for 25 years. Current market financing indicates that conventional lending agencies offer mortgage money at 10 percent.

What is the cash equivalent sales price?

1. Contract amount (after 20 percent down)
   $325,000 - $65,000 = $260,000
2. Principal and interest amortization factor for 10 percent loan for 25 years = 0.110168[1]
3. Principal and interest amortization factor for 8 percent loan for 25 years = 0.093679[2]
4. Contract rate advantage
   0.093676 / 0.110168 = 0.85033
5. Cash equivalent of contract amount
   $260,000 x 0.85033 = $221,086
6. Cash equivalent of sales
   $221,086 + $65,000 = $286,086

The seller added $38,914 (or $325,000 - $286,086) to the sales price and offered below market interest of 8 percent.

To compute the contract rate advantage or the contract rate disadvantage, the appraiser compares the amortization factor of the contract loan rate with amortization factor of the

[1] See Amortization Factor Table in the appendix in Property Assessment Valuation, 2nd Edition, published by the International Association of Assessing Officers.
[2] Ibid.

market rate. For example, consider a contract rate of 12 percent and a market rate of 10 percent.

1. Principal and interest amortization factor for 12 percent for 25 years = 0.127500
2. Principal and interest amortization factor for 10 percent for 25 years = 0.110168
3. Contract rate disadvantage = 0.127500 / 0.110168 = 1.1573

The contract amount needs an increase of 15.73 percent to compensate for the higher than market contract interest rate.

c) **The amount of assumed mortgage.** If a seller offers a below market interest rate, a favorable payment schedule, or both, typically a purchaser will assume the existing mortgage. In this case, the sale price needs a downward adjustment to reflect the market. The purchaser paid more to acquire a mortgage with a below market interest rate.

Example. The acquired property had a sale price of $500,000 with an assumed mortgage of $350,000 for 20 more years at 10 percent interest. The buyer paid $150,000 down on the loan. Current market financing indicates that conventional lending agencies offer mortgage money at 13 percent.

1. Amount of assumed mortgage = $350,000
2. Principal and interest amortization factor for 13 percent for 20 years = 0.142354
3. Principal and interest amortization factor for 10 percent for 20 years = 0.117460
4. 0.117460 / 0.142354 = 0.82513
5. Assumption rate advantage
   $350,000 x 0.82513 = $288,796
6. Cash equivalent of assumption
   $288,796 + $150,000 = $438,796
7. Sale Price = $500,000
   Cash Equivalent Value of Property = $438,796
   Value of Favorable Mortgage = $ 61,204

The seller demanded $61,204 (or $500,000 - $438,796) more when the buyer assumed the below market mortgage rate of 10 percent.

d) **Other financing.** Other financial features of the loan need conversion to their cash equivalent. Financial features that require conversion to their cash equivalent include balloon payments; wrap-around mortgages, variable interest loans, and "buy down" loans where payments are held down for the first few years. These financial arrangements could result in distorted total sales prices, and require careful study by the appraiser.

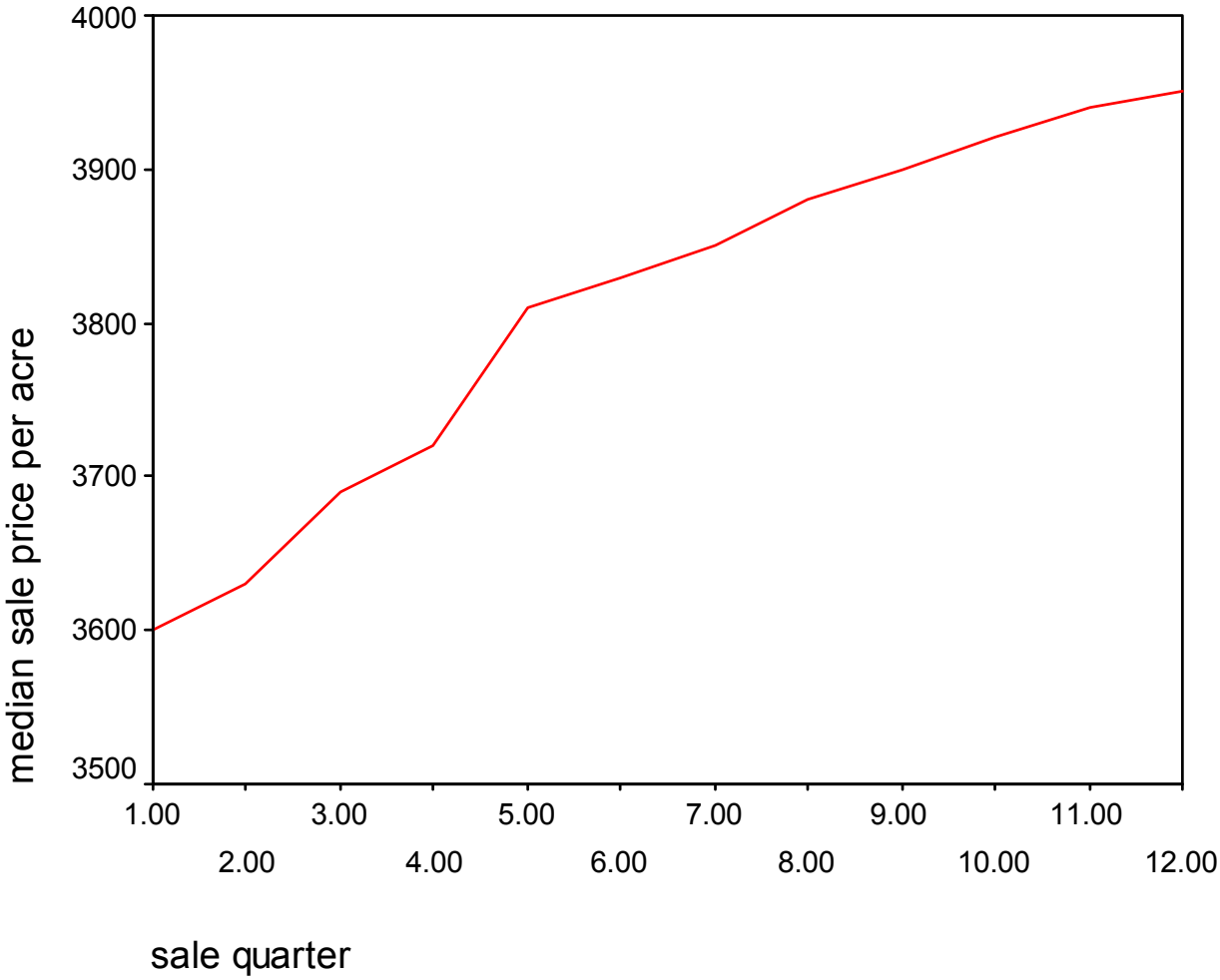
2. **Time.** Generally, if a property sits on the market for a short time prior to sale, many assume that a below market price caused the early sale. It does not necessarily follow that a property with a higher sale price that sits on the market for longer period of time has an above market selling price. If the property remains on the market for an extended period of time, the seller adjusts the price downward to make the property marketable, and the sale requires no adjustment for time on the market.

   In a declining market or a rising market, adjustments for time from the date of sale to the assessment date by property type and by geographic area capture the effects of time on land sales price. A limited number of current year's sales in a dynamic market necessitate a time adjustment study. The time adjustment study supplements prior year's sales with current year's sales. The study indicates the percentage adjustment required to bring prior year's sales to reflect current market conditions. Adjustments by the month or the quarter from the date of sale to the assessment date accurately reflect the amount of change in the market due to time.

   The four methods implemented by mass appraisers to adjust for time include sales ratio trend analysis, multiple regression models, resales analysis, and average unit value comparisons. Multiplicative multiple regression analysis models always assumes compounding adjustments. Regression analysis in an additive model develops the amount of change per period by regressing sale price per unit on sale month or sale quarter. Time adjustment factors applied on a straight-line basis or a compounding basis produce similar results, except in cases of extreme inflation or deflation.

Average unit value comparisons method tracks price trends by plotting per unit values over time. Sale prices can vary greatly with size, so track change in sale price on a per unit basis. Use the appropriate units, for example, front foot for waterfront and commercial land, square foot for residential land, and acres for rural land. Tracking median sale price per unit over time has the advantage of discounting the effects of extreme values, and capture typical price trends better than using the mean of sale prices per month or per quarter.

Example. The line chart below shows median sale price per acre for ranchettes (rural land) during a thirty-six month period. The upward trend in the line indicates inflation.



Since the data are regular and show a relatively constant increase from month to month, we can use the average unit value comparison method. Calculate the percent of change per quarter as shown below.

Total change = (3,950 – 3,600) / 3,600 = 0.0972;

Rate of change per quarter = 0.0972 / 11 = 0.00884;

Percent change per quarter = 0.00884 x 100 = 0.884.

Counties with computer capabilities could implement regression analysis to develop the amount of change per time period. This example assumes quarterly adjustments, and the schedule below allows the appraiser to adjust the sales to the appraisal date.

TIME TREND SCHEDULE

Quarter / Year	Quarter	% Adjustment
01 / 97	1	9.72
02 / 97	2	8.84
03 / 97	3	7.96
04 / 97	4	7.07
01 / 98	5	6.19
02 / 98	6	5.30
03 / 98	7	4.42
04 / 98	8	3.54
01 / 99	9	2.65
02 / 99	10	1.77
03 / 99	11	0.88
04 / 99	12	0.00

3. **Comparability adjustments.** Comparable land sales selected from properties with the same or similar use and within the same market area have the fewest adjustments, and give the best indication of value. Only through a careful study of the land sales data can the determination of the appropriate adjustment factors result.

EXAMPLE. A vacant lot sold one year ago for $50,000 with typical financing. An increase in vacant land sales prices at a rate of 10 percent per year reflects current market conditions. Since the sale took place one year ago, the necessary adjustment that reflects market as of

the assessment date equals 10 percent, or $5,000. Through a market study, the sale comparable lot, located on a golf course, commands a 20 percent premium. Due to the superior location of the comparable lot, a reduction of the time adjusted selling price of $55,000 by 20 percent, or $11,000, reduces the base lot to an indicated value of $44,000.

Sale	Time Adjustment	Time Adjusted Sale	Location	Net Adjustment	Indicated Value of Typical Lot
$50,000	+10%	$55,000	-20%	-20%	$44,000

Example. A flood prone substandard lot requires fill added to the back area to make it useable. Upon careful market analysis, the estimated "cost to cure" equals $4,400. The substandard lot sold for $36,000 one year ago with typical financing. After adjusting the sale for time by increasing the sale price 10 percent to $39,600, the sale price of the substandard lot needs an adjustment increase of $4,400 because the base lot does not have a flooding problem. The $4,400 adjustment gives an indicated base lot value of $44,000.

Sale	Time Adjustment	Time Adjusted Sale	Location	Physical Features	Indicated Value of Typical Lot
$36,000	+10%	$39,600	0	+$4,400	$44,000

4. **Excess Land Adjustments.** Vacant unimproved land in excess of that required by zoning for the operation of the improvements, for the service of the improvements, or for the support of the improvements defines excess land. Excess land provides a buffer between adjacent properties, serves as an investment, allows for extra parking, or gives options for future expansion. A market analysis of similar properties in the area will indicate the value of the excess land.

   A subject property consists of 500,000 square feet. Comparable properties of similar size sell for $15.20 per square foot. Therefore, the estimated value of the property

equals $7,600,000 (500,000 square feet x $15.20 per square foot). At times appraisers cannot find comparable sales of similar size. In these cases, the minimum site size essential for the service and support of the improvements merit consideration. The adjustment process for excess land involves the analysis of sales to determine the minimum site value and the square foot value of any excess land. Zoning sets the restrictions for different types of residential, commercial, and industrial land.

Example. From the previous scenario, assume zoning requires 400,000 square feet for a shopping center, which leaves a remainder of 100,000 square feet of excess land. An analysis of various sized properties with similar characteristics indicates a value of $16.00 per square foot for the minimum site, and $12.00 per square foot for the excess land. Calculate the value of the excess land separately and add it to the land value essential for the service or support of the improvements.

Minimum site	(400,000 square feet x $16.00)	$6,400,000
Excess land	(100,000 square feet x $12.00)	$1,200,000
Total site	(500,000 square feet x $15.20)	$7,600,000

CHAPTER 3

LAND VALUATION METHODS

INDIVIDUAL PARCEL VALUATION

Sales Comparison Analysis. The sales comparison approach, based upon the economic principle of substitution, uses direct evidence of market's opinion of value for the subject property. The approach involves analysis of sales of comparable properties. In addition to actual sales, other sources for sales information for analysis include listings, offers, opinions of real estate agents, and opinions of appraisers. This approach requires obtaining a concise description of the sale properties and a precise expression of the sales price and related information[1]. The description of the sold properties goes beyond just the physical dimensions of the property to include the property rights and restriction to those rights that go with the properties.

The sales comparison approach generally considered the most direct approach in determining market value, uses recent sales with similar property characteristics in the same market area as the subject property. Once the sales have been verified and deemed valid, adjusted for cash equivalencies and stripped of all non-real property assets (see Chapter 2), the sale properties represent the market. The appraiser must now utilize these sales to set market value estimates on both the sold and unsold properties. The process of assigning market value estimates to all the properties requires the appraiser to match the property characteristics of the subject property with recently sold properties that have the most comparable property characteristics. Usually there will be several sales that are comparable to the subject property, requiring the appraiser to select the appropriate value for the subject property from the value range formed by the sale of the comparable properties.

The sales price of an individual property may not reflect the market value of truly comparable properties. If the subject property's sales price appears at either end of the market value range, the value placed on it for property tax purposes must reflect the composite of all comparables. Primarily due to the differing motivation of the buyers and the sellers and the adjustments required for cash equivalency, the value derived from the sales comparison approach covers a range of values and not just a fixed-point value. A strong seller will hold the price up while a strong buyer will drive the price down. Given the mix of buyers and sellers, the sales price on very similar properties could vary considerably.

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[1] For property tax purposes, the property should be valued free of any encumbrance as if in its “fee simple state”.

Two factors limit the usefulness of this method of valuation. First, not all sales give a good indication of market value. The appraiser must investigate and analyze the conditions surrounding each sale to determine validity. Second, certain types of property sold infrequently results in the lack of close substitutes and in insufficient market evidence. In a market with a lack of comparable sales, the appraiser attempting to use the market comparison method must make many adjustments. In spite of these limitations, adjusting actual valid sales to the subject usually replicates a more accurate index of market value than any alternative available. With the availability of reliable data, appraisers prefer the sales comparison method when valuing land.

With insufficient land sales, the appraiser has the option to utilize the allocation or land ratio method, the abstraction method, the anticipated use or cost of development method, the capitalization of ground rents method, or the land residual capitalization method. Successful application of these less preferred methods of land valuation rests in the ability of the appraiser to conduct careful research and exercise good judgement. Listed in order of preference, the following land valuation methods use the sales comparison approach and the income approach for the individual parcel valuation of commercial, industrial, agricultural, and residential land. With enough available land sales, the appraiser has the choice to implement the comparative unit method or the base lot method, which has primary applications of the sales comparison approach.

1. **Comparative Unit Method.** A method of appraising land parcels based on an estimated average or typical value for each stratum of land. The calculated median or mean land sales price per unit represents the average or typical land value. All values chosen for each stratum requires analysis from market data. The appraiser must consider the reasonableness and consistency of choices for each stratum. Market data plotted on maps and driving around the appraisal area gives visual confirmation to the value choices in each stratum. This process verifies relative desirability of each stratum. Block to block analysis will reveal sales trends based on differences in proximity to parks and schools, traffic patterns, noise levels, housing styles and overall block attractiveness. After the establishment of comparative unit values, refinement to the individual parcel level by developing unit values for each block face will address most variations in land values within the area.

a) **Front foot.** Use front foot when front footage significantly contributes to value. Buyers usually purchase prime waterfront lots and prime commercial lots by front foot.

b) **Square foot.** Use square foot as a unit of comparison when the analysis indicates that sites typically sell for a given price per square foot of land area.

c) **Acre.** In general, market analysis will show that appraisers should use price per acre as the unit of comparison for large industrial sites rural and agricultural properties. Convert land area to acres by dividing square footage of land by 43,560 square feet per acre.

d) **Site.** Use site value as a unit of comparison when the market does not indicate a difference in value due to land size. Typically, appraisers use site value as a unit of comparison for valuing residential subdivisions, planned unit developments and industrial parks.

e) **Units buildable.** When a parcel of land sells on a unit capacity basis, an appraiser will use units buildable as a unit of comparison. Apartment property sold by buildable apartment unit in a subarea area justifies the use of units buildable as the unit of comparison for apartment land.

Example. An appraiser must analyze land sales data and select the best unit of comparison.

Land Sale	Price	Price/Lot	Front Foot	Price/FF	Sq. Ft.	Price/Sq. Ft.
1	68,000	68,000	100	680	7,500	9.07
2	36,000	36,000	50	720	4,500	8.00
3	35,500	35,500	50	710	5,500	6.45
4	50,000	50,000	75	667	5,625	8.89
5	69,500	69,500	100	695	9,000	7.72
6	51,000	51,000	75	680	5,625	9.07
7	35,000	35,000	50	700	5,500	6.36
8	70,000	70,000	100	700	9,000	7.78
9	69,500	69,500	100	695	7,500	9.27
10	52,500	52,500	75	700	5,625	9.33

Unit of Comparison	Range	Percent Difference
Price / Lot	$35,000 to $69,500	49.64
Price / Front Foot	$667 to $720	7.36
Price / Square Foot	$6.36 to $9.07	28.88

In the example above the data indicates that price per front foot has the least percent difference, and the use of price per front foot will reduce variation in value when applied to subject properties. Divide the difference of the upper and lower limits by the upper limit to calculate percent difference.

f) **Advantages.** Advantages of the comparative unit method include ease of use, simplicity, and efficiency. When the subarea varies in size, but has all other land characteristics in common, the comparative unit method has the advantage over the base lot method. The comparative unit method requires refining by block and individual lot the same as the base lot method.

