JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

V. INDUSTRY SEMINARS AND SPEECHES - SHORT TERM

A. Appraisal Organizations

6. 1974

g. "Real Estate Feasibility Seminar", sponsored by Arizona Chapter of AIREA, November 21-22, 1974

Index

REAL ESTATE FEASIBILITY SEMINAR
November 21-22, 1974
Doubletree Inn, Scottsdale, Arizona

SECOND AFTERNOON

I. To this point the feasibility analysis will have assembled all the critical data for the design process as flow charted in Exhibit One.

A. The pre-architectural program will be initially specified by the various analyses which have been discussed in our previous session. These constraints and objectives will lead to fairly detailed statement about the space-time product to be built. The next problem is to convert these physical limitations to their corresponding financial implications. The design team should be given:

1. A definition of rental units in terms of size, features (ranked by customer appeal and indicated as required or desired), mix and rental level or price.

2. Price should be allocated between direct construction budget, site improvement, land, and indirect cost including profit per unit.

3. Site analysis should establish essential linkage points, negative elements to be neutralized, environmental factors to be considered or avoided, and special legal or political constraints.

4. Designers should be given a statement on investment strategy and financial criteria with which alternative design concepts will be evaluated.

B. Converting design elements to the cash cycle of the real estate enterprise requires basic assumptions about:

1. The time-line of financial events for an enterprise

2. Schedules of outlays

3. Schedules of receipts

4. Measures of yield

5. Measures of risk

C. In appraisal and feasibility the nature of these assumptions has been changed as the industry has become more sophisticated in financial management. It is useful to see how feasibility differs from appraisal by the comparison summarized on Exhibit One.

D. When the view point changes from valuation of a property for a mortgage commitment to an equity commitment the assumptions from the Ellwood approach become too simple, too far removed from reality to be a useful model.

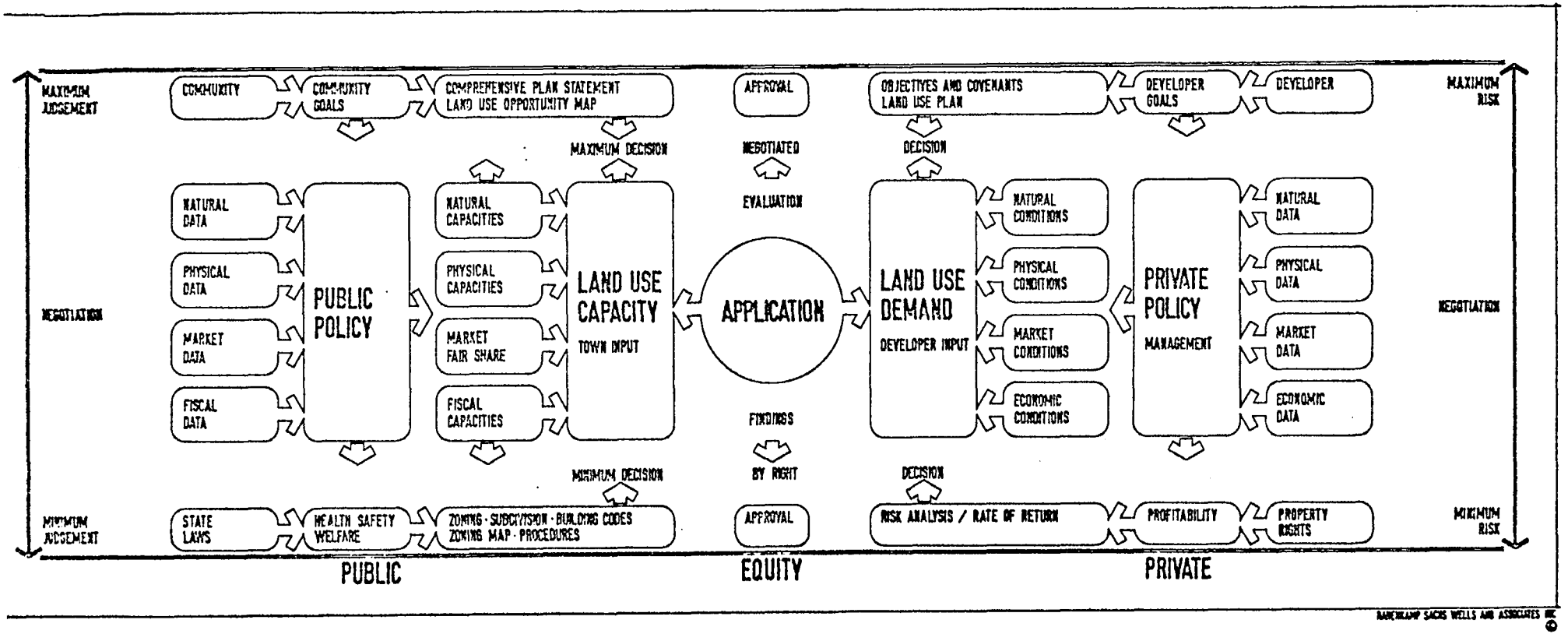


EXHIBIT ONE

1. The question for the equity investor is which investment has the best probability of maximizing his net spendable cash in the future and his total accumulation of net worth over time with an acceptable level of risk and hassle.

2. Exhibit Two, Col. C summarizes the assumptions of modern capital budget decision models.

3. Notice that it is no longer possible to have a single NOI in the numerator or in some cases, a single capitalization rate in the denominator. It will be necessary to do some accounting period by period.

4. Financing Real Estate Development, Harry A. Golemon, AIA editor Aloray Publisher Englewood, N.J. 07631.

E. Modern money management therefore requires the following inputs to a financial forecast and investment strategy.

1. The time line for significant financial events

2. A schedule and amount of outlays for each period

   a. Capital outlays
   b. Expense outlays
   c. Debt service outlays
   d. Tax outlays

3. A schedule and amounts of receipts for each period

   a. Operating revenues
   b. Sales proceeds
   c. Borrowed funds
   d. Derivative receipts or savings

4. Measures of yield

   a. Periodic dollars of profit
   b. Periodic return in dollars invested
   c. Average periodic return on total resources
   d. Total cumulative dollar increase in net worth

5. Measures of risk

   a. Capacity for absorbing surprise
   b. Range of variation in alternative outcomes
   c. Definition of maximum loss

II. Before one can provide much financial analysis of the elements above, it is necessary to structure the forecast to permit rapid testing of alternatives.

EXHIBIT TWO

COMPARISON OF CRITICAL VALUATION ASSUMPTIONS FOR THREE PRESENT VALUE VIEWPOINTS IN REAL ESTATE

Prepared for Discussion at Feasibility Seminar

Traditional Income Appraisal	Ellwood Valuation	Modern Capital Theory
1. Instant investment	1. Instant investment	1. Discontinuous series of outlays
2. Productivity limited to net income from parcel before debt and income tax.	2. Productivity limited to parcel after debt but before income tax.	2. Productivity is net change in spendable cash from all sources after debt and income tax traced to real estate.
3. Continuous income function	3. Continuous income function	3. Discontinuous series of tax classified receipts
4. Recapture from income	4. Recapture from income & resale	4. Payback of equity from spendable cash and debt from net revenue & resale.
5. Projected for full useful life of improvements	5. Projected for normal turnover period 5-10 years of typical investor	5. Projected for elapsed time of outlays and receipts for specific investor time line horizon.
6. Arbitrary discount factor	6. Weighted average Inwood discounting	6. Selected present value discounting based on characteristics of investor and property revenue pattern

3. A system firm which provided mail-back service as well as Tymshare network programs is: OMNIMETRICS, 3325 Wilshire Boulevard, Suite 1215, Los Angeles, California, 90005, 386-1360.

III. Measuring rate of return is really an elaboration on buy-low-sell-high when looking at streams of outlays and receipts over time. Some basic questions which should be asked before using one measure or another in a feasibility report are:

A. Who is reading the report and what method does he use? Some may be interested in total dollars as real estate is their business while others may be interested in rate of return since money management is their business.

B. What is the definition of the equity investment? Cash equity up front, net cash after tax shelter, or liquidating cash equity?

C. What is the precise definition of items to be included as a return on investment as opposed to a return on service and how are shares in these items distributed? Floors? Ceiling? Priorities?

D. What reinvestment assumption does the client wish to make in evaluating the project?

1. Prospective rate which disregards reinvestment

2. Reinvestment at the safe rate ala Hoskold

3. Reinvestment at the discounting rate ala Inwood or IRR

4. The modified internal rate of return for money managers

E. Method for determining the resale or liquidating price assumption

IV. The feasibility study is asking the client to purchase a set of assumptions about the future and the analyst should identify the consequences of the most critical but variable assumptions and the protection which the investor may or may not have available to "lay-off" the risk.

A. Required market segment for planned absorption as a percent of total market opportunity and protection provided by monopoly characteristics of project.

B. Direct cost overruns and the possibilities of shifting the risk by contract.

C. Significant timing upsets as a result of political regulation or seasonal markets and possible risk control for carrying charges.

D. The use of the equity pay back ratio - the ratio of total cash received cumulatively to original cash investment plus exposure if any on notes and mortgages.

E. Designing the project for a conservative default ratio or cash break even point both in structuring the financing and phasing the project.

F. Funded holding power should be at least three times cash equity required plus exposure on notes.

A. Exhibit Three provides a systematic organization of receipts and outlays for a rental property.

   1. These items must be forecast for quarterly and annual periods.

   2. Careful definition is the first step in structuring the financial term with both lenders and partners.

B. Mini-mod demonstrates a simple model for a typical rental project but this model has several flaws: (see Exhibit Four)

   1. Nothing is done about cash flows during the construction period.

   2. Projections are made on a simple straight line basis.

   3. It is not a valuation model; it is an investment analysis.

C. TAP is an after-tax Ellwood model which does permit erratic and alternative methods of predicting resale value. However it does not handle the construction phase very well because it does not permit refinancing. (see Exhibit Five)

D. A more useful model for feasibility analysis has been developed by John Nabors of Dallas, Texas. He is both a real estate analyst and a computer systems man. One of his techniques is shown in Exhibit Six.

   1. This model handles direct and indirect cost of construction phase.

   2. It is one of the few computer models which provide sensitivity analysis in a from appropriate to the prearchitectural program and in a form which permits the analyst to make exquisite recommendations to the client as to financial and design flaws or objectives.

E. A number of computer modeling services are being marketed to architects, which are not only useful to appraisers but demonstrate how rapidly appraisers are becoming obsolete if they continue to use the basic income approach for feasibility analysis.

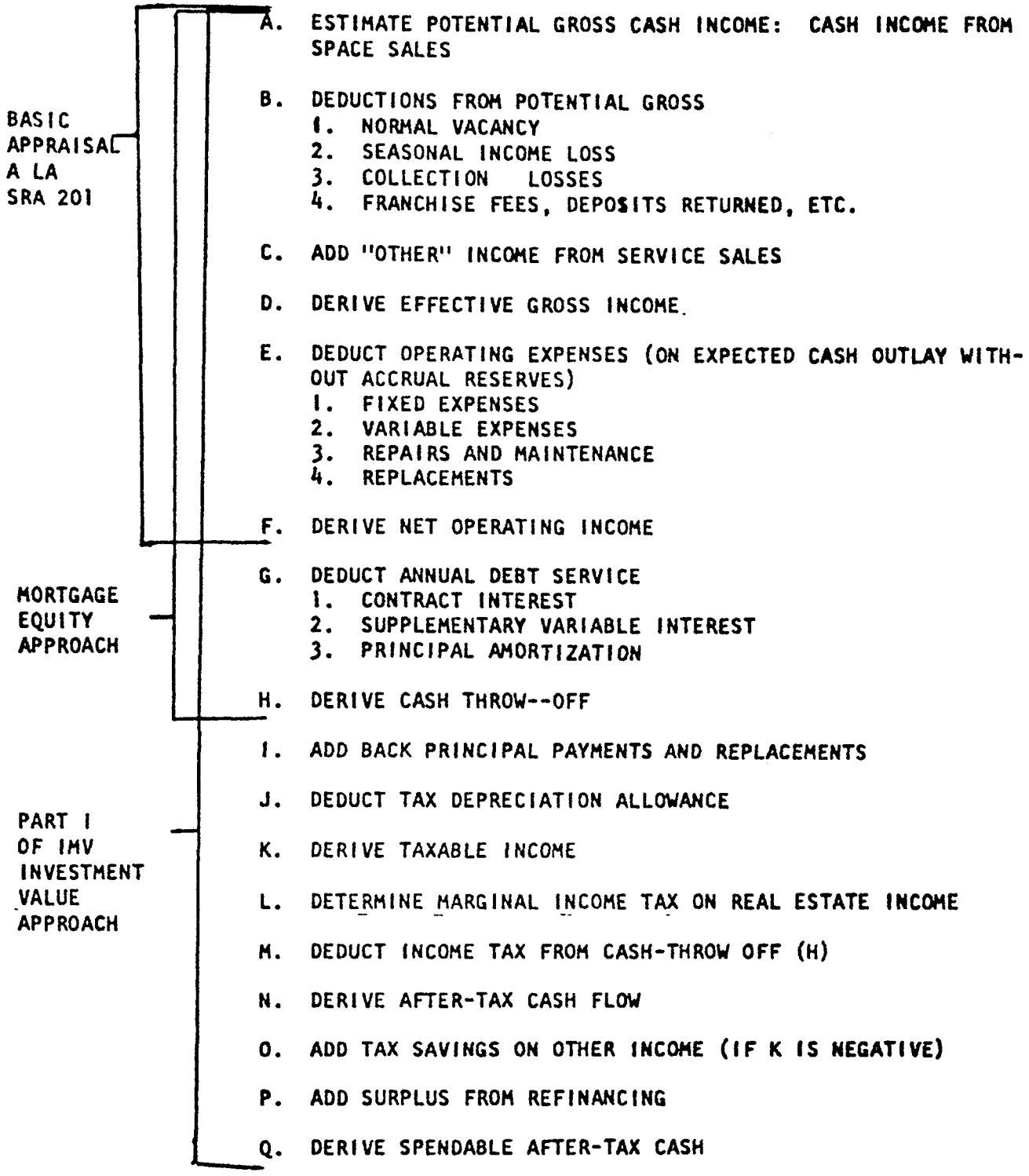
   1. A system which implements the process of classification and scheduling fundamentals extremely is called REAP which is available on Tymshare from the vendor CLM/Systems, Inc., 292 Main Street, Cambridge, Massachusetts 02142, (617) 492-6210. (For a partial example see Exhibit Seven).

   2. A timesharing computer service also on the Tymshare network is Comarc Design Systems, The agriculture Building Embarcadero at Mission, San Francisco, California 94105 (415) 392-5268 P.O. Box 3919 San Francisco, California 94119. (They have programs which will compute LUI, test MPS standards, provide pre-tax analysis of land and condiminium sales projects, and after-tax analysis of office, industrial, and apartment structures.)

