

DOES "GOOD DESIGN" ADD VALUE?
A Comparative Analysis of Two Residential Projects

The Planned Unit Development of Mission Valley
and the New Town of Reston

by

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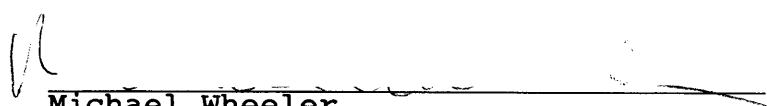
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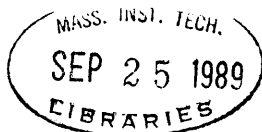


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fulfillment of the requirements for the Degree of
Master of Science in Real Estate Development

ABSTRACT

The architectural community believes quite strongly in the maxim "good design adds value". If true, the application of "good design" to a real estate project should result in a greater return to the developer. This paper analyzes the "value" of two residential real estate developments publicly recognized for their design. The first case describes a planned unit development called Mission Valley in Fremont, California. The second case pertains to the two original sections of Reston, a new town in Fairfax County, Virginia. This study focused on determining whether the homebuyer was willing to pay a premium for a unit within the project with "good design" as compared to similar units in typical area subdivisions. Three periods were analyzed; the value at the original sale, the value in 1987, and the change in value which had taken place between the original sale and 1987.

Overall, the analysis results were inconclusive. The Mission Valley units originally sold for a nine percent discount as compared to the subdivision sample. Yet, according to the developer, the Mission Valley single-family, detached units sold at a faster rate than expected despite a slow homebuying market. During the next 20 years, the Mission Valley units appreciated at a four percent faster rate than the subdivision units. Part of this increase in value may be due to its design. In case of Reston, two separate samples were gathered, town house units and single-family, detached units. The comparative analysis results were surprising. Town house units in the much acclaimed Lake Anne Village development originally sold for a nine percent premium over town house units located in western Fairfax County. However, these units appreciated at a slower rate than the typical town houses of the area indicating a low level of market acceptance for the urban village concept. In contrast, the original single-family buyer was willing to pay a 50 percent premium for a home in Reston. This differential remained constant from 1967 through 1987.

This issue of "good design" will become increasingly important to the developer as the homebuying market becomes more sophisticated and recognizes the value of good design.

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This study was the result of extensive field research. An implicit assumption of the study was that the two projects analyzed, Mission Valley and Reston were examples of good design. In order to develop a comparative sample of units, it was necessary to identify typical subdivisions built during the same period. Since 20 years had elapsed from the original development of both projects, this was not a simple task. However, it was critical to the study's success.

My sincere gratitude is extended to the individuals who assisted me with this seemingly impossible task. David Beavers, an analyst with the Fairfax County Office of Research and Statistics stayed late one evening and put together a computer search which identified all the single family and town house units built in western Fairfax County during study period. In Fremont, the combined efforts of two Planners, Michael Johnson and Robert Fegley, and Robert Desch, a City Engineer helped to identify subdivisions built during the same period as Mission Valley.

In both Alameda County and Fairfax County, the staff of the Assessors and Land Records Departments were patient instructors in the use of their systems.

The time spent editing of the paper by Charles Harvey, Jean Howard, and Joshua Resnick was greatly appreciated. The support and "cool" place to work provided by my parents, Mary Jane and Paul Kilian also helped to get the project done.

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I. INTRODUCTION

What does the statement: "Good design adds value" mean? Who or what determines "good design"? What is the "value"? Can the value be measured? The difficulty in exploring the claim that good design adds value lies as much in the difficulty of defining what constitutes "good design" as the vagueness of what "value" represents.

The belief that good design adds value is a generally accepted maxim by the architectural community. If true, it could be of great benefit to a developer. One assumes that a project with good design would be more profitable. Therefore, good design results in increased sales or a higher return.

To date, very little research has been done to quantify or define the "value" created through design. Two recent studies (Kratz and Hough, 1981 and Vandell and Lane, 1988) focused on commercial office building leases and attempted to identify a rent premium attributable to "good design". In the residential area, Kain and Quigley, 1970, looked at the relationship between housing quality and value. A more recent study on the affect of architectural quality in regard to the pricing of historic homes was too specialized in its approach for widespread application. (Asabere, Hachery and Graugh, 1989?)

This paper looks at two well-known residential

developments completed twenty years ago and attempts through comparative analysis to discern the value that homebuyers place on "good design". Selection of the two cases was based on extensive interviews and literature search. These two projects share the common characteristic of being publicly recognized for their design. The first case describes a small, planned unit development called Mission Valley located in Fremont, California. In 1972, the Urban Land Institute recognized the project in its Project Reference File. The second case pertains to the original sections of Reston, a new town in Fairfax County, Virginia. The Whittlesley and Conklin master plan was internationally acclaimed for its design in 1965.

In both cases, a comparative sample was developed for units located in the subject project and units located in typical subdivisions in the same area. The initial basis for sample selection was the title transfer of the unit in 1987. The samples were then analyzed to determine how the market originally valued the project and how the valuation changed over time. County land records provided the source of the data. The major difficulty encountered was the time consuming process of tracing real estate transactions over a 25 year period. The other problem was identifying subdivisions of a comparable nature and age. Time constraints during data gathering in the field was the primary limitation.

This paper is organized into three sections.

The first section details the study's focus on the issue of whether "good design" adds value, the methodology employed and previous research done on the issue.

The second section contains a brief discussion of the conclusions reached and their limitations.

The third section is the case write up which describes the project, its type of development, the surrounding area, the comparable subdivisions and the results of the comparative analysis. The cases follow a similar outline but were designed to stand alone.

A short summary concludes the paper.

II. THE HYPOTHESIS: "GOOD DESIGN" ADDS VALUE

Utilizing a comparative approach, this study attempts to identify and quantify the value created by the "good design" of two residential projects. Before the issue of value created through design can be explored, it would appear reasonable to first define the meaning of "good design". However, a recent telephone survey conducted by the Center for Real Estate Development at the Massachusetts Institute of Technology in Spring, 1989¹ found that little is known about the "value of good design", but more fundamentally, there was no consensus about the definition of good design or methods of determination.

This problem is illustrated by Michael Collin from the American Institute of Architects, Committee on Design, who commented:

This is a very slippery issue because good design represents something different to every person. There are a lot of people talking about it.

Robert Campbell, architectural critic for the Boston Globe asked: "What are we basing "good" design on: the theory of more rents? Hiring of architects with a reputation?"

The informal survey reached a cross section of architects, professors, and researchers. When asked who or what determines "good design" (as opposed one would assume to average or even poor design), the 18 surveyed identified: architects, design award and competition juries, critics,

design review panels, the American Institute of Architects, developers, the market producing a higher financial return, state or city agencies. There was certainly no consensus among the sample of "experts" on who or what determines "good design".

The first difficulty with proving or disproving the long-standing maxim that "good design adds value" is finding some way to determine "good design". The second problem is defining what "value" represents.

Previous Research on Value

Most often, research on the value of "good design" has used a proxy to determine the attributes of "good design" such as recognition as a historic landmark due to architectural merit or a design award. In a discussion about value created by architecture, Louis Sullivan wrote in 1901²:

The building is there, for good or for ill -- they cannot run away; they cannot conveniently avoid investigation.

Very good. But tell me: When you say; The value of a building, do you really lay more stress on the subjective value than on the Dollar value?

On both. For human nature determines that subjective value, sooner or later, becomes money value; and the lack of it, sooner or later, money loss. The subjective value is far the higher, by far the more permanent; but money value is inseparable from the affairs of life; to ignore it would be moonshine.

Much of the research done to date has focused on the "aesthetic" or subjective elements of design rather than the

"functional" elements. Hough and Kratz conducted the first study in 1981 to determine "whether the positive externality of "good" architecture can be internalized; in particular, is the value of "good" architecture reflected in the rental rates of commercial office structures in downtown Chicago?" As the "authority of architecture significance", they utilized the national landmark or Chicago landmark designation for structures built prior to 1930 (the age of the newest designated building) and nominated for architectural merit or aesthetic qualities. The second measure utilized was the 1955 to 1978 Chicago American Institute of Architects jury awards for aesthetic excellence. Through the use of hedonic modeling, the authors came to the conclusion:

"Thus, the market for office buildings in downtown Chicago seems to exhibit the interesting phenomenon of rewarding "good" new architecture but not old. ...We found that tenants are willing to pay a premium to be in new architecturally significant office buildings but apparently see no benefits associated with old office buildings that express recognized aesthetic excellence."³

This conclusion was reinforced in 1987 by Vandell and Lane's study of the Boston office market. This study also utilized the hedonic modeling technique. The parameter of design in their study was also defined as the "aesthetic" elements rather than the functional. The proxy used as a design qualifier was a survey of architects who had served on Boston area awards panels. Vandell and Lane examined several measures of building performance including rent, vacancy, and construction cost. (Only contemporary buildings, not rehabilitated buildings were included in final study due to a

problem with significance.) They found that perceived design quality affects rents positively, but they concluded:

We must note that we found no evidence that well-designed buildings are expected to be more profitable either in the short or long run. In fact quite the opposite affect is predicted to be true, providing preliminary empirical support for the proposition that investment in design is a "lottery", providing a negative expected return but a small chance of a very high return.⁴

Measuring the economics of good design, or the benefits of "architectural merit", was the focus of several less definitive works. Ruegg's presentation on the Economics of Architecture: The Challenge of Measuring the Economic Consequences of Good Design was a discussion piece which offered little of use to actually measure the value of good design.⁵ Derrington has prepared a draft on the decision to invest in architectural merit which attempts to put the issue of "aesthetic merit of the architecture" into a real estate developer's vocabulary of feasibility analysis and proforma statements.⁶ She explains that a name architect who wins an award for designing the building may bring a higher return to the building. She cites the Hough and Kratz study as support for this thesis.

Two studies in the residential area utilizing the hedonic modeling technique touch on the issue of quality and value. Kain and Quigley found that "the quality of the bundle of residential services has about as much effect on the price of housing as such objective aspects as the number of rooms, number of bathrooms, and the lot size".⁷ They also confirmed

the widely held belief that the quality of neighborhood schools influences residential property value. Physical and environmental quality of the dwelling unit and the surrounding environmental unit were measured in a 1967 random sample of 1,500 households and dwelling units located in St. Louis. These quality measurements were not directly related to architectural or urban design elements, rather the "condition" of the unit and neighborhood. Single-family house buyers were willing to spend more for "better than average". Buyers were willing to spend considerably more for new structures than an identical unit 25 years old. The premium buyers were willing to pay for "quality" increased with unit size.

The recent Asabere, Hachery and Grubaugh study's main objective was "to investigate whether or not architectural quality would lead to premium effects on housing prices".⁸ Their study of historic Newburyport, Massachusetts focused on whether the market would pay premium prices for "historical architectural brands like Colonial, Federal, Garrison, and the Victorian" which was much narrower than their original objective. The author's agreement with the view that contemporary suburban styles are "declassé" would tend to limit the applicability of their findings to broader application.

Comparative Approach Methodology

This paper is not intended to debate the question of what constitutes good design. It presents an alternative method of exploring the thesis that "good design adds value" through the use of comparative analysis. Does a residential development of "recognized" superior design have a higher economic value than the typical suburban subdivision of the same era? When does the homebuying market recognize higher value? Is it during the original purchase or an incremental adjustment of the purchase price through time?

Like the other studies done in this area, the determination of "good design" was left to the "experts". Both the projects selected for case study examination have received public recognition for their design quality. Reston, the "new town", developed by Robert E. Simon, Jr. in Fairfax County, Virginia received international recognition for its master plan by Whittlesley & Conklin. The first neighborhood center, Lake Anne Village has received historic district status. The smaller scale Mission Valley planned unit development located in Fremont, California was recognized in 1972 by the Urban Land Institute and included in its Project Reference File.

This paper did not challenge the basis upon which each project received recognition. It was assumed, for the purpose of this research, that both projects were examples of "good" design. The question became: "What value did "good design"

impart to each project initially and over time? Urban design i.e. site planning and layout, was the main factor which differentiated the single-family home samples in Reston and Mission Valley. Otherwise, the single family, detached units were very similar in unit design and size to the units in the subdivision sample. The Reston town houses included two design factors, the urban design of Lake Anne Village and the architectural merit of the town houses themselves.

A sample of units within each project was compared to a sample of units located in typical subdivisions in the immediate area. The first difficulty encountered in the research approach was identifying subdivisions that were approximately the same age as the subject project. In Reston's case, the comparable subdivision's were identified through a computer search of county records compiled by the Fairfax County Office of Research and Statistics. Fremont subdivisions were identified by the city engineer's subdivision roster. In both cases, county assessors records were used to identify 1987 title transfers of units within the subject project and comparable subdivisions. To create a base for comparison, all units used in the sample had to be purchased in 1987. In Fairfax County, Virginia, the assessor's records also contained information on the house and lot size. In Alameda County, California, this information was obtained through the Southern Alameda County Board of Realtors Multiple Listing Service.

The land record keeping methods of the two counties were quite different. In Fairfax County, Virginia title was attached to the land in the deed books. In Alameda County, the title record was maintained in the purchaser's name. Transfer Tax Stamps were the proxy for the purchase price identified on the deeds.