2. **Base Lot Method.** This method uses the sales comparison approach to estimate the value of the base lot. The appraiser selects the most typical lot in the subarea as the base lot.

a) **Standard of comparison.** The base lot provides a standard of comparison to value the remainder of the parcels in the subarea by making adjustments for differences in property characteristics between the base lot and the subject parcel. The base lot method calculates adjustment amounts caused by differences in property characteristics between the base lot and other comparable sales. The application of these adjustment amounts to the base lot value for differences in property characteristics of individual subject parcels gives an estimate of value for all the parcels in the subarea.

b) **Benchmarks.** The base lot method establishes land sale properties as benchmarks for properties different from the base lot. Size, view, location, shape, topography and access make up the most typical adjustments to land. Always develop the most supportable adjustment first, the next most supportable second,

and so forth. One common method of market analysis to develop adjustment amounts involves the use of matched pairs. Matched pair analysis requires similarity of sales in all but one characteristic. For example two similar lots in the same neighborhood sell, one with a view and one without a view. Since one sale does not make a market, it requires a succession of these matched pairs to validate a view adjustment. An extension of the matched pair concept compares a sales grid to the base lot. For example, ten sales differ from the base lot in only one property characteristic. Two sales differ due to location, three sales differ due to street type, and five sales differ due to view. Remember, always determine the most supportable adjustment first. In this case, first calculate the view adjustment, then the street type adjustment, and finally the location adjustment.

Example. An appraiser must analyze sales data and select a base lot value.

	Time-adjusted sale price (in dollars)	**View**	**Traffic**	**Size**	**Adjusted sale price (in dollars)**
Base lot	N/A	Standard	Moderate	¼ acre	N/A
Comparable 1	53,000	Standard	Light	¼ acre	50,350
			(-.05)		(-.05)
Comparable 2	53,000	Standard	Moderate	¼ acre	53,000
Comparable 3	79,400	Premium	Light	¼ acre	55,580
		(-.25)	(-.05)		(-.30)
Comparable 4	47,000	Restricted	Moderate	¼ acre	54,050
		(+.15)			(+.15)
Comparable 5	64,000	Standard	Moderate	½ acre	44,800
				(-.30)	(-.30)
Comparable 6	45,000	Restricted	Heavy	¼ acre	56,250
		(+.15)	(+.10)		(+.25)

Comparable 2 reflects the base lot value at $53,000. Measures of dispersion gauge the accuracy of base lot values. Large measures of dispersion indicate a need for additional analysis. In the example above the values range from a low of $44,800 to a high of $56,250, and the average absolute deviation from the base lot value equaling $2,955, or about 5.6 percent of $53,000, indicates consistency among comparables. If the appraiser encounters large measures of dispersion, further stratification generating additional base lots will reduce average absolute deviation.

c) **Advantages.** Advantages to the base lot method include accurate and supportable benchmarks that aid in the defense of values. Also, the base lot method has a high degree of explicability to the taxpayer. When an appraiser needs to adjust for many differences in property characteristics, the base lot method exhibits superiority over the comparative unit method. For additional explanation about the comparative unit method or the base lot method see Chapter Seven in Property Appraisal and Assessment Administration[2].

3. **Allocation Method.** The allocation method has basis in the theory that for a given type of property and area, the appraiser can determine a consistent overall relationship between land and improvement values. The allocation method includes estimating the amount of value that land contributes to the total value by appraiser's knowledge, by previous year's land values, by analysis of new construction sites from similar market areas, and by land to building ratios from similar market areas. Appraisers analyze vacant land sales and improved sales from comparable and competing market areas to develop appropriate land to building ratios. In the absence of sufficient land sales, applications of the ratio in the subject market area to improved sales will give reasonably accurate land values. Land values estimated by the allocation method require additional analyzing to establish comparative unit values or base lot values. Converting land estimates to comparative unit values or base lot values will enhance uniformity and consistency among parcels in the subject market area.

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Example. Recently developed land and improvement values derived from market land sales for three comparable neighborhoods indicate the following land ratios.

Neighborhood	Average land value	Average total value	Land ratio
1	29,672	117,067	0.253
2	33,632	127,243	0.264
3	32,261	120,330	0.268

If a typical property in the subject area recently sold for $123,000, we estimate the land value as 26% of the sale price, or $31,980. This process applied to improved sale properties in the subject area obtains a set of estimated benchmark values. These estimated benchmark values comprise the basis for comparative unit values and base lot values.

a) **Advantages and Disadvantages.** The allocation method does not have the specific requirement for estimated improvement values as does the abstraction method, which makes the allocation method particularly appropriate to value older neighborhoods with few sales of vacant or newly improved parcels.

4. **Abstraction Method.** The abstraction method subtracts the depreciated replacement cost of improvement value from the sales price to yield the residual land value estimate. These calculated land values supplement the land sales database. The reliability of the generated improvement values depends on the accuracy of the cost model and the judgement of the appraiser in the calculation of depreciation. Sales with newer improvements make it easier to estimate depreciation, which gives a better residual land value estimate. As a last resort, if the market area does not have enough improved sales, the appraiser may use appraised values instead of improved sales. The appraiser should carefully validate the appraised values before implementing this diluted form of the abstraction method. Land residual estimates generated by the abstraction method require further analyzing to establish comparative unit values or base lot values. Converting land residual estimates to comparative unit values or base lot values will enhance uniformity and consistency among parcels in the market area.

Example. Demonstrates the abstraction method of land valuation.

Sale price of property		$ 180,000
Replacement cost new estimate	$ 200,000	
Less accrued depreciation	$ 50,000	
Estimated value of improvements		$ 150,000
Indicated land value		$ 30,000

a) **Advantages and Disadvantages.** In developed areas with few or no land sales, the abstraction method provides an alternative land valuation method. This method of land valuation weakly substitutes for the direct sales comparison method, but will suffice in the absence of vacant land sales.

5. **Anticipated Use or Cost of Development Method.** In the absence of sufficient land sales data, the appraiser hypothetically develops the vacant site. This method involves some speculation, and the projected improvements must represent the most probable use of the land. The results of this method, based in the principle of surplus productivity, indicates the price a prudent developer will pay for land in its present undeveloped condition by subtracting the total development costs from the projected sales prices of the lots as if developed. The appraiser calculates the residual land value after the satisfaction of labor, capital, and management.

Example. A study of the market with necessary technical assistance shows the distribution of costs for site development at 25 percent, overhead and sales expense at 25 percent, and profit and interest at 25 percent.

Projected sale price of tract (36,000 X 100 lots)		$3,600,000
Site development: streets, sewers, water service, site preparation, planning	$ 900,000	
Overhead and sales expense	$ 900,000	
Profit, interest, and entrepreneurial profit	$ 900,000	
Less estimated total development costs		$2,700,000
Indicated value of undeveloped land		$ 900,000

a) **Advantages and Disadvantages.** The anticipated use or cost of development method serves as a backup method to substantiate the direct sales comparison method. The cost of development method falls under criticism primarily because of its hypothetical nature. Appraisers must not arbitrarily select percentage of projected sale price as the indicated value of the raw land. In order to defend the land values generated from this method, the appraiser must perform a study of the market, and solicit the necessary technical assistance to develop a reliable percentage of projected sale price. This method serves as a substitute only when the subject market area lacks sufficient land sales to employ the direct sales comparison method.

Income Approach Analysis. Income property as a class is "that property which for its primary purpose has the capacity to produce monetary income." All income properties have one common appraisal characteristics: their value has basis in the quantity, quality, and durability of their estimated net income stream before debt service and after allowable expenses are deducted. The capitalization of the income stream generated by land gives an important indication of value.

The five commonly accepted ways an income property owner realizes a return on an investment include:

a) monthly incomes representing a difference between gross cash flow and expenses,

b) income tax benefits derived from applying interest payments,

c) taxes and building depreciation against income,

d) amortization derived from using the cash flow to make the mortgage payments, and

e) appreciation of property based on economic trends or upgrading.

6. **Capitalization of Land Rent.** The performance of land valuation through direct capitalization of land rent requires land rented or leased independently of improvements. The method has its greatest application in the appraisal of farmland. In compliance with the A.R.S. § 42- 13101, Arizona uses this method exclusively to value agricultural land.

The Agricultural Manual, published by the Department of Revenue, discusses the statutory valuation of agricultural land.

In addition, this capitalization of land rent has application for commercial land with leases on a net basis. Appraisers evaluate leases to assure consistency of terms of the lease with current market requirements. Net rent from a lease of commercial land can be directly capitalized into an indication of land value.

Example. Assume a piece of downtown land used for parking recently leased on a net basis for ten years at a rate of $18,000 per year. Capitalized at the appropriate market rate of 10 percent, see the indicated market value below:

$18,000 / 0.10 = $180,000

7. **Land Residual Capitalization.** Apply the land residual capitalization technique with a known improvement value coupled with the absence of vacant land sales to support the land value. The relatively new improvements must represent the highest and best use of the land, and have no observed depreciation to accurately estimate the their value. The land residual technique uses straight line, annuity, or sinking fund income capitalization methods. Information necessary to process a land residual technique problem includes (1) the net operating income, (2) the building value, (3) the proper discount rate, (4) the proper recapture rate, and (5) the effective tax rate.

Example 1. Capitalization using the straight-line recapture method with the land residual technique.

Assumptions:

Building value	$240,000
Remaining economic life	40 years
Discount rate	0.10
Annual gross rental income	$ 50,000
Annual operating expenses	$ 10,000

Calculations:

Gross annual income	$ 50,000
Less annual operating expenses	10,000
Net annual income	$ 40,000
Building value	$240,000
Times capitalization rate (0.10 discount rate+ 0.025 recapture + 0.025 effective tax rate)	0.15
Income attributable to the building	$ 36,000
Net annual income	$ 40,000
Less income attributable to building	36,000
Income attributable to the land	$ 4,000

To calculate land value, divide income attributable to the land by the discount rate of 0.10 plus the effective tax rate of 0.025. There is no recapture increment in the land capitalization rate.

	Building	$240,000
$4,000 / 0.125= $32,000	Land	32,000
	Total	$272,000

Example 2. A two-year-old office property has a net operating income (NOI) of $200,000 per year. The building is valued at $1,200,000 and has an estimated 40-year remaining economic life. The current discount rate is 10%, current effective tax rate is 2% and the recapture rate is (1 / REL of 40 years = 0.025 or 2.5%).

Net income before recapture and real estate taxes		$200,000
Capitalization Rate:		
Discount Rate	10%	
Recapture Rate	2.5%	
Effective Tax Rate	2%	
	14.5%	
Less income from building (0.145 x 1,200,000)		$174,000
Income attributable to land		$ 26,000
Land Value $26,000 / 0.12 (Discount Rate + ETR)		$216,666

Example 3. Land Residual Method (Annuity Capitalization) with same assumptions as stated in example 2.

Net income before recapture and real estate taxes	$200,000
Partial payment factor[3] 10% for 40 years	0.1023
Effective tax rate	0.0200
Total	0.1223
Less income from building (0.1223 x 1,200,000)	$146,760
Income attributable to land	$ 53,240
Land Value[4] $53,240 / 0.12 (Discount Rate + ETR)	$443,666

[3] The appendix in Property Assessment Valuation, 2nd Edition, contains compound interest tables used to calculate land value by the income approach.

[4] For further assistance see Chapter 12 of Property Appraisal and Assessment Administration, and Chapter 5 of Property Assessment Valuation, 2nd Edition, both published by the International Association of Assessing Officers.

CHAPTER 4

RESIDENTIAL SUBDIVISIONS

SUBDIVISIONS

A.R.S. § 32-2101(54) mandates that any parcel of land in Arizona that is divided into six or more lots, parcels or fractional interests is a subdivision if each of the lots, parcels or fractional interests are less than 36 acres in size. However, this definition, when considered alone, is insufficient when utilized for the assessment of subdivision land. There are many variations between the different cities and counties in Arizona in their requirements for lot splits and other types of land subdivision which must be considered. For example, in one county, a large tract of land that has been divided into several 40 acre "ranchettes," and which includes only one parcel which is less than 36 acres in size, has been deemed to be a subdivision. This is obviously inconsistent with the above definition. Knowledge of local practices, as well as relevant statutory requirements are, therefore, essential to the correct valuation of subdivision land. This chapter will focus on residential subdivision land valuation only.

Residential Subdivision Overview. The value of vacant land changes as the land passes through the various stages of development from raw land to subdivided land to fully developed parcels that are ready for the construction of the intended structural improvements on the land. This section provides definitions for these various stages of development and provides guidance on how to establish market value at each of these stages. The following discussions are presented in terms that are relevant to residential subdivision property development.

Prior to any lots or parcels being offered for sale by a developer, a residential subdivision must be approved by various local governmental authorities and by the Department of Real Estate.

Typically, the normal sequence of events for a subdivision's approval is as follows:

1. The developer prepares a plat map and any other supporting documentation which may be required by the various local governmental agencies involved. These requirements are usually included in the Arizona Department of Real Estate's application for a subdivision public report. Note that the application does not have to be obtained first, and typically, it is not. However, developers usually know, or have obtained, the requirements for a proposed subdivision from local governmental agencies and have complied with most, if not all of them prior to the submission of the application to the Department of Real Estate for their review. No sales activity can commence until the subdivision public report has been issued.

2. These documents are submitted to local agencies for their approval. Approval is usually required from the City or County Engineer, the County Flood Control Office, the City or County Health and Sanitation Departments, the City Transportation or County Highway Department and, possibly, any of several other local (and in some instances, even a few state or federal) agencies, depending on the particular circumstances involved. One or more of these governmental agencies may establish specific requirements for the subdivision as a whole, and may also specify certain requirements for all (or any given number) of the individual parcels within a subdivision. It is at the discretion of the Department of Real Estate to decide whether or not to include all of these requirements in their public report, although the normal requirements are generally found in the report.

3. Upon approval by these agencies, the local Planning and Zoning Board must approve the subdivision's plans before they are submitted to the local County Board of Supervisors, or the appropriate City Council or other local governing entity for their final approval.

4. Upon approval by the appropriate local governing board, the plat map is recorded with the County Recorder, as required by A.R.S. § 32-2181(A)(6).

   Note: The legal description will remain as shown on the plat map, regardless of any further steps.

   The Assessor receives a copy of each plat map recorded at the Recorder's office. Additional information pertaining to subdivision development schedules, any projected or occurring lot sales data and similar information can normally be obtained from the developer on a cooperative basis. A.R.S. § 42-15052 provides the Assessor with the necessary legal authority to demand maps, drawings, papers, etc., pertinent to such property. When sufficient information is received, the Assessor prepares a map to accurately reflect the new subdivision, assigns each lot a parcel number, and sets up the county subdivision file.

5. The recorded plat map, public report questionnaire and any other accompanying documentation required that have been approved by the various governmental agencies and the local governing board are then submitted to the Department of Real Estate by the developer for their review.

6. The developer is required by A.R.S. § 32-2181(A)(17) to provide assurances for completion of any required off-site improvements (and, if applicable, any required on-site improvements), in the form of a cash deposit, a performance bond, or a lender's letter of credit, placing these funds into an escrow account in favor of the appropriate city or county. However, the Department of Real Estate's Commissioner does have the authority to waive this requirement, if justification can be demonstrated by the developer for doing so. Copies of cost estimates for planned improvements may also be required.

7. The Department of Real Estate reviews all submitted data and may perform an inspection of the subdivision. Note that per A.R.S. § 32-2183(B), developers may also (and often do) elect to submit their own version of the final public report. In either event, if the application submitted is determined to be complete and is found to be acceptable, the Department of Real Estate then issues a public report on the subdivision and the developer may proceed with sales activities.

As noted in number 1 above, there is no direct correlation between the developer obtaining the subdivision public report and the start of construction activities. Most subdividers begin construction activities and install at least some off-site improvements before approval is received from the Department of Real Estate. If such improvements are installed prior to approval as of the valuation date, their value must be added to the value of the land. The status of the subdivision on January 1 of the valuation year determines the valuation for the following tax year. Exceptions to this approval process will be discussed in more detail in Chapter 6 regarding unsubdivided land.

Once the subdivision is recorded, each parcel must be valued separately, because each parcel is now an individual legal entity. Its value should be indicative of its probable sale price in the market. For property tax assessment purposes, property is valued in fee simple, without consideration of the form of ownership, the financial arrangements of ownership, or any other

aspect of the developer or property owner's individual circumstances. These items pertain only to the owner's interest, which for property tax purposes is irrelevant. It is the land that is taxed, not the owner.

At the point when the subdivision has first been recorded and assigned parcel numbers, the subdivision's assessed land value does not include a permanent value increment for preparation and planning costs (even if development activity has occurred) and should be valued similarly to other acreage in the area. The experienced appraiser who has worked extensively with subdivisions will normally make a comparative parcel value estimate. The appraiser will need to field check the subdivision to determine which type of subdivision is being developed (discussed below) and will also have to determine what type of off or on-site improvements, if any, have been made to the parcels at the time of the inspection. This will determine which value "type" should used for the first valuation of the parcels (discussed later under "Initial value"). The appraiser should also begin gathering any available sales data at this time.