EXHIBIT THREE

SYSTEMATIC ESTIMATION OF FORECAST ANNUAL INCOME FOR AN INCOME-PRODUCTNG PROPERTY

PART I. ANNUAL RETURNS TO INVESTOR



PART II. RESALE RETURNS TO INVESTOR (OVER)

J. Graaskamp

PART II. RESALE RETURNS TO INVESTOR

A. ESTIMATED RESALE PRICE (EOY)

B. DEDUCT BROKER'S COMMISSION AND OTHER TRANSACTION COSTS

C. DERIVE EFFECTIVE GROSS PROCEEDS FROM SALE

D. DEDUCT ALL CREDIT CLAIMS (EOY) OUTSTANDING
   1. SHORT AND LONG TERM NOTE BALANCES DUE
   2. PREPAYMENT PENALTIES
   3. DEDUCT EQUITY SHARES TO NON-OWNER INTEREST

E. DERIVE PRE-TAX REVERSION TO EQUITY

F. DEDUCT TAX CLAIMS ON OWNERSHIP INTEREST
   1. DEDUCT CAPITAL GAINS TAX
   2. DEDUCT INCOME TAX ON DISALLOWED ACCELERATED DEPRECIATION
   3. DEDUCT SURTAX ON TAXABLE PREFERENTIAL INCOME

G. DERIVE AFTER TAX RESALE PROCEEDS TO INVESTOR

COMPONENTS	PCT. DEPR	BEGIN USE	USEFUL LIFE	DEPR METHOD		COST
LAND	.00	1	.	0	$	40000.
BUILDING	1.00	1	35.	3	$	165300.
PARKING	.50	1	10.	3	$	7200.
FURNISHINGS	1.00	1	7.	1	$	13200.
ELEVATOR	.80	1	12.	3	$	12500.
TRANSACTION COST	1.00	1	35.	3	$	1800.
7TH YR REFURBISH	1.00	8	7.	1	$	10000.
TOTAL INITIAL INVESTMENT					$	240000.

GROSS RENT	$ 46080.	RATE OF GROWTH OF GROSS RENT	.0200
EXPENSES	$ 8400.	RATE OF GROWTH OF EXPENSES	.0200
R E TAXES	$ 9000.	RATE OF GROWTH OF R E TAXES	.0500
INCOME TAX RATE	.3000	RATE OF GROWTH OF PROJECT VALUE	.0100
VACANCY RATE	.0500	WORKING CAPITAL LOAN RATE	.0900
EQUITY DISCOUNT RATE	.1800	EXTRAORDINARY EXPENSES	$ 7625.
STAGING YR(0),FACTOR	.00	COST OF EQUITY CAPITAL	.1200

	1	2	3	4	5	6	7	8	9	10
CASH EQUITY REQUIRED	45000.	45000.	45000.	45000.	45000.	50000.	50000.	50000.	50000.	50000.

FINANCING PLAN

FIRST ASSUMED MORTG. $ 180000.
MONTHLY PAYMENT $ 1477. INTEREST RATE .0775 STARTS 1 ENDS 5 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	3919.	4234.	4574.	4942.	5339.	.	.	.	.	.
INTEREST	13812.	13497.	13157.	12790.	12393.	.	.	.	.	.
BALANCE	176080.	171845.	167270.	162328.	156989.	.	.	.	.	.

SELLERS 2ND MORTG $ 15000.
MONTHLY PAYMENT $ 185. INTEREST RATE .0850 STARTS 1 ENDS 5 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	994.	1082.	1178.	1282.	1396.	.	.	.	.	.
INTEREST	1236.	1148.	1053.	948.	835.	.	.	.	.	.
BALANCE	14005.	12922.	11743.	10460.	9064.	.	.	.	.	.

REFINANCED FIRST $ 190000.
MONTHLY PAYMENT $ 1589. INTEREST RATE .0800 STARTS 6 ENDS 10 BONUS INTEREST .0400 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	.	.	.	.	.	4016.	4349.	4710.	5101.	5524.
INTEREST	.	.	.	.	.	15054.	14721.	14360.	13969.	13546.
BALANCE	.	.	.	.	.	185983.	181634.	176924.	171822.	166297.

REFURBISH CHATTEL $ 10000.
MONTHLY PAYMENT $ 150. INTEREST RATE .0900 STARTS 8 ENDS 10 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	.	.	.	.	.	.	.	938.	1026.	1122.
INTEREST	.	.	.	.	.	.	.	861.	773.	677.
BALANCE	.	.	.	.	.	.	.	9061.	8035.	6913.

	1	2	3	4	5	6	7	8	9	10
GROSS RENT	46080.	47001.	47923.	48844.	49766.	50688.	51609.	52531.	53452.	54374.
LESS VACANCY ALLOWANCE	2304.	2350.	2396.	2442.	2488.	2534.	2580.	2626.	2672.	2718.
EFFECTIVE GROSS INCOME	43776.	44651.	45527.	46402.	47278.	48153.	49029.	49904.	50780.	51655.
LESS REAL ESTATE TAXES	9000.	9450.	9900.	10350.	10800.	11250.	11700.	12150.	12600.	13050.
LESS EXPENSES	16025.	8568.	8736.	8904.	9072.	9240.	9408.	9576.	9744.	9912.
NET INCOME	18751.	26633.	26891.	27148.	27406.	27663.	27921.	28178.	28436.	28693.
LESS DEPRECIATION	11469.	10537.	9640.	8775.	7940.	6762.	5942.	7729.	7144.	6571.
LESS INTEREST	15049.	14646.	14210.	13739.	13229.	17082.	16785.	17323.	16881.	16398.
TAXABLE INCOME	-7768.	1449.	3039.	4633.	6236.	3818.	5192.	3125.	4410.	5723.
PLUS DEPRECIATION	11469.	10537.	9640.	8775.	7940.	6762.	5942.	7729.	7144.	6571.
LESS PRINCIPAL PAYMENTS	4914.	5317.	5753.	6224.	6735.	4016.	4349.	5648.	6127.	6647.
CASH THROW-OFF	-1213.	6669.	6926.	7184.	7441.	30510.	6785.	15206.	5427.	5647.
LESS TAXES	.	434.	911.	1390.	1870.	1145.	1557.	937.	1323.	1716.
CASH FROM OPERATIONS	-1213.	6234.	6014.	5794.	5570.	29365.	5227.	14268.	4104.	3930.
WORKING CAPITAL LOAN(CUM BALANCE)	1213.	.	.	.	.	.	.	.	.	.
SPENDABLE CASH AFTER TAXES	.	4911.	6014.	5794.	5570.	29365.	5227.	4268.	4104.	3930.
TAX SAVINGS ON OTHER INCOME	2330.	.	.	.	.	.	.	.	.	.

* *

	1	2	3	4	5	6	7	8	9	10
MARKET VALUE	242400.	244800.	247200.	249600.	252000.	254400.	256800.	269200.	271600.	274000.
BALANCE OF LOANS	191298.	184767.	179014.	172789.	166054.	185983.	181634.	185985.	179858.	173211.
NET WORTH OF PROPERTY	51101.	60032.	68185.	76810.	85945.	68416.	75165.	83214.	91741.	100788.
CAPITAL GAIN	10253.	20506.	30759.	41013.	51266.	61519.	71773.	83455.	95329.	106757.
CAPITAL GAINS TAX	1537.	3075.	4613.	6151.	7689.	9227.	10765.	12518.	14299.	16013.
INCOME TAX ON EXCESS DEPRECIATION	1084.	1890.	2426.	2702.	2729.	2401.	1828.	1362.	663.	.

* *

	1	2	3	4	5	6	7	8	9	10
PERCENT INITIAL EQUITY PAYBACK AFTER TAX	.0517	.1609	.2946	.4233	.5471	1.0797	1.1843	1.2696	1.3517	1.4303
NET INCOME-MARKET VALUE RATIO	.0773	.1087	.1087	.1087	.1087	.1087	.1087	.1046	.1046	.1047
RETURN ON NET WORTH BEFORE TAXES	.1086	.3052	.2511	.2318	.2158	.1510	.1978	.3093	.1676	.1601
RETURN ON NET WORTH AFTER TAXES	.1290	.2372	.2196	.2061	.1933	.1406	.1939	.1762	.1665	.1553
CASH RETURN ON ORIG CASH EQUITY BEF TAX	-.0269	.1482	.1539	.1596	.1653	.6102	.1357	.3041	.1085	.1129
CASH RETURN ON ORIG CASH EQUITY AFT TAX	.0517	.1091	.1336	.1287	.1237	.5873	.1045	.0853	.0820	.0786
DEFAULT RATIO	.9763	.8339	.8054	.8029	.8004	.8204	.8185	.8508	.8484	.8461
LENDER BONUS INTEREST RATE	.0000	.0000	.0000	.0000	.0000	.0122	.0110	.0115	.0114	.0120

* *

	1	2	3	4	5	6	7	8	9	10
PRESENT VALUE OF PROJECT BEFORE TAXES	238306.	242903.	245505.	247329.	248531.	247609.	247992.	255579.	255349.	255001.
PRESENT VALUE OF PROJECT AFTER TAXES	238058.	240050.	241378.	242202.	242600.	241500.	241748.	246686.	246477.	246115.

INVESTMENT MARKET VALUE ANALYSIS
DATA INPUT FORM

PROJECT ID: EDUCARE SEMINAR PROBLEM FIVE
UNIVERSITY OF WISCONSIN

Date: 2 DECEMBER 1970

ANALYSIS OF AN ACTUAL SALE: In June 1970 a New York manufacturing corporation, with much taxable income, purchased a 306-unit, poorly located and unattractively planned garden apartment complex in Virginia, paying cash above existing 6% mortgages. The land is zoned commercial, but if it were vacant it would probably not sell at much more than if zoned for row houses. If the purchaser obtains a shift in the tax assessment, from land to buildings, reducing the land value to $268,000, what would be the IMV for an equity yield of .0875? The actual purchase price was $2,640,000.

Next, prepare a price-yield curve surrounding the actual purchase price, and while doing so, determine the yield at such purchase price. Do this under the assumption that the land assessment will be reduced.

Finally, what would a REIT have paid for this property, to have obtained the same equity yield (.0875), but failing to get the land valuation, as assessed, below its present $450,000? Note that in order for the REIT to achieve a suitable cash-flow-to-equity ratio, it would have had to refinance the property at the best available terms as of the purchase date.

PREPARED BY: MBH

ALL INPUTS INVOLVING A % MUST BE ENTERED AS A DECIMAL EQUIVALENT [11.75%=.1175]

PROJECT ID (Maximum 30 characters per line)

100 EDUCARE SEMINAR PROBLEM FIVE

101 UNIVERSITY OF WISCONSIN

USED FOR ELLWOOD'S VALUATION

	AVG. ANNUAL NET INCOME	BEFORE TAX YIELD	AFTER TAX YIELD
102	217000	.15	.0875

OPERATION CODE:
- 1–Produces IMV for a given after tax equity yield rate
- 2–Produces four after tax equity yield rates for four given IMVs

NET INCOME CODE:
- 1–Constant net income value for each year
- 2–Different net income value for each year (If the last year of the projection term does not fall in the last position of a line fill the remaining years of that line with zeros)

	OPERATION CODE	PROJECTION TERM (yrs)	NET INCOME CODE
103	1	10	2

NET INCOME [If net income is constant enter the value in position (1) only]

	(1)	(2)	(3)	(4)	(5)
104	220000	220000	218000	218000	216000
	(6)	(7)	(8)	(9)	(10)
105	216000	214000	214000	210000	210000
	(11)	(12)	(13)	(14)	(15)
106					
	(16)	(17)	(18)	(19)	(20)
107					

OWNERSHIP FORM CODE:
- 1–Corporation (Operating losses applied to other investments)
- 2–Corporation (Operating losses carried back/carried over)
- 3–Corporation (Taxable income offset by losses from other investments)
- 4–Corporation (Set-up solely for this investment)
- 5–Non-corporation (Operating losses applied to other investments)
- 6–Non-corporation (Operating losses carried back/carried over)
- 7–Non-corporation (Taxable income offset by losses from other investments)

EXCESS DEPRECIATION RECAPTURE CODE:
- 1–No recapture
- 2–FHA 221 (d) (3), 236 before 1975 (After 20 months-declines 1% per month)
- 3–All other residential rentals (After 100 months-declines 1% per month)
- 4–All non-residential–100% recapture

	OWNERSHIP FORM CODE	FEDERAL TAX RATE	STATE TAX RATE	STATE CAPITAL GAINS RATE	EXCESS DEPRECIATION RECAPTURE CODE
108	1	.48	.10	.10	3

APPRECIATION/DEPRECIATION AT RESALE:

APP/DEP CODE:
- 1–% of IMV (Enter the % in the APP/DEP AT RESALE column)
- 2–$ amount (Enter the $ amount in the APP/DEP AT RESALE column)
- 3–Reversionary $ amount (Enter the $ amount in the APP/DEP AT RESALE column)

5-2

	APP/DEP CODE	APP/DEP AT RESALE ($ OR %)	SALES COMMISSION RATE (0 if none)
109	3	1860000	.0175

DEPRECIABLE CAPITAL ASSETS:

ASSET CODE: Asset value as a:

1–$ amount (Enter the $ amount in the ASSET VALUE column)
2–% of IMV (Enter the % in the ASSET VALUE column)
3–% of the difference between IMV and land value (Enter $ amount for land value in LAND VALUE column and the % in the ASSET VALUE column)

METHOD CODE:

1–Straight line
2–125%
3–150%
4–200%
5–Sum-of-years-digits

	NUMBER OF ASSETS (0 to 6)	LAND VALUE (0 if ASSET CODE 3 is not used)
110	3	268000

[Assets MUST be entered in order of ASCENDING ASSET CODES]

	ASSET CODE	ASSET VALUE ($ or %)	METHOD CODE	LIFE	SALVAGE (0 if none)
111	3	.64	2	26	0
112	3	.19	2	13	0
113	3	.17	1	5	0
114					
115					
116					

MORTGAGES:

MORTGAGE CODE:

1–Existing mortgage or mortgage of known $ amount (Enter the $ amount in the KEY FIGURE column)
2–New mortgage amount which is a % of IMV (Enter the ratio (%) in the KEY FIGURE column)

THE FOLLOWING TWO OPTIONS CANNOT BE USED SIMULTANEOUSLY

3–Secondary mortgage amount which is the difference between IMV and sum of known amounts for equity cash and the other mortgages (Enter the $ amount for cash equity in the KEY FIGURE column)
4–Secondary mortgage amount which is the difference between a total mortgage ratio and the sum of other mortgages of known amounts (Enter the total mortgage ratio (%) in the KEY FIGURE column)

TERM AND ANNUAL CONSTANT:

For each mortgage either the TERM or the ANNUAL CONSTANT must be provided except in the case of a balloon for which both must be provided. Enter a zero for the TERM or the ANNUAL CONSTANT, whichever is unknown. The annual constant must be at least 8 decimal places.