Although the transfer records of several hundred properties were reviewed in both cases, the final sample of usable record was quite small. The original purchase price of the sample was traced through the County Land Records using the same techniques applied in a title search. Units which had transferred in 1987 through divorce, bequest, or refinancing were rejected as not representative of market conditions. These transactions could be anomalous for a number of reasons. The records search was slow and time consuming. The process often terminated in an unusable record if the original purchaser bought the lot rather than a completed house.

In the case of Reston, Fairfax County assessors records do not indicate the transfer's purpose nor the transferor or the transferee. This resulted in the elimination of approximately 50 percent of the 1987 transactions selected after examining the county title record of the transfer.

The Alameda County record keeping system allowed faster identification of actual sales. However, the assessors records were less complete, containing no information about

the house or lot size. This necessitated a search of the Southern Alameda Board of Realtors multiple listing sales records. About 25 percent the 1987 records identified were eliminated due to lack of information about the unit size.

The two projects were evaluated on a historical sales basis and an incremental increase in value. The primary method of comparison, since the resulting samples were small, was calculating the median and mean.

III. CONCLUSIONS

This paper attempts to identify the value created through acknowledged "good design" in two residential projects; a portion of the new town, Reston, Virginia, and a planned unit development, Mission Valley in Fremont, California. These two projects employed highly acclaimed urban design principles to combat the criticism that was associated with the "suburban sprawl" of typical subdivisions of the time. The central question being posed: Is the homebuyer willing to pay a premium for design quality?

In the case of Mission Valley, the evidence seems to indicate that the original buyer was not willing to pay a premium for the special character and "micro-neighborhoods" created by the designers through the application of the planned unit development. Yet, according to the developer, the Mission Valley units sold very quickly despite a slow market created by rising interest rates and tight money. This claim cannot be substantiated. If true however, this might corroborate that these attributes held a higher value than that of comparable subdivisions. Twenty-five years later, the Mission Valley units have demonstrated a faster rate of appreciation than comparable units located in more typical Fremont subdivisions. However, other factors outside the parameters of this study could also have affected the appreciation level. For example, the schools in the Mission

Valley area are now considered the best in Fremont and the area is viewed as the most prestigious part of the city. Both these factors would affect property value over time.

The internationally acclaimed "new town" of Reston had two types of development; town houses densely clustered around a village center and single-family detached units. The market distinguished between the two types of development and this was reflected in their respective values. Initially, the town house purchaser was willing to pay a 10 percent premium for the special urban environment of Lake Anne Village. However, the Reston town house units have subsequently appreciated at a slower rate than comparable town house units located in surrounding Fairfax County. In 1987, Reston town house units sold for approximately the same price, per square foot, as comparable town house located in western Fairfax County. The "urban village" design concept embodied by the Lake Anne development seems to have been rejected by the homebuyer. In the case of the single-family detached units, the market was willing to pay a fifty percent premium for the Reston location. This premium has been maintained through a twenty year cycle of appreciation.

Time constraints limited this study to the examination of two projects. The comparative analysis techniques shows some interesting but very preliminary insight on how the homebuying market has valued two projects of reputed good design through a 25 year period. A broader sample with more sophisticated techniques of analysis such as hedonic modeling might provide

a more comprehensive basis upon which to examine the theory that "good design" can add value to residential development. On the basis of these two cases, respecting the limitations of the study, it appears that what the homebuyer values as good design may not be the same as what the architectural community considers good design.

CASE STUDY 1: MISSION VALLEY, A PLANNED UNIT DEVELOPMENT IN FREMONT, CALIFORNIA

In 1972, the 93.5-acre Mission Valley planned unit development located in Fremont, California was recognized by the Urban Land Institute as "possessing several innovative design concepts". The middle income market orientation of Mission Valley was compared to Fremont subdivisions built during the same period, that is 1965 to 1972, with houses and lots of a similar size.

Planned Unit Development

The Urban Land Institute describes Planned Unit Development (PUD) as a "better way to the suburbs".⁹ Suburban "sprawl" in the last 20 years has been assailed by countless books and articles on the subject. According to Robert Reich, former Director of the School of Landscape Architecture at Louisiana State University:

A PUD offers considerable flexibility of design and thus the possibility of much more innovative design than is seen in the usual subdivision. Most housing developments leave little or no space for people; not so with a PUD; recreational spaces are the rule, not the exception.¹⁰

Planned Unit Development incorporates many of the planning principles utilized in the "Garden Cities" of the 1920's and 1930's, such as Clarence S. Stein and Henry Wright's historic project, Radburn, in New Jersey. These

early town planners in turn took many ideas, such as the superblocks and clusters divided by cul-de-sacs, from the English "New Towns". Planned Unit Development is viewed as an alternative to "tract" type development which resulted from the tremendous suburbanization movement that started at the close of World War II.

Planned Unit Development as defined by the American Society of Planning Officials:

... a land development project comprehensively planned as an entity via unitary site plan which permits flexibility in building siting, mixtures of housing types and land uses, usable open spaces, and the preservation of significant natural features.¹¹

Planned Unit Development (PUD) is the most common acronym; however, other names include Planned Area Development (PAD), Community Unit Plans (CUP) or open space residential development (OSRD). In all cases some type of a special enabling ordinance is required since more traditional residential zoning does not incorporate the design features that PUD use promotes. The PUD ordinance typically includes language to encourage innovative design solutions while providing strong guidance on the expected improvement in land use. The trade-off to developers is higher density in return for improved open space and site layout and design.

MISSION VALLEY, A Planned Unit Development

Most of the residential Planned Unit Development projects presented in the Project Reference File of the Urban Land Institute were targeted for the upper income market. However, the January-March, 1972 edition¹² contained a write up on Mission Valley, a 320 single-family lot development located in Fremont, California, forty minutes from San Francisco. Other project elements included a 72-unit town house cluster, a small retail center and a swimming club. Its major design features were a system of pedestrian pathways connecting micro-neighborhoods and innovative, landscaped cul-de-parks. The project was conceived in 1965 and built out by 1972. It was designed for and marketed to middle-income families. This case study will pertain strictly to the single family portion of the Mission Valley development. The town house and retail elements were not evaluated.

Development History

The 93.5-acre Mission Valley project was developed by Oliver Rousseau Industries, then a fairly large regional developer, as a planned unit development under Fremont's Article 28 requirements. It was originally conceived as a subdivision but its triangular configuration and location, adjacent to a flood plain, did not suit the normal pattern of collector, secondary and minor streets of a standard subdivision. The developer worked closely with city planners

to develop a more innovative site plan. Two planners, associated with the city, are given credit for the single-family site plan in the ULI write up.

According to an interview with the developer (now named Rousseau-Jordan)¹³, Mission Valley was a very successful project. Twenty years later, the company is quite proud of its attractiveness and well-designed character. Mission Valley entered the market "during a period of very tight money when interest rates were rising and buyer resistance was high, the environment and special neighborhood character of Mission Valley allowed development to proceed at a reasonably good pace."¹²

Mission Valley received site map approval on October 10, 1965 according to the Fremont Engineering Department records. Plans were approved for the first 135 lot phase of single-family development on February 22, 1966. Permits were applied for at four intervals between February 22, 1966 and November 2, 1968. The final "as built" plan was submitted to the City Engineer on January 21, 1969, signaling completion of the single-family portion of the planned unit development. The table on the following page contains a summary of the project.

TABLE 1
MISSION VALLEY, PLANNED UNIT DEVELOPMENT
PROJECT SUMMARY

Site Area: 93.5 Acres
 Density: 4.2 Units per Acre Gross
 4.7 Units per Acre Net

Land Cost: \$11,000 per acre (1965)

Planned Composition:

Type	# Acres	Percent
Single Family	79.0	84.5%
Townhouse	5.0	5.3%
Commercial	6.3	6.7%
Park and Pool	2.1	2.2%
Church Site	1.1	1.2%
Total	93.5	100.0%

Residential Density:

Type	Units	Acres	Units/Acre
Single-Family	320	79	4.1
Townhouses	72	5	14.5
Total	392	84	4.7

Source: Oliver Rousseau Industries (12)

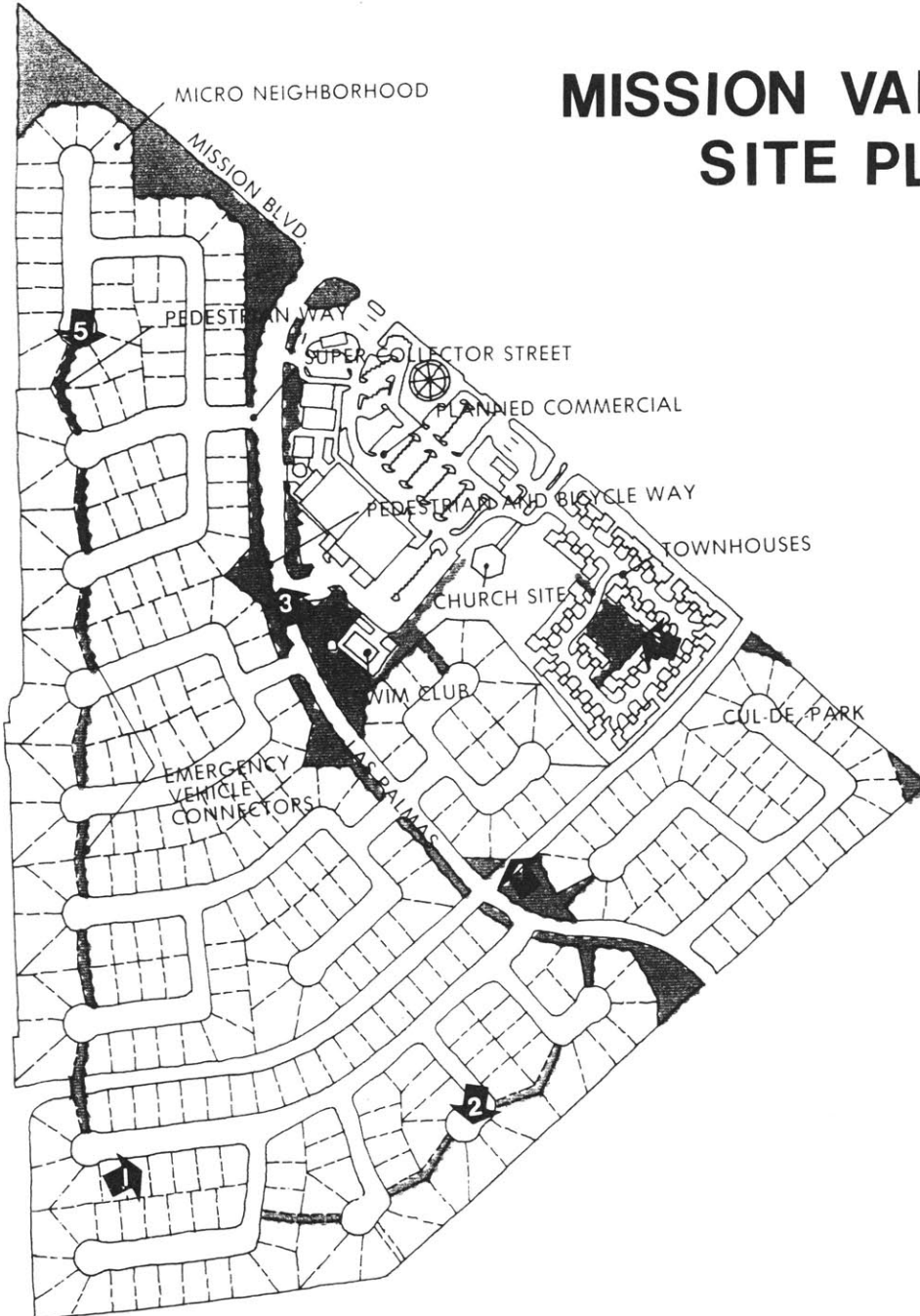
Design Features

The map of Mission Valley planned unit development on the following page indicates the site plan of small, "micro-neighborhoods" which are clustered around landscaped cul-de-sacs, called cul-de-parks by the developer. Pedestrian walkways weave the cul-de-sacs together. The site is quite flat and is located at the base of the Mission Hills. This area of Fremont has become the most affluent section with the highest property value. The housing design is characterized as "typical Californian" with some "Mission Style" details. During the same period Mission Valley was developed, the developer built the same houses in developments throughout northern California, according to Evonne Critzer, current Manager of Rousseau-Jordan.¹³

The utilization of Fremont's planned unit development provision, Article 28, allowed for a varied site plan. PUD allowed flexibility in the placement of the individual houses on the lots, including varied front, side and rear yards, as well as "zero lot line" setbacks. This changed the visual character and texture of the project.

The retail - planned district and town house cluster are not part of the case study. The church site was not utilized.

MISSION VALLEY SITE PLAN



N

0 100 200

↑ PHOTO ANGLE



Fremont, California

Mission Valley is located in Fremont, California on the south side of the San Francisco Bay. Fremont, as a city, is only 30 years old. The Fremont area was once primarily agricultural. Its products included apricots, almonds, flowers, grain and dairy products. The unincorporated area was loosely organized as Washington Township. Following World War II, a residential explosion began. Suburbanization began to encroach on the ranches and orchards. Its neighbors, Haywood to the north and San Jose to the south threatened to annex large sections of the township. In 1952, the first public proposal was made for incorporation. In 1956, the electorate approved incorporation of the city of Fremont.