Completed Parcel Definition. A "completed" parcel, as used in the context of this chapter, is defined as any parcel in a new subdivision that has all of the off-site improvements required by the various governmental agencies physically in place. Since the required off-site improvements can vary for each subdivision, it is important that the public report be referenced for this information. (If the information is not in the public report, the local governing officials should be contacted to determine their specific requirements.) Also, the public report may specify that certain initial on-site engineering requirements for each parcel (or for any given number of parcels) in a subdivision must be met before any structurally related on-site improvements can be built. For example, topography may make it necessary for one or more parcels to have their own retention basin capable of holding a certain amount of water prior to runoff being channeled into storm sewers. Therefore, these engineering requirements would also be considered as part of the requirements for a physically "completed" parcel. Once all of the requirements are met, the parcel would then constitute a physically "completed" parcel or site, that is ready for the installation of the planned structurally related on-site improvements.

Required off-site improvements would not necessarily include such items as clubhouses, pools, or other common facilities (typically found in condominium projects or planned unit

developments) that will be built at a later date. While some developers may install all off-site improvements to all parcels prior to any on-site construction, the majority of developers will usually install off-sites only to a sufficient number of parcels in a subdivision to begin marketing and construction efforts in sections, phases or units. A few developers may only subdivide the land "on paper" and provide nothing more than rough access to the parcels, requiring owners or builders to bring in all off-site improvements to the parcels individually. Further, over time the engineering costs for backfill, compaction, drainage, rough grading, utility lines, earth moving, and road construction, together with legal and design costs, land acquisition costs, and many other miscellaneous costs, can vary considerably between otherwise similar subdivisions. They can also differ substantially between individual developers of similar subdivisions. These variations among subdivisions and developers make physical site inspection, referencing the public report, and, if necessary, contacting the governmental agencies involved, vital to determining the correct valuation and assessment procedure for any residential subdivision.

Common Areas. A.R.S. § 42-13402 defines common areas as “consisting of improved or unimproved real property that is intended for the use of owners and residents of a residential subdivision or development and invited guests of the owners or residents and include common beautification areas”. A.R.S. § 42-13402 excludes common areas of condominium properties and golf courses from consideration as residential common areas.

To determine the qualification of a common area for separate valuation under A.R.S. §§ 42-13401 through 42-13404, a review of conveyance documents from the Arizona Department of Real Estate, the County Recorder’s Office, or the homeowner’s association will help make the decision by the way the common area is deeded. A qualified residential common area must be deeded to a nonprofit homeowner’s association, nonprofit community association, or a nonprofit corporation. Additionally, for the common area to qualify for separate valuation, property owners must have membership in the association or the corporation, or must have an obligation to pay mandatory assessments to maintain and manage the common area. Each qualified common area parcel, whether improved or unimproved is valued at $500. For a complete discussion of valuation of qualified common areas, see the Arizona Department of Revenue Property Tax Division Guideline, entitled “Residential Common Areas”, dated March 31, 2000.

BASIC SUBDIVISION TYPES

A. Subdivisions - Parcel Size Under 3 Acres.

Subdivisions in this category usually fall into two major groups:

1. The first category consists of parcels which will have houses with predetermined floor plans and elevations. In this category each parcel and structure is sold as a complete package, with the purchaser selecting exterior and interior decorator colors and minor additional items, such as appliances and other fixtures. The purchaser may or may not be permitted to make limited elevation or floor plan modifications. Parcels in this type of subdivision will generally range from 1/7 acre to 1 acre in size.

2. The second category consists of parcels sold with the provision that one builder, or one of several specified builders, may construct a home to the specifications of the purchaser. Frequently, these homes will be semi-custom models of standard designs, with the purchaser having the options of selecting the elevation, changing the square footage, and moving some interior and/or exterior walls. In other cases the homes will be custom designed to the purchaser's specifications. Parcels in this type of subdivision will generally range from 1/2 acre to 3 acres in size.

With predesigned homes sold as a package, it is difficult to determine the amount of the sale price which should be allocated to the parcel and the amount which should be allocated to the improvements without consulting the subdivider. If this is not feasible, the Allocation (or Land Ratio) Method of estimating the land value ratio from similarly improved properties can be employed. Those in the second group are generally sold as parcels, so the price should be known.

B. Subdivisions - Parcel size from 4 to 36 Acres :

Large residential subdivisions will often be developed and sold over an extended period of time, usually in separate sections, phases or units. Large parcels or tracts that are held for the future use or expansion of the subdivision, where no plat map has been filed, would still be valued as either agricultural use property (assuming the land had met, and

continues to meet the agricultural status requirements of A.R.S. § 42-12152) or, as vacant land appraised at market value.

The development of subdivisions of this type have normally proceeded in one of the following two ways:

1. Initially the characteristic land use will change very little, if at all. For example, agricultural land is frequently sold, and is leased back, used and maintained by the original owner. The purchaser may assume the position of a speculator and defer the new use of the land, potentially for several years. The user of the property will frequently contend that the use and character of the area has not changed and that agricultural values should be retained. Agricultural status may be maintained only if the owner complies with all of the filing requirements of A.R.S. § 42-12153. If not, the acreage should be removed from any farm or ranch land inventory and the parcels should be appraised on the basis of the market value of the land.

2. Changes to the characteristics of the land will begin to occur fairly rapidly. Rough graded roads will be extended throughout the area. Primary roads will be well maintained and the subdivision's interior roads will be installed. Off-site improvements are installed (to varying degrees) and construction of improvements will commence.

Individual Parcel Valuation. As discussed in Chapter 3, the following land valuation methods are listed in the order of preference for their application to the appraisal of land.

1. Direct Sales Comparison Method.
2. Allocation (or Land Ratio).
3. Abstraction.
4. Anticipated Use (or Cost of Development).
5. Capitalization of Ground Rent.
6. Land Residual Capitalization.

The Direct Sales Comparison Method is the most accurate, reliable and defensible method of valuing land. The remaining Alternative Methods are far less reliable, and should be utilized

only in the absence of adequate market sales activity. The Direct Sales Comparison Method and the Allocation Method are emphasized in this chapter.

Initial, Interim and Final Full Cash Values. In valuing individual subdivision parcels, there are three conceptually distinct values, applicable in three distinct valuation periods, each having its own valuation considerations. For the purposes of this manual, these three values will be referred to as Initial, Interim, and Final Full Cash values. The determination of each type of value is based on the physical status of the parcel being valued at the time of inspection. Each of these values, however, constitutes a full cash value at the time it is effective. These values are defined as follows:

Initial Full Cash Value. That value applicable to all parcels in a subdivision when the subdivision has been approved by the Department of Real Estate, it has been mapped, and the lots have each been assigned individual parcel numbers by the Assessor. Typically, the value of each parcel will simply be a raw land value estimate for the entire subdivision, divided by the number of parcels in the subdivision. This Initial value will generally be utilized for only one tax year. In the following year, actual construction of the subdivision will normally have commenced. In many instances, however, subdivisions may develop very rapidly. By the time the Assessor begins the valuation process, developers may have already made significant investments in planning and land preparation costs. If so, and especially if sales activity has begun already, these costs should be included in each parcel's first valuation. This may preclude there ever being an Initial value, as described above, at all. The first valuation of the parcels may, in such cases, have to utilize an Interim value figure.

Interim Full Cash Value. That value applicable to those parcels in a subdivision that have progressed beyond the Initial valuation stage, but which are not yet physically developed to the point where the establishment of a Final Full Cash value would be appropriate. It is a transient value that reflects the physical status of an incomplete parcel in a subdivision as of January 1 of each year. A pro-rata share of the subdivision's raw land cost, plus the cost of any off-site improvements (and, if applicable, any specified on-site improvements) would be used for those parcels which are not fully developed ("completed") on the valuation date. The cost of any off-site improvements would also need to include a factor for the developer's profit and overhead, so that the Interim value

for any parcel that was actually a "completed" parcel, but which can not yet be assigned a Final Full Cash value (due to the lack of sales activity in the subdivision) would approximate the Final Full Cash value. In some instances, an Interim value may be required in the subsequent tax year, depending on the physical status of the parcel as of the next valuation date.

Final Full Cash Value. That value applicable to those parcels in a subdivision which have their planned off-site improvements (and any required on-site improvements) physically completed **and** that are located in a subdivision in which at least one recorded, arm's-length sale has occurred. The sold parcel does not need to be one of the "completed" parcels. The recorded sale is simply the "trigger" which indicates the start of market sales activity and warrants the establishment of an ad valorem value that directly reflects the market value for all "completed parcels" in the subdivision, or in a section, phase or unit. This does not mean that the Assessor must (or can) use a single sale to establish the Final Full Cash value, or that the recorded sale price of the sold parcel is to be utilized as the Final Full Cash value for all completed parcels. The Assessor must apply standard appraisal procedures, which should include locating comparable parcel sales in similar subdivisions to establish the appropriate Final Full Cash value for all "completed" parcels. The term "Final Full Cash value" in this chapter applies only to developing subdivisions. It is not intended to restrict continued market value adjustments of full cash values in fully developed, established subdivisions.

The Initial, Interim, and Final Full Cash values of a subdivision's parcels may also be established on the basis of the developer's allocation to land, or on the Allocation (or Land Ratio) Method, which relies on estimates from established and competing new subdivisions and market sales data. For example, since residential developers must be competitive, there will normally be a similar relationship between the selling price of the typical house in similar subdivisions and the land value allocations in them. The land to improvement value ratio, however, is not a constant within and between subdivisions. For example, it would not be unusual to find a 20 percent to 30 percent difference in the price of completed houses within a subdivision. A price range of $80,000 to $100,000 would not be uncommon in mass constructed subdivisions, but homes at both ends of the sales range would be constructed on typical parcels (a "typical" parcel being determined by size, location, view, etc.). On this basis,

an estimated one to four (20 percent) land to improvement ratio would establish a land value of $16,000 to $20,000 for similar parcels in the same subdivision, depending on the houses constructed on the parcels. If they are truly comparable, these relationships should be similar in competing subdivisions. In such cases, parcel value estimates must be uniform within and between subdivisions.

ADDITIONAL CONSIDERATIONS

Since the purpose of having these distinctions between Initial, Interim and Final Full Cash values is to establish the appropriate market value of all parcels in a subdivision, or in each section, phase or unit of a subdivision as of the valuation date, it may be necessary to establish Initial, Interim and Final Full Cash value estimates on different parcels in the same subdivision, or section, phase or unit simultaneously. Once one or more of the parcels in a subdivision have been sold, all physically "completed" parcels in the subdivision should be valued at Final Full Cash value as of the valuation date. All "incomplete" parcels would remain valued at their appropriate Initial or Interim values.

Sales of parcels within a subdivision may begin as soon as the subdivision plat is recorded, all requirements from local governmental agencies are met and a public report has been issued by the Department of Real Estate. If construction activities have not commenced, this is referred to as a "paper subdivision," because no physical developmental activities have been initiated on site at the subdivision at this point. However, Final Full Cash values should not be applied to any parcels in the subdivision until at least one parcel has been "completed" **and** at least one recorded sale of a parcel has occurred which has been verified as being an arm's length transaction.

When sales occur before the parcels are "completed" and Final Full Cash values have not yet been determined, the Assessor should use an appropriate warning code on the Affidavit of Property Value (DOR form number 82162), to indicate that this situation has occurred. The Property Use Code in such a case should also be changed appropriately to indicate an "incomplete" subdivision parcel sale.

As stated earlier, the key to establishing the Final Full Cash value on "completed" parcels is the recorded sale of at least one parcel in the subdivision. The sold parcel does not need to be a "completed" parcel at the time of the sale. Again, this does not mean that the Assessor

must (or can) use that single sale by itself to establish the Final Full Cash value. The Assessor should apply standard appraisal procedures, which may require locating comparable parcel sales in similar subdivisions to establish the appropriate Final Full Cash value. The appraiser is cautioned that the recorded sale price of any one parcel in a subdivision, or in a section, phase or unit, may not necessarily reflect the actual market value for that (or any other) parcel. The sale price must be reviewed to insure that it was truly an arm's-length transaction and that the parcel's location, size, and other relevant market factors have all been considered in determining the market value of the parcel.

Valuation Examples. Newly activated subdivisions are generally characterized by few sales and minimal off-site improvements. The Initial value of parcels in a new subdivision can be established as follows:

In the following examples, the subdivision has received all necessary approvals from local authorities, all required improvement completion assurances (performance bonds, etc.) are in place, and the Department of Real Estate has issued the subdivision public report.

1. The Initial value of a parcel in subdivisions with minimal off-sites will be based on the market value of the land that comprises the subdivision. For example:

   Purchase price of subdivision land or of a comparable area = $100,000.

   Number of residential sites in the subdivision = 40.

   Total cost of land allocated to parcels = $100,000 ÷ 40 = $2,500.

   Initial market value per parcel = $2,500.

Another method, using the same approach, is to determine value on a per acre basis and appraise each site in the subdivision on the basis of the number of sites to the acre, as appropriate.

2. Subdivision area = 10 acres.

   Purchase price of subdivision land or of a comparable area = $100,000.

   Unit value per acre = $10,000.

Residential parcels per acre = 4.

Per acre cost divided by the number of residential parcels per acre ($10,000 divided by 4 = $2,500).

To establish the Interim parcel value, a proportionate share of the costs of installed off-site improvements (and any appropriate on-site preparation costs) must be added to the raw land value. Another method that can be used to establish the Interim value is based on the selling price of the individual parcels. Once the selling price of the parcels is established, the cost of off-site improvements not yet constructed can be subtracted to establish the Interim value. It is important to determine what off-site improvements the selling price includes before making any deductions for incomplete off-site improvements. In no case, however, will the parcels be reduced in value below the current market value of unimproved raw land (Initial value) on a comparative unit basis in the area.

Subdivisions that have progressed beyond the Initial valuation stage are generally characterized by having off-site improvements completed to a significant proportion of the parcels in one or more sections, phases or units of the subdivision to allow increasing sales and construction activity to occur. As stated, a single subdivision or section, phase or unit, can have all three values (Initial, Interim and Final Full Cash) on parcels as required for the same valuation year. The following example demonstrates this concept:

The subdivision public report requires that all parcels have paved road access (includes curb and gutter, sidewalk and lighting) and water, sewer and electric service to the parcel's boundaries. No other off-site improvements (and no specified on-site improvements) are required. The subdivision contains nine (9) parcels. The entire tract comprising the subdivision was originally purchased for $90,000, resulting in an initial valuation of $10,000 per parcel. This was the Initial value established for all parcels as of the valuation date of Year One.

Road		
Parcel #1	Parcel #2	Parcel #3
Parcel #4	Parcel #5	Parcel #6
Road		
Parcel #7	Parcel #8	Parcel #9 (with unobstructed river view)

For the Year Two valuation date there have been no off-site improvements installed to parcels numbered 1, 2 and 3. Parcels numbered 7, 8 and 9 are completed, having all required off site improvements in place. Parcels numbered 4, 5, and 6 have sewer, water and electricity lines in place, but the curb and gutter, sidewalks and street lighting are not yet installed. Parcel number 3 sold in Year One for $40,000. At the time of sale, the parcel did not have any off-site improvements in place. The $40,000 sale price of parcel 3 requires the completion of all off-site improvements. The sale has been confirmed as an arm's length transaction. This sale indicates the need to place Final Full Cash values on all completed parcels. The appraiser, after reviewing comparable sales from similar areas and subdivisions, has determined that the Final Full Cash value for similarly completed parcels should be in the range of $38,000 to $45,000.

The appraiser has also developed the following subject subdivision costs data:

Note: Do not confuse this data with the Anticipated Use or Cost of Development Method.

Subdivision Development Costs (per parcel):

Roadway improvements =	$10,000
(includes curb and gutter, sidewalks and street lighting)	
Water service =	$ 3,500
Electric service =	$ 6,000
Sewer lines =	$ 4,500
Developer profit and overhead allowance =	30 percent
Location premiums =	20 percent

The Year Two full cash values of all of the parcels would be determined as follows:

Parcels 1, 2 and 3 remain at their Initial values of $10,000 each (assuming no changes in the market value of the entire subdivision tract).

Parcels 4, 5 and 6 have Interim values determined by their current costs of development:

Raw land cost of $10,000 each, plus the cost of off-site improvements in place at the time of inspection (consisting of water, electric and sewer improvements only) totaling $14,000, plus the developer's profit and overhead for the off-site improvements ($14,000 x 30%) = 4,200, for a total cost of $28,200.

Parcels 7 and 8 would be valued at their Final Full Cash value, as determined by the market. Their Final Full Cash values could also be established by using the development costs as follows:

The cost of water, sewer and electric services ($14,000) and all road improvements ($10,000), totaling $24,000. Developer's profit and overhead for improvements ($24,000 x 30%) = $7,200, for a total of $31,200. Add the raw land cost of $10,000 for a total cost of $41,200.

The cost generated value indicated is well within the market sales range of $38,000 to $45,000. Because the appraiser has sufficient market comparables to support the cost generated value, the value of $42,000 was determined to be the best indicator of market value. Parcel number 9 would also have a value of $42,000 as determined above, plus a 20

percent lot premium, due to a panoramic, unobstructed view of the river from that parcel. This would produce a value estimate of $50,400 ($42,000 + 20%).

To reiterate, the values for all of the parcels in the subdivision for Year Three would be as follows:

Parcel #1.	$10,000	= Initial Value.
Parcel #2.	$10,000	= Initial Value.
Parcel #3.	$10,000**	= Initial Value.
Parcel #4.	$28,200	= Interim Value.
Parcel #5.	$28,200	= Interim Value.
Parcel #6.	$28,200	= Interim Value.
Parcel #7.	$42,000	= Final Full Cash Value.
Parcel #8.	$42,000	= Final Full Cash Value.
Parcel #9.	$50,400	= Final Full Cash Value (w/ 20% premium).