	NUMBER OF MORTGAGES (0 to 6)
117	2

[Mortgages MUST be entered in order of ASCENDING MORTGAGE CODES]

	MORTGAGE CODE	KEY FIGURES ($ or %)	INTEREST RATE	TERM (Months)	ANNUAL CONSTANT
118	1	1186414	.06	0	.09170491
119	1	855518	.06	0	.09713413
120					
121					
122					
123					

1ST RUN

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100 EDUCARE SEMINAR PROBLEM FIVE
101 UNIVERSITY OF WISCONSIN
102 217000,.15,.0875
103 1,10,2
104 220000,220000,216000,216000,216000
105 216000,214000,214000,210000,210000
108 1,.48,.10,.10,3
109 3,1860000,.0175
110 3,268000
111 3,.64,2,26,0
112 3,.19,2,13,0
113 3,.17,1,5,0
117 2
118 1,1186414,.06,0,.09171491
119 1,855518,.06,0,.09713413
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2D5E70-2

1ST RUN

INVESTMENT MARKET VALUE ANALYSIS
EDUCARE SEMINAR PROBLEM FIVE
UNIVERSITY OF WISCONSIN

PREPARED BY A COMPUTER IN CONSULTATION WITH
M. B. HODGES,JR MCLEAN, VIRGINIA

****

INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 15.00%: $ 2357132

AFTER TAX YIELD OF 8.75%: $ 2492436

****

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

EXISTING	6.00%	17 YRS	9 MONS	$	1186414
EXISTING	6.00%	16 YRS	1 MONS	$	855518

EQUITY CASH: $ 450504

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE	$	1860000
LESS: MORTGAGE BAL.		1094217
SALES COMMISSION		32550
CASH REVERSION BEFORE TAXES	$	733233
LESS: CAPITAL GAINS TAX(ALT.)		231206
TAX ON RECAPTURED DEPR.		13867
TAX PREFERENCE TAX		0
CASH REVERSION AFTER TAXES	$	488160

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	220000	120576	184713	-85289	-45373	71336	73461
2	220000	116176	177515	-73691	-39203	75736	67291
3	218000	111504	170851	-64355	-34236	80408	60324
4	218000	106545	165877	-54422	-28952	85367	55040
5	216000	101279	163039	-48318	-25705	90633	49793
6	216000	95689	84706	35605	18941	96223	5147
7	214000	89755	84171	40074	21319	102157	769
8	214000	83454	84171	46375	24671	108458	-2583
9	210000	76765	84171	49064	26102	115147	-8014
10	210000	69662	84171	56167	29880	122250	-11792

2 DECTO-1

2ND RUN

```
OLD INPUT
READY
103 2,10,2
REPLACE INPUT        (COMPUTER IS NOW IN OPERATION CODE 2, PREPARED
                      TO ASK USER FOR A NUMBER OF TRIAL IMV AMOUNTS,
                      TO GIVE USER THE AFTER TAX YIELD FOR EACH)
```

2 Dec 70-2

2ND RUN

```
WHAT IS TRIAL IMV AMOUNT NO 1 (0=STOP)?2564000

AFTER TAX YIELD  6.92%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 2 (0=STOP)?2650000

AFTER TAX YIELD  5.19%
DO YOU WANT DETAIL(0-NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 3 (0=STOP)?2475000

AFTER TAX YIELD  9.27%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 4 (0=STOP)?2750000

AFTER TAX YIELD  3.60%
DO YOU WANT DETAIL)0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 5 (0=STOP)?2350000

AFTER TAX YIELD  13.07%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 6 (0=STOP)?2850000

AFTER TAX YIELD  2.33%
DO YOU WANT DETAIL(0=NO,1=YES)?0
```

2Dec70-2

GRAPHIC ANALYSIS FOR INVESTMENT MARKET VALUE

(EDUCARE FIVE)

Investment Criteria

10 Year Ownership Projection Term.

$ 217000 Average Annual Net Income or as shown annually on FORM E.

____% Loan-to-Value Ratio; or assumption of mortgage balance(s) shown on FORMS C & D

Terms of mortgage(s) shown on FORM C.

Land Value = $ 268000; or ____% of IMV.

Capital Imps. at Cost of $_____.

Ordinary State Income Tax Rate = .10 %

Ordinary Federal Income Tax Rate = .48 %

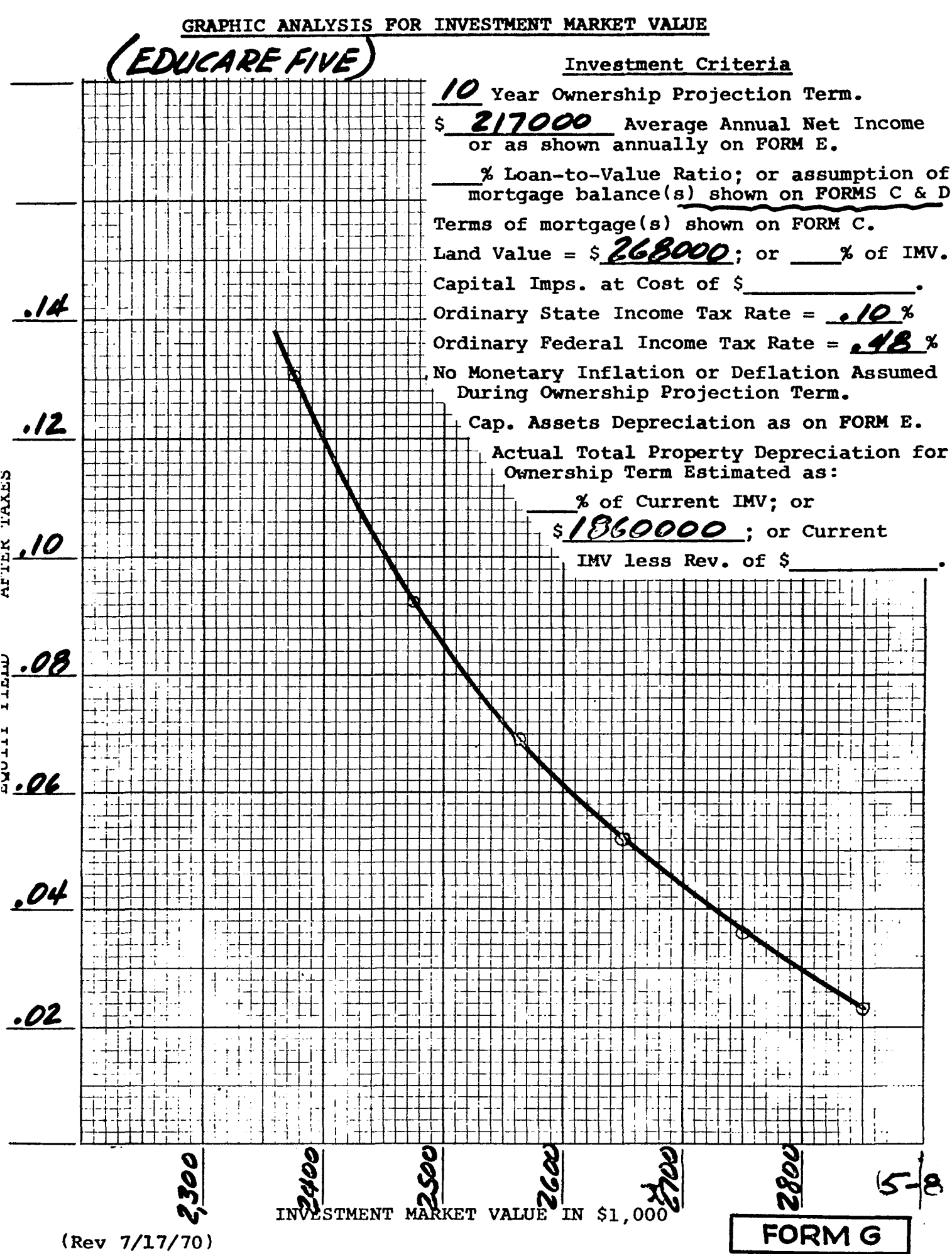
No Monetary Inflation or Deflation Assumed During Ownership Projection Term.

Cap. Assets Depreciation as on FORM E.

Actual Total Property Depreciation for Ownership Term Estimated as:

____% of Current IMV; or

$ 1860000; or Current IMV less Rev. of $_____.



5-8

(Rev 7/17/70)

FORM G

2 DEC 70-2

3RD RUN

INVESTMENT MARKET VALUE ANALYSIS
EDUCARE SEMINAR PROBLEM FIVE
UNIVERSITY OF WISCONSIN

PREPARED BY A COMPUTER IN CONSULTATION WITH
M. B. HODGES,JR MCLEAN, VIRGINIA

****

INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 15.00%: $ 1875093

AFTER TAX YIELD OF 8.75%: $ 2095923

****

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:
NEW 1ST 10.25% 25 YRS 0 MONS $ 1571942

EQUITY CASH: $ 523981

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE	$	1860000
LESS: MORTGAGE BAL.		1336034
SALES COMMISSION		32550
CASH REVERSION BEFORE TAXES	$	491416
LESS: CAPITAL GAINS TAX(STD.)		149296
TAX ON RECAPTURED DEPR.		8291
TAX PREFERENCE TAX		15355
CASH REVERSION AFTER TAXES	$	318474

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	220000	160466	136674	-77140	-33170	14281	78423
2	220000	158931	131348	-70279	-30219	15816	75472
3	218000	157231	126417	-65648	-28228	17516	71481
4	218000	155349	122737	-60086	-25836	19398	69089
5	216000	153265	120637	-57902	-24897	21482	66150
6	216000	150956	62676	2368	1018	23791	40235
7	214000	148400	62280	3320	1427	26347	37826
8	214000	145569	62280	6151	2644	29178	36609
9	210000	142434	62280	5286	2272	32313	32981
10	210000	138961	62280	8759	3766	35786	31487

2DEC20-2

3RD RUN

```
OLD INPUT
READY
103 1,10,2                (PLACES COMPUTER BACK INTO CODE 1 OPERATION
108 5,.40,.04,.05,3        WITH NEW DATA FOR A REAL ESTATE INVESTMENT
110 3,450000               TRUST AS THE PROSPECTIVE PURCHASER.
117 1                      NEW FINANCING REQUIRED TO GET THE REIT
118 2,.75,.1025,300,0      A CASH FLOW RETURN SATISFACTORY TO ITS
REPLACE INPUT              STOCKHOLDERS)
```

2Dec70-2

Real Estate Feasibility Analysis Seminar
Sponsored by the Arizona Chapter of American Institute of Real Estate Appraisers
Doubletree Inn, Scottsdale, Arizona
(November 21-22, 1974)

Morning - Second Day

I. Yesterday we discussed the constraints imposed on feasibility by market action of individual consumers. This morning we want to discuss the constraints imposed by the attributes of the site and public regulation of the site. Site analysis was once called highest and best use analysis and dealt with the legal, technical feasibility, and economic need for a particular use. Today we will recast that into the jargon of the '70's - SUITABILITY, CAPACITY, COMPATIBILITY, and ECONOMIC IMPACT.

A. Louie Carter has a song about things that seem the same but are really not - like a place with birds and bees and grass and trees which to some is just a vacant lot. There is no such thing today as raw land or a vacant lot. Every site has:

1. Static attributes - physical characteristics of size, shape, topography, soils, etc.
2. Linkage attributes - relationships to other sites which may tend to generate movements of goods and people to the subject site.
3. Dynamic attributes - characteristics which affect behavior such as visibility, prestige, or feelings of fear or anxiety.

B. There has been a revolution in the supply of information about sites, particularly static attributes but also the measurement of linkages and dynamic characteristics. This in turn has drastically altered the ability of the public to police land use within the concept of due process of law and within an acceptable cost benefit ratio.

1. The appraiser must have an adequate map of the static attributes or physical facts of the site to determine suitability for use and begin to measure capacity.
2. A basic list of data types and cheap sources of information is provided in Exhibit A, B and C.
3. The appraiser will soon discover that land appraisal assignments may often require the skills of a professional land planner to organize and present all the free data in a comprehensible form.
4. Keep in mind the appraisal function is to interpret the economic (sales price) consequences of suitability, capacity and compatibility.

C. Space technology will have more immediate impact on the use of the surface of this earth than it will have for a long time on the surface of the moon. Space research and military intelligence have developed some incredible new information gathering devices in the form of aerial surveillance.

1. High and low survey photography coordinated with 1/4 1/4 section markers and planning departments can now overlay building permits and other data tied to tax code numbers. (Example DU counts and growth potential for shopping center or bank site).

2. Thermal and infra-red photography (identification of underground faults or vegetation disease as well as micro-climate).
3. In Wisconsin free soil conservation service is considered constructive notice to the public of site limitation and therefore must be considered by the appraiser.
4. The Earth Resources Technology Satellite (Exhibit B)
5. Computerized mapping of suitability (Exhibits D and E)

Suggested reading:

DESIGN WITH NATURE by Ian L. McHarg, Natural History Press, 1969

CITY PLANNING AND AERIAL INFORMATION, by Melville C. Branch, Harvard University Press 1971

MANUAL OF COLOR AERIAL PHOTOGRAPHY by American Society of Photogrammetry, American Society of Photogrammetry, 1968.

D. The site inventory should include physical limits which are created by:
1. Access controls (proximity is not accessability)
2. Concealed utility easements
3. Flood plains which have been determined by Corp of Engineers, etc.
4. Old foundations, etc.
5. Scarce environmental elements which almost certainly mean environmental impact litigation
6. Landmarks or historical structure

E. The land map should also include possible physical controls imposed by legal-political characteristics of the site which are not always obvious from existing zoning or recorded easements. Consider:
1. Water district, harbor commission, or other special district lines
2. Premises of community master plans still in incubation process
3. Tax conservancy commitments
4. Extra territorial zoning or subdivision powers
5. Attitudes of sewer, water, and highway commissions
6. Contractual agreements among previous buyers and sellers which may or may not run with the land.
7. Planner views of physical barriers to contain sprawl

F. Anticipate impact of impending legislation which appears to have reasonable probability of passage rather than simply meeting current standards relative to:
1. Septic tank installation
2. Ground water, depth and conservation of high water recharge areas
3. Salt water encroachment
4. Conservation of environmental edges
5. Conservation of prime agricultural
6. Impact on off-site areas down wind or down stream

G. Some static attributes can lead to monopoly advantage because its suitability is unique relative to lands all about it, because of prior political review and approval of development plans, including licenses for dredging, creation of water control districts, or control of riparian features essential to contiguous property owners.
1. Keep in mind that static attributes will help identify most probable use and buyer.
2. Lack of fit between static site and merchandising data is a basic cause of unsuccessful projects.