In 1956, Fremont had an estimated population of 22,000. By 1964, the city had grown to 75,000. During the same eight year period, the assessed property value had grown from \$41,744,000 to \$103,975,000. By 1986, the population had expanded to 153,000, an increase of 595 percent. In 1963, 1,642 building permits were issued with a value of \$27,642,000. The 1985 figure was \$301,885,000.¹⁴

Fremont was expected to be a "planned city" from its conception. Under the "Benefit Theory", private developers were expected to provide roads outside their subdivision developments as well as land for schools, libraries and other civic requirements. A Planning Commission was created which immediately began work on land use, zoning and subdivision

ordinances. A professional planning group was retained to draft the first General Plan, which became the city's development bible. In 1962, the American Institute of Planners gave its first award for community planning excellence to Fremont. Growth became the most important civic issue.

Despite the impressive growth taking place in Fremont, many developers expressed frustration over city planning efforts. Larry Miles, the Director of Public Works from 1959 to 1975, described the situation:

I remember how two different people commented to me about this situation in 1966. One was a developer who was so exasperated by a project that he said to the planners, "Put any kind of a condition on it you want. I don't care what it is. Just give me a permit. I want to build." The other was an architect who told me he was so frustrated with staff changes he was tempted to simply bring in a sheet of paper with property lines on it and say, "Okay you guys design it." As a result of these kinds of things, the city was experiencing an attitude throughout the Bay Area development community of, "Build anywhere but Fremont."¹⁴

Article 28 of Fremont's Zoning Ordinances established the planned unit development approval process. According to Planning Commissioner, Geoffrey Steel:

Two of the key reasons why Fremont has been able to maintain variety and high standards of quality in its development are the planned unit development (PUD) and planned district processes, which were introduced by Planning Director Roy Potter in the early 1960's. The planned unit development process allows developers of subdivisions to reduce the size of residential lots below the zoning

ordinance. The street right-of-way in a PUD can also be reduced 10 feet in width by eliminating the strip of land which trees are normally planted. In return for these privileges, the developer is required to convert the land "saved" into park space.¹⁴

Comparable Fremont Subdivisions

Through the assistance of the city planning and city engineering office, three Fremont subdivisions were identified for purposes of comparison: Cabrillo, Glenmoor and Mission West (also called Way Out West). Two of these projects, Cabrillo and Glenmoor, were quite large and their development started before and extended after the development of Mission Valley. Only the portions of these projects built during the same period as Mission Valley are included in the study. Fremont and southern Alameda County organizes its land records by Assessors Tract number which is not assigned until the site map is approved. The table on the following page summarizes the development history of Mission Valley and the three comparable subdivisions.

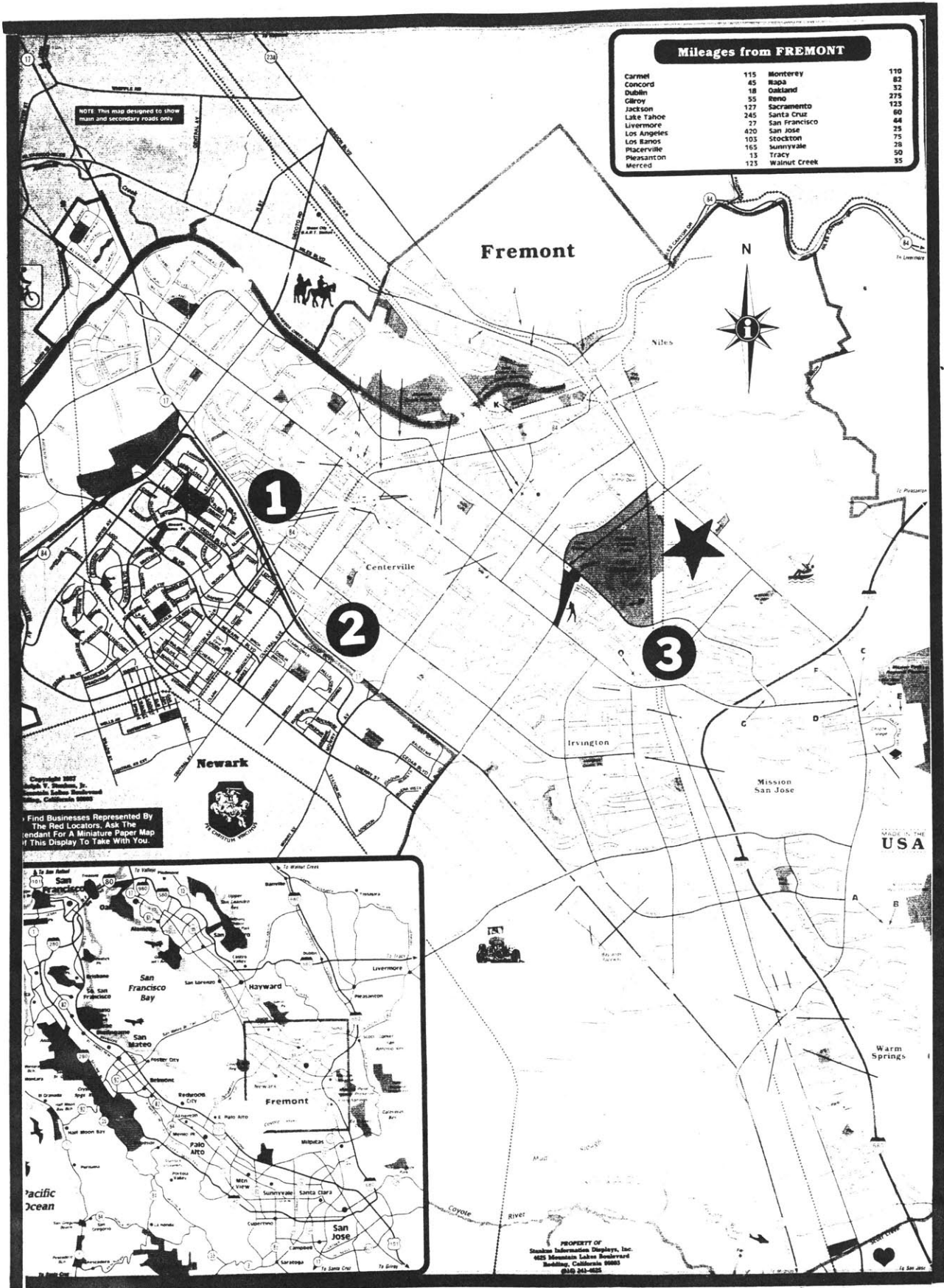
The Location Map indicates the location of these three developments and Mission Valley. It is important to note that both Mission Valley and Mission West are located in the prestigious "Mission" section of Fremont. Portions of the Cabrillo and Glenmoor developments abut the Nimitz Freeway (State Highway 17) which is considered a locational disadvantage.

TABLE 2
MISSION VALLEY - COMPARABLE SUBDIVISIONS
DEVELOPMENT HISTORY

	Mission Valley	Cabrillo Park	Glenmoor Gardens	Mission West
Map Key	*	1	2	3
Phase #	1	17	22	1
# Lots	135	14	13	52
Map Approved	10/21/65	06/04/64	06/08/60	12/20/65
Plans Approved	02/22/66	10/08/64	10/11/60	12/05/68
As Built	02/09/68	07/09/65	NA	05/16/69
Phase #	2	20	2	2
# Lots	59	147	36	31
Map Approved	06/22/66	05/22/65	03/13/70	05/07/69
Plans Approved	10/13/66	06/13/66	NA	09/24/69
As Built	02/09/68	08/22/67	NA	NA
Phase #	3	21	3	3
# Lots	103	131	0	62
Map Approved	03/14/67	07/13/66	08/21/67	08/22/69
Plans Approved	08/18/67	10/13/66	10/23/67	07/01/70
As Built	01/21/69	12/19/67	05/15/70	06/27/72
Phase #	4	22		
# Lots	23	37		
Map Approved	06/29/67	09/12/66		
Plans Approved	11/02/67	05/25/67		
As Built	05/07/68	12/19/67		
Total Units	320	329	49	145
Estimated Lot Size	6000	5800	7210	3900
Estimated Size (sf)	1960	1270	1721	1572

Sources: Fremont Engineering Development Roster
Fremont Tract Maps
Southern Alameda County Board of Realtors

CASE 1: LOCATION MAP



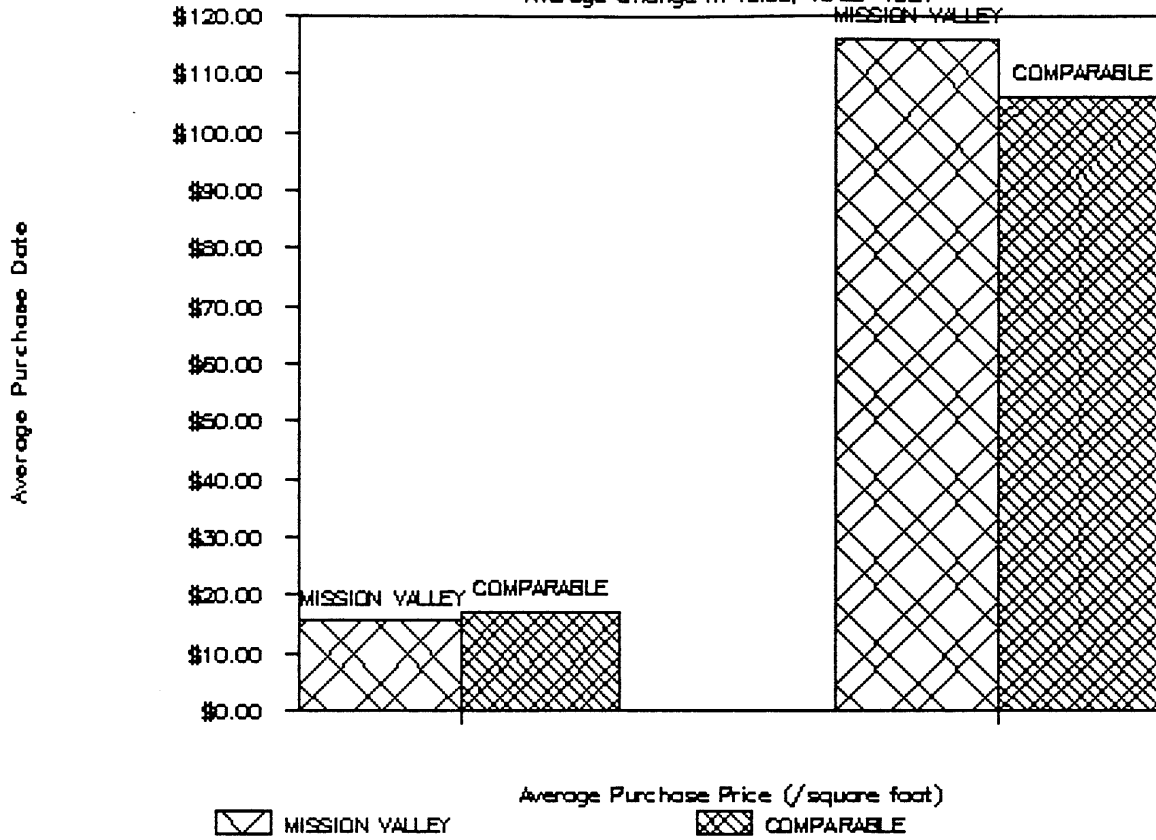
Comparative Analysis Results

Following the procedure described in the methodology section of this paper, a sample of 11 Mission Valley single-family, detached units and 22 single-family, detached units distributed in the three comparable Fremont subdivisions was analyzed. This sample represented units which sold at assumed fair market values during 1987, and whose original purchase price could be traced through Alameda County Land Records. Information regarding property size and configuration was gained through the Southern Alameda County Board of Realtors multiple listing sales records.

In order to provide a common base for comparison, the purchase price per square foot was calculated for the original purchase and the 1987 purchase. Growth in value was measured through compound average annual growth and total change in value. The graph on the following page summarizes the change in value, on a per square foot basis, between the original purchase price and the 1987 selling price of the average for the Mission Valley and Comparable samples. The table which follows summarizes the results of the comparative analysis. Appendix A contains the complete worksheet for Mission Valley.