** Parcel #3 sold in November of Year One for $40,000. It was this first sale in the subdivision which triggered the requirement of going to Final Full Cash value on all "completed" parcels. Parcel #3 is not a "completed" parcel, but it does not need to be for its sale to trigger the need to re-value all parcels in the subdivision. It also does not yet receive a Final Full Cash market valuation, as it is not yet a "completed" parcel.

CHAPTER 5
CONDOMINIUM AND TOWNHOUSE SUBDIVISIONS

CONDOMINIUM AND TOWNHOUSE SUBDIVISIONS

Ownership, Organization and Rights. Condominium subdivisions can be comprised of residential, commercial or industrial use properties, but residential projects are the most common type. "Townhouse" subdivisions will be discussed in conjunction with and in comparison to condominium subdivisions throughout the remainder of this chapter. The discussions in this section will focus only on residential use subdivisions. However, keep in mind that all types of condominium subdivisions are subject to the provisions of Title 33, Chapter 9 and must be treated uniformly for property tax assessment purposes. Further, all residential condominium (and "townhouse") subdivisions must be valued in accordance with the same procedures discussed in the previous section regarding residential subdivisions in general, pursuant to A.R.S. § 32-2101(54).

Residential condominium and townhouse projects are different from typical single-family residential subdivisions primarily in the ownership of land, and by the fact that any condominium must be legally identified by the inclusion of the term "condominium" in the subdivision name, or in the required "declaration" which legally creates a condominium. While most often physically constructed in a manner similar to the typical residential condominium project, a residential "townhouse" project is more accurately described as being a residential planned unit development (**P.U.D.**), which is identified by the subdivision's conditions, covenants and restrictions (CC & Rs) statement. (Note that planned unit developments can also consist of detached, single-family structures and can be commercial or industrial use properties as well, similar to condominiums.) Either type of project must be clearly identified in the documentation required to be submitted to the State Real Estate Department for their issuance of a subdivision public report.

In condominium projects, all of the land in the project is commonly owned, with an undivided interest in the land vested in each parcel or unit. In townhouse (P.U.D.) projects, the owner of the unit individually owns the land under each unit. In some cases, the owner of a townhouse (P.U.D.) unit will also own a small area directly in front, to the rear, or to the side(s) of the unit. The balance of the land area in the P.U.D. project will normally be commonly owned by a homeowner's association that is owned and controlled by the individual unit owners. In limited cases, the balance of the land in the P.U.D. project is also owned by the individual unit

owners, as an undivided interest in the land vested in each unit, similar to a condominium project.

Usually, townhouse (P.U.D.) and condominium owners will own the residential structure, including a proportionate share of the common walls. In some cases, however, the condominium owner may own only the air space within the residential structure. There are even instances of free-standing, single-family structures comprising residential condominium projects, but they are rare. These variations are mentioned here to emphasize that condominiums and P.U.D.s are legal creations; they are not simply descriptions of physical construction characteristics. In many areas the terms condominium and townhouse are used interchangeably. However, this is an incorrect practice. Condominiums are only created under Title 33, by the Uniform Condominium Act. Per A.R.S. § 33-1202(10), a "condominium" is defined as "...real estate, portions of which are designated for separate ownership and the remainder of which is designated for common ownership solely by the owners of the separate portions. Real estate is not a condominium unless the undivided interests in the common elements are vested in the unit owners." Note that while "undivided interests" may be held by the owners of individual townhouse units in a planned unit development, the P.U.D. is not a "condominium," by definition.

Common Area Considerations. Both condominium and townhouse (P.U.D.) parceling require the assignment of a parcel number to each individual unit. In condominium complexes there will be no separate title to the commonly owned land. The sale agreements will assign ownership of an identified individual unit, together with a fractional undivided interest in the common areas or elements. The common ownership interest will be included as a part of the legal description: e.g., "By this instrument and in accordance with the terms herein specified, the Jones Development Company does convey all rights, title, and interest in Unit 631K, together with a one/seven hundred twentieth (1/720) undivided interest in all common elements." In P.U.D.s, however, common areas may be either commonly owned and not separately titled, or they may be separately titled and remain separately owned (by the project developer or by the homeowner's association). If commonly owned and integral to the value of individual units, a fractional undivided interest in the common areas are included in the value of the individual units, similar to a condominium project. If not, the common areas are separately titled, separately parceled and separately valued.

The commonly owned land areas of a P.U.D., if separately titled, should be assigned a separate parcel number or series of parcel numbers, as appropriate. If not separately titled, the common areas may be designated as a tract or series of tracts.

Valuation of Condominium Common Areas. The separate valuation of common areas in all condominiums is specifically prohibited under A.R.S. § 33-1204(B), unless the common areas are subject to developer withdrawal (see below). The reason for this is that those areas of a condominium under common ownership are a part of the package purchased by the individual unit owner at the time the unit is purchased. The bundle of rights encompassed in normal ownership, therefore, is included in the ownership of the individual units, and the rights to the common elements are additional rights that have accrued to each unit. Conversely, the rights normally included in property ownership are no longer included in the rights remaining with the common areas. This is particularly true of the rights to sell, trade, or subdivide the land comprising the common areas or elements.

Valuation of Townhouse Common Areas. A.R.S. § 42-13402 defines common areas as "consisting of improved or unimproved real property that is intended for the use of owners and residents of a residential subdivision or development and invited guests of the owners or residents and include common beautification areas". A.R.S. § 42-13402 excludes common areas of condominium properties and golf courses from consideration as residential common areas.

To determine the qualification of a common area for separate valuation under A.R.S. §§ 42-13401 through 42-13404, a review of conveyance documents from the Arizona Department of Real Estate, the County Recorder's Office, or the homeowner's association will help make the decision by the way the common area is deeded. A qualified residential common area must be deeded to a nonprofit homeowner's association, nonprofit community association, or a nonprofit corporation. Additionally, for the common area to qualify for separate valuation, property owners must have membership in the association or the corporation, or must have an obligation to pay mandatory assessments to maintain and manage the common area. Each qualified common area parcel, whether improved or unimproved is valued at $500. For a complete discussion of valuation of qualified common areas, see the Arizona Department of

Revenue Property Tax Division Guideline, entitled “Residential Common Areas”, dated March 31, 2000.

Valuation of Land. Land areas zoned for condominium or townhouse (P.U.D.) development compete with all other classes of land for sale in the market place. If condominium or townhouse (P.U.D.) land begins to command a premium price, in response, zoning and supply will usually catch up with demand relatively soon. This fact, together with the density of the use authorized under residential condominium or P.U.D. zoning tends to support a land value (per comparative unit) that is usually higher than the per unit value of single-family residential land. In most areas in the state, developers make similar investments per unit in land, including site preparation costs, interior roads, sidewalks, etc., for the construction of competitive condominium or townhouse (P.U.D.) projects. As is common in single-family residential subdivisions, due to competition, residential condominium and townhouse (P.U.D.) parcels should exhibit similar land value to improvement value ratios in and between similar, competitive projects, including the contribution of off-site amenities and site preparation costs.

Also, as is true of any other type of subdivision, any "rule of thumb" generalizations about condominium or townhouse (P.U.D.) land acquisition costs and developmental improvement cost data should be completely avoided. These factors must be extracted from market sales data and other market related research.

In typical projects, density can range from as low as two or three units per acre to as high as about fifteen units per acre. Unit density in the vast majority of residential complexes, however, will fall in a typical range of seven to ten units per acre. Density affects costs, but not in direct proportion to the number of units to the acre. For example, if a density of eight to ten units to the acre is contemplated, the total site preparation costs will generally exceed the costs to prepare sites for a density of six to seven units per acre on the same land. Conversely, however, the per unit cost decreases as density increases. The following example illustrates:

Example. Site preparation cost estimate (hypothetical).

8 Units per acre =	$28,000 per acre site preparation cost
	= 3,500 per unit site preparation cost
6 Units per acre =	$24,000 per acre site preparation cost
	= 4,000 per unit site preparation cost

When appraising any condominium or townhouse (P.U.D.) land, the Direct Market Comparison Approach is the most reliable method. To apply the Market Approach:

1. Determine the per acre value of undeveloped land in the neighborhood that is suitable for condominium or townhouse (P.U.D.) development and for which such development is authorized or authorization is readily obtainable. Include the sale of the subject property if the sale is representative of other arm's-length sales.

2. Estimate the site preparation cost of the subject complex, or obtain development cost information from the developer.

3. Total the land acquisition and site preparation cost data on a per acre basis and divide by the average number of units per acre to determine the average per unit Initial land value. With both condominium and planned unit developments, the value of common area land and improvements owned by a homeowner's association or developer must be deducted prior to the allocation to the units, to avoid double taxation. If the per unit costs fall outside of an average of 10% to 20% of the selling price, the cost data should be carefully reviewed and verified, or modified in accordance with the local market. Purchase prices somewhat inconsistent with typical land cost patterns are commonly found in the market place. When found, they should be carefully checked, but if valid, the actual costs should be considered when establishing Interim and Final Full Cash site values. To be valid, however, the Final Full Cash land value established for a condominium or townhouse (P.U.D.) complex must be consistent with local land acquisition and site preparation costs. In condominium or townhouse (P.U.D.) appraisal, as in all other land appraisal, use realistic data that can be verified in the market place. Do not use land as a variable to reflect the difference between structural cost estimates and

unit selling prices. Once the value of the land that comprises the total complex has been determined, it can be allocated on the basis of the average unit area as determined by the number of units in the project, by the actual square footage of each unit to the total square footage of all units, or by any other legally specified ownership and property rights.

If vacant land market sales data is insufficient, the alternative Abstraction Method can be used. To apply the Abstraction Method, establish a total selling price for all units comprising the complex. Total the cost generated value (RCNLD) of all improvements existing in the complex, including streets, sidewalks, carports, clubhouses, swimming pools, recreational facilities, taxable personal property, unit structures, and incidental costs such as profit, interest and sales costs. Subtract the cost and overhead generated value from the total selling price of the complex units. The balance will be the indicated land value of the complex. Divide this value by the number of units in the complex to establish a unit land value increment. As was necessary under the Market Approach, if the condominium or P.U.D. complex common areas are to be owned by the homeowner's association or developer, it will be additionally necessary to deduct the value of the common areas land from the balance derived from deducting all costs from the total selling price of the complex units. Then, divide the resultant value by the number of units in order to produce an accurate per unit land value increment and to avoid double taxation. The accurate application of the Abstraction Method is highly dependent on accurate market sales; improvement costs and especially on estimated accrued depreciation data. It should not be used alone to determine land values

Condominiums and townhouses (P.U.D.s) offer a very high potential for market analysis using multiple regression when sales occur in sufficient numbers. The land value abstraction method described above is an excellent way to update existing land values to establish a new level of value when reappraising condominiums or townhouses (P.U.D.s) using regression analysis. The base land concept works well in this regard. Average residual can be converted to the new base land value for a condominium or townhouse (P.U.D.) complex.

CHAPTER 6

UNSUBDIVIDED LAND AND UNDEVELOPED RURAL LAND

UNSUBDIVIDED LAND

A.R.S. § 32-2101(58) states, "Unsubdivided lands means land or lands divided or proposed to be divided for the purpose of sale or lease, whether immediate or future, into six or more lots, parcels or fractional interests and the lots or parcels are thirty-six acres or more each but less than one hundred sixty acres each, or that are offered, known or advertised under a common promotional plan for sale or lease, except that agricultural leases shall not be included in this definition."

List of qualifications for "unsubdivided land"as stated in A.R.S. § 32-2101(58):

a) Land divided or proposed for division for the purpose of sale or lease.

b) Land divided into six or more lots, parcels, or fractional interests.

c) Lots, parcels, or fractional interests 36 acres to less than160 acres in size.

d) Agricultural leases do not qualify under definition of "unsubdivided land".

Pursuant to A.R.S. § 32-2195, the State Real Estate Commissioner must provide written authorization for the sale of unsubdivided land. The criteria on which the State Real Estate Commissioner bases approval includes a valid legal description, permanent access, and an accurate statement relative to the availability of water and utilities. The Commissioner issues a public report and requires distribution of the public report to each prospective purchaser.

Once a determination that splitting or division occurred, on a cooperative basis, the title company or the developer will provide a plat map and necessary documents for property identification. A.R.S. §42-15052 provides the Assessor with the necessary legal authority to demand maps, drawings, and papers pertinent to such property. In the case of "unsubdivided land", normal subdivision approval procedures do not apply. Parcels of this type require close monitoring due to lack of normal controls and reporting requirements.

At this point appraise the "unsubdivided land" on the basis of the market value of each lot, parcel, or fractional interest. Assign the appropriate value related to the selling price. Values established during each phase of development will include an allocation of the existing off-site values to the lot, parcel, or fractional interest values.

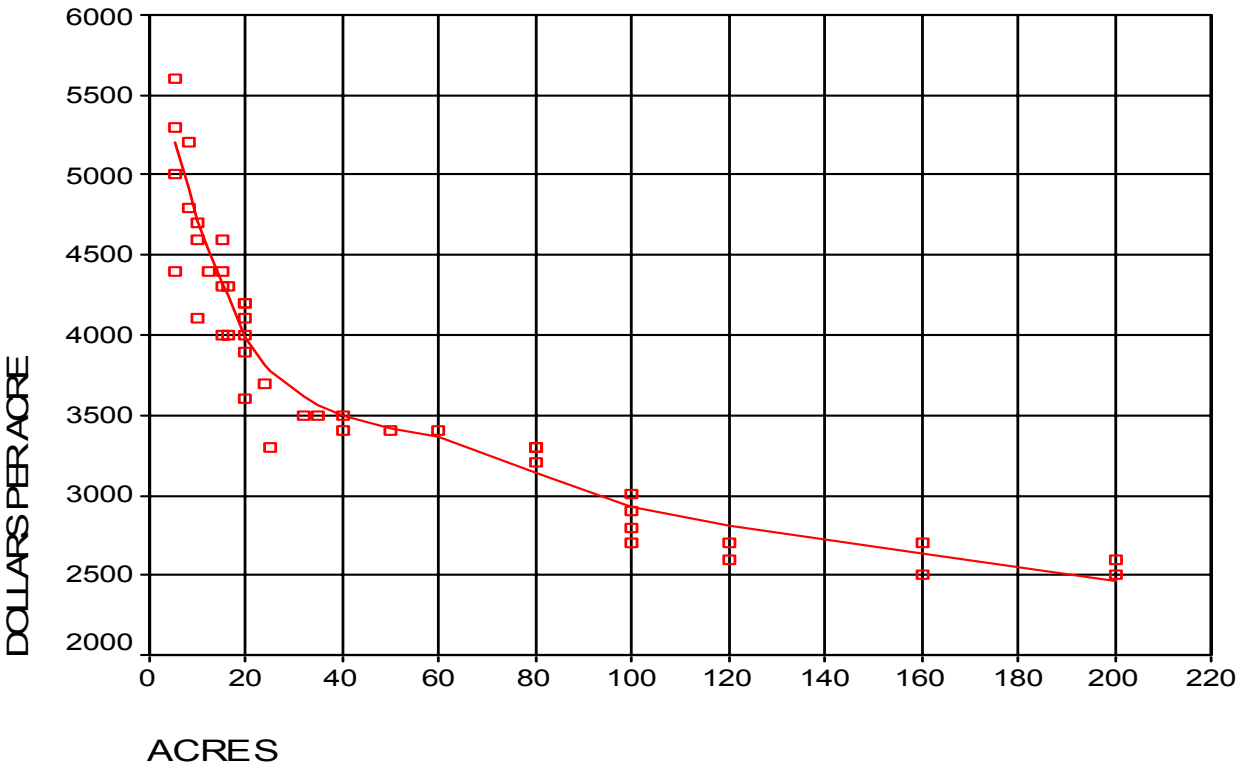
Generally, the development and marketing of this type of land happens in phases. Establishing a valuation procedure oriented to the development and sales trends of the "unsubdivided land" on a phase by phase basis will provide the Assessor with a reliable and flexible ad valorem appraisal base.

Undeveloped Rural Land. Encroachment of urban development in rural areas precipitates a complex appraisal problem. Land values blend out from urban areas, and appraisers reflect values accordingly into the adjacent rural land. Sales prices give the best evidence to value urban encroachment to arrive at an acre value for the rural land in these transitioning areas. Although generally located in rural areas, undeveloped rural land does not qualify as either ranching or farming land, and vary in size from several acres to several hundred acres.

Value Pattern. When undeveloped rural land has equal amenities, the parcels generally sell depending on size. Resulting sales prices on a simple scatter graph will plot a value curve pattern. Plot sales on the graph by price per acre of undeveloped rural land. Plotting sales on a graph will help identify other land characteristics that influence land value such as location, access, view, and topography. Draw a curve through the plotted points to represent the average price per acre based on the land size. Counties with computer capabilities use regression analysis to provide a value curve line with greater accuracy. Sales on the graph with points far above or below the curve line possibly indicate land characteristics other than size that influence value. One fairly typical sale property with the exception of an excellent view will have a point above the curve line. Another fairly typical sale property with the exception of an access problem will have a point below the curve line. The indicated price per acre differences for properties with special features or problems will be a guide to adjustments to use on properties with similar conditions.