H. A map of land use suitabilities will define its maximum capacity to provide usable net acres for different type of land uses. Ultimately the purchase price must always be related to the buyer viewpoint of usable net acres even though sellers like to talk in terms of gross area.

1. Usable net acres relative to development is similar to farm appraisal which classifies net acres as cropped land, pasture, etc.
2. Usable net acres becomes an important qualification in the selection of comparables for the adjustments which must be made.
3. Mixed use acreage may require a set of comparables for each.

II. The linkage attributes of the site have to do with its direct and indirect ties to other nearby sites by street, sidewalk, or site line.

A. Access points in alternative approaches.

1. Traffic department controls, present and proposed.
2. Indirect controls imposed by elements affecting behavior

B. Relationship to ancillary or economic base activities.

C. Simulation of auto, truck, or pedestrian approaches and capacity for volumes generated by site.

D. Implications for off-site improvement budgets.

E. Utilities services are linkage capacity issues, too.

1. Sewer, water, and electric capacity
2. Adequacy of energy sources
3. Implicit resources such as game supplies, open space, continued operation of schools, etc.

III. Dynamic attributes have to do with the mental or emotional qualities of the site and its environment.

A. First there are image problems and opportunities in the location:

1. Historical community reputation and values attached to the area
2. Image conditioning of the approach zone
3. Anxiety factors of access and security
4. Visual factors in terms of prominence of the site, views from the site, potential for controlled sight lines, etc.
5. Noise as a function of traffic count
6. Prevailing air currents and airborne pollution (phosphate plants or sulphite paper mills, for example)
7. Recycling of old buildings within existing urban areas is fashionable among architects and the upper class.
8. Recycling may establish historical roots and images (such as the Plantation House at Sea Pines)

B. Then there are the political images which have been established for a site by the public positions of local politicians or vested interest groups.

1. Potential for dislocation of the disadvantage
2. Potential for dissatisfaction of contiguous property owners and neighborhood associations
3. Potential for misuse by outside vested interest or activist group
4. Hierarchy of regulating agencies whose long term plan affects site in advance of restrictive zoning
5. Compatibility of proposed uses with social preferences of neighborhood

IV. The analysis for feasibility study is equally appropriate to the appraisal of special use sites. The various attributes are compared with a point system and various groups of points can be weighted to determine relative desirability for either site selection, or by correlation to price, for appraisal.

A. Professor Ratcliff, in Chapters 6 and 7 of his most recent book VALUATION FOR REAL ESTATE DECISIONS (available from Democrat Press, P.O. Box 984, Santa Cruz, Cal. 95060) demonstrates a means of converting physical features of homes in comparison to the subject property without having to make arbitrary dollar adjustments.

B. Although his example involves a single family home, it is much more useful to compare commercial sites, as in the two examples in Appendix F & G.

C. The linear regression process is very simple with a small calculator and virtually automatic with an HP-80. Moreover, once the points have been assigned for various attributes it is possible to work backward to the weights buyers are assigned to different groups of factors, a technique which is useful for market insight.

V. Site analysis in terms of static, linkage, and dynamic attributes leads eventually to a basis for environmental impact analysis both for technical and political compatibility of a proposed project.

A. More and more projects will depend on financing, directly or indirectly from the federal government and therefore the analyst and the appraiser must have quick access to worksheets which describe such things as:

1. FHA work sheets on noise control relative to traffic and other sources
2. Federal definitions of the flood plain and procedures for adjustment.
3. State and federal worksheets involving projects like shopping centers, planned unit developments, etc.

B. Recent actions of local administrative agencies for the FHA A-95 form as it may affect feasibility of future projects.

C. The evolving science of normative measurements of environmental and resources impact.

EXHIBIT "A"

INTRODUCTION

This data list is not to be viewed as a final or all inclusive list of needed environmental factors but rather a general framework through which we can work with the County's representatives in identifying the necessary factors needed to assist them in their decision making.

SUGGESTED ENVIRONMENTAL FACTORS AND POSSIBLE DATA SOURCES

A. PHYSICAL CHARACTERISTICS

1. EARTH

*a. Mineral resource [Geological studies/U.S.G.S.]
*b. Construction material [Geological studies/U.S.G.S.]
*c. Landform [Geological studies/U.S.G.S.]
*d. Unique physical features [Geological studies/U.S.G.S.]
*e. Soil [Form 1972 Soil Survey]
1. Depth to bedrock
2. Depth to seasonal high water table
3. Unified class
4. AASHO class
5. Liquid limit
6. Plastic limit
7. Permeability
8. Available water capacity
9. Reaction-ph.
10. Salinity
11. Shrink-swell
13. Suitability-topsoil
14. Suitability-sand and gravel
15. Suitability-road fill
16. Hydrologic soil group
17. Suitability-road location
18. Water retention-embankment

19. Water retention-reservoir area
20. Agricultural drainage
21. Irrigation
22. Limitation-septic tank
23. Agricultural capability unit

f. Topography
*1. % slope-average predominant type [U.S.G.S.]
*2. Centroid elevation [U.S.G.S.]
*3. Orientation [U.S.G.S.]

2. WATER

*a. Surface
*1. Lakes or pond [U.S.G.S./Infra Red Photo]
*2. Rivers [U.S.G.S./Infra Red Photo]
*3. Stream [U.S.G.S./Infra Red Photo]
*4. Intermittent stream [U.S.G.S.]

b. Underground
*1. Ground water levels at wells [Hydrologic data]
*2. Recharge areas [Geological studies]

3. PROCESSES
*a. Floods
1. 10 year [Infra Red or Color Photo]
2. 25 year [Infra Red or Color Photo]
3. 50 year [Infra Red or Color Photo]
4. 100 year [Infra Red or Color Photo]

*b. Stability
Slides and slumps [Geological studies/Soil Map/Photo]

*c. Stress-strain
Earthquake [Geological studies/Photo's]

*d. Air movements [Climatological Data]

B. BIOLOGICAL CONDITIONS

1. FLORA
*a. Dominant type [Infra Red Photo]
1. Trees
2. Shrubs
3. Grass
4. Crops
5. Swamp
*b. Endangered species [State/County Studies]

1. Tree
2. Shrub
3. Grass
4. Other

2. Fauna
*Endangered species [State/County Studies]

C. CULTURAL FACTORS

*1. LAND USE- Dominant type [Infra Red Photo's]

a. Wilderness
b. Wetland
c. Forest
d. Grazing
e. Agriculture
f. Residential
g. Commercial
h. Industrial
i. Mining and quarrying/wells

*2. RECREATION [State/County/Infra Red Photo]

a. Hunting
b. Fishing
c. Boating
d. Swimming
e. Camping and hiking
f. Picnicking
g. Golfing
h. Tennis
i. Other

*3. AESTHETICS AND HUMAN INTEREST [State Studies/Infra Red Photo]

a. Scenic views and vistas
b. Wilderness qualities
c. Landscape design
e. Unique physical features
f. Parks and reserves
g. Monuments
*h. Rare and unique species or ecos./stems [State/Infra Red Photo]
*i. Historical or archaeological sites and objects [State Studies/Infra Red Photo]

4. CULTURAL STATUS
*a. Cultural patterns (life Style) [State/ Photo's]

*b. Population density	[Photo's]

5. MAN-MADE FACILITIES

*a. Transportation network	[U.S.G.S./Photo's]
*b. Utility network	[County/Photo's]
*c. Waste disposal	[County/Photo's]

6. POLITICAL BOUNDARIES

*a. Zoning	[County]
*b. Special assessment districts	[County]
*c. Sewage district	[County]
*d. City boundaries	[County]
*e. School district High, Junior, Elementary	[County]

Exhibit B

INTRODUCTION

Appraisers and real estate counselors are expected to consider a great array of information when reviewing land in its present and projected uses. In attempting to respond to these reviews or assistments these persons must begin to search out and exploit to the fullest all sources of accurate and relevant information.

A variety of government agencies are expanding the number of free and low cost sources of information. This information is available to the citizen, providing he knows how and from where to request the information.

The following list of sources is organized by agency and type of information or data index available from each agency.

I. The United States Geological Survey

Address: Map Information Office
U.S. Geological Survey
Washington, D.C. 20242

Phone: 202/343-2446

A. Topographic Map

A topographic map is a graphic representation of selected manmade and natural features. It is a record in convenient readable form of the physical characteristics of the terrain as determined by precise engineering surveys and measurements. The distinguishing characteristic of a topographic map is that through the use of a contour symbol it portrays the shape and elevation of the landscape. To understand the contour symbol, think of it as an imaginary line on the ground which takes any shape necessary to maintain a constant elevation above sea level.

The colors in which symbols are printed indicate the general classes of map features they represent. Symbols for water features are printed in blue; manmade objects (roads, railroads, buildings, transmission lines, and many others) are shown in black; and green is used to distinguish wooded areas from clearings. The contours which portray the shape and elevation of the land surface are printed in brown.

On recent maps, solid red is used to represent or emphasize certain cultural features, such as the more important roads, fence lines, and the boundary lines of townships, ranges, sections, and land growth in states subdivided by public land surveys.

A booklet describing topographic maps and symbols is available free upon request from the Map Information Office of the U.S. Geological Survey.

B. Status Index Maps

Maps showing the status of various phases of mapping and areas covered by aerial photography in the United States are available free on request. There are three types of status index maps all printed at the same scale. Scale, 1:5,000,000 (1 inch = about 80 miles); Size, 27 x 41 inches.

1. Topographic Mapping--Status and Progress of Operations (7-1/2 and 15 minute series).

   Shows the status of topographic mapping and progress of operations in the United States by the Geological Survey and other federal agencies. General appraisal of the adequacy of these maps is indicated by color patterns. Published semi-annually.

2. Status of Aerial Photography.

   Shows the areas that have been photographed and agencies holding the film. Aerial photographic coverage is shown only if reproductions are available for purchase.

3. Status of Aerial Mosaics.

   Shows areas in the United States for which mosaics or photomaps have been prepared from aerial photographs, scale of negatives, dates of photography, and sources from which copies may be obtained.

C. State Index Maps

Shows published topographic maps in each state, Puerto Rico, and the Virgin Islands. Available free on request

from U.S. Geological Survey, Washington, D.C. 20242, or Federal Center, Denver, Colorado 80225. These indexes contain lists of special maps, addresses of local map reference libraries, local map dealers, and federal map distribution centers. An order blank and detailed instructions for ordering maps are also supplied with each index.

D. Geological Survey Photography

Probably one of the greatest sources of exploitable information is the aerial photograph. Advances in the development of new films and cameras has brought to the decision-maker a totally new dimension in area analysis. Available today is not only the customary black and white photography taken from 5,500 to 24,000 feet above the ground, but also color and color infrared photographs, many taken from an elevation as high as 65,000 feet above the ground.

1. Aerial Photographic Reproductions

The Map Information Office, U.S. Geological Survey, maintains records of aerial photographic coverage of the United States and outlying areas, based on reports from federal and state agencies and commercial companies. From these records, the Map Information Office furnishes data to prospective purchasers on the available photography and the agency or firm holding the aerial film.

Geological Survey vertical aerial photography is obtained primarily for topographic and geologic mapping. Reproductions from this photography are usually satisfactory for general use. Because reproductions are not stocked, but are custom processed for each order, they cannot be returned for credit or refund.

2. Print Sizes

Contact prints are the same size as aerial negatives, approximately 9 x 9 inches. Prints are available with stereoscopic overlap or without such overlap (pictorial coverage). Photographs with stereoscopic overlap, when viewed with a stereoscope, will permit the observer to obtain a mental impression of the three dimensional shape of the

landscape. Stereoscopic coverage requires about twice as many prints as pictorial photography. Orders for photographs or requests for information should specify which type is needed.

Enlargements to an exact ratio or to a specific scale are available. If ratio factors are not furnished by the purchaser, enlargements will be processed to ratios derived from lens focal lengths and flight heights specified in the photographic contract or reported by the contractor.

Prints are processed only from whole negatives; prints of selected parts of negatives are not available.

Index: A complete index listing type of photography, scale, date, direction flight was flown, and lens focal length is available from any of the regional headquarters. Where large areas are involved, photo indexes are essential for selecting prints and should be requested.

3. Photography Orders

Because many types of reproductions are available, requests should state the purpose for which the photographs are desired and define the specific area of interest by means of a detailed description, sketch, or latitude and longitude position. The size of photographs and type of coverage (pictorial or stereoscopic) should also be specified.

a. Requests for reproductions or information from the following states should be sent to: Atlantic Region Engineer, U.S. Geological Survey, 1109 N. Highland St., Arlington, Va. 22210.

Alabama, Connecticut, Delaware, Florida, Georgia, Indiana, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Vermont, West Virginia, Puerto Rico, Virgin Islands, U.S.

b. Requests for reproductions or information from the following states should be sent to: Central Region Engineer, U.S. Geological Survey, Box 133, Rolla, Mo. 65401.

Arkansas, Illinois, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Oklahoma, Nebraska, North Dakota, South Dakota, Wisconsin.

c. Requests for reproductions or information from the following states should be sent to: Rocky Mountain Region Engineer, U.S. Geological Survey, Building 25, Federal Center, Denver, Colorado 80225.

Alaska, Colorado, Montana, New Mexico, Texas, Wyoming.

d. Requests for reproductions or information from the following states should be sent to: Pacific Region Engineer, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, California 94025.

Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, Washington.

Shipment by parcel post or railway express is prepaid. Extra charges for shipment by air express or airmail and special delivery are paid by the purchaser.

Check, money order, or draft payable to the U.S. Geological Survey must accompany the order. Refund will be made for any part of the order that is not filled.

II. ERTS

On Sunday, July 23, 1972, the Earth Resources Technology Satellite (ERTS-A) was launched into orbit. It is a butterfly shaped observatory flying in a 570 mile circular orbit which is nearly polar. From this vantage point, its imaging systems provide useful information concerning agriculture and forest resources, mineral and land resources, water resources, marine resources, land use and environmental quality, and ecology.

ERTS circles the earth every 103 minutes or 14 times per day. The pass is from north to south at an angle of 80° retrograde to the equator. Each pass covers a region 115 miles wide, however there is some overlap between the proceeding and succeeding passes. After 18 days or about 252 passes the satellite returns to the same position. In other words ERTS covers the entire globe every 18 days.

The ERTS-A spacecraft carries two types of imaging sensors: the Return Beam Vidicon (RBV) cameras and the Multi-Spectral Scanner (MSS).