CASE 1: MISSION VALLEY

Average Change in Value, 1968-1987



CASE STUDY 1: MISSION VALLEY, A PLANNED UNIT DEVELOPMENT

TABLE 3
COMPARATIVE ANALYSIS SUMMARY

	Bedroom	Bath	Size (sf)	Sales Date	1987 Price	Building Price/sf	Original Purchase	Original Price	Building Price/sf	Transfer Tax	Tax Rate /\$1,000
Average											
Mission Valley	3.8	2.2	1,916	07/19/87	\$219,909	\$116.21	06/23/68	\$29,859	\$15.67		\$1.10
Comparables	3.2	2.0	1,476	07/16/87	\$155,864	\$106.29	08/21/69	\$25,380	\$17.20		\$1.10
Change in Value	0.6	0.2	440	2.3	\$64,045	\$9.92	(424.2)	\$4,479	(\$1.54)		\$0.00
Percent Difference	18%	11%	30%	0%		41%	-2%	18%	-9%		0%
Median											
Mission Valley	4.0	2.5	2,028	06/23/87	\$218,750	\$121.53	01/12/69	\$32,677	\$16.97		\$1.10
Comparables	3.5	2.0	1,572	07/15/87	\$180,500	\$111.58	07/06/69	\$26,500	\$16.79		\$1.10
Change in Value	0.5	0.5	456	(22.0)	\$38,250	\$9.95	(174.5)	\$6,177	\$0.18		\$0.00
Percent Difference	14%	25%	29%	-0%		21%	-1%	23%	1%		0%
Variance											
Mission Valley			76,600		\$390,140,909	\$216.55		\$24,453,246	\$4.50		\$0.00
Comparables			55,858		\$485,670,996	\$85.37		\$34,271,064	\$8.57		\$0.00
Change in Value			20,742		(\$95,530,087)	\$131.18		(\$9,817,818)	(\$4.07)		(\$0.00)
Percent Difference			37%			-20%		-29%	-47%		0%
Standard Deviation											
Mission Valley			277		\$19,752	\$14.72		\$4,945	\$2.12		\$0.00
Comparables			236		\$22,038	\$9.24		\$5,854	\$2.93		\$0.00
Change in Value			40		(\$2,286)	\$5.48		(\$909)	(\$0.81)		(\$0.00)
Percent Difference			17%			-10%		-16%	-28%		-40%
COMPOUND ANNUAL GROWTH RATE											
			Total Purchase Price		Price per square foot						
Mission Valley, 1968 to 1987			11.1%		11.1%						
Comparables, 1969 to 1987			10.6%		10.6%						
Change in Value			0		0						
Percent Difference			4%		4%						
APPRECIATION											
			Total Purchase Price		Price per square foot						
Mission Valley, 1968 to 1987			636.5%		641.9%						
Comparables, 1969 to 1987			514.1%		517.9%						
Change in Value			1		1						
Percent Difference			24%		24%						

The comparative analysis of the Mission Valley single family homes and similar homes located in three Fremont subdivisions provided little evidence to corroborate the hypothesis that its design added value. In fact, originally on a per square foot basis, the Mission Valley units sold at a nine percent discount when compared to the comparable units. Some of this difference might be explained by the fact that the Mission Valley sample had an average building age nearly a year older than the comparative sample. Lot size may also have been a factor. However, the comparative analysis seems to indicate that the original homebuyer was unwilling to pay a premium for the "environment created and special character"¹² of Mission Valley.

Over time, the Mission Valley units have appreciated in value at a 4.5 percent faster rate than the subdivision sample. This resulted in a 24 percent difference in value between the original purchase price and the 1987 purchase price. Some of this value differential may well be due to the 1987 homebuyer's greater willingness to pay for the design qualities of Mission Valley today. However, factors outside the study's parameters may have significantly affected the result. For example, the area Mission Valley is located is now the most desirable section of Fremont. Most of the "Mission area" housing is high end and the schools are considered the best in Fremont, according to several local

real estate brokers. Schools are an important determinant of residential property value. Changing perceptions of the area's prestige may have affected the value of Mission Valley homes more than its inherent design qualities.

Does planned unit development add greater value to new residential development? Is the appreciation in value any greater as a result of a higher level of design? In the case of Mission Valley, the design qualities created through planned unit development do not appear highly valued by either the original buyer or the current buyer. A number of factors limit the validity of this conclusion, particularly the significant differences between the average size and age of the Mission Valley and the subdivision units. The Mission Valley units averaged 440 square feet larger, a 30 percent variation. The Mission Valley units were also over a year older than the comparable sample.

CASE STUDY 2: RESTON, A NEW TOWN IN FAIRFAX COUNTY, VIRGINIA

In the 1960's, the concept of the "Garden City" first described by Ebenezer Howard in 1898 and partially developed in Radburn, New Jersey during the 1920's was resurrected. These comprehensive communities were intended to address some of the ills of the city and create an alternative living pattern for its residents. The rapid population growth and increasing amount of suburbanization following World War II renewed interest in these planned communities. Eventually, the Federal Government supported the new town development through the 1970 Title VII Federal Housing Act.

Reston was one of the few privately developed new towns. Its original developer was Robert E. Simon, Jr., who's father was a limited partner in the development of Radburn. Gulf Oil Corporation eventually took over the project. Gulf later sold the project to the Mobil Corporation. The Whittlesley & Conklin master plan for Reston achieved international acclaim and was widely published. The design concept of the first neighborhood center, Lake Anne Village, was written up in all the major architectural journals.

The "New Town" Concept

The "New Town" concept of the 1960's had its roots in the "Garden City" movement of the 1920's. The rural British company town, such as Cadbury's Bourneville built in 1895 with

its high level of town planning, was the forerunner of the "garden city". According to the movement's originator, Ebenezer Howard: "One small Garden City must be built as a working model, then a group".¹⁵ Begun in 1904, Letchworth, England was the experimental model of the Garden City concept. Howard was a social reformer who was distressed by the urban and industrial conditions of England's cities. His plan called for the creation of self-contained cities surrounded by large areas of farms, forests and recreation areas, about eight square miles (5,000 acres) in total. The 30,000 residents would live in the densely populated center (20 percent of the land area) surrounded by the open, green space (80 percent). Factories would be situated on the outer edge of the town center.

The American Garden City

Radburn, the first and best known of America's "Garden Cities", was begun in 1929 by City Housing Corporation after 1,300 acres (2 square miles) was assembled in Fairlawn, New Jersey, 15 miles west of New York City. From the beginning, due to the high price of land in the metropolitan area, the protective "greenbelt" would be sacrificed. Designed largely by Clarence Stein and Henry Wright, Sr., it incorporated many of Howard's ideas for a planned community of 25,000 to 30,000 residents. "Radburn's special place in the history of urban planning is based on its physical site plan and particularly on its unique system of handling pedestrian and vehicular

traffic."¹⁶ Other design elements included the superblock, cul-de-sacs, interior parks and a series of pedestrian pathways. According to Stein: "At Radburn, the neighborhood idea formed the basis of the town plan". Unable to attract a strong industrial base, Radburn became a "satellite" of New York.

Radburn's development began on the eve of the Great Depression Depression, (1929 - 1939) which eventually destroyed the financial resources of the well-financed City Housing Corporation. In 1934, the company declared bankruptcy and the garden city dream ended for several decades.

Today it (Radburn) consists of 149 acres, less than a quarter of a square mile, and houses 677 families, or fewer than 3,000 people. Of these, only 100 acres and about 500 families are to found in the historic area, built before 1940, the rest of its residents live in conventional₁suburban homes constructed after World War II.¹⁶

The American New Town

Following World War II, the Garden City concept was altered and renamed in reaction to the widespread suburbanization taking place, often described as "sprawl". "New Town" was the term utilized for large-scale developments and "Planned Community" was the term for smaller scale projects. Once again, the many promoters of the "New Town" were calling it a new way of life.

The new town idea has won wide acceptance at a time of confluence of several trends, events and national moods. The idea rose to national

prominence in the 1960's on the eve of the suburban population in the early 1970's becoming numerically dominant over central cities, which made even firmer the long standing suburban power dominance. Urban Renewal and the War on Poverty had failed. Racial troubles in the cities quickened White out-migration, and middle-class America is now irreversibly committed to the suburbs. But the suburbs have not proved to be the escape that many believed. Indeed, suburbanites are increasingly faced with the whole array of urban social problems that were supposedly left behind, and, in addition, a variety of new ones that hinge on the problems of low density, dependence on the automobile, and a lack of certain facilities. It is not surprising that suburbanites are interested in solutions, and new town planners and developers are providing new ones.

William Alonso wrote: "But mostly the idea of the new town has some magic that fires the imagination, stirring some Promethean impulse to create a better place and way of life, a calm and healthy community of crystalline completeness."¹⁸ The new town movement was further fueled by a statement publicized by the National Committee on Urban Growth Policy which called for the development of 100 new towns of 100,000 and 10 new cities of 1,000,000 to absorb America's projected growth of 100 million by the year 2,000.

Developers, architects and planners responded. Soon new towns were planned across the country. Some were independently financed such as Reston, Columbia, and the Irvine Ranch. Others such as Lysander and Roosevelt Island received federal aid when the Department of Housing and Urban Development extended financial backing through the 1968 (Title IV) and 1970 (Title VII) Federal Housing Acts. The federal involvement was ended in 1975 and many of the HUD-sponsored projects failed.

In 1973, **The Architectural Record** issued "a plea for planned communities":

This entire issue (December, 1973) is devoted to new towns--not because we think what has been built so far is ideal, not because we think that prospects for meaningful Federal support are good these days, and not because we think that the social goals implicit in the new town concept will be easily met--but because at a time when more and more options are being closed off, we think planned communities offer a broad and important new option in the way of living for Americans of all ages and degrees.

For architects and other professionals, new towns are a still-fresh opportunity to help create a way of living that is more rational, more rewarding, and maybe even more fun--on a scale that is rarely offered. It will not be easy--indeed the rules of the game are not yet clear.

Over-all the editors hope this issue argues a positive case. For in a world in which there is too little idealism, far too little concern for land planning and land use, and almost no effective social planning, new towns offer new hope. Both for the poor and for the growing body on middle-income families who search for a fresh option in their way of living.

The New Town of Reston

Robert Simon conceived and was the early developer of Reston. He financed the purchase of the 6,750 acre site through the sale of Carnegie Hall in New York City. The consulting firm of Arthur D. Little issued the following opinion in a 1962 feasibility study of Reston.

The location of the site, the topography of the land, the likely increase in population, the prospective economic growth of the region, and the potential advantages of a carefully planned community combine to suggest that by 1980 Reston can be developed to house, educate, and employ a population of 75,000.²⁰

The Reston site was 23 miles west of the District of Columbia and five miles east of the planned Dulles International Airport. The Dulles Airport access road would bisect the site.

Reston's site was a former brewery located in the wooded, rolling hills of western Fairfax County, Virginia. The former owners, the Bowmans, had retained the Washington planning firm of Mott and Hayden to prepare a master plan for a satellite city of 30,000. This proposed use made sense as the site was within the major growth corridor projected in the Year 2000 Plan prepared by the Capitol Region Planning Council.²¹

Development History

Simon's father was a minor partner in the development of Radburn. As a child, he had helped name the streets. He became interested in the post-War new town, believing, the future would be an age of leisure, "but it must also be an age of planning what we want to do with our newly won time."²¹

Simon was immediately interested in the Fairfax County new town site. He purchased the 6,750-acre site in 1961 for \$12,800,000. The firm of Harland Bartholomew and Associates was retained to prepare a new master plan. The St. Louis firm had been involved in the planning of 150 New Towns throughout the world. Their proposed plan for Reston entailed 13 neighborhoods of 5,000 each which was not acceptable to with Fairfax County officials. The Fairfax County zoning then in effect was not flexible enough to handle the development requirements of a New Town. According to Simon:

Our present zoning ordinances are largely responsible for the diffusion of our communities into separate, unrelated hunks without focus, identity or community life. They have helped to promote chaos on our highways, monotony in our subdivisions, ugliness in our shopping centers."²¹

Design Features

Since the Bartholomew plan was not viable, Simon turned to the small firm of Whittlesley & Conklin. The firm's co-founder, Whittlesley had worked with Clarence Stein, the creator of Radburn. William Conklin in collaboration with James Roussant came up with the mixed-use plan which was implemented for Reston's development. The plan consisted of seven neighborhood centers of 10,000 each to better achieve the desired "urban feel". It became a model for the mixed-use concept.