Due to economies of scale, the value per acre will decrease as the parcels increase in size. An acreage schedule developed from each simple scatter graph represents the force of supply and demand in each market area. Test the new values for uniformity using a ratio study to spot any inequities in the land schedule.

Example. Generated from the scatter graph, see the rural land value schedule below with size modifiers that have a base size of 20 acres.



Acres	Price/Acre	Size Modifier
2	5240	1.33
3	5169	1.31
4	5097	1.29
5	5026	1.27
10	4668	1.18
15	4311	1.09
20	**3954**	**1.00**
30	3492	0.88
40	3456	0.87
50	3421	0.87
60	3385	0.86
70	3110	0.79
80	3057	0.77
90	3004	0.76
100	2952	0.75
120	2847	0.72
140	2741	0.69
160	2636	0.67
180	2531	0.64
200	2426	0.61

See the array of sale ratios on the next page.

Acres	Appraised Value	Sale Price	Sale Ratios
5.00	$ 25,130	$ 28,000	90
8.00	$ 38,488	$ 41,600	93
80.00	$ 244,560	$264,000	93
80.00	$ 244,560	$264,000	93
200.00	$ 485,200	$520,000	93
15.00	$ 64,665	$ 69,000	94
20.00	$ 79,080	$ 84,000	94
20.00	$ 79,080	$ 84,000	94
5.00	$ 25,130	$ 26,500	**95**
24.00	$ 84,312	$ 88,800	**95**
80.00	$ 244,560	$256,000	**96**
20.00	$ 79,080	$ 82,000	**96**
200.00	$ 485,200	$500,000	**97**
160.00	$ 421,760	$432,000	**98**
15.00	$ 64,665	$ 66,000	**98**
100.00	$ 295,200	$300,000	**98**
16.00	$ 67,824	$ 68,800	**99**
40.00	$ 138,240	$140,000	**99**
20.00	$ 79,080	$ 80,000	**99**
35.00	$ 121,590	$122,500	**99**
10.00	$ 46,680	$ 47,000	**99**
60.00	$ 203,100	$204,000	**100**
32.00	$ 111,520	$112,000	**100**
8.00	$ 38,488	$ 38,400	**100**
15.00	$ 64,665	$ 64,500	**100**
5.00	$ 25,130	$ 25,000	**101**
50.00	$ 171,050	$170,000	**101**
20.00	$ 79,080	$ 78,000	**101**
10.00	$ 46,680	$ 46,000	**101**
40.00	$ 138,240	$136,000	**102**
100.00	$ 295,200	$290,000	**102**
12.00	$ 54,300	$ 52,800	**103**
100.00	$ 295,200	$280,000	**105**
120.00	$ 341,640	$324,000	**105**
160.00	$ 421,760	$400,000	**105**
16.00	$ 67,824	$ 64,000	106
25.00	$ 87,750	$ 82,500	106
15.00	$ 64,665	$ 60,000	108
100.00	$ 295,200	$270,000	109
120.00	$ 341,640	$312,000	110
20.00	$ 79,080	$ 72,000	110
10.00	$ 46,680	$ 41,000	114
5.00	$ 25,130	$ 22,000	114

Next, select a base unit value predicated on the typical sized parcel in the area. Before developing the size modifier, establish the size range for rural tracts. Once you have determined size ranges, compute size modifiers using the relationship between base acre value and values for each size above or below the base. Develop the schedule for rural land by using the following formula. Value at X acres / base acre value = size modifier. After developing the schedule for rural undeveloped land, select primary benchmarks. Appraise the sales used in the rural land study by applying the acreage values from the rural land schedule. This may require some interpolation of the modifiers. Perform a ratio study by making a ratio comparison between the new appraised value and the sale price as shown in the table above using the following formula. New appraised value / Sales price = Ratio. Check the ratios for appraisal level and appraisal uniformity utilizing statistical analysis.

Appraisal Level	
Mean	1.00
Median	1.00

Appraisal Uniformity	
COV	5.84
COD	4.55

Measures of appraisal level use the mean of the ratios and the median ratio of new appraised value to sale price of each observation to describe the typical level of appraisal. The mean and median at a measure of 1.00 indicates properties statistically appraised at 100% of market value. With a mean of the ratios at 1.00 and the median ratio at 1.00 indicates the rural undeveloped land schedule generates a good appraisal level. Measures to describe the degree of consistency between appraisals and market value include the coefficient of variation and the coefficient of dispersion. In appraisal, distributions of data are typically less than normal, so the coefficient of dispersion gives the best measure of uniformity. The data in the example above has been contrived to demonstrate key appraisal concepts using basic statistical tools. Usually, actual data will display greater dispersion than the example. The *Standard on Ratio Studies* (IAAO 1999) suggests a COD of below 20 acceptable for vacant land. As applied in Arizona, a COD of 25 percent or less for vacant land is considered acceptable in all counties. In the example above, 95% of the ratios fall between 90 and 110, 60% of the ratios fall between 95 and 105, and the ratios have a low coefficient of dispersion of 4.55. The low COD indicates good appraisal uniformity.

Select undeveloped rural land benchmarks from the array of ratios. For example, the appraiser may select sales with a range of ratios between 95 and 105 inclusive as primary benchmarks. The sales with ratios falling outside of the range serve as supplemental benchmarks, and might help explain the range of value for properties with atypical

characteristics. Write a narrative description of the amenities and characteristics found in the benchmark properties to serve as standards when appraising undeveloped rural land properties.

Upon completion of the tables, the graphs, and the schedules, the blending of values between adjacent market areas commences. A large map provides another valuable tool to help "blend" the values between adjacent areas of market activity, and furnishes a wider perspective of the area. Accomplish blending by a combination of physical inspection and sales analysis. Collecting land sales data, posting sales data to maps, field checking land sales, and blending market data to establish ad valorem property values for this class of land may take several months.

RECTANGULAR SURVEY SYSTEM

Legal descriptions and surveys are based on the requirements as set forth in the "Manual of Instructions for the Survey of the Public Lands of the United States of America", prepared by the Bureau of Land Management. The guidelines provided in this manual are applicable for surveys and resurveys of both public and private land and are based on federal laws and court decisions.

This rectangular survey system provides for a unit of land approximately 24 miles square, bounded by base lines running east and west, and meridians running north and south. This 24 mile square is divided into areas six miles square called townships. Townships are further divided into 36 sections, each one mile square.

Base Line and Principal Meridian. The first step in implementing this survey system in a given area is the establishment of an initial point. This point will be the basis for all government surveys in the area it controls, and its latitude and longitude are fixed by astronomical observations. From this initial point, a Principal Meridian is run north and south on a line that would intersect the poles, and a Base Line is run east and west on a parallel of latitude. The Principal Meridian controls survey lines east and west, and the Base Line is the north and south control. In Arizona, the Principal Meridian and the Base Line are set from the point of intersection of the Gila and Salt Rivers. See Example 1 on page A.4 of this appendix. Approximately 20 townships in Apache County are surveyed from the Navajo Baseline and Meridian which originated in New Mexico, and a small portion of land near Yuma is surveyed from the San Bernardino Baseline and Meridian originating in California.

Guide Meridians and Standard Parallels. Because of the curvature of the earth, additional lines called Guide Meridians are run every 24 miles east and west of the principal Meridian. Other lines, called Standard Parallels, are run every 24 miles north and south of the Base Line. The parallels north of the Base Line are designated First Standard Parallel North, Second

Standard Parallel North, and so forth, and those south as the First Standard Parallel South, Second Standard Parallel, and so on. Standard Parallels are also called correction lines.

Ranges and Townships. North and south lines are next run on true meridian from Standard Parallels and 6 miles apart, marking the survey area into strips 6 miles wide called ranges which are numbered east and west from the Principal Meridian. Similar lines are run at every 6 mile point north and south of the Base Line, and parallel with the Base Line, dividing the ranges into 6 mile squares called townships. The first township north of the Base Line and east of the Principal Meridian is identified as Township 1 North, Range 1 East, the second township north of the Base Line as Township 2 North, Range 1 East, and so on.

Sections. Townships are subdivided into 36 parts, each one mile square, called sections. This is accomplished by running each way through the township lines which are parallel to the south and east township boundaries. The 36 sections into which the township is divided are numbered from 1 to 36, beginning with the northeast corner and proceeding west and east alternately through the township. See Example 2 on page A.5 of this appendix for an illustration of a township divided into one mile square sections. Such a section would contain 640 acres.

Further subdivisions are made by the division of the sections into quarters containing 160 acres, and named the northeast quarter, northwest quarter, southeast quarter, and southwest quarter. The quarter sections may be divided into quarter quarter sections of 40 acres and these quarter quarter sections further divided into quarter quarter quarter sections of 10 acres. While sections may be divided into even smaller units of 2.5 acres, 10 acre portions are usually the smallest.

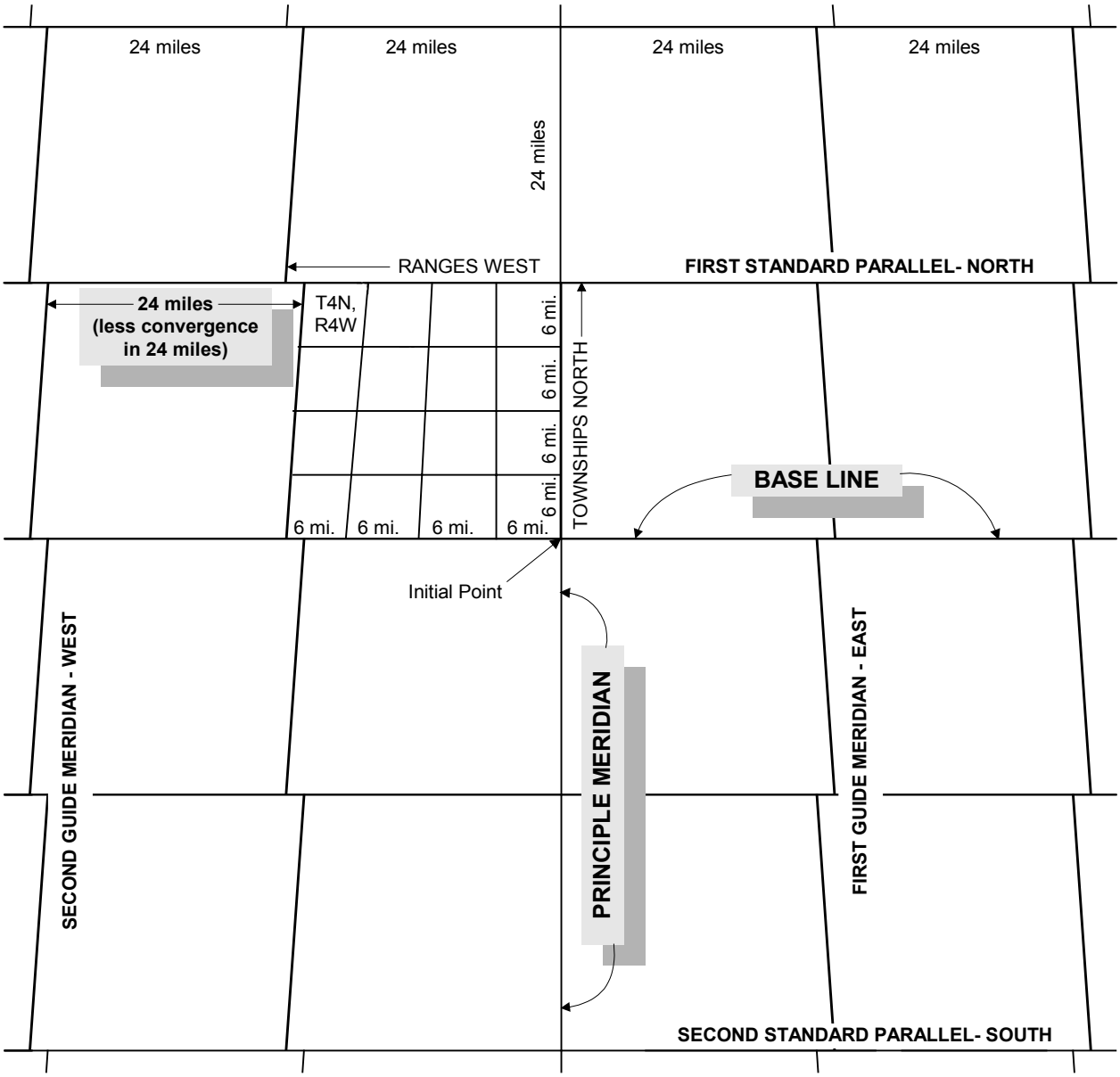
Because meridians converge toward the poles, townships cannot be perfectly regular. Because of this and surveying errors, irregularity occurs and the sections along the north boundary and the west boundary of each township contain these discrepancies. Quarter sections along the north and west boundary take up the excess or shortage in the township.

Their quarter quarter sections do not contain the standard 40 acres and are known as fractional lots or government lots. They are assigned unique lot numbers at the time of the survey. For example, Lot 2, Section 5 Township 42 North, Range 12 East; or Lot 7, section 31, Township 41 North, Range 9 East, and so on.

In some states, a township frequently will be occupied partially by Indian Lands. The United States Government Surveys did not cover these lands, and an intersection with the boundaries of them resulted in fractional townships. Fractional quarters are also created by the meander line of a body of water.

EXAMPLE 1

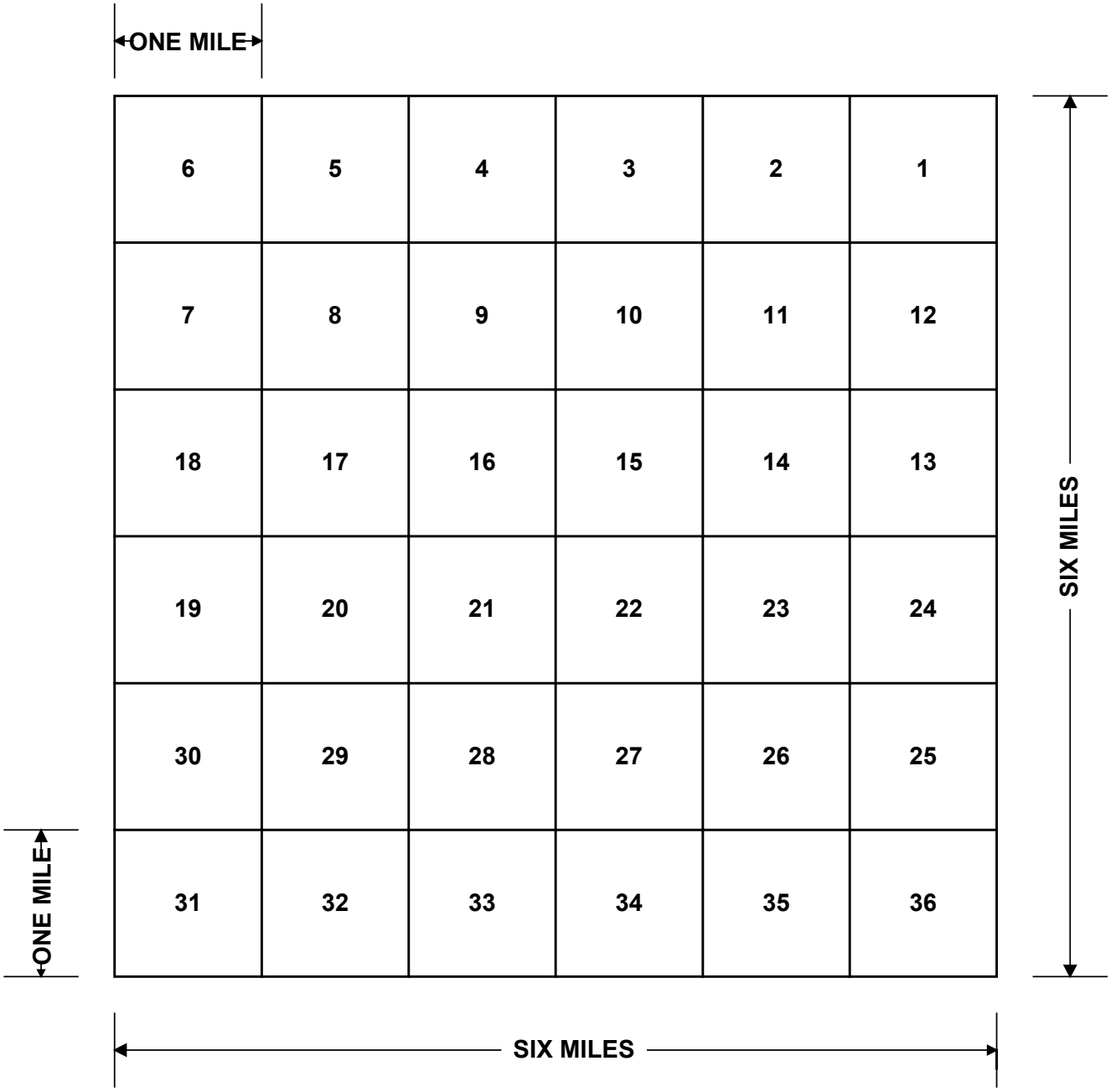
UNITED STATES RECTANGULAR SURVEY SYSTEM



The initial point for the rectangular survey system in Arizona is the confluence of the Salt and Gila Rivers. Through this point the Principal Meridian and Base Line are drawn. The Base Line is the approximate site of Baseline Road, common to Maricopa County.