The Return Beam Vidicon cameras are television cameras mounted side by side in the spacecraft and bore-sighted to simultaneously photograph the earth beneath the spacecraft in each of three spectral regions: .475 to .575 micrometers (blue-green, Band 1); .580 to .680 micrometers (red, Band 2); and .690 to .830 micrometers (near infrared, Band 3). These cameras do not contain film but rather their images are stored on photosensitive surfaces within each vidicon camera which in turn is scanned by an internal electron beam to produce a video picture. This process requires 11 seconds to read out and transmit all three pictures. The RBV cameras will repeat the cycle each 25 seconds producing overlapping pictures of the ground scene below with 10% overlap.

The Multi-Spectral Scanner Subsystem (MSS) covers the same area as the RBV system in four wavelength bands: .5 to .6 micrometers (green, Band 1); .6 to .7 micrometers (red, Band 2); .7 to .8 (near infrared, Band 3); and .8 to 1.1 (near infrared, Band 4).

The Multi-Spectral Scanner and Return Beam Vidicon cameras on ERTS-A take pictures in specific wavelength bands for very particular reasons.

1. Green, Band 1, .5 to .6 micrometers.

   This band appears green to the naked eye. Water is quite transparent in this band which consequently tends to enhance features contained within water such as sediment. Unfortunately, light scattering in the atmosphere makes "seeing" in this band difficult at times.

2. Red, Band 2, .6 to .7 micrometers.

This band appears red to the eye. Unlike the green band, the red easily penetrates the atmosphere. This is good for land use mapping where regional population patterns need to be observed against the vegetation patterns. The red band shows good contrast between natural surface cover such as vegetation which absorbs most of this energy against manmade structures which strongly reflect this energy. Many manmade structures appear very bright against dark appearance of vegetation. Bare soil is often highly reflective in this band, so that deserts are best seen in this band.

3. Infrared, Bands 3 and 4, .7 to 1.1 micrometers.

This is invisible to the human eye. Water appears black in the infrared because water almost totally absorbs the radiant energy in these wavelengths. A significant characteristic about the infrared bands is that vegetation appears bright and water appears dark. As a comparison, vegetation is as bright in the infrared as snow is in the visible region.

The average green leaf reflects about 20% of green light and absorbs the other 80%. It absorbs approximately 95% of red light due to absorption by chlorophyll and is frequently called the chlorophyll absorption band. It reflects approximately 80% of the infrared light and transmits the other 20%. The brightness of vegetation in this band depends upon several things. First, the type of vegetation, i.e., big leaves will be brighter than small ones. Hardwood trees (deciduous) show up brighter than pine (evergreen). Because of leaf thickness, tobacco shows up brighter than wheat. Second, in the infrared, crop brightness depends upon plant health. Healthy crops, in the infrared will be much brighter than diseased vegetation.

A. <u>How ERTS Imagery May Be Obtained</u>

ERTS imagery may be obtained at cost from several sources: EROS (Earth Resources Observation Systems), NOAA (National Oceanographic and Atmospheric Administration, and The Department of Agriculture.

1. The EROS Data Center

The EROS Data Center in Sioux Falls, South Dakota, is operated for the Earth Resources Observation Systems Program of the Department of the Interior by the Topographic Division of the Geological Survey to provide access to Earth Resources Technology Satellite (ERTS) imagery, USGS aerial photography, and NASA aircraft data for the general public, domestic government agencies at all levels, foreign government agencies at all levels, and foreign government. Facilities are available for data storage, retrieval, reproduction, and dissemination, and for user assistance and training.

a. ERTS Imagery

ERTS imagery, originally processed at the Goddard Space Flight Center, NASA Data Processing Facility (NDPF), is a significant part of the Data Center imagery file. Each scene, covering 10,000 square nautical miles, is imaged seven times from ERTS-A. The raw data is either system corrected images (bulk processed) and provided to the Data Center in the form of 70 mm film, or scene corrected images (precision processed) and provided on 240 mm film at a scale of 1:1,000,000. The Data Center has a catalog of the ERTS imagery and a 16 mm browse film including only one RBV image and one MSS image per scene for rapid evaluation of coverage and cloud cover.

Copies of the system corrected individual images are available at contact scale, 1:3,369,000 approximately 2-1/2 x 2-1/2 inches or enlarged by a factor of 3.369 to 1:1,000,000 scale, approximately 9 x 9 inches including marginal data. Color composites, derived by processing the three RBV or three of the four MSS images together are available only at a scale of 1:1,000,000 of those frames prepared by NDPF.

Copies of scene corrected (precision) images may be obtained only at scales of 1:1,000,000 or larger. These images have been rectified at the NDPF to orthographic photographs and have been overprinted with the UTM grid.

Both individual and color composites are available at 1:1,000,000 scale, approximately 9 x 9 inches including marginal data. Only about 5% of the ERTS images available in the Data Center will have been precision processed.

b. NASA Aircraft Imagery and Photography

Imagery and photography obtained by NASA, as part of its aircraft program in support of the development of Earth Resources Surveys by aircraft and spacecraft, are processed at the Manned Spacecraft Center, Houston, Texas, and at the Ames Research Center, Moffett Field, California. The data was acquired for specific purposes and to varied specifications as to time, aerial coverage, and sensors, and is primarily of test sites within the continental United States. Supplementary to the NASA aircraft program data, are the earth-oriented photographs from the Apollo and Gemini manned spacecraft missions. A catalog of all this NASA imagery and photography, and browse films, is also at the Data Center.

Copies of these images and photographs may be purchased at contact scales, enlargements, or reductions, in color or black and white, on film or on paper, in rolls or cut. Provided with each image order are annotations on a computer printout that provide: date, local time, geographic coordinates, print scale, flying height, film, filter, sensor, originating agency, project, roll and frame, and order number in an understandable code.

c. USGS Aerial Photography

Aerial photographs taken by the U.S. Geological Survey primarily for purposes of topographic and geologic mapping are available from the Data Center. The vast majority are black and white vertical photographs at a scale of approximately 1:24,000, but they range in scale from 1:12,000 to 1:66,000. In addition, photography flown in support of various projects of the Bureaus of Reclamation and Land Management is routinely provided to the U.S. Geological Survey for indexing and general distribution.

These photographs are at various scales reflecting the specifications of the particular project.

Photographs obtained prior to 1941 are held by The National Archives and Record Service. This material is available on request but not within the normal one week reproduction time.

d. How to Place an Order

To obtain data from the EROS Data Center you may:

Telephone from: 7:00 a.m. to 7:00 p.m., Central Time
605/339-2270 (Commercial)
605/336-2381 (Federal Telephone System Users)

Visit from: 7:45 a.m. to 4:30 p.m., Central Time
EROS Data Center
10th and Dakota Avenue
Sioux Falls, South Dakota

Write at any time:

EROS Data Center
Data Management Center
Sioux Falls, South Dakota 57198

If you should need assistance EROS personel will help you identify the data best suited to your needs, but you must be prepared to tell them:

1. Limits of the geographic area of interest,

2. What you want to use the data for, and

3. How you want to use the data.

e. Browse Films

Copies of ERTS imagery, aircraft program imagery and photography, and USGS photography produced on 16 mm film are available for purchase. These films are not intended for basic research.

They are designed to provide prepurchase evaluation of such things as: aerial coverage, cloud cover, and sensor angle. Most of the browse films have two indexes to locate scenes at high speeds: Kodamatic Indexer Code Lines and Image Control; NASA aircraft program imagery and photography browse films have only Image Control. The film is supplied on an open reel and each film is designed so that it can be cut and mounted by the user for microfiche presentation. Browse films for ERTS data are updated every 18 days and are available on a subscription basis. Updating of the other browse films is irregular and films must be purchased individually.

Browse file locations have been established by the Department of the Interior at:

EROS Data Center
U.S. Geological Survey
10th and Dakota Avenue
Sious Falls, South Dakota 57198
Phone: 605/339-2270

Map Information Office
U.S. Geological Survey
Room B-310, GSA Building
18th and F Streets, NW
Washington, D.C. 20242
Phone: 202/343-2611

CARETS Information Center
U.S. Geological Survey
Room 837, 1717 H Street, NW
Washington, D.C. 20242
Phone: 202/343-5985

Water Resources Division
U.S. Geological Survey
Room 343, Post Office and
Court House Building
Albany, New York 12201
Phone: 518/472-3107

U.S. Geological Survey
5th Floor, 80 Broad Street
Boston, Massachusetts 02110
Phone: 617/223-7202

EROS Program Assist. Office
Room B-210, Building 1100
U.S. Geological Survey
Mississippi Test Facility
Bay St. Louis, Miss. 39520
Phone: 601/688-3541

Regional Topographic Engineer
U.S. Geological Survey
Room 2404, Building 25
Denver Federal Center
Denver, Colorado 80225
Phone: 303/234-2351

Water Resources Division
U.S. Geological Survey
Room 5107, Federal Building
230 North 1st Avenue
Phoenix, Arizona 85025
Phone: 602/261-3188

Public Inquiries Office
U.S. Geological Survey
Room 7638, Federal Building
300 N. Los Angeles Street
Los Angeles, California 90012
Phone: 213/688-2850

Public Inquiries Office
U.S. Geological Survey
Room 678, U.S. Court House Bldg.
West 920 Riverside Avenue
Spokane, Washington 92201
Phone: 509/456-2524

Public Inquiries Office
U.S. Geological Survey
108 Skyline Building
508 2nd Avenue
Anchorage, Alaska 99501
Phone: 907/277-0577

Regional Topographic Engineer
U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Phone: 415/323-8111

Inter American Geodetic Survey
Headquarters Building
Fort Clayton, Canal Zone
Phone: 117-1201
Panama Routine 833-227

Topographic Division
U.S. Geological Survey
961 Pine Street
Rolla, Missouri 65401
Phone: 314/364-3680

State Topographic Engineer
Florida Dept. of Transportation
State Topographic Office
Lafayette Building
Koger Office Center
Tallahassee, Florida 32304
Phone: 904/599-6212

Director
Portland Service Center
U.S. Bur. of Land Management
710 N.E. Holladay
Portland, Oregon 97208
Phone: 503/234-4100

EROS Program Library
U.S. Geological Survey
Room 827, 1717 H Street, NW
Washington, D.C. 20244
Phone: 202/343-7500

Chief, Maps and Surveys Branch
Tennessee Valley Authority
200 Haney Building
311 Broad Street
Chattanooga, Tennessee 37401
Phone: 615/755-2133

Dr. Everett A. Wingert
University of Hawaii
Department of Geography
Physical Science Building
Room 313-C
Honolulu, Hawaii 96822
Phone: 944-8463

EROS Coordinator
Office of the Governor
Pago Pago, American Samoa
Phone: 32203

EROS Coordinator
Trust Territory of the Pacific Islands
Office of the High Commissioner
Saipan, Mariana Islands 96950
Phone: 202/343-2141 or 2176

Dr. Frank J. Janza
Sacramento State University
Dept. of Electrical Engineering
6000 Jay Street
Sacramento, California 95819
Phone: AC-916/454-6545

Dr. Douglas Smith
University of Guam
EROS/P.I.E.R. Program
Section of the Pacific Room
P.O. Box EK
Agana, Guam 96910
Phone: 749-2921, Ext. 363

2. National Ocenaographic and Atmospheric Administration

The Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA) has an Earth Resources Data Center at Suitland, Maryland. This center will furnish data gathered by ERTS to users in the oceanographic, hydrologic, and atmospheric sciences as well as to the general public.

To aid in selecting the data desired, NOAA has established public browse files at 22 locations around the nation. They are located in:

Hillcrest Heights, Md.	Fort Worth, Tex.
Rockville, Md.	Salt Lake City, Ut.
Silver Spring, Md.	Anchorage, Alaska
Washington, D.C.	Honolulu, Hawaii
Miami, Fla.	Norman, Okla.
Norfolk, Va.	Boulder, Colo.
Garden City, N.Y.	LaJolla, Calif.
Woods Hole, Mass.	Tibaron, Calif.
Asheville, N.C.	Seattle, Wash.
Detroit, Mich.	Madison, Wisc.
Kansas City, Mo.	College Station, Tex.

Reproductions may be ordered from the National Climate Center, NOAA Environmental Data Service, Federal Building, Asheville, N.C. 28801.

3. Department of Agriculture

The Department of Agriculture also sells ERTS imagery dealing with agriculture. Photos may be obtained from the Western Aerial Photo Laboratory, Agricultural Stabilization and Conservation Service, USDA, 2505 Parley's Way, Salt Lake City, Utah 84109.

It is now possible to order ERTS Standard Catalogs from the Superintendent of Documents. Private individuals should direct requests to the NASA Publications Desk, at the main GPO bookstore, 710 North Capital Street, Washington, D.C. 20402, Telephone: 202/783-3238.

III. U.S. Department of Agriculture - Soil Conservation Service

The U.S. Department of Agriculture, in cooperation with state agricultural experiment stations and other federal and state agencies, has been making soil surveys and publishing them since 1899. These surveys are designed to furnish soil maps and interpretations needed in guiding decisions about soil selection, use, and management.

Since these soil surveys are a basic scientific inventory, they can provide valuable information needed for land use planning, highway location and design, park and open space planning, subdivision layout and designs, planning and design of sewage disposal facilities, zoning and other land use controls, as well as for agricultural and forest land use planning and management.

Soil surveys published since 1957 contain many different kinds of interpretations for each of the different soils mapped in the area. The kind of interpretations included in these recent surveys vary with the needs of the area, but the following interpretations are in most of them: estimated yields of the common agricultural crops under defined levels of management, land-capability interpretations, soil-woodland interpretations, range land interpretations, engineering uses of soils, interpretations for community planning, suitability of the soil for drainage and irrigation, and suitability of the soil for recreation and wildlife.

Most of the soil surveys published since 1957 contain soil maps printed on a photomosaic base. The usual scale is 1:20,000 or 1:15,840 depending upon the needs of the area.

A soil survey published by the U.S. Department of Agriculture that is still in print may be obtained in one of the following ways:

1. Land users in the area surveyed and professional workers who have use for the survey can obtain a free copy from the local office of the Soil Conservation Service, from their county agent, or from their congressman. Those outside the area surveyed who have

use for the survey can obtain a free copy from the Information Division, Soil Conservation Service, Washington, D.C. 20250.

2. For a time after publication, copies may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

3. Many libraries keep published soil surveys on file for reference. Also soil conservation district offices and county agricultural extension offices have copies of local soil surveys that may be used for reference.

A list of all published soil surveys may be obtained by writing the Information Division, Soil Conservation Service, Washington, D.C. 20250.

Requests for information pertaining specifically to soil conservation service photography should be addressed to: Director, Cartography Division, Soil Conservation Service, USDA Federal Center Building, Hyattsville, Maryland 20781.