In 1964, The Architectural Record described the major elements:

In essence, the master plan for this tract is extremely simple. The Dulles Airport access highway and a railroad bisect the site from east to west. Route 602 runs north and south, and its point of intersection with the highway and railroad is the location of the future main town center. Also from north to south run what William Conklin calls "high-density sinews" of housing surrounded by lower density housing and areas set aside for parks, recreation, and various community functions. Land along the airport highway has been reserved for light industry and government offices. Automobile circulation is by loop roads around the periphery of each area; pedestrian circulation by walkways to, and through, the high density sinews.²²

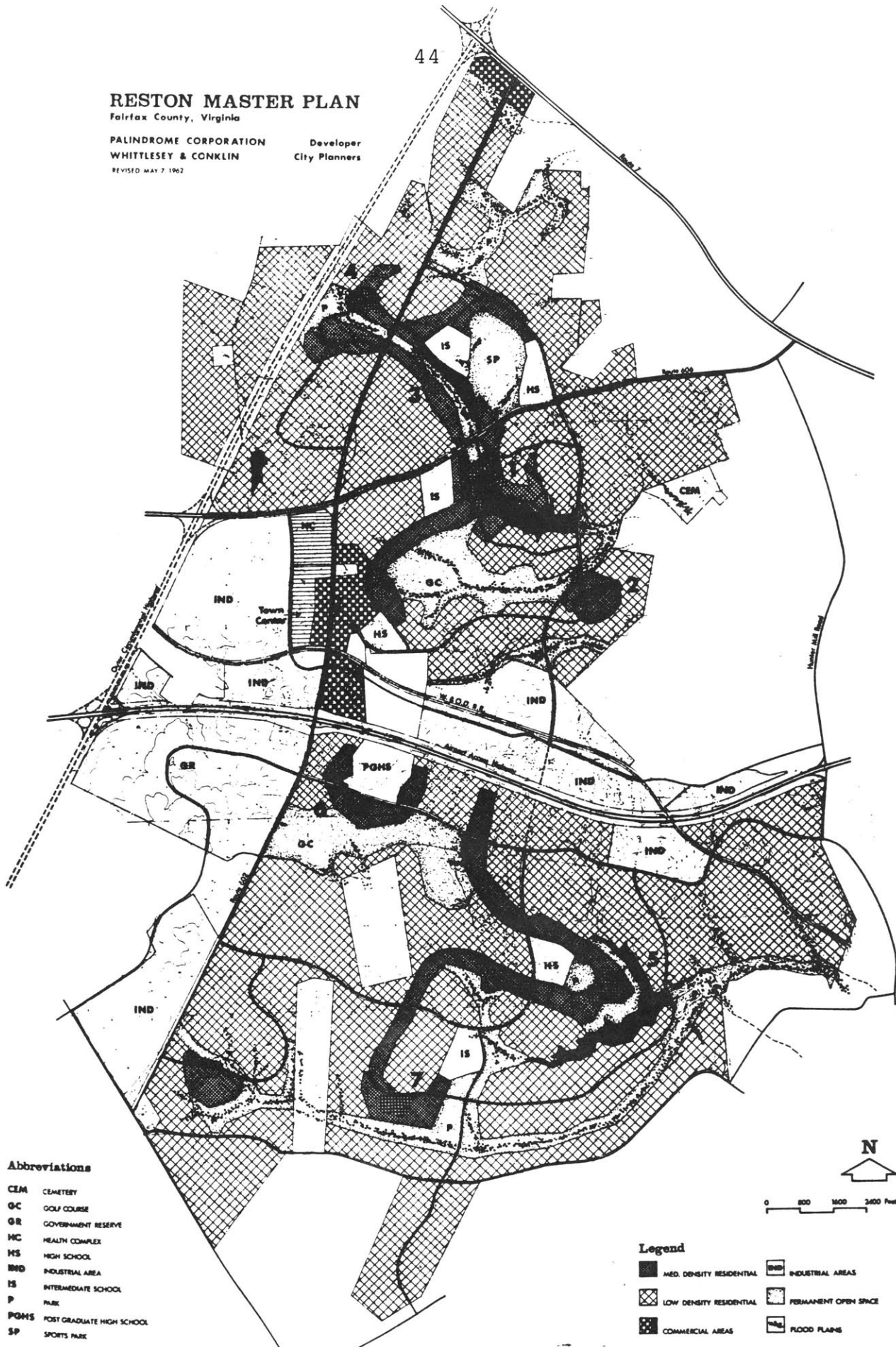
A copy of the original Whittlesley & Conklin master plan map for Reston is located on the following page

RESTON MASTER PLAN

Fairfax County, Virginia

PALINDROME CORPORATION
WHITTLESEY & CONKLIN
REVISED MAY 7, 1962

Developer
City Planners

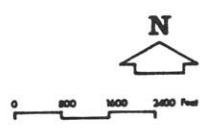


Abbreviations

- CIM CEMETERY
- GC GOLF COURSE
- GR GOVERNMENT RESERVE
- HC HEALTH COMPLEX
- HS HIGH SCHOOL
- IND INDUSTRIAL AREA
- IS INTERMEDIATE SCHOOL
- P PARK
- PGHS POST GRADUATE HIGH SCHOOL
- SP SPORTS PARK

Legend

- [Solid black box] MED. DENSITY RESIDENTIAL
- [Cross-hatched box] LOW DENSITY RESIDENTIAL
- [Dotted box] COMMERCIAL AREAS
- [Diagonal hatched box] INDUSTRIAL AREAS
- [Stippled box] PERMANENT OPEN SPACE
- [Wavy line box] FLOOD PLAINS



At the time of Reston's inception, Fairfax County zoning for the area was two acres. The planners, Whittlesley and Conklin, with the county drafted a model density ordinance which was called Zoning for a Residential Planned Community. The ordinance embodied the following points:

1. By keeping the net lot area assigned to each individual housing facility to a practical minimum, RPC Zoning permits a higher proportion of land to be devoted for public use. Density zoning permits combining the open space normally associated with each building type into common space more usable and attractive to the community as a whole.
2. RPC Zoning permits the mixture of housing and commercial uses and the introduction of high-rise buildings in close conjunction with courtyard houses, town houses and other building types.
3. RPC Zoning makes possible the separation of vehicular and pedestrian circulation, providing safer travel for children to and from school and easy pedestrian access to shops and other facilities.
4. In low density development RPC Zoning permits clustering of dwelling units, creating³ a far more open appearance and preserving trees.

The principle's behind RPC Zoning and represented by the master plan were adopted by Fairfax County in July 1962. The County imposed planning standards that required 10 acres of parks per 1,000 people (twice the national standard), the land set aside for industry be reduced from 1,512 to 914 acres, and an overall density limit of 11 persons per acre.

Phase I: Lake Anne Village - Town Houses

According to the Master Plan and Simon's marketing plan, each village would have an elaborate "motif". Lake Anne would have boating and water-related sports on the lake. Tall Oaks would be built above some steep ravines inspired by hill towns in Europe. Hunter Woods would have an equestrian theme with horse trails leading to its shopping center.²³

For the first village, a site was selected near Route 606 with a low spot where a man-made lake could be created.

Around the lake, the planners proposed there would be a village center with apartments and even a child-care center above the supermarket. There would also be town houses along the quay, with a 15-story apartment building providing an architectural exclamation point at one corner of the lake. On the opposite shore would be more town houses, completing the boldly urban statement. This was not suburbia. Nor was it, with its provocative mix of buildings and openspace, the city. It was something different. It was the new town of Robert Simon's specification.²¹

The architecture and design of Lake Anne Village was much heralded. The master plan was created by Conklin and Roussant who also designed the Chimney House town house cluster, the apartment tower and the semi-circular mixed use concept of apartments over commercial and civic facilities. Charles M. Goodman designed the Hickory Cluster and Chloethiel Woodard Smith designed the Waterview Cluster.

The three clusters of Lake Anne Village were described by Simon as "Vanilla, Chocolate, and Strawberry", something for everyone's taste. The 90 lakeside town houses of Waterview had pastel hues and tin roofs suggesting a French fishing village. The Hickory cluster's 90 town houses used bold colors and strong vertical and horizontal lines to create a more contemporary, urban sense. The Chimney House with its 47 town houses and Gothic detail created a different, quiet urban statement. Altogether, the 227 town houses had 37 different floor plans, required special mill work, and many non-standard construction materials. The overall density was 14 people per acre.

The Arthur D. Little study in 1961 found a market in the \$16,000 to 23,000 range.²⁰ By 1964, the actual sales prices ranged from \$23,900 to \$45,000. The average was \$34,000. The town house sales were very slow.²⁴

Phase II: Hunter Woods - Single Family

The second phase of Reston was a more conventional, single-family development called Hunter Woods on the other side of Reston. This phase had an equestrian theme which Simon thought would attract the Virginia horse-set. An elaborate stable was built with miles of riding paths. The street names followed same theme, like Colts Neck Road and Trotter Lane. The lots were one-quarter to two acres in size. The overall density was 3.8 persons per acre. Most

lots were sold to local home builders for development. Each lot had a deed restriction delineating the location of the house and ancillary buildings in order insure that no house was built which blocked the view of any other house.

The equestrian theme was not a success! The Virginia horse-set preferred more private five to ten acre home sites. The expensive stable eventually fell down from disuse. Splitting Reston's development into two separate sections also created very expensive infrastructure requirements including roads, sewer, pedestrian trails and a golf course.

The End of Reston's First Era

Simon initially secured a \$15,000,000 loan from Morgan Guaranty Trust Co. of New York for the development of Reston. This loan was guaranteed by Gulf Oil Company of Pittsburgh. Reston was Gulf's first real estate investment. By 1967, as a result of slow sales of the Lake Anne Village town houses and high infrastructure demands created by the Hunter Woods development, the loan balance had grown to \$18,750,000 and Gulf was paying \$500,000 monthly to meet payroll and other expenses. Gulf took over Reston, replacing Simon as President and Chief Operating Officer with a marketing consultant, Robert H. Ryan from Cabot, Cabot and Forbes. Simon was asked to remain as Chairman of the Board of Gulf-Reston, Inc. In 1968, Simon was let go from all Reston involvement. William Magness, a Gulf executive, later succeeded Ryan. During this

period, Reston was developed largely in accordance with the Whittlesley master plan.

In 1975, parent company problems caused Gulf Oil to sell all its real estate interests, including Reston. Meanwhile, Mobil Oil was looking to diversify into real estate. It had just lost on the Irvine Ranch auction, a new town south of Los Angeles. Gulf sold the 3,700 undeveloped acres of Reston to Mobil for \$31 million (\$8,278 per acre) in 1978. It later sold its all its remaining Reston interests of retail, apartments and industrial to a Bethesda investment firm, Donatelli and Klein, Inc. for \$40 million.

Reston Today

Mobil Oil continues to develop Reston through its subsidiary, Mobil Land Development Corporation. As of March, 1989, 52,674 people lived in Reston with approximately 18,215 residential units completed. The final buildout is expected to be 21,000 residential units with 62,000 residents. This figure is expected to be achieved in the mid-90's.²⁵ The original Whittlesley and Conklin master plan was for 75,000 residents with a projected completion in 1980.

Over 1400 companies are located in Reston employing 31,000 people. Forty percent of the employees also live in Reston.

Reston has 1,000 acres of open space. Recreational facilities include 16 swimming pools, 42 tennis courts, 44 ball fields, a health and fitness center, a public golf course, a private golf course, 50 miles of walk and bike ways, four lakes and 11 picnic areas.

Access along the Dulles Airport highway was finally achieved through the development of the Dulles Toll Road, approved by the Virginia General Assembly in 1979. Tyson's Corners, Fairfax County's fastest growth area is five miles east of Reston on the Dulles Toll Road.

In early 1989, Mobil announced its plan to build the Reston Town Center. The 10-year project is planned for an 85-acre site and is supposed to serve as the "urban core" of Reston. The program elements include 400,000 square feet of retail space, 2.1 million square feet of office space, two hotels with 1200 rooms and 600 residential units.²⁶ The first phase, scheduled to open in the fall of 1990, was designed by RTKL Associates, Inc of Baltimore. It includes two 11-story office towers, a 515-room Hyatt Hotel, 75 retail outlets, eight restaurants, an 11-screen theater and parking for 2,100 automobiles. The landscape architect is Sasaki Associates, Inc. of Watertown, Massachusetts.

Fairfax County, Virginia

In Virginia, the county magisterial system of government is very strong. The county, for the most part, determines taxation, zoning, administers the public schools, road construction and maintenance and other functions more often organized on the local level. Reston, as a result, does not have a local government. Its strongest government identifier is its Post Office and zip code designation. The Fairfax County Planning Department played an important role in the development of Reston.

Fairfax County has a gross area of 402 square miles. It is located directly west of the District of Columbia. Until 1800, Alexandria and Arlington were part of Fairfax County. Mount Vernon, the home of George Washington is located within its boundaries. In 1962, the Arthur D. Little Report stated:

Reston is located in one of the country's fastest growing counties. Population projections for Fairfax County point to an increase of 425,000 people between 1960 and 1980, thus bringing the County's total to over 700,000 or almost one-quarter of the Washington Metropolitan Area's anticipated 1980 population.²⁰

The study went on to project that 20 percent of this growth could be accommodated in Reston.

In 1960, the Fairfax County population was 248,897. The 1970 population was 455,021 located in 126,500 households. Fairfax County had a net in-migration of 150,000 people between 1960 and 1970. By 1980, the population had grown to

596,901 located in 205,166 households. The estimated Fairfax County population in 1987 was 715,400 in 259,600, finally surpassing the Arthur D. Little forecast.²⁷ The table below contains a distribution of Fairfax County housing by Unit Type.