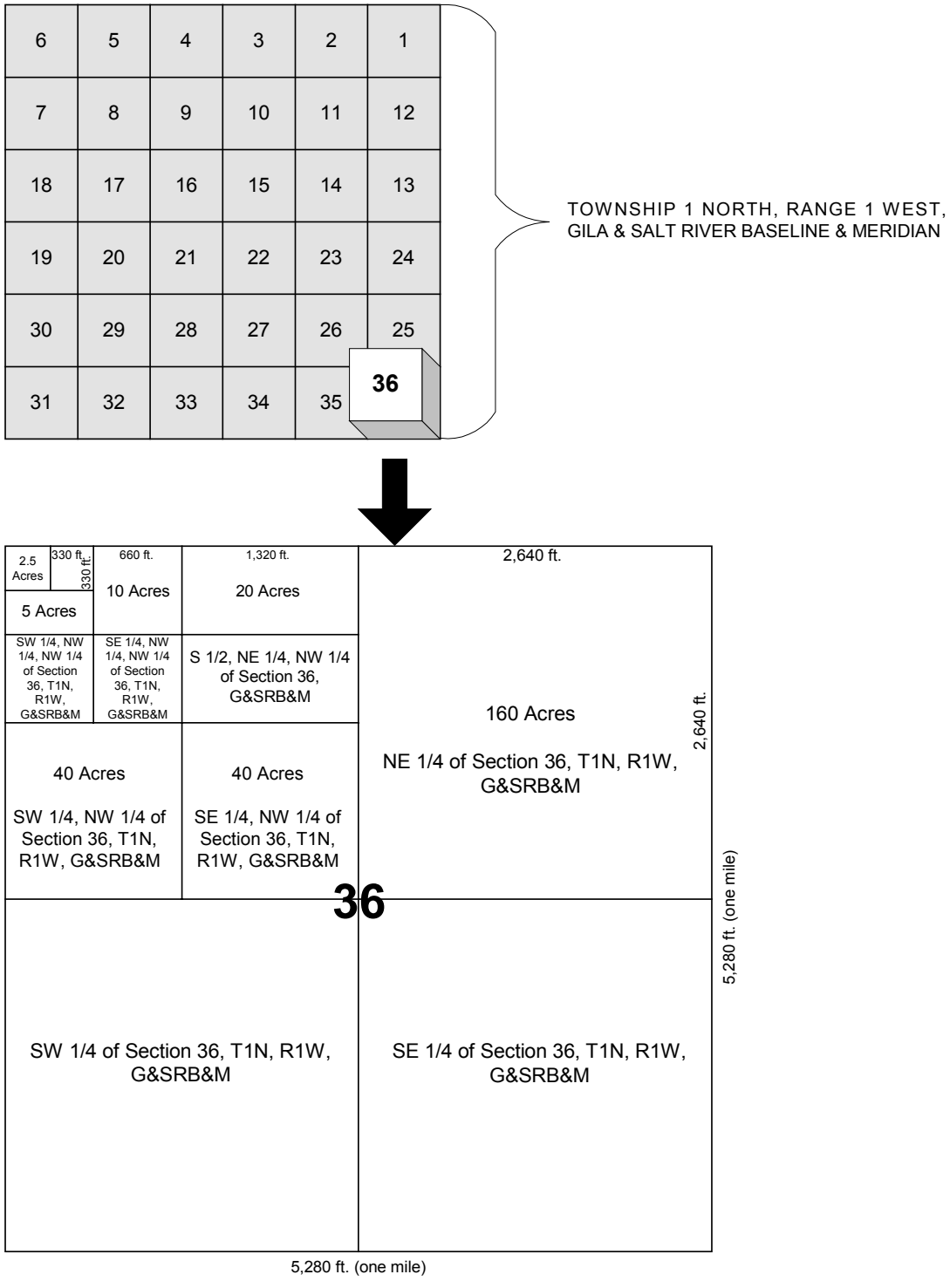
EXAMPLE 2

TOWNSHIP DIVIDED INTO SECTIONS



EXAMPLE 3

SECTION DETAIL



RECTANGULAR SURVEY DESCRIPTION

This survey system is described in more detail in Appendix A to this manual. To summarize briefly, the rectangular survey system provides for a unit of land approximately 24 miles square, bounded by a baseline running east and west, and a meridian running north and south. This 24 mile square is further divided into 6 miles squares called townships. A range is an east and west row of townships between two meridian lines six miles apart. A township is divided into 36 numbered sections, each one mile square. Farm, ranch and undeveloped land are often described by this method. An example of a 40 acre parcel described by the rectangular survey system might be: The southwest quarter of the northwest quarter of Section 36 of Township 1 North, Range 1 West, Gila and Salt River Baseline and Meridian (often abbreviated in some fashion, such as SW ¼ NW ¼, Sec 36,T1N, R1W, G&SRB& M).

METES AND BOUNDS DESCRIPTION

This is a system that identifies a property by describing the shape and boundary dimensions of a unit of land using bearing angles and distances starting from a defined point of origin. The point of origin may be referenced to the corner of some section or quarter section described by the Rectangular Survey System. For example, "…..commencing at the southwest corner of Section 10 of Township 1 North, Range 1 West ….." Refer to pages B.4 through B.9 of this appendix for a demonstration of the technique employed to plot a metes and bounds description. Metes and bounds legal descriptions are frequently used for to describe land which is not located in a recorded subdivision.

LOT AND BLOCK DESCRIPTION IN RECORDED SUBDIVISION

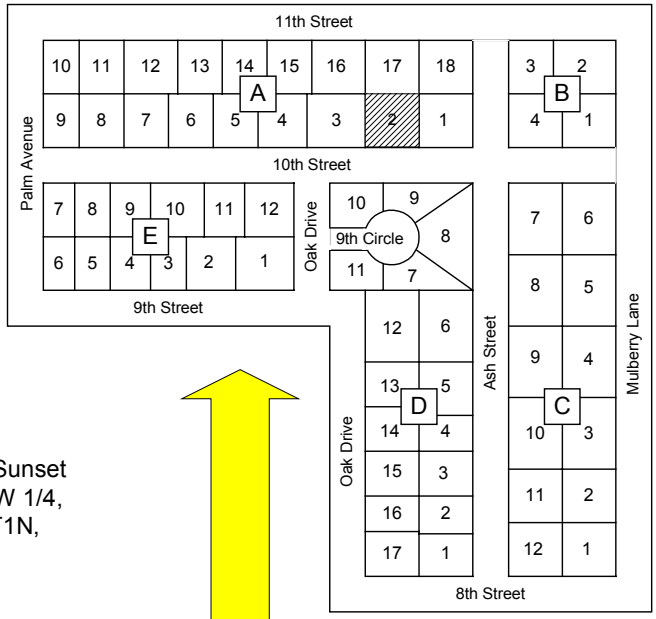
This system is commonly used in many urban communities to legally describe small units of land, because of simplicity and convenience. A map is created in which a larger unit of land is subdivided into smaller units for the purpose of sale. The map is recorded after each lot has been surveyed by a metes and bounds description. Deeds then need

only refer to the lot, block and map book designation in order to describe the property. It is not necessary to state the survey bearings and distances or the rectangular survey description in the deed. An example of this is show on page B.2 of this appendix. The legal description of Lot 2 as shown in this example can then be simplified to Lot 2, Tract A, Arizona Sunset Subdivision, with the appropriate recording information included in the description.

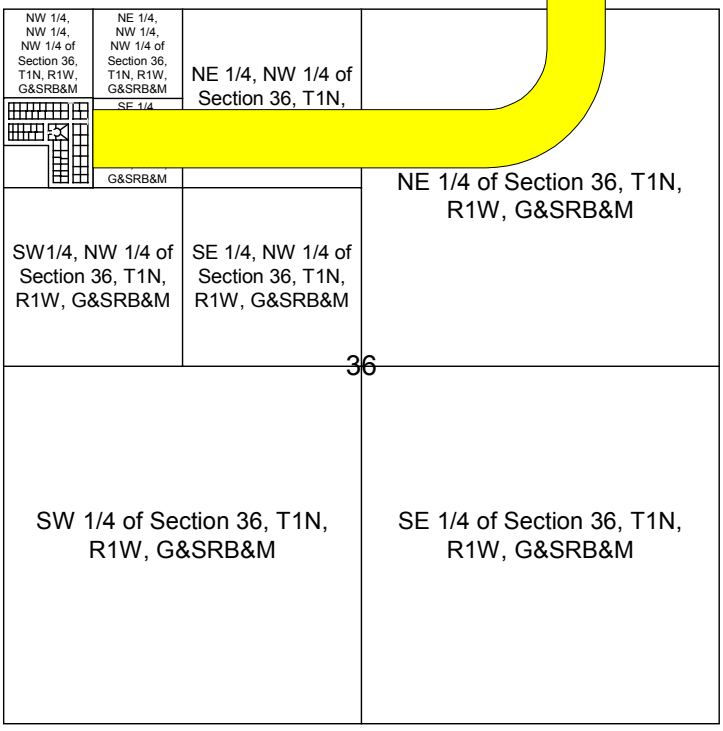
EXAMPLE 1

HYPOTHETICAL LOT AND BLOCK LEGAL DESCRIPTION ORIGINATING FROM SECTION

TRACTS A, B, C, D & E, ARIZONA SUNSET SUBDIVISION

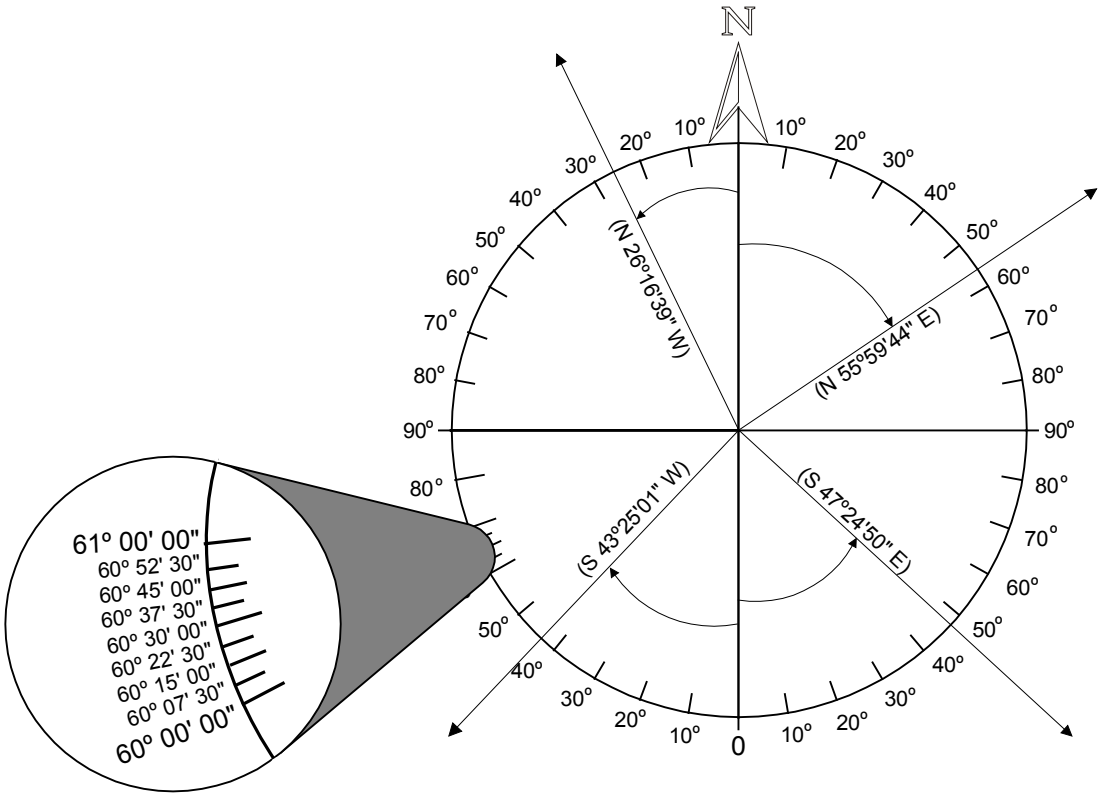


Lot 2, Tract A, Arizona Sunset Subdivision, SW 1/4, NW 1/4, NW 1/4 of Section 36, T1N, R1W, G&SRB&M



EXAMPLE 2

BEARING ANGLES



Note: 1 degree(°) equals 60 minutes('),
1 minute equals 60 seconds("),
1 degree equals 3,600 seconds.

INSTRUCTIONS FOR PLOTTING THE DESCRIPTION OF A PARCEL OF LAND

In most deeds transferring land from one owner to another there is a description of a beginning point followed by various bearings and distances (usually numbered) plotted around the boundaries of land.

Make a list of bearings and distances in the following manner:

In this example there are six lines listed thus:

1. North 33 degrees and 30 minutes East, 600 feet
2. South 56 degrees and 30 minutes East, 400 feet
3. South 63 degrees and 30 minutes West, 346.41 feet
4. South 56 degrees and 30 minutes East, 173.20 feet
5. South 33 degrees and 30 minutes West, 300 feet
6. North 56 degrees and 30 minutes West, 400 feet

1/2 degree = 30 minutes (N 33 1/2º E., 600')

Nearly all modern descriptions follow the boundaries in a clockwise direction.

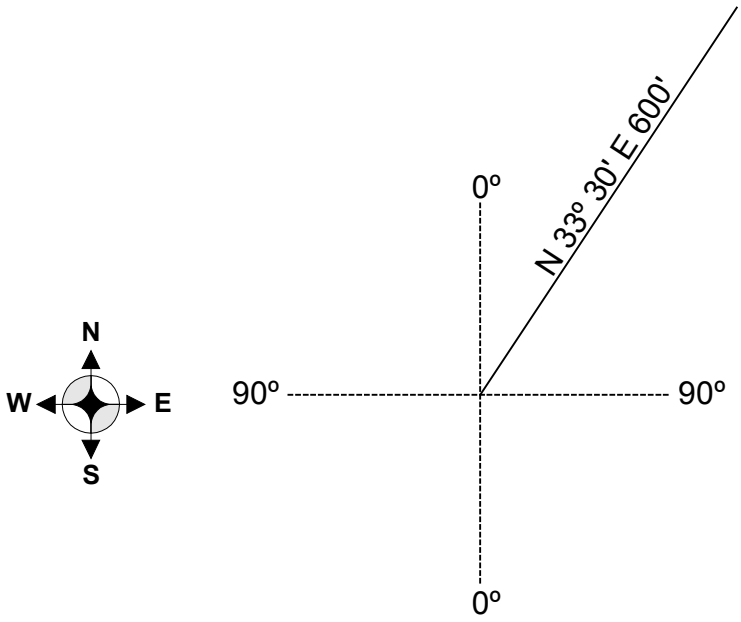
See the following page for the procedure delineating the parcel above:

Step 1

Note in the forgoing list of lines that three run in westerly direction.

Usually the last westerly line ends at the most westerly point in the description, which would be the point farthest to the left; therefore, start plotting the line immediately following, which in this example is line 1.

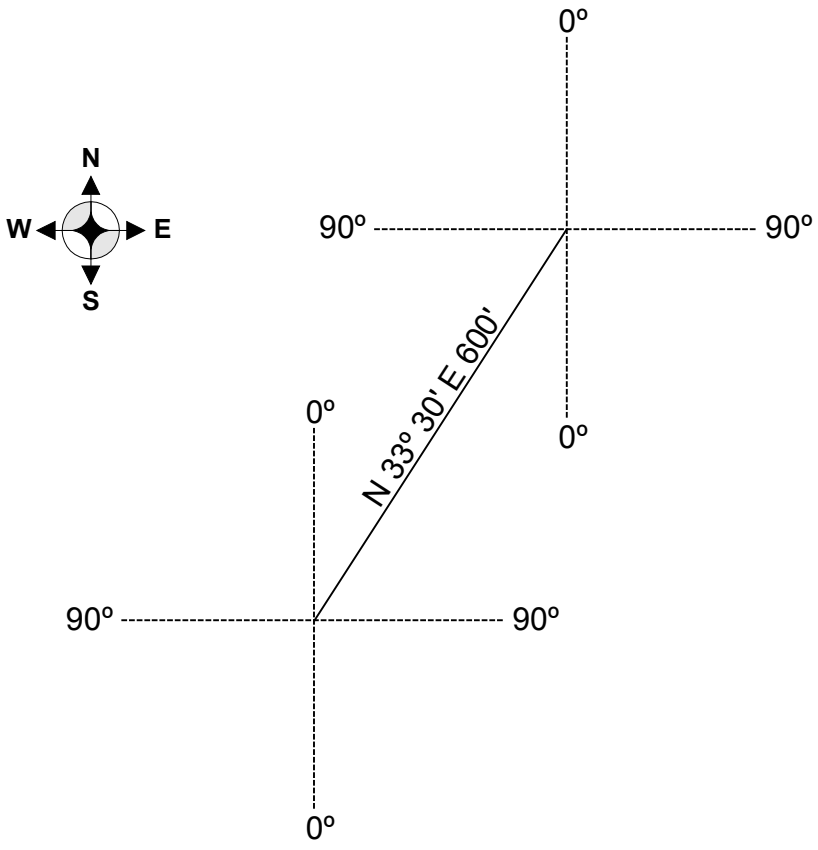
Draw a pair of N-S and E-W lines (and label them) near the left-hand edge of the paper and about in the middle, vertically. With a protractor plot an angle of 331/2 degrees east of north from the intersection of the north-south and east-west lines and extend this line, using a suitable scale for a distance of 600 feet.