IV. Additional Federal Agency Photography

Besides the Geological Survey and Soil Conservation Service, several other federal agencies regularly make extensive use of aerial photography. These include the Agricultural Stabilization and Conservation Service and the U.S. Forest Service.

Requests for information pertaining to Agricultural Stabilization and Conservation Service Photography should be addressed to a regional laboratory.

Orders for photographs of the following states should be addressed to: Western Aerial Photography Laboratory, Compliance and Appeals Division, ASCS-USDA, 2505 Parley's Way, Salt Lake City, Utah 84109 (Tel. 801/524-5856).

Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming.

Orders for photographs of the following states should be addressed to: Eastern Aerial Photography Laboratory, Compliance and Appeals Division, ASCS-USDA, 45 South French Broad Avenue, Asheville, North Carolina 28801 (Tel. 704/254-0961, Ext. 610).

Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, Wisconsin.

Requests for information pertaining to U.S. Forest Service Photography should be addressed to: Division of Engineering, Forest Services, USDA, Washington, D.C. 20250.

V. Conclusion

The interpretation of aerial photographs and soil surveys represents a tool for efficient, economical, and highly detailed landscape evaluation. It is hoped that the use of these new and ever expanding data sources will assist in providing socially acceptable decisions concerning the land development and valuation process.

The sources of information outlined in the paper do not begin to represent all the available information, either by agency or within agency. These information sources do represent an initial contact point from which other information concerning a particular area or problem can be identified if needed.

EROS Data Center Photographic Products Price List -- November 1972

Contact prints, enlargements and transformed prints are unmounted and untrimmed. The reproduction will be printed on standard paper stock unless the order specified other materials.

PRODUCT	PRICE	
Black and white paper prints	**1 to 25**	**Over 25***
Contact prints:		
70 mm	$ 1.25	$ 1.00
5 in x 5 in	1.50	1.00
9 in x 9 in	1.75	1.25
10 in x 12 in*	2.50	2.50
20 in x 24 in**	3.00	3.00
Enlargements:***		
20 in x 20 in	3.50	3.00
30 in x 30 in	4.50	3.50
40 in x 40 in	9.00	8.00
Black and white film transparency		
Contact prints:		
16 mm (100 ft. roll)	15.00	15.00
35 mm (100 ft. roll)	20.00	20.00
70 mm	2.50	2.50
5 in x 5 in	2.75	2.75
10 in x 10 in	3.00	3.00
Color paper print		
Contact prints:		
70 mm	4.00	2.50
10 in x 10 in	7.00	3.00
Enlargements:***		
20 in x 20 in	12.00	9.00
30 in x 30 in	17.00	13.00
40 in x 40 in	25.00	20.00
Color film transparency		
Contact prints:		
16 mm (100 ft. roll)	20.00	20.00
35 mm (100 ft. roll)	25.00	25.00
70 mm	4.00	2.50
10 in x 10 in	7.00	4.00
Enlargements:***		
20 in x 20 in	15.00	8.00
30 in x 30 in	19.00	15.00
40 in x 40 in	27.00	22.00

	1 to 25	Over 25*
Transformed prints from either convergent or transverse low-oblique photographs	$ 3.50	$ 3.00

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* Quantity prices apply only to those prints ordered in excess of 25 of the same size, i.e., 26 contact prints cost: 25 at $1.75 each--$43.75 plus 1 at $1.25 - $45.00.

** Photo indexes.

*** For an intermediate-size enlargement, use the price listed for the next larger size.

The EROS Data Center is located at 10th and Dakota Avenue, Sioux Falls, South Dakota 57198, Telephone: 605/339-2270.

REFERENCES

1. Avery, T. Eugene, Interpretation of Aerial Photographs, Burgess, Minneapolis, Minnesota, 1962.

2. Bartelli, Linda, ed., Soil Surveys and Land Use Planning, Soil Science Society of America, Madison, Wisconsin, 1966.

3. Geological Survey Circular 645, "A Procedure for Evaluating Environmental Impact", U.S. Geological Survey, Washington, D.C., 1971.

4. Gruen, Gruen and Associates, The Impacts of Growth, California Better Housing Foundation, Inc., Berkely, California, 1972.

5. Guidelines for the Preparation and Evaluation of Environmental Impact Reports, State of California Office of the Secretary for Resources, Sacramento, California, 1973.

6. Kiefer, Ralph W., "Terrain Analysis for Metropolitan Fringe Area Planning", Journal of the Urban Planning and Development Division, ASCE, Vol. 93, No. UP4, Paper 5649, 1967.

7. Kiefer, R. W. and M. L. Robbins, "Computer-Based Land Use Suitability Maps", Paper presented to 1972 Annual and National Environmental Engineering Meeting, Houston, Texas, October, 1972.

8. List of Published Soil Surveys, U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C., January, 1972.

9. Lueder, Donald R., Aerial Photographic Interpretation, McGraw-Hill, New York, 1959.

10. Lynch, Kevin, Site Planning, The M.I.T. Press, Cambridge, Massachusetts, 1962.

11. McHarg, Ian L., Design With Nature, Natural History Press, Garden City, New York, 1969.

12. Miller, Allen H. and Bernard J. Niemann, An Interstate Corridor Selective Process, Environmental Awareness Center--Department of Landscape Architecture, University of Wisconsin, Madison, Wisconsin, 1972.

13. Scherz, James and Alan Stevens, An Introduction Photography and Remote Sensing, Department of Civil and Environmental Engineering, University of Wisconsin, Madison, Wisconsin, 1969.

14. "Topographic Maps", U.S. Geological Survey, Washington, D.C.

Exhibit C

Cost Effective Data Collection Sources

Data Requirement	Data Sources							
	High Altitude Aerial Photography	Low Altitude Aerial Photography	Field Investigations	Special Purpose Maps	Topographic Maps	Government Publications	Non-government Publications	Local Experts
I. Topography	2				1			
II. Soils								
Class	2			1				
Permeability						1		2
Depth of Bedrock						1		2
III. Vegetation								
Association Level	1			2				
Community Level	1			2				
Species Level			1					2
IV. Land Use								
Urbanized Area	1			2				
Commercial Land	1					2	2	
Commercial Type			1	1				
V. Agriculture								
Cultivated Land	1			2		2		
Crop Class	1		2					
Crop Type		2	1	1				

1 Primary Source
2 Secondary Source

Exhibit D

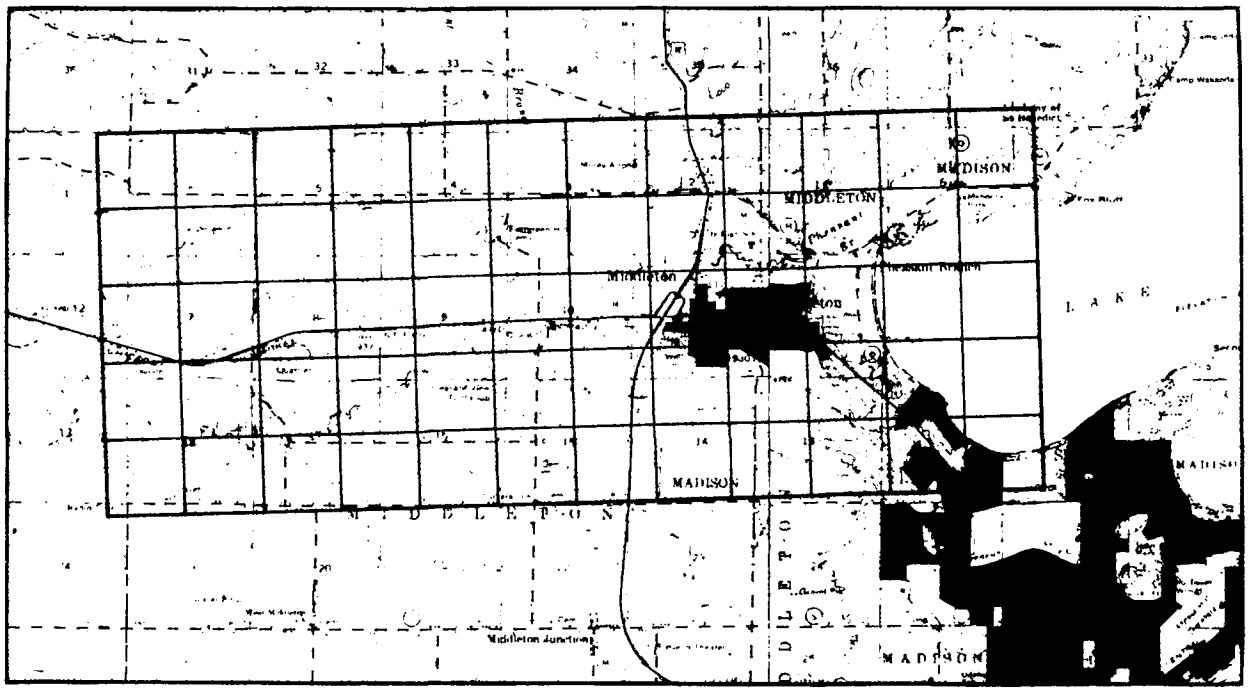

FIG. 1 - U.S.G.S. TOPOGRAPHIC MAP WITH 1 km^2 GRID

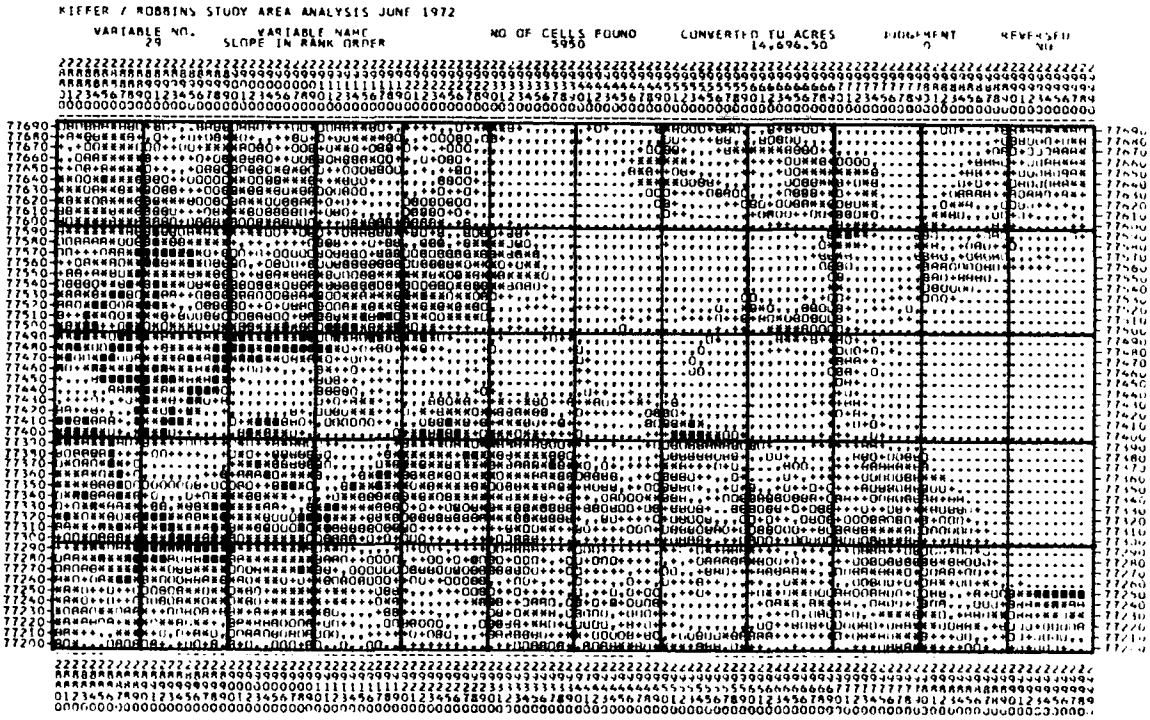

FIG. 2 - COMPUTER PRINTOUT OF TOPOGRAPHIC SLOPE WITH 1 km^2 GRID

Exhibit E

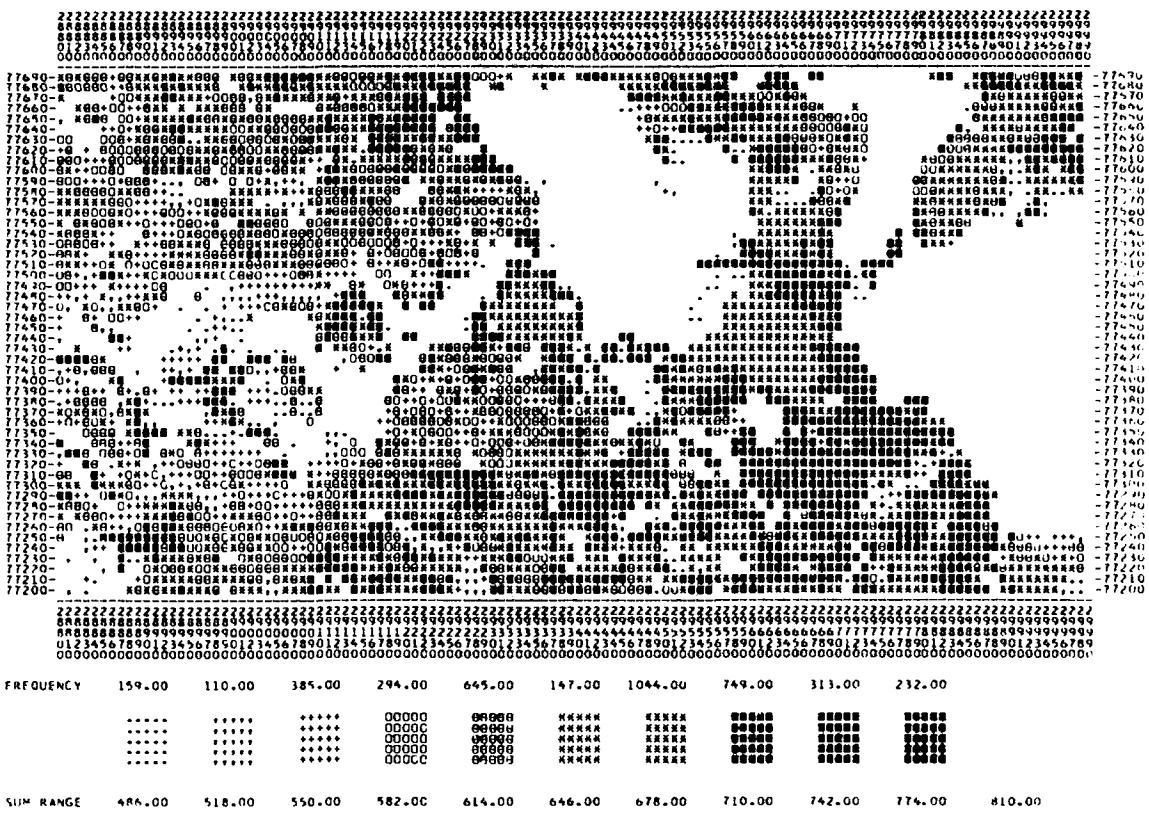

FIG. 21 - RESIDENTIAL LAND USE SUITABILITY WITH 1401 LEAST FAVORABLE CELLS DROPPED (4078 CELLS SHOWN)