TABLE 4
FAIRFAX COUNTY HOUSING UNITS
1960-1985

Type	<u>1960</u>	<u>1970</u>	<u>1985</u>
Single-Family Detached	59,300	91,100	139,800
Single-Family Attached	3,000	6,400	47,000
Multifamily	6,900	33,200	48,600
Total	69,200	130,700	245,400

Source: Fairfax County Office of Research and
Statistics, 1985 Fairfax County Profile

Comparable Fairfax County Subdivisions

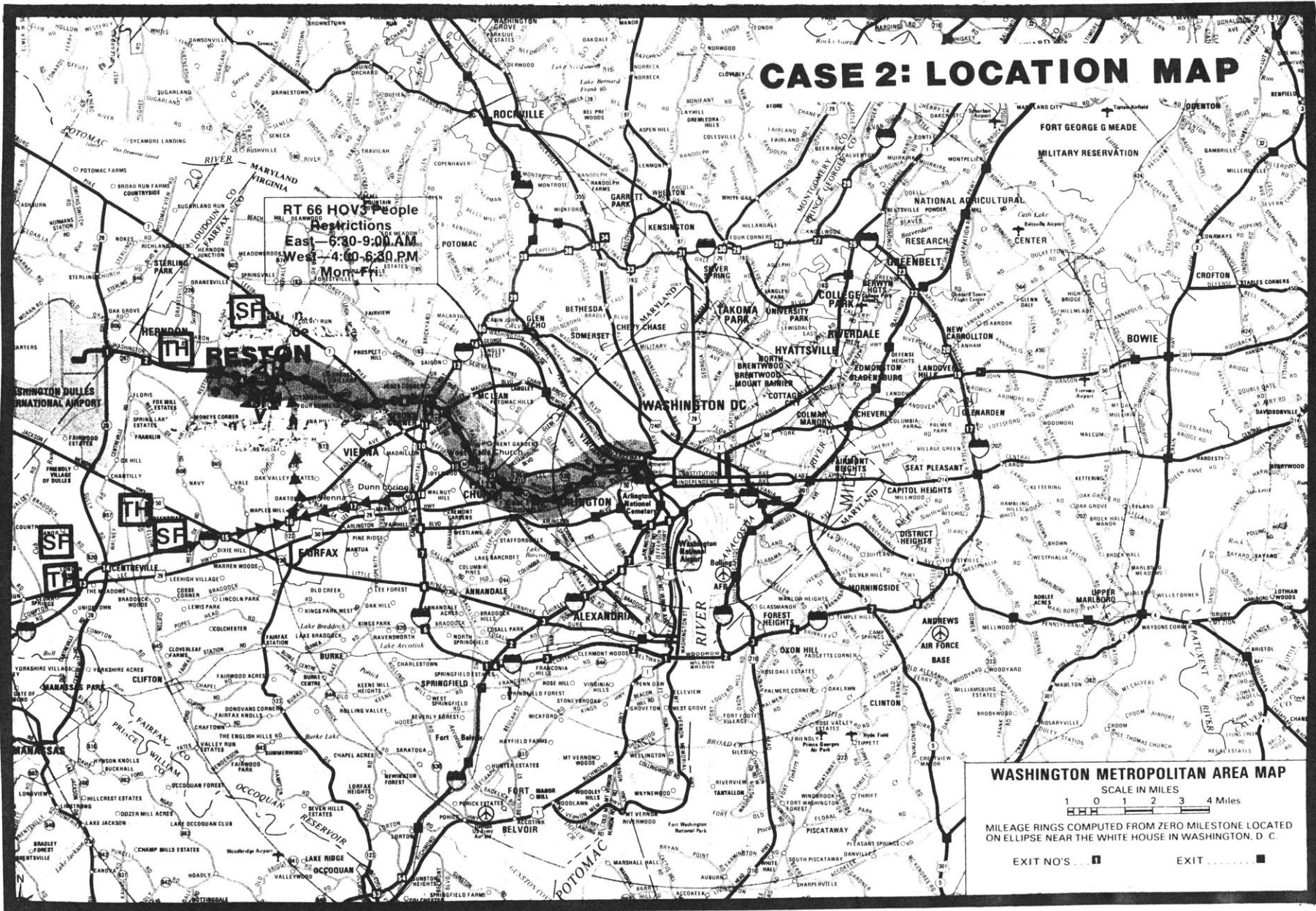
The planning efforts of Fairfax County are organized into 14 planning districts rather than the more typical network of cities and towns. Through the assistance of the Fairfax County Office of Research and Statistics, a computer search of their records was done to identify comparable single family and town house units built during the initial development period of Reston, 1965 to 1970. For comparative purposes, the three planning districts: Bull Run, Pohick and Upper Potomac, located in the western end of Fairfax County were chosen. This western end of Fairfax County was comparatively rural like the Reston site. Reston is located in Upper Potomac Planning District. These three districts have the same transportation pattern, population density and relative location with regard to the Washington metropolitan area as Reston. The eastern end of Fairfax County abutting Arlington and the District of Columbia is much more urban. The actual comparative sample utilized only the Bull Run and Upper Potomac Planning Districts.

Comparative single-family subdivision and town house developments were identified from the computer printout supplied by the Office of Research and Statistics which listed approximately 2,500 units. The map on the following page indicates the location of these developments in relationship to Reston. Reston was the only major development taking place during this period in western Fairfax County. Dulles International Airport was still under development along with

most of the highway system. The comparable units are located in small subdivisions scattered throughout the western end of Fairfax County.

CASE 2: LOCATION MAP

RT 66 HOV's People Restrictions
East - 6:30-9:00 AM
West - 4:00-6:30 PM
Mon-Fri



WASHINGTON METROPOLITAN AREA MAP
SCALE IN MILES
1 0 1 2 3 4 Miles
MILEAGE RINGS COMPUTED FROM ZERO MILESTONE LOCATED ON ELLIPSE NEAR THE WHITE HOUSE IN WASHINGTON, D. C.
EXIT NO'S ■ EXIT ■

Comparative Analysis Results

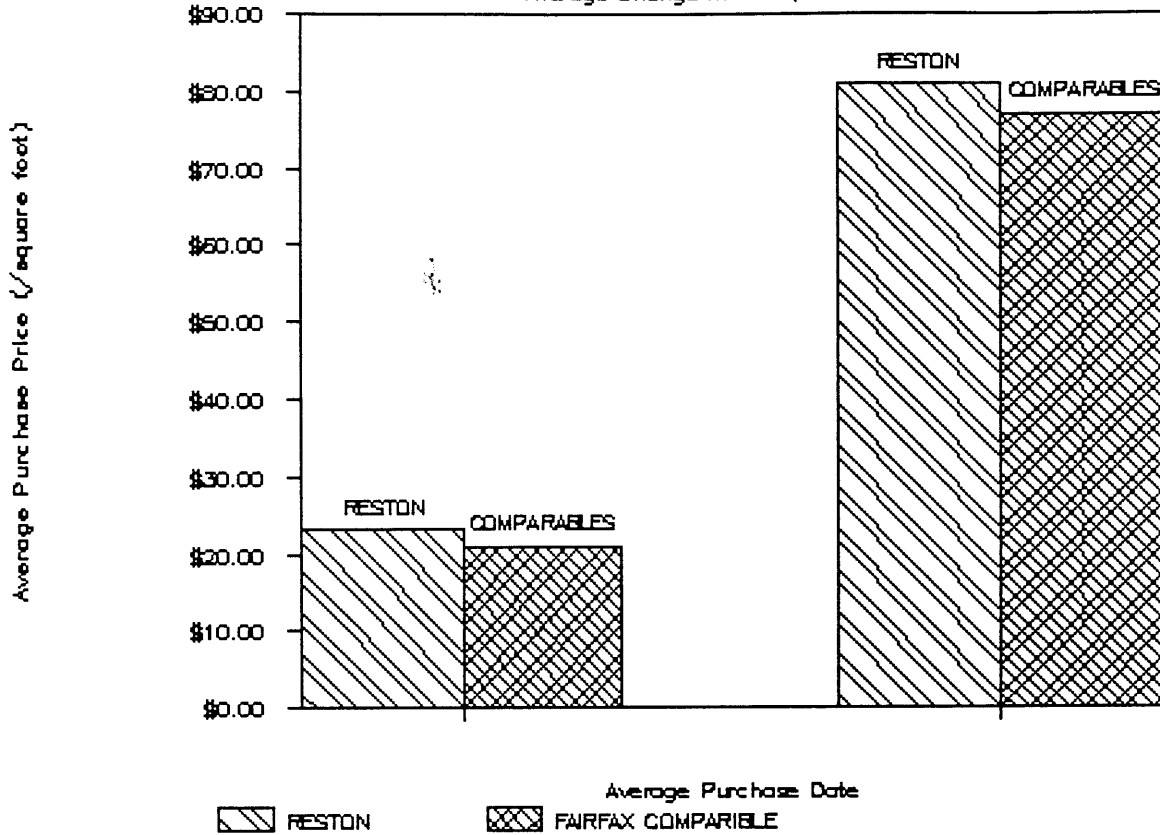
A sample of 27 usable records was analyzed. Over 50 were originally researched but had to be rejected for various reasons. The sample represented only units sold at assumed fair market value during 1987 and whose original purchase price could be tracked through Fairfax County Land Records. The housing units selected for case study evaluation were all built during Reston's initial period of development, 1965 to 1968 when Simon had control.

Information regarding the size and configuration of the units was gained through the Fairfax County Assessors Office. The sample was then divided into single-family and town house units for analysis purposes.

The two graphs on the following page summarizes the change in value which took place between the original purchase price and the 1987 sales price, on a per square foot basis for both the single-family and town house samples. Analysis of the historical and incremental increase in the selling price of the town house units and single family units showed a distinct difference in the market's willingness to pay.

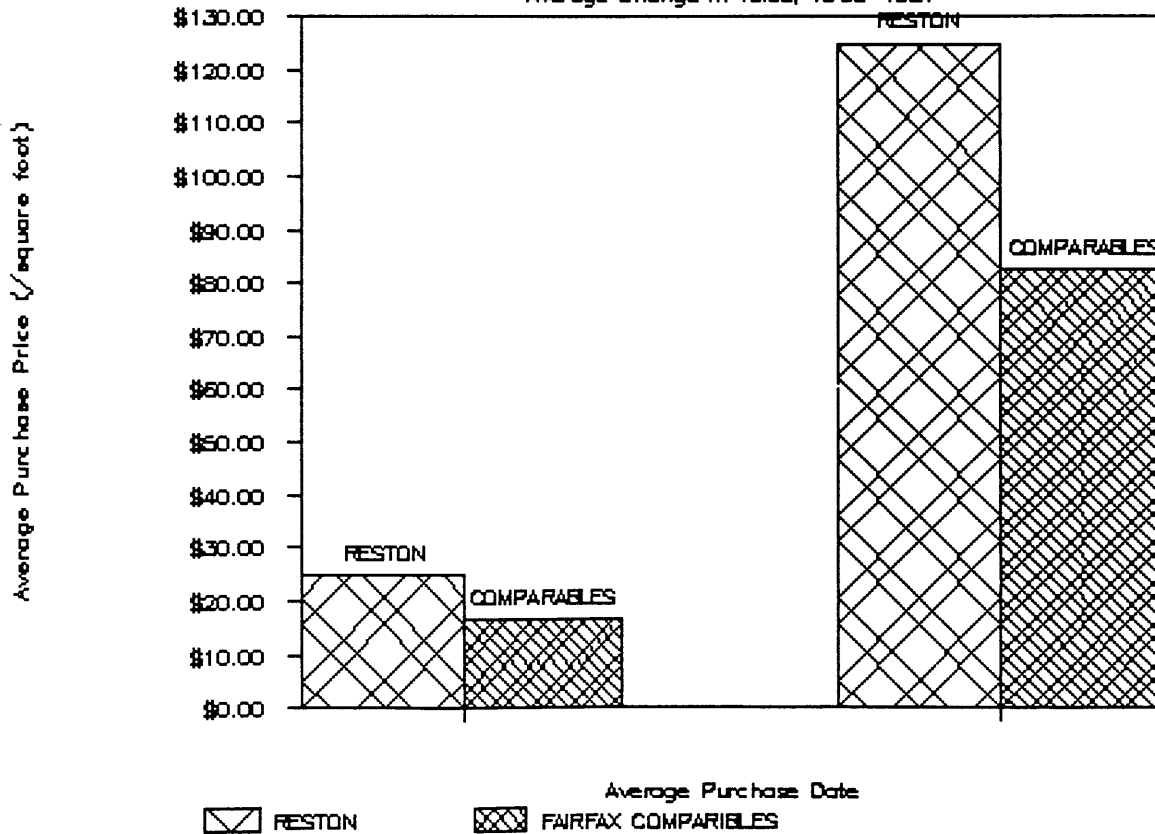
CASE 2: RESTON TOWN HOUSES

Average Change in Value, 1965-1987



CASE 2: RESTON SINGLE-FAMILY

Average Change in Value, 1965-1987



Town House Sample

The town house sample analyzed was comprised of nine Lake Anne Village townhouses and six comparable town house units of a similar age located in three western Fairfax County town house developments. These comparative town houses were quite typical in design, all two story, located in small clusters with a pseudo-Georgetown motif. The Reston town house, by contrast, were individually designed by prominent architects. Surprisingly, on a per square foot basis, there was only a 10 percent variation in original selling price between the Reston town houses and the Fairfax County Comparable town houses.

Even more startling, the Reston town houses appreciated between 1966 and 1967 at an annual rate that was eight percent slower than the comparative sample. As a result, in 1987, there was only a five percent difference in value, on a per square foot basis, between the two town house samples. The highly regarded Lake Anne Village town house are now selling at only a five percent premium over the comparable town houses of no particular architectural merit, a differential of \$3.75 per square foot of building.

The table and graph on the following page summarizes the results of the valuation analysis. A more detailed worksheet is found in appendix B.