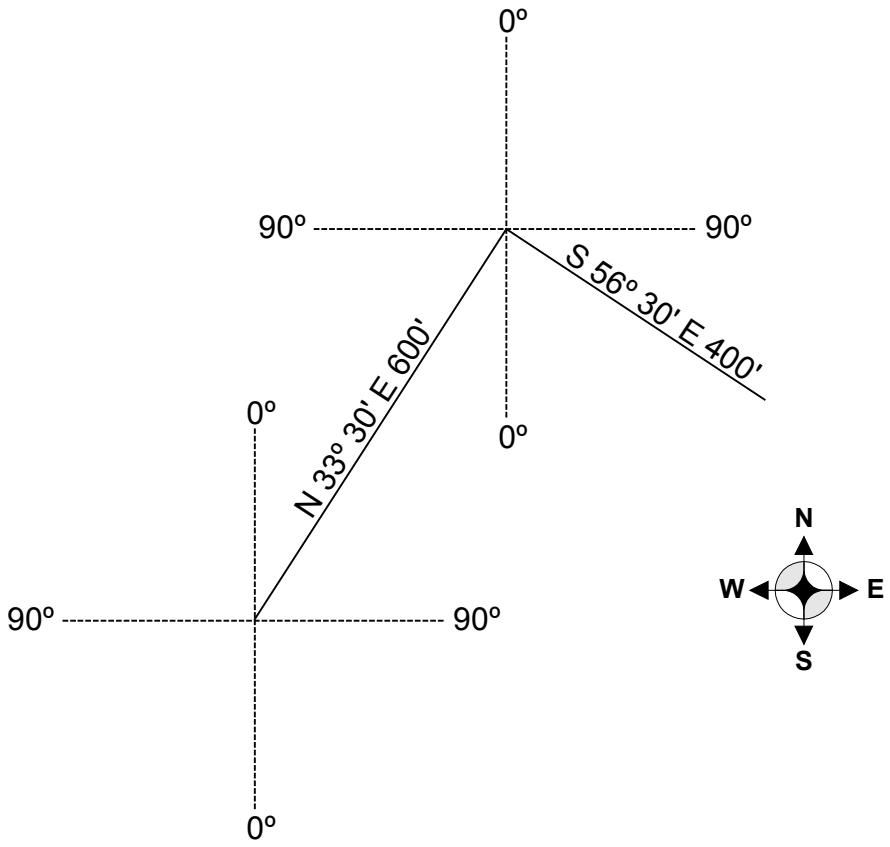


LINE 1

Step 2

Extension of the N - S and E - W directional lines will help in the locating of the next bearing. Place center point of protractor at end of line 1 so that the reverse direction of line 1 is located (S 33 degrees 30 minutes W); locate line 2 (S 56 degrees 30 minutes E), draw 400' line.





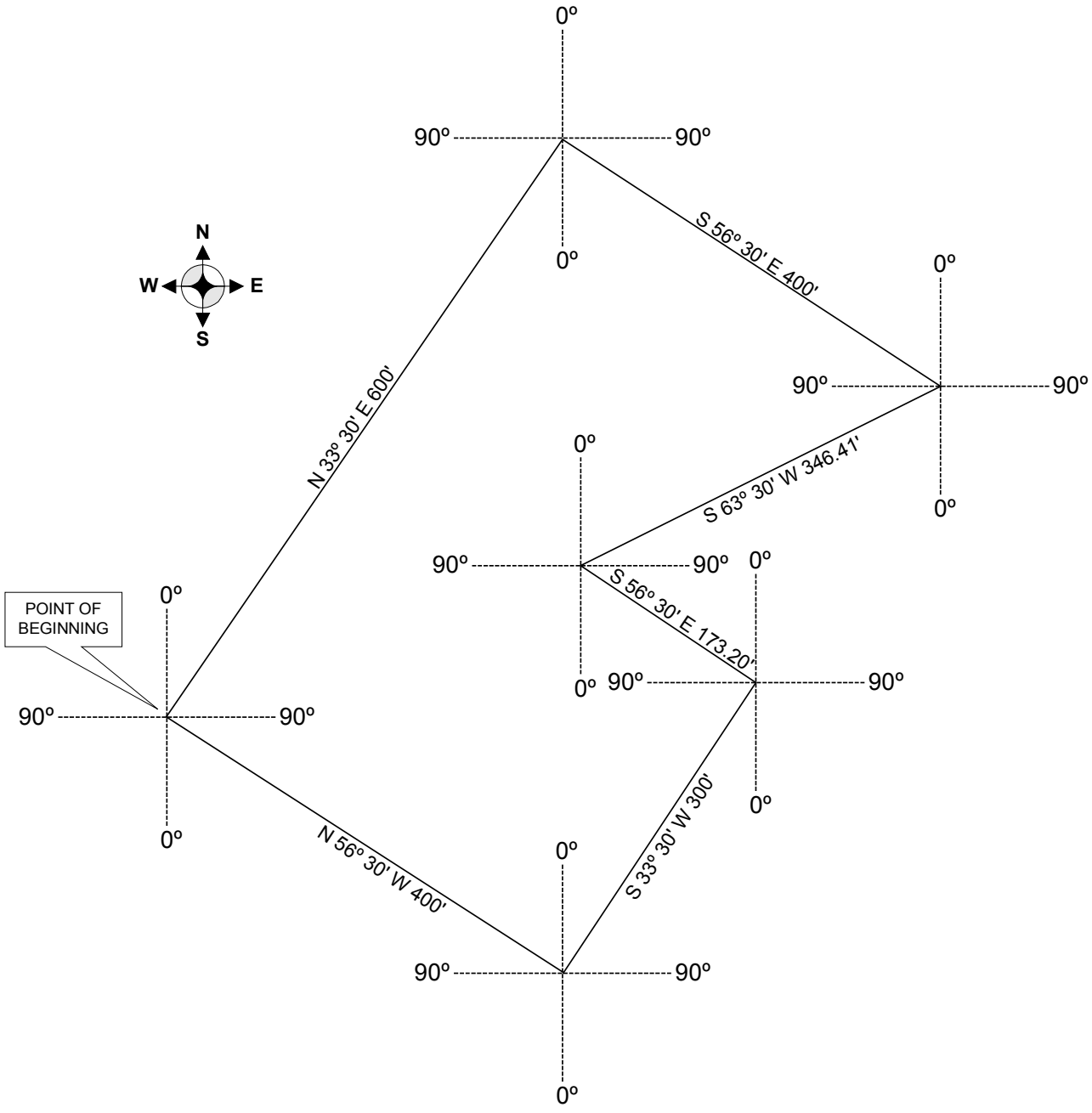
LINES 1 and 2

After drawing line 2, follow the same step wise procedure until all 6 bearings are plotted and the boundaries of the parcel are closed.

A direction of N 0 degrees through 45 degrees will be more north than east or west. This is also true for a direction of S 0 degrees through 45 degrees, which will be more south than east or west.

A direction of 45 degrees through 90 degrees will be more east on west than north, while S 45 degrees through 90 degrees will be more east on west than south.

COMPLETED PARCEL PLAT DRAWN FROM METES AND BOUNDS DESCRIPTION



ADJUSTMENTS TO UNITS OF VALUE

Units of Value. For appraisal purposes, land valuation is often performed using those comparative unit values, expressed in dollars per unit, which are typically used in the local real estate market. Examples of these unit values are front foot, square foot, acre, site, and units buildable. Commercial and industrial land is often valued using front foot, square foot, or acre unit value. Residential land is usually valued using site, square foot, or acre unit value. Agricultural land is valued on an acre unit of value. A units buildable unit value might be useful for property suitable for apartment or condominium development.

Adjustments to Units of Value. The geometric arrangement of many subdivisions creates problems in the use of typical land unit values to calculate the lot value, applying front foot, square foot, or acre unit values. For example, the application of the front foot unit value to the effective front footage of a particular lot may result in an unrealistic lot value if the market value for the lot is unaffected by the actual size and shape. If the depth, frontage, or shape is extreme enough to result in a substantially greater or lesser lot value than justified by the market price of the typical lot, there has to be an adjustment made to reflect the true market value. Lots with more frontage than is necessary for one residence, but with insufficient frontage to accommodate a second dwelling may fall into this category. Lots with irregular shapes or excess footage at the rear may also may create valuation problems if the value resulting from the application of typical unit values for land value calculations is significantly greater than the market value.

If the verified sales price for a lot indicates a reasonably uniform market value, regardless of size or shape, a site value would be more appropriate than the application of front foot, square foot, or acreage unit values.

Value Adjustments for Shape. Factors to be considered in the analysis of odd shaped lots and those lots with atypical street frontage or depth:

Lot shape and dimensions which are typical of the majority of the lots.

Indicated market value of individual lots.

The unit value as applied to the typical lot.

Necessary adjustments to be applied to lots which are not typical in size or shape, but which are selling in the same price range as the typical lot and which result in an appraised value outside the value range tolerance.

Odd shaped lots might include those that are triangular, trapezoidal, or irregular in shape. One type of size adjustment that may be required is depth adjustment, discussed in the section immediately following.

Depth Adjustments. Property which is appraised on a front foot unit basis normally will require the use of a depth factor table. Depth tables can be utilized to adjust front foot values for parcels with atypical depth. The depth factors shown on a depth table must be developed from the analysis of market data. A depth table is provided later in this appendix which provides hypothetical depth factors to be applied to the valuation of lots whose depths deviate from the typical depth in the local market. This hypothetical depth table can be adjusted for the typical depth existing in any market by following the procedures provided in this appendix under the subject, Depth Factor Conversion, immediately following the Depth Table.

Corner Lot Valuation. The market may exhibit increased value for corner lots, particularly for certain property uses. This influence is often seen in commercial properties such as service stations, retail stores, and convenience stores. It is less likely to apply to residential sites, but could in some communities. Commercial advantages of a corner are such things as easy entrance and exit, increased visibility, and exposure to more traffic. The effect on

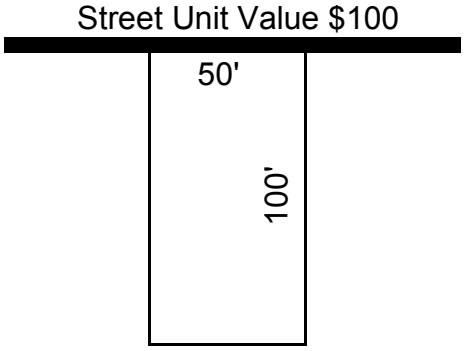
the value of the lot will increase or decrease as the amount of frontage on the two intersecting streets increases or decreases.

An appraiser must determine if the corner influence is a factor, and if so, the amount of influence. Percentage factors can be applied to a unit value to adjust the valuation for the corner influence. Any such percentage factors should be based on local market data. The appraiser can develop corner influence tables to provide factors which take into account the frontages applicable to the subject lot. Unless a local pattern of value influence is clearly demonstrated, corner influence should not be applied to residential properties.

LOT VALUATION USING FRONT FOOT UNITS OF VALUE

The following 12 examples present calculation methods applicable to the front foot unit valuation of lots with regular and irregular shapes and depths. All depth and corner influence factors used are hypothetical.

EXAMPLE 1 Rectangular Lot. - Front Foot Value with Depth Factor

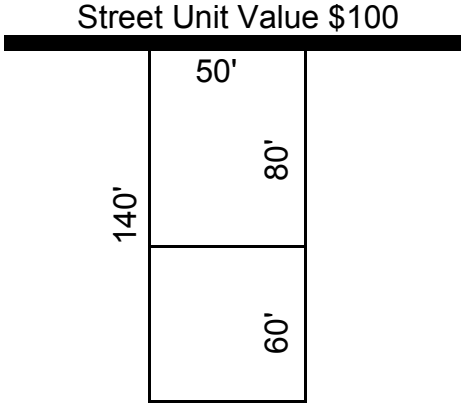


To find the value of a rectangular lot, multiply the unit front foot value by the depth factor. Multiply the resulting adjusted front foot value (rounded off to nearest dollar) by the lineal feet of frontage or width of the lot.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
50' X 100'	50'	X	($100	X	1.00)	=	$5,000

EXAMPLE 2 Rear Rectangular Lot. - Front Foot Value with Depth Factor.



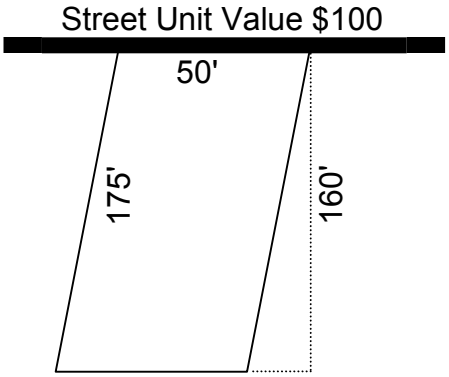
To find the value of a rear rectangular lot, multiply the unit front foot value by the difference between the depth factors for the farthest and nearest distances of the lot from the street. Multiply the resulting adjusted front foot value by frontage.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
50' X 60'	50'	X	($100	X	0.21)	=	$1,050

Depth (140' - 80') Depth Factor (1.12 - 0.91) = 0.21

EXAMPLE 3 Parallelogram-Shaped Lot. (Oblique to the Street) - Front Foot Value with Depth Factor.

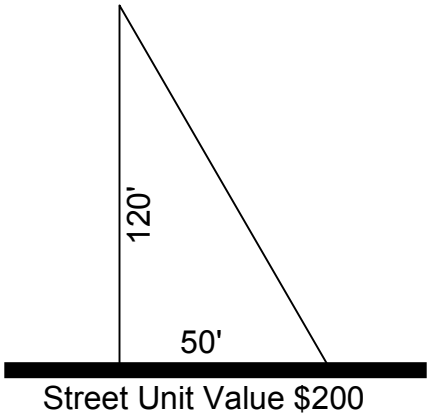


To find the value of the lot, multiply the unit front foot value by the depth factor for the perpendicular depth of the lot. Multiply this adjusted front foot value by the frontage.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
50' X 160'	50'	X	($100	X	1.16)	=	$5,800

EXAMPLE 4 Triangular Lot with Base on Street - Front Foot Value with Depth Factor and Shape Factor (with base on the street at right angle to the street).

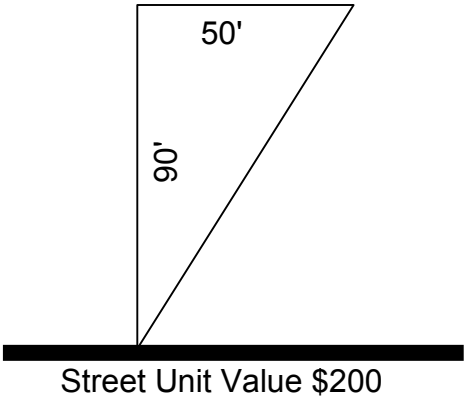


To find the value of the lot, first compute as a rectangle or parallelogram lot of identical frontage and parallelogram depth. Take 65% of the value of this lot for the value of the triangle lot with base on the street at right angles to the street.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
50' X 120'	50'	X	($200	X	1.06	X	0.65)	=	$6,890

EXAMPLE 5 Triangular Lot with Apex on Street - Front Foot Value with Depth Factor and Shape Factor (with apex on the street at right angle to the street).

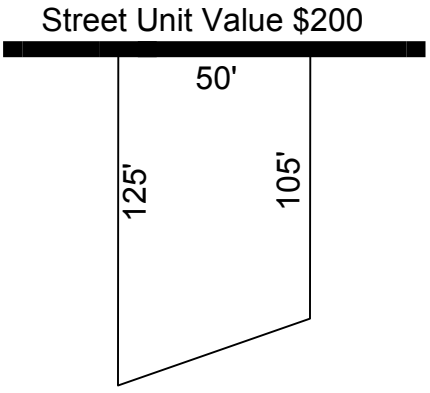


To find the value of the lot, first compute as a rectangular or parallelogram lot with frontage and perpendicular depth identical to the base and depth of the triangular lot. Take 35% of the value of this lot for the value of the triangular lot with the apex on the street and at right angles to the street.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
50' X 90'	50'	X	($200	X	0.96	X	0.35)	=	$3,360

EXAMPLE 6 Trapezoidal Lot with Base on Street. - Front Foot Value with Depth Factor.

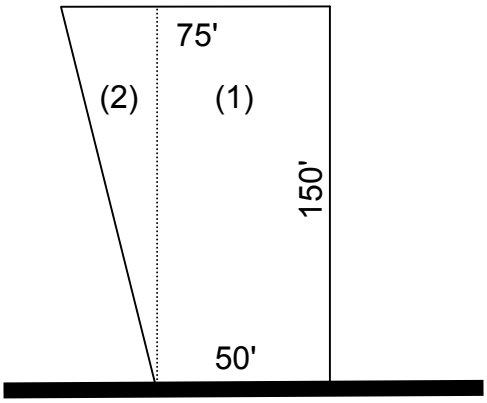


To find the value of a trapezoidal lot at right angles to the street, multiply the unit front foot value by the depth factor for the average depth of the parallel sides of the lot. Multiply this adjusted front foot value by the frontage.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
50' X 115' (average)	50'	X	($200	X	1.04)	=	$10,400

EXAMPLE 7 Trapezoidal Lot with base on Street. - Front Foot Value with Depth Factor and Triangle Factor.