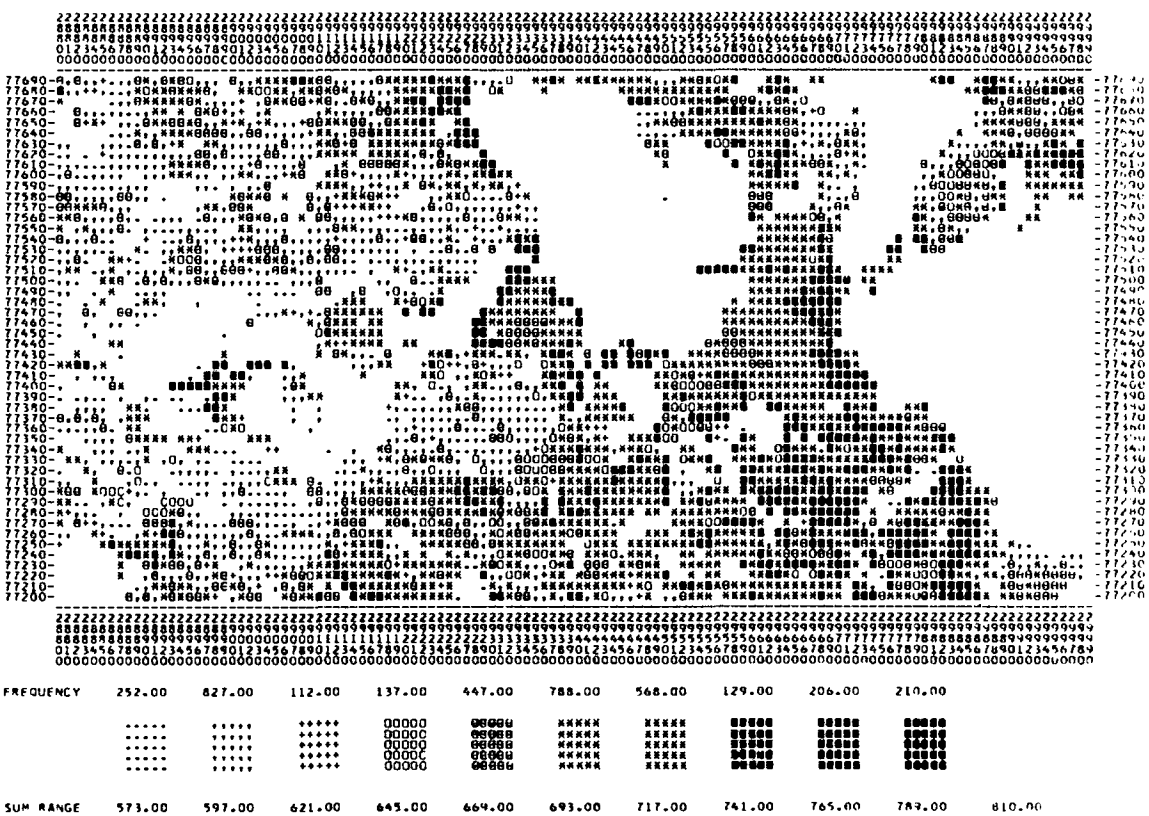

FIG. 22 - RESIDENTIAL LAND USE SUITABILITY WITH 1803 LEAST FAVORABLE CELLS DROPPED (3676 CELLS SHOWN)

EXHIBIT #8

Basic Information on Restaurant-Commercial Land Sale Comparables

	Barnaby's East	Barnaby's West	Bud's West	Pigs Ear East	Marc's Big Boy South	Marc's Big Boy East
Sales Price	$92,000*	$89,000	$75,700	$91,000	$87,500	$85,000
Sales Date	10-6-70	6-30-70	6-29-71	5-20-72	9-3-69	3-15-68
Type of Deed	Lease with Option	WD	WD	WD	WD	WD
Volume & Page	209-455	184-75	264-173	344-385	130-463	15-108
Grantee	Barnaby's Inc.	Barnaby's Inc.	Clyde Chamberlain	Poole, Inc.	B & G Realty	B & G Realty
Area	38,211	32,900	45,236	141,570	38,327	30,237
Zoning	C-2	C-3-L	C-3-L	M-1	C-2	C-2
Principal Business Frontage	E. Washington Ave.	Mineral Point & Grand Canyon Roads	Odana Rd.	Cottage Grove Road & Atlas Avenue	S. Park Street	E. Washington Ave.
Position on Block	Inside lot	Corner lot	Inside lot	Corner lot	Corner lot	Inside lot

All have city services, Pigs Ear did not have curb and gutter
No adjustment of time required as restaurant economics would not permit inflation of land prices.

EXHIBIT F

EXHIBIT #9

Attribute Point and Weight Comparison
Of Restaurant-Commercial Land Sales and Subject Property

	(See Exhibit #8)	Barnaby's East		Barnaby's West		Bud's West		Pigs Ear East		Marc's Big Boy South		Marc's Big Boy East		Subject	
30	*Site	Points	Wgt'd Pts												
	Shape	5		1		5		3		5		3		5	
	% Usable	3		3		5		5		5		5		1	
	Site Preparation	3		1		5		5		5		5		5	
	Visibility	3		5		5		3		5		3		3	
	Access														
	Left & Right Turn	5		5		5		3		3		3		1	
	Frontage Road	3		5		5		1		5		5		5	
	Total	18		20		25		20		28		24		20	
	Weight		540		600		750		600		840		720		600
50															
	Linkages														
	Traffic Volume	5		5		3		3		5		5		3	
	Supportive Retail/Serv.	5		5		3		1		1		3		1	
	Proximity to Multi-Family Residential	1		5		5		1		3		3		3	
	Proximity to Employm.	3		3		3		1		1		5		3	
	**Interstate-Beltline	2		1		1		3		2		2		1	
	Total	15		18		15		9		12		18		11	
	Weight														
20	Image														
	Development Activity	5		5		3		1		1		3		1	
	Prestige of Street Address	5		5		3		1		3		5		1	
100	Total	10		10		6		2		4		8		2	
			200		200		120		40		80		160		40
	*Scale 1,3,5 Except **		1490		1700		1620		1090		1520		1780		1190

EXHIBIT F

EXHIBIT F

Determination of Linear Regression
Weighted Mean Value of Land/sf
Commercial-Restaurant

Comparable	1 Land $/sf Yi	2 Total Wgtd. Pts. Xi	3 (Land $/sf)^2 Yi^2	4 (Wgtd.Pts)^2 Xi^2	5 (3 x 4) XiYi
1	$2.40	1490	5.76	2220100	3575
2	2.73	1700	7.45	2890000	4641
3	1.67	1620	2.79	2624000	2705
4	.64	1090	.41	1881000	698
5	2.28	1520	5.20	2310400	3466
6	2.81	1780	7.90	3168400	5002
TOTAL	$12.53	9200	29.51	15093000	20087
Mean	(Y)=$2.09	(X)=1533			

Calculations of Mean, Standard Deviation

$$\text{Sum } y^2 = Y^2 - n(Y)^2$$

$$= (29.51)^2 - 6(2.09)^2$$

$$= 845$$

$$\text{Sum } x^2 = X^2 - n(X)^2$$

$$= 1509900 - 6(1533)^2$$

$$= 993366$$

$$\text{Sum } xy = XY - n(x)(Y)$$

$$= 20087 - 6(1533)(2.09)$$

$$= 863$$

$$Y' = a + bX_{subject}$$

$$b = \frac{\text{Sum } xy}{\text{Sum } x^2} = \frac{863}{993366} = .00087$$

$$a = (Y) - b(X) = \$2.09 - .00087(1533)$$

SALES PRICE/SUBJECT SITE

$$Y' = a + bX_{subject}$$

$$= -\$.76 = .00087(1190) = \underline{\$1.80}$$

STANDARD DEVIATION

$$S_{xy} = \frac{\text{Sum } y^2 - b(\text{Sum } xy)}{n-2}$$

$$= \$ \underline{.15}$$

APPENDIX II

Vacant Land Market Comparison
Office Use
Subject - Fauerbach Property

Weight Total	Weight Sub Total	Factor	CMI Wgt	CMI Wgt*	VIP Wgt	VIP Wgt*	Doty School Wgt	Doty School Wgt*	WPS-1 Wgt	WPS-1 Wgt*	IBM Wgt	IBM Wgt*	WPS-2 Wgt	WPS-2 Wgt*	Subject Wgt	Subject Wgt*
30		Site														
	10**	Intensity of Land Use	8	80	10	100	6	60	4	40	2	20	2	20	6	60
	10**	Topography	10	100	8	80	6	60	4	40	1	10	4	40	6	60
	10**	Views	8	80	6	60	4	40	8	80	4	40	4	40	6	60
25		Image														
	10**	Lineal Ft Lake/Park	10	100	4	40	4	40	8	80	6	60	1	10	8	80
	5	Lake Exposure	5	25	3	15	3	15	3	15	1	5	1	5	3	15
	10**	Community Recognition	10	100	8	80	8	80	6	60	4	40	2	20	2	20
35		Linkages														
	15**	Downtown	8	120	10	150	8	120	4	60	1	15	1	15	4	60
	5	Auto Approach Zone	5	25	3	15	3	25	2	10	2	10	1	5	3	15
	5	Ancillary Uses	3	15	5	25	3	15	3	15	1	5	2	10	1	5
	5	Employee--Housing & Transportation	3	15	3	15	3	15	1	5	3	15	3	15	3	15
	5	Protection from adverse Contiguous Uses	5	25	4	20	3	15	3	15	4	20	2	10	1	5
10		Construction Suitability														
	5	Depth to Ground water/ Soils	5	25	5	25	3	15	1	5	1	5	2	10	3	15
	5	Drainage	5	25	5	25	3	15	3	15	1	5	3	10	3	15
100	100	Totals		735		650		515		440		225		210		425

* Weight x Scale
** 10 Point Scale

$b = \frac{\text{Sum } xy}{\text{Sum } x^2} = .0249$

$a = Y - bX = -\$5.75$

$Y' = a + bX_{subject}$

$= -\$5.75 + .0249(425)$

$= \$4.83$ per sq. ft. $\pm$ $ .08 (standard deviation)

EXHIBIT G

06/29/74

DEVELOPMENT IMPACT ANALYSIS FOR WISCONSIN ALUMNI FOUNDATION

REPORT ONE
DATA SUMMARY

			YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	TOTAL
1	SITE ACQUISITION		600.0	0	0	0	0	0	600.0
2	ACQUISITION COST	1	1,400,000.0	0	0	0	0	0	1,400,000.0
	NON-RES LNE USE								
3	OPTION 1	1	0	0	0	0	0	0	0
4	AREA IN ACRES		0	425.0	0	0	0	0	0
5	OPTION 2	1	0	0	0	0	0	0	0
6	AREA IN ACRES		0	0	12.5	12.5	0	0	0
7	OPTION 3	1	0	0	0	300,000.0	0	0	0
8	AREA IN ACRES		0	0	0	5.0	0	0	0
23	TOT NON-RES LND USE	2	0	425.0	12.5	17.5	0	0	455.0
24	AVAIL FOR RES LND USE		600.0	175.0	162.5	145.0	145.0	145.0	145.0
25	TOT NON-RES DEVEL		0	0	0	300,000.0	300,000.0	300,000.0	300,000.0
	SOURCE OF PROPERTY TAX								
26	REAL ESTATE TAX		7.2	7.2	7.2	7.3	7.3	7.4	0
28	SCHOOL TAX		22.5	22.6	22.7	22.8	22.9	23.0	0
29	TOTAL TAX RATE		29.7	29.8	29.9	30.1	30.2	30.4	0
30	TAX CREDIT		8.3	6.2	6.2	6.3	6.3	6.3	0
31	NET TAX LEVY		21.3	23.6	23.7	23.8	23.9	24.1	4.0
32	EQUALIZATION RATE		.6	.7	.7	.7	.7	.7	0

SOURCE CODE: 1 = USER SUPPLIED; 2 = COMPUTED;
3 = MARKET STUDY

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DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT TWO
DATA SUMMARY

			TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TOTAL
33	CONSTRUCTION MIX	2	.2	.3	.2	.2	.3	1.0
34	DENSITY / DU / TYP	1	1.0	3.0	3.0	4.0	4.0	0
35	ACRES REQUIRED / TYP	2	50.0	25.0	16.7	12.5	18.8	122.9
37	TOTAL DU / TYP BUILT	1	50.0	75.0	50.0	50.0	75.0	300.0
	CONST SCHEDULE							
38	YEAR 1	1	.0	.0	.0	0	0	0
39	YEAR 2	1	.5	.1	.1	0	0	0
40	YEAR 3	1	0	.2	.2	0	.0	0
41	YEAR 4	1	.0	.4	.2	.0	.3	0
42	YEAR 5	1	.3	.2	.3	.5	.3	0
43	YEAR 6	1	.3	.2	.3	.5	.3	0
48	TOTAL CONST SCHUDL	1	1.0	1.0	1.0	1.0	1.0	0
49	CONSTRCT COST / TYP	3	50,400.0	30,800.0	33,600.0	15,840.0	19,170.0	29,962.0
50	DEVELOPMENT COST-TYP	3	.4	.3	.3	.3	.3	.3
51	SELLING PRICE / TYP	3	80,000.0	44,000.0	48,000.0	22,000.0	27,000.0	44,200.0
	MARKETING SCHEDULE							
52	YEAR 1	1	.0	0	0	0	0	0
53	YEAR 2	1	.9	0	0	0	0	0
54	YEAR 3	1	.9	.9	.9	0	0	0
55	YEAR 4	1	0	.9	.9	.9	.9	0
56	YEAR 5	1	.9	.9	.9	.9	.9	0
57	YEAR 6	1	1.0	1.0	1.0	1.0	1.0	0
62	TOT SCOOL CLDRN / DU	2	.6	.2	.7	0	.3	.4
	NUM SCOOL CLDRN / UN BY SCOOL LEVEL							
63	GRADE	3	.1	0	.1	0	0	0
64	MIDDLE	3	.4	.1	.4	0	.3	.3
65	HIGH	3	.1	.1	.1	0	.1	.1
66	NUM OCC / DU UNIT	3	3.3	2.7	3.3	1.9	2.8	2.8
67	TRIPS / DU	3	4.0	3.2	3.2	2.0	2.1	2.9