CASE STUDY 2: THE NEW TOWN OF RESTON

TABLE 5
COMPARATIVE ANALYSIS SUMMARY

TOWN HOUSE UNITS	Story	Size (sf)	Site (sf)	1987		Price	Price/sf (Building)	Price/sf (Site)	Original Purchase	Price	Price/sf (Building)	Price/sf (Site)	Transfer Tax	Tax Rate /\$1,000
				Sales Date	Price									
Average														
Reston	2.0	1,573	2,114	08/05/87	\$124,767	\$80.83	\$68.55	05/17/68	\$35,546	\$23.18	\$19.52	\$0.00	\$1.28	
Comparable	2.0	1,301	2,710	04/26/87	\$100,092	\$77.07	\$37.63	05/13/69	\$27,369	\$21.00	\$10.31	\$0.00	\$1.43	
Difference	0.0	272	(596)	100	\$24,675	\$3.75	\$30.91	(361)	\$8,178	\$2.18	\$9.21		(0.16)	
Percent	0%	21%	-22%	0%	25%	5%	82%	-1%	30%	10%	89%		-11%	
Median														
Reston	2	1,512	2,269	07/09/87	\$125,000	\$81.57	\$73.37	11/17/68	\$32,950	\$23.31	\$22.33		\$1.30	
Comparable	2	1,284	2,792	04/13/87	\$105,300	\$76.27	\$39.34	12/26/69	\$28,856	\$21.83	\$11.26		\$1.30	
Difference	0	228	(523)	87	\$19,700	\$5.30	\$34.03	(404)	\$4,094	\$1.48	\$11.07		\$0.00	
Percent	0%	18%	-19%	0%	19%	7%	86%	-2%	14%	7%	98%		0%	
Variance														
Reston		73,024	837,724		\$267,837,500	\$191.66	\$723.00		\$37,387,241	\$31.87	\$69.83		\$0.04	
Comparable		8,491	124,871		\$68,190,417	\$66.56	\$50.42		\$17,452,550	\$6.12	\$6.40		\$0.03	
Difference		64,533	712,853		\$199,647,083	\$155.10	\$672.58		\$19,934,691	\$25.74	\$63.42		0.02	
Percent		760%	571%		293%	424%	1334%		114%	421%	991%		67%	
Standard Deviation														
Reston		270	915		\$16,366	\$13.84	\$26.89		\$6,115	\$5.64	\$8.36		\$0.21	
Comparable		92	353		\$8,258	\$6.05	\$7.10		\$4,178	\$2.47	\$2.53		\$0.16	
Difference		178	562		\$8,108	\$7.80	\$19.79		\$1,937	\$3.17	\$5.83		0.05	
Percent		193%	159%		98%	129%	279%		46%	128%	230%		29%	
COMPOUND ANNUAL GROWTH														
Average Selling Price	Total		per square foot											
Reston, 1966 to 1987	6.16%		6.13%											
Comparables, 1967 to 1987	6.70%		6.39%											
Difference	-0.54%		-0.26%											
Percent	-8.01%		-4.06%											
APPRECIATION														
Average Selling Price	Total		Percent		Building per square foot		Percent							
Reston, 1966 to 1987	\$89,220		251.00%		\$57.65		248.68%							
Comparables, 1967 to 1987	\$72,723		265.72%		\$56.08		267.03%							
Difference	\$16,497		-14.72%		\$1.57		-18.35%							
Percent	22.69%		-5.54%		2.80%		-6.87%							

In 1968, Gulf Oil seized control of Reston's development due to rising development costs caused in large part by slow sales. A 1972 Research Monograph on the New Community Design and Development summarized the situation:

Simon's principal financial backer was Gulf Oil Corporation, but by the summer of 1965, nearly \$50 million had been invested, but only 180 units had been put on the market and about 50 of these sold. To protect its \$45 million investment, the refining firm assumed control and recent development at Reston has been less flamboyant, but sales have improved dramatically. The base price in 1970 for a house was \$25,400 for a three-bedroom town house, and the range extended to \$60,000 or more. (Kling Planning, "A Research Monograph on New Community Design and Development", Philadelphia, PA 1972)

Based on this information and the results of the comparative analysis, it appears that the market has rejected "the new way of life" represented by the design and development of Lake Anne Village.

Single-Family Sample

The results of the single-family analysis reveal a much different valuation of Reston's attributes. The original purchasers of Reston homes were willing to pay a 50 percent premium, on a per square foot basis to live in Reston. By 1987, this premium had increased to 52 percent indicating continued market support for the planned community.

In total a sample of 12 single-family residences was

analyzed. Five located in Hunter Woods, Reston's first single-family area, and seven were located in western Fairfax County subdivisions. The table below summarizes the analysis results. A more detailed worksheet is located in Appendix B.

The Reston single-family homes were not custom designed for the most part. Most were developed by local builders, the same ones who might have built the houses in the comparable subdivisions. The house sizes were nearly identical. The Reston lot size was nine percent larger, about 1,250 square foot. The main difference was the open space and community facilities found at Reston which appear highly valued by the Reston Single-Family owner.

Other than a nine percent larger lot size in Reston, there is little difference in the house size and quality of those built in Reston or a Fairfax County subdivision. Does development of a "new town" add greater value to new residential development? Is the appreciation in value any greater as a result of a higher level of design? The market has apparently rejected the clustered housing of the planned village concept but embraced the open space and community facilities offered in the high premium paid for the purchase of a single family home in Reston.

CASE STUDY 2: THE NEW TOWN OF RESTON

TABLE 6
COMPARATIVE ANALYSIS SUMMARY

SINGLE-FAMILY, DETACHED UNITS	Story	Size (sf)	Site (sf)	1987		Price	Price/sf (Building)	Price/sf (Site)	Original Purchase	Price	Price/sf (Building)	Price/sf (Site)	Transfer Tax	Tax Rate /\$1,000
				Sales Date										
Average														
Reston	1.4	1,768	15,538	08/12/87		\$214,170	\$124.93	\$13.92	08/04/66	\$41,932	\$24.70	\$2.73		1.10
Comparable	1.6	1,786	14,289	07/23/87		\$146,686	\$82.38	\$11.51	07/12/67	\$29,235	\$16.42	\$2.36		1.27
Difference	(0.2)	(18)	1,249	20		\$67,484	\$42.55	\$2.41	(342)	\$12,697	\$8.28	\$0.37		(0.17)
Percent	-11%	-1%	9%	0%		46%	52%	21%	-1%	43%	50%	16%		-13%
Median														
Reston	1.5	1,776	14,917	08/17/87		\$214,500	\$125.85	\$13.69	11/07/66	\$40,750	\$24.65	\$2.86		1.10
Comparable	1.5	1,794	18,338	08/13/87		\$160,000	\$88.36	\$10.01	05/03/67	\$29,250	\$16.12	\$2.08		1.30
Difference	0	(18)	(3,421)	4		\$54,500	\$37.49	\$3.67	(177)	\$11,500	\$8.52	\$0.78		(0.20)
Percent	0%	-1%	-19%	0%		34%	42%	37%	-1%	39%	53%	37%		-15%
Variance														
Reston		128,415	3,391,169			\$798,519,500	\$792.97	\$5.16		\$10,614,153	\$37.40	\$0.18		0.00
Comparable		3,964	56,639,870			\$865,788,095	\$314.00	\$7.79		\$13,391,575	\$5.70	\$0.52		0.05
Difference		124,451	(53,248,700)			(\$67,268,595)	\$478.97	(\$2.63)		(\$2,777,422)	\$31.69	(\$0.34)		(0.05)
Percent		3139%	-94%			-8%	153%	-34%		-21%	556%	-66%		-100%
Standard Deviation														
Reston		358	1,842			\$28,258	\$28.16	\$2.27		\$3,258	\$6.12	\$0.42		0.00
Comparable		63	7,526			\$29,424	\$17.72	\$2.79		\$3,659	\$2.39	\$0.72		0.21
Difference		295	(5,684)			(\$1,166)	\$10.44	(\$0.52)		(\$402)	\$3.73	(\$0.30)		(0.21)
Percent		469%	-76%			-4%	59%	-19%		-11%	156%	-42%		-100%
COMPOUND ANNUAL GROWTH														
Average Selling Price														
	Total		per square foot											
Reston, 1966 to 1987	8.07%		8.03%											
Comparables, 1967 to 1987	8.40%		7.98%											
Difference	-0.32%		0.04%											
Percent	-3.86%		0.53%											
APPRECIATION														
Average Selling Price														
			Building											
			per square foot		Percent									
Reston, 1966 to 1987	\$172,238	410.76%	\$100.23		405.87%									
Comparables, 1967 to 1987	\$117,451	401.75%	\$65.96		401.72%									
Difference	\$54,787	9.01%	\$34.27		4.14%									
Percent	46.65%	2.24%	51.96%		1.03%									

V. SUMMARY

This was a first attempt to discern, utilizing comparative analysis, the value created through "good design". During the study, the question became, "Was the homebuyer willing to pay a premium for development with good design characteristic?" The two projects selected for study, Reston and Mission Valley were publicly recognized for their design quality. The overall study results were inconclusive.

In the case of Mission Valley, the original buyer seemed to disregard its design qualities, yet the developer believes these qualities resulted in accelerated sales. Over time, Mission Valley units have appreciated at a faster rate than the units located in area subdivisions, a possible result of its design character.

At Reston, the homebuying market appears to have rejected the urban design concept of an urban village in the countryside as embodied in the Lake Anne development. The town houses, designed by famous architects in an award winning site plan sold at very small premium over the typical row house of the area. The slow sales of Lake Anne Village were also a major factor in Gulf's takeover of the project. The Architectural Record commented during Reston's initial development: "It remains to be seen whether this type of urban living in the country will be accepted by the public." It certainly would seem that the homebuyer did not value this style of living in the case of the Lake Anne town houses.

However, the homebuying market strongly supported the single-family component of Reston through its willingness to pay a 50 percent premium for a home in Reston. The single-family homebuyer valued and continues to value the new town attributes of Reston. Traditionally, the largest portion of the single-family market is composed of couples with children. These families obviously place a much higher value on the open space and recreational facilities of Reston than the town house dwellers. Other factors may also contribute such as schools.

As a first attempt, there is some merit to the study's format and methodology. Real estate markets are quite local. The housing value of identical units in even neighboring towns can vary quite significantly. By comparing units located in subdivisions within the same area, this study tries to control this factor. Housing preferences and amenities also change over time, hence the focus on subdivisions built during the same period as the subject project. The homebuyer will often pay a substantial premium for "new" construction.

Problems with the comparative approach arose mainly through the nature of the land record available. They were designed to track title to a particular land parcel of land and contain no little descriptive information of the "improvements" that are built on the parcel. Having to track the title through multiple transfers is a time consuming process that results in a high level of rejection. Approximately 10 percent of the records reviewed were actually

used in the final sample. Only 25 percent of the records actually tracked were useable in the final sample. Selection of a single transaction year, in this case, 1987, also limits the number of usable records available, especially in a smaller scale development like Mission Valley. However, this method tends to dampen the effect the rapid escalation in houses prices which took place in both Fremont and Fairfax county in recent years.

Due to the small size of the resultant samples, it was not appropriate to employ sophisticated statistical techniques such as hedonic modeling. A larger sample, perhaps tracking several years of recent sales might provide more compelling support for the hypothesis that "good design" adds value.

An implicit assumption was that the two projects selected for study, Mission Valley and Reston were examples of good design. In fact, both had received public recognition for their design. However, a case might also be made for "good design" in whose view. When the projects were designed and developed in the late 1960's, urban sprawl in the form of rapidly spreading suburbanization was the subject of much concern by the planners and architects of the period. Recent articles and books written on our suburbs seem to be describing a totally different phenomena than the process formerly described "sprawl". Ultimately, the homebuyer is the final judge of "good design" since in the words of Sullivan, to ignore money value "would be moonshine".

VI. APPENDICES

Appendix A: Detailed Worksheet for Mission Valley Case

Appendix B: Detailed Worksheets for Reston Case Town House
and Single-Family Detached

APPENDIX A
CASE STUDY 1: MISSION VALLEY, A PLANNED UNIT DEVELOPMENT

Detailed Comparative Analysis Worksheet

Mission Valley: Single-Family, Detached											
Record Address	Bedroom	Bath	Size (sf)	Sales Date	1987 Price	Building Price/sf	Original Purchase	Original Price	Building Price/sf	Transfer Tax	Tax Rate /\$1,000
1 40,471 Andorra Ct	4	2	2,000	08/05/87	\$230,000	\$115.00	08/29/66	\$29,500	\$14.75	\$32.45	\$1.10
2 290 Carmelita Pl	4	3	2,120	09/15/87	210,000	99.06	05/22/72	41,500	19.58	45.65	1.10
3 40,002 Catalina Pl	5	3	2,500	08/11/87	240,000	96.00	11/25/68	35,000	14.00	38.50	1.10
4 40,130 Lucinda Ct	3	2	1,555	08/21/87	195,000	125.40	11/25/68	25,500	16.40	28.05	1.10
5 626 San Carlos Pl	3	2	1,555	09/02/87	205,000	131.83	11/10/67	31,000	19.94	34.10	1.10
6 40,184 San Carlos Pl			2,000	05/29/87	224,000	112.00	12/18/67	30,000	15.00	33.00	1.10
7 39,863 San Moreno Ct			1,700	09/11/87	250,000	147.06	01/22/70	23,855	14.03	26.24	1.10
8 40,298 San Sebastian	3	2	1,700	04/03/87	187,500	110.29	07/10/70	25,000	14.71	27.50	1.10
9 883 Seville Pl	4	2	2,000	03/31/87	210,500	105.25	09/05/65	29,500	14.75	32.45	1.10
10 40,436 Seville Ct	4	2	1,950	09/01/87	230,000	117.95	04/07/67	29,000	14.87	31.90	1.10
11 40,432 Valencia Ct	4	2	2,000	07/14/87	237,000	118.50	01/24/67	28,591	14.30	31.45	1.10
Average	3.8	2.2	1,916	07/19/87	\$219,909	\$116.21	06/23/68	\$29,859	\$15.67		\$1.10
Median	4.0	2.5	2,028	06/23/87	\$218,750	\$121.53	01/12/69	\$32,677	\$16.97		\$1.10
Variance			76,600		\$390,140,909	\$216.55		\$24,453,246	\$4.50		\$0.00
Standard Deviation			277		\$19,752	\$14.72		\$4,945	\$2.12		\$0.00