Street Unit Value $200

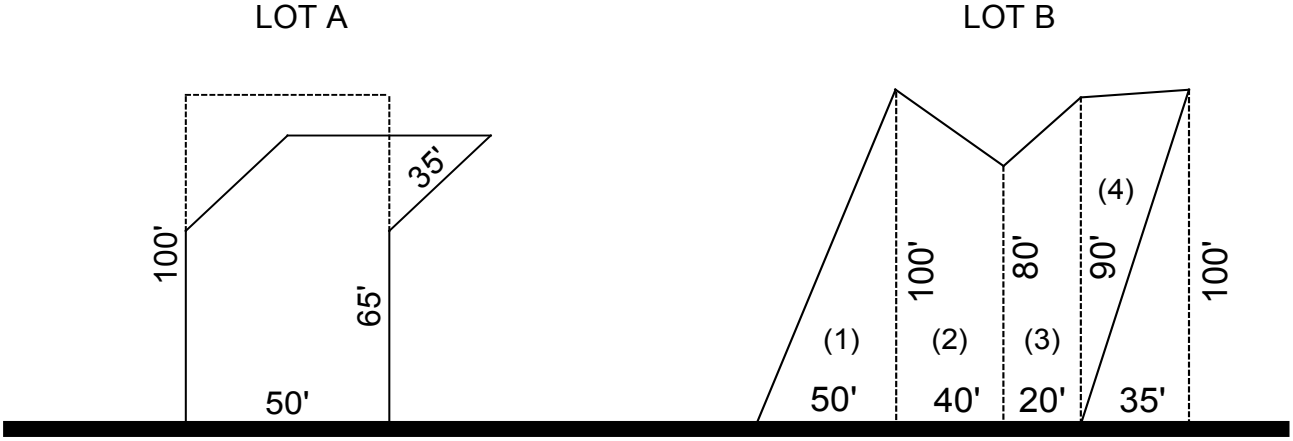
To find the value of the lot, compute the rectangular portions separately, according to rule, and take the sum of the two computations for the total value.

CALCULATION:

Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
(1) 50' X 150'	50'		($200	X	1.14		NA)	=	$11,400
(2) 25' X 150'	25'	X	($200	X	1.14	X	0.35)	=	$ 2,000
					TOTAL LAND VALUE:				$13,400

EXAMPLE 8 Irregular Lot with base on Street. - Front Foot Value with Depth Factor and Shape Factors.

Reduce the irregular lot to the nearest equivalent rectangular, trapezoidal or triangular sections and apply the applicable rules.



Street Unit Value $200

EXAMPLE 8 Irregular Lot with Base on Street. (continued) - Front Foot Value with Depth Factor and Shape Factors.

CALCULATIONS:

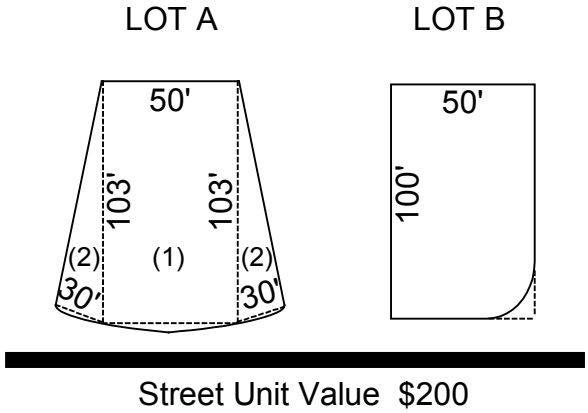
LOT A

Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
50' X 100'	50'	X	($200	X	1.00		NA)	=	$10,000

LOT B

Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
(1) 50' X 100'	50'	X	($200	X	1.00	X	0.65)	=	$ 6,500
(2) 40' X 90'	40'	X	($200	X	0.96		NA)	=	$ 7,680
(3) 20' X 85'	20'	X	($200	X	0.94		NA)	=	$ 3,760
(4) 35' X 95'	35'	X	($200	X	0.98	X	0.35)	=	$ 2,400
					LOT B TOTAL VALUE:				$20,340

EXAMPLE 9 Curved Lot with Shape Factors.



To find the value of a curved lot, rectify the curvature and reduce the lot to its nearest equivalent lot shape. Then compute according to the applicable rules.

CALCULATIONS:

LOT A

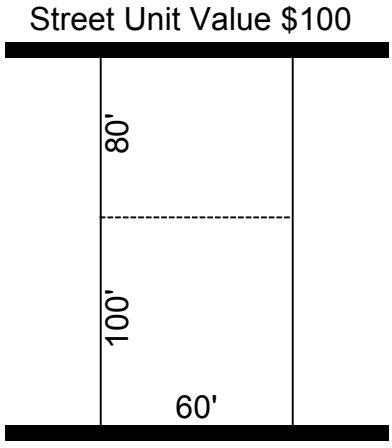
Lot Dimensions	Unit		Unit Value		Depth Factor		Triangle Factor		Lot Value
(1) 50' X 103'	50'	X	($200	X	1.01		NA)	=	$10,100
(2) 60' X 103'	60'	X	($200	X	1.01	X	0.65)	=	$ 7,880
					LOT A TOTAL VALUE:				$17,980

EXAMPLE 9 Curved Lot with Shape Factors (continued).

CALCULATIONS:
LOT B

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
50' X 100'	50'	X	($200	X	1.00)	=	$10,000

EXAMPLE 10 Commercial Lot - Front Foot Value with Depth and Two Street Frontage Factors.

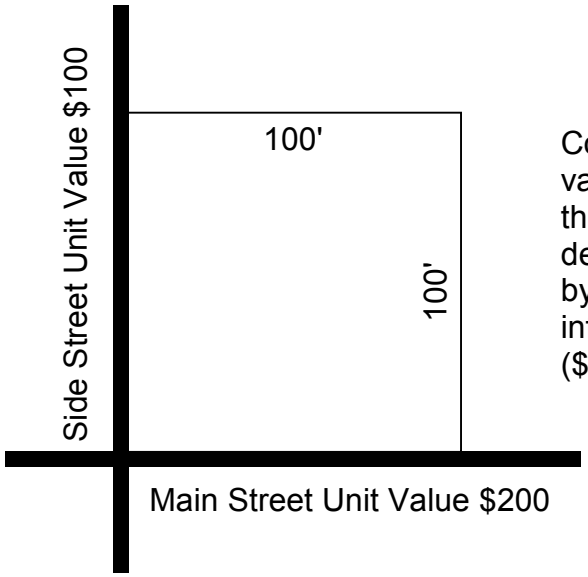


To find the value of a through lot with two street fronts, compute from the high-value street to the standard depth or from half the depth, whichever is greater, and from the low-side street for the remaining depth, and add together for the total value.

CALCULATIONS:

Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
60' X 180'							
High-Street Value							
60' X 100'	60'	X	($200	X	1.00)	=	$12,000
Low-Street Value							
60' X 80'	60'	X	($100	X	0.91)	=	$ 5,460
					TOTAL LOT VALUE:		$17,460

EXAMPLE 11 Commercial Corner Lot - Front Foot Value with Depth and Street Frontage Factors. (Corner influence applicable to entire frontage).



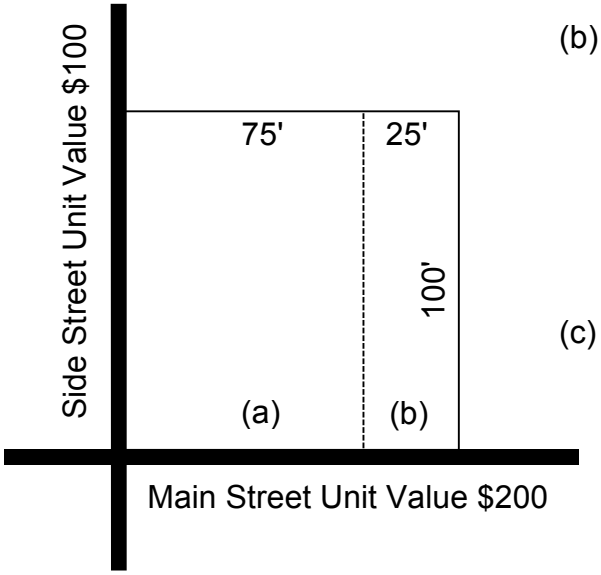
Compute the frontage 100', on the high unit value street to the depth of the lot on the basis of the unit front foot value of $220. This figure was derived by multiplying the high unit value ($200) by the increase contributed to the corner influence (10%) and adding it to the unit value ($200 X 10% = $20 + $200 = $220).

In this hypothetical example the corner influence contributes 0.10 in additional land value. However, an analysis of local market data of similar properties should be used to determine the corner influence factor most appropriate.

CALCULATIONS:

Lot Dimensions	Unit	Unit Value		Depth Factor		Lot Value
100' X 100'	100'	($220	X	1.00)	=	$22,000

EXAMPLE 12 Commercial Corner Lot - Front Foot Value with Depth and Street Frontage Factors. (Corner influence applicable to portion of frontage).



(b) Compute the frontage 75', on the high unit value street to the depth of the lot on the basis of the unit front foot value of $260. This figure was derived by multiplying the high unit value ($200) by the increase contributed to the corner influence (30%) and adding it to the unit value ($200 X 30% = $60 + $200 = $260).

(c) Compute the remainder of the frontage on the high unit value street to the depth of the lot on the basis of the unit front foot value of the street.

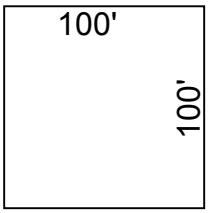
In this hypothetical example the corner influence contributes 0.30 in additional land value. However, an analysis of local market data of similar properties should be used to determine the corner influence factor most appropriate.

CALCULATIONS:

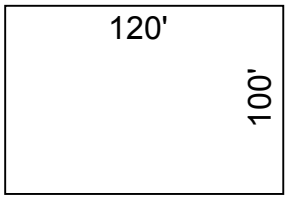
Lot Dimensions	Unit		Unit Value		Depth Factor		Lot Value
(a) 75' X 100'	75'		($260	X	1.00)	=	$19,500
(b) 25' X 100'	25'	X	($200	X	1.00)	=	$ 5,000
					TOTAL LAND VALUE:		$24,500

SQUARE FOOT CALCULATIONS

EXAMPLE 1 Square and Rectangular Lots - Multiply length of the lot times width of the lot.

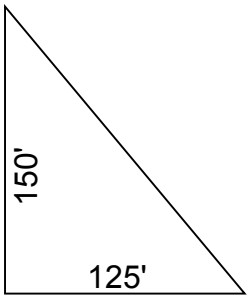


100' X 100' = **10,000 Square Feet**



100' X 120' = **12,000 Square Feet**

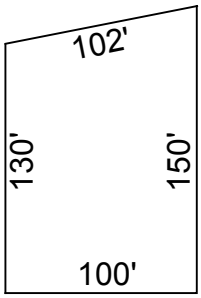
EXAMPLE 2 Triangular Shaped Lots



Base times height divided by 2

$$\frac{150' \text{ X } 125'}{2}$$ **= 9,375 Square Feet**

EXAMPLE 3 Irregular Lots - If irregularity is minimal, use averages.

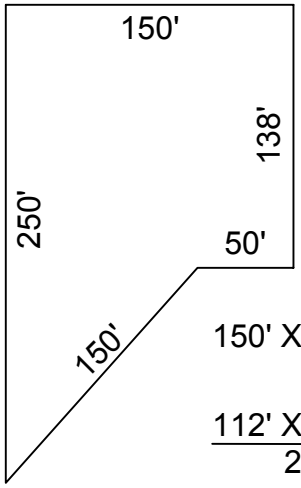


Determine average depth:

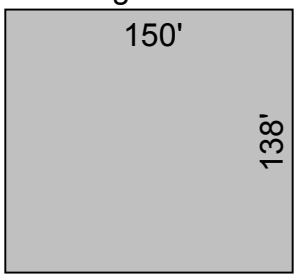
$$\frac{130' + 150'}{2} = 140'.$$

Multiply average depth by the width:
140' X 100' = **14,000 Square Feet.**

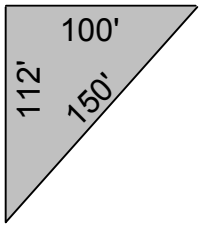
If irregularity is complex use a planimeter, or divide into two or more segments to determine the area.



Segment 1



Segment 2



150' X 138' = 20,700 Square Feet

+

$\frac{112' \text{ X } 100'}{2}$ = 5,600 Square Feet

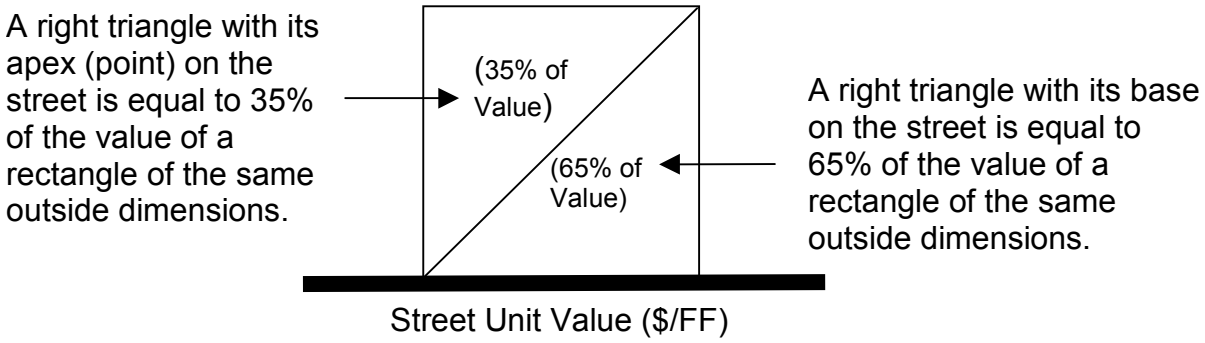
26,300 Square Feet

RULES

65/35 Rule For Triangular Lots

65/35 Rule

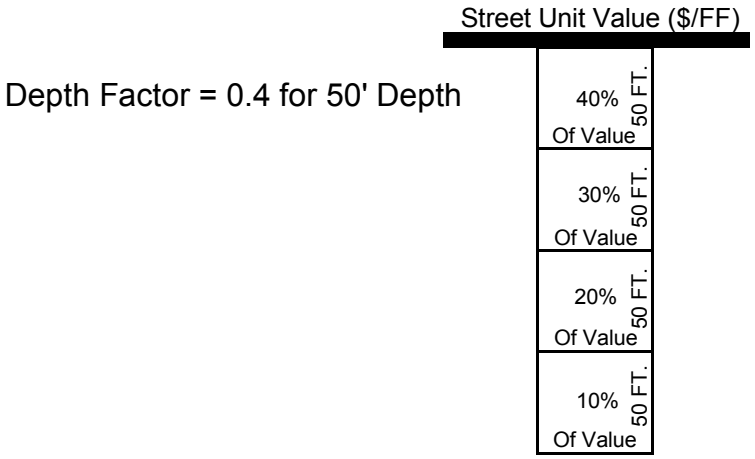
This rule is based on the premise that a right-angle, triangular-shaped lot with its base on a street contains 65 percent of the value of a rectangular lot of the same outside dimensions, and that a right-angle, triangular-shaped lot with its apex (point) on a street contains 35 percent of the value of a rectangular lot.



Rule For Depth Factor Table

4-3-2-1 Rule

One of the oldest depth curves in use is based on what is known as the 4-3-2-1 rule. This rule states that the front quarter of a parcel is worth 40% of the whole value, the second quarter 30%, the third quarter 20%, and the rear quarter 10%.



DEPTH FACTOR TABLE
(based on 100' standard depth)

Lot Depth	Depth Factor	Lot Depth	Depth Factor
5'	0.15	120'	1.06
10'	0.25	125'	1.08
15'	0.35	130'	1.09
20'	0.43	135'	1.10
25'	0.50	140'	1.12
30'	0.55	145'	1.13
35'	0.60	150'	1.14
40'	0.65	155'	1.15
45'	0.69	160'	1.16
50'	0.73	165'	1.17
55'	0.77	170'	1.18
60'	0.80	175'	1.18
65'	0.83	180'	1.19
70'	0.86	185'	1.20
75'	0.89	190'	1.20
80'	0.91	195'	1.21
85'	0.94	200'	1.21
90'	0.96	210'	1.21
95'	0.98	220'	1.22
100'	1.00	230'	1.22
105'	1.01	240'	1.23
110'	1.03	250'	1.23
115'	1.04	300'	1.26

NOTE: These depth factors are hypothetical. Actual depth factors should be developed to reflect local market conditions.

DEPTH FACTOR CONVERSION

The depth factors shown in the preceding Depth Factor Table are based on a standard depth of 100'. In cases where the standard lot depth is not 100', conversion of the factors in the Depth Factor Table will be required. The revised depth factors can be mathematically derived by multiplying the existing depth factors by a conversion factor.

Conversion Procedure

1. Establish the typical lot depth of the subject area.
2. Divide the standard depth factor of 1.00 for a 100' lot by the depth factor for the new standard lot depth. Both of these factors are taken from the Standard Depth Factor Table based on a 100' standard lot depth. The result is a conversion factor to be applied to each existing depth factor to calculate the new depth factors.

Example

It may be necessary to convert the 100' standard lot to a 150' standard lot. As shown in the 100' Standard Depth Factor Table the factor for a 150' depth lot is 1.14.
Divide this factor into all the other factors given in the table for each depth conversion. This results in a new factor of 150' standard depth for each lot depth.

Calculations for a lot with 125' depth in an area of 150' standard depth lots:

$$\frac{\text{Standard Depth Factor } \mathbf{1.00}}{\text{150' Lot Depth Factor } \mathbf{1.14}} = \mathbf{0.877}.$$

Note: Standard Depth Factor for a 125' Lot Depth = 1.08.

New Standard Depth Factor 0.877 X Depth Factor 1.08 = 0.95

The above procedure is the suggested process for converting the Standard Depth Table in this manual to any standard depth factor. The factors should be rounded to the 2nd decimal place.

Caution must be given when applying the depth factors. The Standard Depth Factor Table and the conversion process should be considered a guide, and should be supported by evidence from the local market before being applied.