68 SEWAG / DU IN G/D	3	330.7	267.5	334.9	161.7	238.4	266.6
69 WATER / DU IN G/D	3	396.8	321.0	401.9	190.2	280.5	318.1
70 SURF COVERAGE / DU	3	.1	.2	.2	.2	.2	.2
71 TOTAL SITE COVERAGE	2	5.0	13.5	10.0	11.0	17.3	56.8

DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT THREE
MUNICIPAL CASH FLOW — SCHOOLS

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	TOTAL
	# SCHOOL CLDRN / LEVEL							
72	GRADE	0	2	2	2	4	4	14
73	MIDDLE	0	9	8	14	20	22	73
74	HIGH	0	3	2	4	6	7	22
75	# DEVEL SCHOOL CLDRN	0	14	12	20	30	33	109
76	# NON-DEVL SCHOOL CLDRN	1,570	1,570	1,586	1,602	1,618	1,634	0
77	# CUM SCHOOL CLDRN	1,570	1,584	1,612	1,648	1,694	1,743	0
	NET OPERATING COST							
78	W/O PROJECT	1,912,917	1,912,917	1,932,046	1,951,367	1,970,880	1,990,589	0
79	WTH PROJECT	1,912,917	1,929,975	1,963,725	2,007,414	2,063,480	2,123,397	0
	MAXIMUM NON-OPER COST							
80	W/O PROJECT	157,000	157,000	158,570	160,156	161,757	163,375	0
81	WTH PROJECT	157,000	158,400	161,170	164,756	169,357	174,275	0
	TOTAL SHARED COST							
82	W/O PROJECT	2,069,917	2,069,917	2,090,616	2,111,522	2,132,638	2,153,964	0
83	WTH PROJECT	2,069,917	2,088,375	2,124,895	2,172,170	2,232,837	2,297,672	0
84	PRIMARY COST / STUDENT	1,225	1,225	1,237	1,250	1,262	1,275	0
	PRIMARY COST CELING							
85	W/O PROJECT	1,923,250	1,923,250	1,961,907	2,001,342	2,041,569	2,082,604	0
86	WTH PROJECT	1,923,250	1,940,400	1,994,076	2,058,824	2,137,490	2,221,551	0
	PRIMARY SHARED COST							
87	W/O PROJECT	1,923,250	1,923,250	1,961,907	2,001,342	2,041,569	2,082,604	0
88	WTH PROJECT	1,923,250	1,940,400	1,994,076	2,058,824	2,137,490	2,221,551	0
	SECONDARY SHARED COST							
89	W/O PROJECT	146,667	146,667	128,709	110,181	91,069	71,360	0
90	WTH PROJECT	146,667	147,975	130,819	113,345	95,348	76,121	0
	DIST. EQUALIZ. VALUE TO NEAREST 10,000							
91	W/O PROJECT	10,649	10,649	10,756	10,863	10,972	11,082	0
92	WTH PROJECT	10,650	10,655	10,760	10,870	10,981	11,091	0
93	AMT PRI GUAR VALUATION	75,500	75,500	76,255	77,018	77,788	78,566	0

94	AMT SEC GUAR VALUATION	47,600	47,600	48,076	48,557	49,042	49,533	0
	TOTAL PRI GUAR. VAL TO NEAREST 10,000							
95	W/O PROJECT	11,854	11,854	12,092	12,335	12,583	12,836	0
96	WTH PROJECT	11,854	11,959	12,290	12,689	13,174	13,692	0
	TOTAL SEC GUAR. VAL TO NEAREST 10,000							
97	W/O PROJECT	7,473	7,473	7,623	7,777	7,933	8,092	0
98	WTH PROJECT	7,473	7,540	7,748	8,000	8,306	8,632	0
	NET PRI GUAR. VAL TO NEAREST 10,000							
99	W/O PROJECT	1,204	1,204	1,336	1,472	1,611	1,754	0
100	WTH PROJECT	1,203	1,304	1,530	1,819	2,193	2,601	0
	NET SEC GUAR. VAL TO NEAREST 10,000							
101	W/O PROJECT	(3,176)	(3,176)	(3,132)	(3,087)	(3,039)	(2,989)	0
102	WTH PROJECT	(3,177)	(3,115)	(3,011)	(2,870)	(2,675)	(2,458)	0
	PRIMARY AID MILL RATE							
103	W/O PROJECT	16	16	16	16	16	16	0
104	WTH PROJECT	16	16	16	16	16	16	0
	SECONDARY AID MILL RAT							
105	W/O PROJECT	2	2	2	1	1	1	0
106	WTH PROJECT	2	2	2	1	1	1	0
	TOTAL PRI EQALIZ AID							
107	W/O PROJECT	195,396	195,396	216,775	238,758	261,359	284,593	0
108	WTH PROJECT	195,201	211,569	248,316	295,193	355,828	422,088	0
	TOTAL SEC EQALIZ AID							
109	W/O PROJECT	(62,332)	(62,332)	(52,884)	(43,732)	(34,887)	(26,359)	0
110	WTH PROJECT	(62,355)	(61,142)	(50,839)	(40,659)	(30,711)	(21,677)	0
	TOTAL EQUALIZ AID							
111	W/O PROJECT	133,065	133,065	163,891	195,026	226,473	258,234	0
	TOTAL EQUALIZ AID							
112	WTH PROJECT	132,845	150,426	197,477	254,535	325,118	400,411	0
	TOTAL AID / STUDENT							
113	W/O PROJECT	85	85	103	122	140	158	0
	TOTAL AID / STUDENT							
114	WTH PROJECT	85	95	123	154	192	230	0

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DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT FOUR
PROJECT TAX STATEMENT

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	PROJECT TAX BASE						
	UNSOLD RAW LND						
115	AREA IN ACRES	600.0	145.8	120.4	83.3	46.0	8.1
116	EFF. MILL RATE	13.9	15.4	15.6	15.7	15.9	16.0
117	TAX $$ ON RAW LND	19,410.3	4,717.8	3,895.5	2,693.5	1,489.4	262.6
	UNSOLD INVENTORY / TYP						
124	TYPE A	0	2.5	.3	.3	1.3	0
125	TYPE B	0	7.5	1.9	2.8	1.8	0
126	TYPE C	0	5.0	1.3	1.1	1.6	0
127	TYPE D	0	0	0	0	2.5	0
128	TYPE E	0	0	0	2.5	2.8	0
134	TOTAL UNSOLD INVENTORY	0	15.0	3.4	6.7	9.9	0
135	EFF. MILL RATE	13.9	15.4	15.6	15.7	15.9	16.0
136	TAX $$ ON UNSOLD	0	11,849.9	2,529.2	4,175.1	6,151.0	0
	SOLD DWELLING UNITS						
137	TYPE A	0	22.5	2.3	0	11.5	13.8
138	TYPE B	0	0	16.9	25.3	16.0	16.8
139	TYPE C	0	0	11.3	10.1	14.5	14.1
140	TYPE D	0	0	0	0	22.5	27.5
141	TYPE E	0	0	0	22.6	24.9	27.9
147	TOTAL SOLD INVENTORY	0	22.5	30.4	58.1	89.4	100.1
148	EFF. MILL RATE	13.9	15.4	15.6	15.7	15.9	16.0
149	TAX $$ ON SOLD DU	0	27,701.0	22,762.6	34,746.2	55,359.1	62,155.7
	TAXES NON-RES LND USE						
150	CUMULATIVE MARKT VALUE	0	0	0	300,000.0	300,000.0	300,000.0
151	EFF. MILL RATE	13.9	15.4	15.6	15.7	15.9	16.0
152	TOTAL NON-RES USE TAX	19,410.3	4,717.8	3,895.5	7,409.6	16259.4	5062.6

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DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT FIVE
MUNICIPAL CASH FLOW -- GENERAL

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	POPULATION GROWTH						
153	W/O PROJECT	3,000	3,150	3,308	3,473	3,647	3,829
154	WTH PROJECT	3,000	3,224	3,398	3,638	3,889	4,097
	WATER DEMAND IN G/D						
157	W/O PROJECT	375,000	378,750	382,538	386,363	390,227	394,129
158	WTH PROJECT	375,000	387,679	393,368	404,900	417,015	423,707
	PEAK TRAFFIC / HR						
159	W/O PROJECT	0	0	0	0	0	0
160	WTH PROJECT	0	90	99	161	241	268
	MUNICIPAL TAX						
	==========						
161	STATE TAX LEVY	0	0	0	0	0	0
162	COUNTY TAX LEVY	7	7	7	7	7	7
163	VOC. ED. DIST.	0	0	0	0	0	0
165	TOTAL TAX RATE	7	7	7	7	7	8
166	EQUALIZATION RATE	1	1	1	1	1	1
167	EFFECTIVE TAX RATE	5	5	5	5	5	5
	MUNICIPAL R.E. VALUE						
168	W/O PROJECT	19,855,175	19,855,175	20,847,934	21,890,331	22,984,847	24,134,089
169	WTH PROJECT	19,855,175	21,534,028	21,914,773	23,523,910	25,553,663	26,716,955
	MUNICIPAL R.E. TAXES						
170	W/O PROJECT	142,304	143,727	152,423	161,644	171,424	181,795
171	WTH PROJECT	142,304	155,880	160,223	173,707	190,582	201,251
172	SEWAGE CAPACITY /M GAL	73	73	183	183	183	183
	ESTIMATED DEMAND /M GAL						
173	W/O PROJECT	110	115	121	127	133	140
174	WTH PROJECT	110	118	124	133	142	150
	REMAINING CAPACITY						
175	W/O PROJECT	(37)	(42)	62	56	49	43

176	WTH PROJECT	(37)	(45)	58	50	41	33
	POPULATION EQUIVALENT REMAINING CAPACITY:						
177	W/O PROJECT	(1,000)	(1,150)	1,693	1,527	1,353	1,171
178	WTH PROJECT	(1,000)	(1,224)	1,602	1,362	1,111	903
	% CAPACITY IN USE						
179	W/O PROJECT	150 %	158 %	66 %	69 %	73 %	77 %
180	WTH PROJECT	150 %	161 %	68 %	73 %	78 %	82 %
	COST /M GAL						
181	W/O PROJECT	75	75	121	115	110	104
182	WTH PROJECT	75	75	118	110	103	98
	PROCESSING COST / YR						
183	W/O PROJECT	5,490	5,490	14,600	14,600	14,600	14,600
184	WTH PROJECT	5,490	5,490	14,600	14,600	14,600	14,600
185	DEBT SERVICE / YR	15,200	15,200	62,975	62,975	62,975	62,975
	TOTAL COST / YR						
186	W/O PROJECT	20,690	20,690	77,575	77,575	77,575	77,575
187	WTH PROJECT	20,690	20,690	77,575	77,575	77,575	77,575

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DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT SIX
DEVLOPERS CASH FLOW

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	TOTAL
	DEVELOPMENT COSTS							
188	SITE ACQUISITION	1,400,000	0	0	0	0	0	1,400,000
189	SITE IMPROVEMENT	800,000	800,000	200,000	200,000	0	0	2,000,000
190	OFF-SITE IMPRVMT	0	82,000	50,000	0	0	0	132,000
	CONSTRUCTION							
191	SALEABLE	0	1,659,000	598,500	1,626,146	2,473,646	2,389,646	8,746,939
192	NON-SALEABLE	0	0	0	300,000	0	0	300,000
205	DEV OUTLAYS	$ 2,200,000	$ 2,541,000	$ 848,500	$ 2,126,146	$ 2,473,646	$ 2,389,646	$ 12,578,939
	OPERATING COSTS							
206	EXPENSE OPTION 1	64,000	64,000	64,000	64,000	64,000	64,000	384,000
207	EXPENSE OPTION 2	10,000	10,000	10,000	10,000	10,000	10,000	60,000
208	EXPENSE OPTION 3	0	35,000	35,000	20,000	10,000	0	100,000
211	OP OUTLAYS	$ 74,000	$ 109,000	$ 109,000	$ 94,000	$ 84,000	$ 74,000	$ 544,000
212	TOTAL ANNUAL COST	$ 2,274,000	$ 2,650,000	$ 957,500	$ 2,220,146	$ 2,557,646	$ 2,463,646	$ 13,122,939
	GROSS RECEIPTS							
213		0	$ 1,800,000	$ 1,462,500	$ 2,210,288	$ 3,486,566	$ 3,875,771	$ 12,835,125
214	LESS: DEV OUTLAYS	2,200,000	2,541,000	848,500	2,126,146	2,473,646	2,389,646	12,578,939
	CONTRIBUTION TO							
215	OVERHEAD & PROFIT	(2,200,000)	(741,000)	614,000	84,141	1,012,920	1,486,125	256,186
216	LESS: OPERATNG EXP	74,000	109,000	109,000	94,000	84,000	74,000	544,000
219	B/4 TAX SPNDABL INCOME	$ (2,274,000)	$ (850,000)	$ 505,000	$ (9,859)	$ 928,920	$ 1,412,125	$ (287,814)
220	CUMULATIVE CASH FLOW (+/-)	$ (2,274,000)	$ (3,124,000)	$ (2,619,000)	$ (2,628,859)	$ (1,699,939)	$ (287,814)	$(12,633,611)

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DEVELOPMENT IMPACT ANALYSIS
FOR
WISCONSIN ALUMNI FOUNDATION

REPORT SEVEN
SOURCES AND USES OF FUNDS

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	TOTAL
	SOURCES OF FUNDS							
246	B/4 TAX SPNDABL INCOME	(2,274,000)	(850,000)	505,000	(9,859)	928,920	1,412,125	(287,814)
	INCREASE IN OWNERS INTEREST:							
250	OWNERS EQUITY	2,309,000	991,000	359,000	594,000	84,000	0	4,337,000
254	TOTAL SOURCES OF FUNDS	$ 35,000	$ 141,000	$ 864,000	$ 584,141	$ 1,012,920	$ 1,412,125	$ 4,049,186
	USES OF FUNDS							
255	ACQUISITION OF LAND	1,400,000	0	0	0	0	0	1,400,000
256	DEV OUTLAYS	2,200,000	2,541,000	848,500	2,126,146	2,473,646	2,389,646	12,578,939
257	OP OUTLAYS	74,000	109,000	109,000	94,000	84,000	74,000	544,000
264	TOTAL USES OF FUNDS	$ 3,674,000	$ 2,650,000	$ 957,500	$ 2,220,146	$ 2,557,646	$ 2,463,646	$ 14,522,939
265	INCREASE (DECREASE) IN WORKING CAPITAL	$ (3,639,000)	$ (2,509,000)	$ (93,500)	$ (1,636,005)	$ (1,544,726)	$ (1,051,521)	$(10,473,753)