Fremont Subdivision: Single-Family, Detached											
Record Address	Bedroom	Bath	Size (sf)	Sales Date	1987 Price	Building Price/sf	Original Purchase	Price	Building Price/sf	Transfer Tax	Tax Rate /\$1,000
1 2,513 Abaca Way - MW	4	2	1,750	11/04/87	\$170,000	\$97.14	12/15/71	\$32,318	\$18.47	\$35.55	\$1.10
2 2,543 Abaca Way - MW	4	2	1,625	01/30/87	152,000	93.54	09/07/72	33,000	20.31	36.30	1.10
3 2,563 Abaca Way - MW	3	2	1,400	09/11/87	157,000	112.14	11/16/71	29,500	21.07	32.45	1.10
4 2,593 Abaca Way - MW	2	2	1,400	07/09/87	146,000	104.29	01/13/72	26,500	18.93	29.15	1.10
5 2,146 Gomes Road - MW	4	2	1,625	06/25/87	155,000	95.38	11/12/70	30,000	18.46	33.00	1.10
6 2,417 Gomes Road - MW			1,700	08/26/87	172,500	101.47	11/17/70	33,000	19.41	36.30	1.10
7 41,065 Joyce Ave - MW	4	2	1,625	06/12/86	160,000	98.46	11/12/72	35,500	21.85	39.05	1.10
8 41,065 Joyce Ave - MW	4	2	1,400	06/12/87	146,000	104.29	02/21/73	31,500	22.50	34.65	1.10
9 40,841 Valero Dr - MW			1,625	04/02/87	155,000	95.38	07/15/71	29,500	18.15	32.45	1.10
10 5362 Laramie Ct - Glenmoor	4	2	1,912	06/26/87	189,000	98.85	06/13/67	21,182	11.08	23.30	1.10
11 5350 Laramie - Glenmoor	4	2	2,000	08/21/87	227,000	113.50	11/22/71	31,000	15.50	34.10	1.10
12 38,044 Granville Dr - Glenmoor	3	2	1,350	10/16/87	175,000	129.63	01/31/69	22,455	16.63	24.70	1.10
13 37,921 Granville Dr - Glenmoor	4	2	1,625	09/02/87	172,000	105.85	12/04/68	23,000	14.15	25.30	1.10
14 35,159 Adriano St - Cabrillo	3	2	1,200	05/29/87	174,000	145.00	08/21/69	19,000	15.83	20.90	1.10
15 35,173 Adriano St - Cabrillo	3	2	1,200	09/02/87	135,000	112.50	11/18/65	17,500	14.58	19.25	1.10
16 4502 Ardo St - Cabrillo	4	2	1,300	02/17/87	135,500	104.23	02/16/67	20,500	15.77	22.55	1.10
17 35,299 Aquado St - Cabrillo			1,300	09/15/87	141,000	108.46	03/24/67	20,500	15.77	22.55	1.10
18 35,502 Cabrillo Dr - Cabrillo	3	2	1,450	10/02/87	143,000	98.62	05/22/68	20,000	13.79	22.00	1.10
19 4469 Gulbraiter Ia - Cabrillo	3	2	1,300	07/29/87	138,000	106.15	04/17/67	19,500	15.00	21.45	1.10
20 35,290 Lancero St - Cabrillo	3	2	1,300	07/15/87	149,000	114.62	12/06/66	19,000	14.62	20.90	1.10
21 35,418 Gustavo Ct - Cabrillo	3	2	1,143	12/28/87	147,000	124.23	12/22/66	19,000	16.62	20.90	1.10
22 4302 Ribera St - Cabrillo	3	2	1,250	02/19/87	135,000	108.00	06/07/67	24,909	19.93	27.40	1.10
Average	3.2	2.0	1,476	07/16/87	\$155,864	\$106.29	08/21/69	\$25,380	\$17.20		\$1.10
Median	3.5	2.0	1,572	07/15/87	\$180,500	\$111.58	07/06/69	\$26,500	\$16.79		\$1.10

APPENDIX B
CASE STUDY 2: THE NEW TOWN OF RESTON

Table 1 - Town House
Detailed Comparative Analysis Worksheet

Reston Townhouse Units				1987	Price/sf	Price/sf	Original	Price/sf	Price/sf	Transfer	Tax Rate		
Record Address	Story	Size (sf)	Site (sf)	Sales Date	Price	(Building)	(Site)	Purchase	Price	(Building)	(Site)	Tax	/ \$1,000
1 11,541 Maple Ridge	2	1,568	1,241	08/03/87	\$113,300	\$72.26	\$91.30	06/16/65	\$24,000	\$15.31	\$19.34	26.40	\$1.10
2 11,499 Waterview CL	2	1,836	3,420	11/23/87	155,000	84.42	45.32	10/26/65	40,500	22.06	11.84	44.55	1.10
3 11,487 Waterview CL	2	1,836	3,420	01/30/87	131,700	71.73	38.51	06/01/65	39,545	21.54	11.56	43.50	1.10
4 11,465 Waterview Cluster	2	1,836	2,307	12/16/87	132,000	71.90	57.22	06/01/66	34,000	18.52	14.74	37.40	1.10
5 1,694 Chimney Rock - Wash PL	2	1,302	1,319	04/07/87	120,000	92.17	90.98	07/07/66	40,773	31.32	30.91	44.85	1.10
6 11,122 Saffold Way (Hillcrest-Gu)	2	1,794	2,544	10/06/87	132,900	74.08	52.24	04/27/70	41,900	23.36	16.47	62.85	1.50
7 11,521 Hickory CL - Gulf	2	1,188	1,118	08/17/87	121,000	101.85	108.23	10/14/70	37,000	31.14	33.09	55.50	1.50
8 11,184 Forest Edge - Gulf	2	1,550	2,338	03/16/87	95,000	61.29	40.63	05/05/72	28,500	18.39	12.19	42.75	1.50
9 11,512 Hickory CL - Gulf	2	1,248	1,319	12/17/87	122,000	97.76	92.49	04/28/72	33,700	27.00	25.55	50.55	1.50
Average	2	1,573	2,114	08/05/87	\$124,767	\$80.83	\$68.55	05/17/68	\$35,546	\$23.18	\$19.52		\$1.28
Median	2	1,512	2,269	07/09/87	\$125,000	\$81.57	\$73.37	11/17/68	\$32,950	\$23.31	\$22.33		\$1.30
Variance		73,024	837,724		\$267,837,500	\$191.66	\$723.00		\$37,387,241	\$31.87	\$69.83		\$0.04
Standard Deviation		270	915		\$16,366	\$13.84	\$26.89		\$6,115	\$5.64	\$8.36		\$0.21

Comparables - Fairfax County Townhouse Units				1987	Price/sf	Price/sf	Original	Price/sf	Price/sf	Transfer	Tax Rate		
Record Address	Story	Size (sf)	Site (sf)	Sales Date	Price	(Building)	(Site)	Purchase	Price	(Building)	(Site)	Tax	/ \$1,000
1 906 Park Av - Herndon	2	1,360	2,400	02/22/87	\$115,700	\$85.07	\$48.21	01/13/67	34,545	\$25.40	\$14.39	38.00	\$1.10
2 14,818 Haymarket-London Towne, Ce	2	1,160	2,400	04/21/87	94,950	\$81.85	\$39.56	11/22/68	23,167	\$19.97	\$9.65	34.75	\$1.50
3 14,811 Haymarket-London Towne, Ce	2	1,240	3,000	06/16/87	94,900	\$76.53	\$31.63	12/13/68	24,400	\$19.68	\$8.13	36.60	\$1.50
4 4,134 Novar - Chantilly	2	1,408	2,878	09/23/86	95,000	\$67.47	\$33.01	02/28/69	25,700	\$18.25	\$8.93	38.55	\$1.50
5 4,141 Newport - Chantilly	2	1,280	3,183	06/12/87	97,000	\$75.78	\$30.47	03/20/69	26,600	\$20.78	\$8.36	39.90	\$1.50
6 922 Park Av - Herndon	2	1,360	2,400	11/02/87	103,000	\$75.74	\$42.92	12/08/72	29,800	\$21.91	\$12.42	44.70	\$1.50
Average	2	1,301	2,710	04/26/87	\$100,092	\$77.07	\$37.63	05/13/69	\$27,369	\$21.00	\$10.31		\$1.43
Median	2	1,284	2,792	04/13/87	\$105,300	\$76.27	\$39.34	12/26/69	\$28,856	\$21.83	\$11.26		\$1.30
Variance		8,491	124,871		\$68,190,417	\$36.56	\$50.42		\$17,452,550	\$6.12	\$6.40		\$0.03
Standard Deviation		92	353		\$8,258	\$6.05	\$7.10		\$4,178	\$2.47	\$2.53		\$0.16

APPENDIX B
CASE STUDY 2: THE NEW TOWN OF RESTON

Table 2 - Single-Family
Detailed Comparative Analysis Worksheet

Reston: Single-Family, Detached Units														
Record Address	Story	Size (sf)	Site (sf)	1987		Price	Price/sf (Building)	Price/sf (Site)	Original Purchase	Price	Price/sf (Building)	Price/sf (Site)	Transfer Tax	Tax Rate /\$1,000
				Sales Date	Price									
1 12,122 Basset La.	2	1,710	17,383	06/17/87	\$229,850	\$134.42	\$13.22	09/07/67	\$43,750	\$25.58	\$2.52	NA	\$1.10	
2 2408 Old Trace La.	1	1,730	16,229	07/15/87	177,000	102.31	10.91	01/08/66	42,000	24.28	2.59	NA	1.10	
3 1,701 Shagbark Ct.	1	2,277	15,789	11/17/87	207,000	90.91	13.11	01/17/66	36,500	16.03	2.31	40.15	1.10	
4 12,100 Stirrup Dr.	2	1,850	15,839	05/18/87	252,000	136.22	15.91	08/03/66	45,000	24.32	2.84	49.50	1.10	
5 11,223 South Shore Rd.	1	1,275	12,451	10/26/87	205,000	160.78	16.46	08/15/66	42,409	33.26	3.41	46.65	1.10	
Average	1.4	1,768	15,538	08/12/87	\$214,170	\$124.93	\$13.92	08/04/66	\$41,932	\$24.70	\$2.73		\$1.10	
Median	1.5	1,776	14,917	08/17/87	\$214,500	\$125.85	\$13.69	11/07/66	\$40,750	\$24.65	\$2.86		\$1.10	
Variance		128,415	3,391,169		\$798,519,500	\$792.97	\$5.16		\$10,614,153	\$37.40	\$0.18		\$0.00	
Standard Deviation		358	1,842		\$28,258	\$28.16	\$2.27		\$3,258	\$6.12	\$0.42		\$0.00	

Comparable Western Fairfax County Single Family Units														
Record Address	Story	Size (sf)	Site (sf)	1987		Price	Price/sf (Building)	Price/sf (Site)	Original Purchase	Price	Price/sf (Building)	Price/sf (Site)	Transfer Tax	Tax Rate /\$1,000
				Sales Date	Price									
1 10,009 Columbine-Great Falls	2	1,776	21,966	09/01/87	\$200,000	\$112.61	\$9.10	09/16/66	\$34,500	\$19.43	\$1.57	\$37.95	\$1.10	
2 837 Constellation-Great Falls	1	1,716	27,958	06/26/87	175,000	101.98	6.26	04/13/66	32,500	18.94	1.16	35.75	1.10	
3 14,722 Cranoke-Centreville	2	1,853	10,004	11/23/87	137,000	73.93	13.69	01/16/68	30,000	16.19	3.00	NA	1.50	
4 14,816 Cranoke-Centreville	1	1,741	10,208	06/09/87	128,900	74.04	12.63	02/14/68	29,700	17.06	2.91	44.55	1.50	
5 14,903 Kamputa-Centreville	2	1,725	10,054	05/04/87	127,900	74.14	12.72	05/23/68	28,300	16.41	2.81	42.45	1.50	
6 13,200 Point Pleasant-Fairfax	2	1,872	8,718	07/08/87	120,000	64.10	13.76	07/27/67	24,000	12.82	2.75	26.40	1.10	
7 13,206 Point Pleasant-Fairfax	1	1,820	11,115	07/31/87	138,000	75.82	12.42	08/01/67	25,645	14.09	2.31	NA	1.10	
Average	1.6	1,786	14,289	07/23/87	\$146,686	\$82.38	\$11.51	07/12/67	\$29,235	\$16.42	\$2.36		\$1.27	
Median	1.5	1,794	18,338	08/13/87	\$160,000	\$88.36	\$10.01	05/03/67	\$29,250	\$16.12	\$2.08		\$1.30	
Variance		3,964	56,639,870		\$865,788,095	\$314.00	\$7.79		\$13,391,575	\$5.70	\$0.52		\$0.05	
Standard Deviation		63	7,526		\$29,424	\$17.72	\$2.79		\$3,659	\$2.39	\$0.72		\$0.21	

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