HOUSING DECLINE INDICATORS:

THE IDENTIFICATION OF INDICATORS TO PHYSICAL DETERIORATION OF HOUSING AND THEIR APPLICATION TO HOUSING CONSERVATION POLICY

by

James R. Warring

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Certified by. .....
Thesis Supervisor

Accepted by.....
Chairman, Departmental Committee
on Graduate Students

ABSTRACT

HOUSING DECLINE INDICATORS: THE IDENTIFICATION OF INDICATORS TO PHYSICAL DETERIORATION OF HOUSING AND THEIR APPLICATION TO HOUSING CONSERVATION POLICY

James R. Warring

Submitted to the Department of Urban Studies and Planning in partial fulfillment of the requirements for the degree of Master of City Planning

In spite of substantial government support for the construction of new low- and moderate-income housing, the older stock of housing available to such income groups is in jeopardy from unabated deterioration. The conviction of most public planners is that in most cases older units could be kept from dilapidation if preventive maintenance were applied either through private reinvestment or government subsidy.

Public policy has already responded to the needs of maintenance assistance in low- and moderate-income areas in the form of Concentrated Code Enforcement (Section 117 of the Housing and Urban Development Act of 1965). Concentrated Code deals systematically with neighborhood deterioration by investing in new public facilities (streets, lighting, sewers) and by offering grants and loans for minimum rehabilitation to homes in violation of local code standards. Newer programs now before Congress would extend low interest loans and tax relief to any homeowner needing assistance for home repairs.

The short history of preventive maintenance programs has raised questions about the selection of neighborhoods that receive help. The current process is based on informal visual inspections which may select units that are either unsalvagable or in no need of public reinvestment. With the scarcity of federal funding for Concentrated Code, localities must exercise the greatest care in directing the expenditures for housing conservation efforts.

The purpose of this dissertation is to suggest a more "rational" decision tool to aid policymakers in the selection of housing units to be given assistance. The approach was to develop an early warning system to housing deterioration so that public funds could be channeled to housing units in real danger of extreme decline. Such a system could be based on a deterioration monitoring system that applied a set of proven deterioration indicators to a housing sample located in areas in danger of decline.

Prior to proposing such a system, the research phase established three hypotheses relating to the existence and validity of deterioration indices as early warning devices. Those hypotheses were:

1. Prior to various stages in the deterioration of housing there will be exhibited in data concerning such housing, indicators to impending decline,

2. Given a research effort of proper and sufficient scope, there will emerge a set of indicators that could reliably predict extreme decline in housing conditions.

3. By utilizing the housing decline index as the basis for an ongoing monitoring system, policymakers may organize more efficiently the disbursements of public money for housing conservation.

The research effort was able to substantiate the first two of these hypotheses and thus suggest a structure for an inexpensive housing deterioration monitoring system. Judgments about the third hypothesis must wait pending formal commitment to the monitoring concept by a public agency. Such a commitment is now being made by the Boston Mayor's Office of Public Service and the Boston Model Cities Administration.

Acknowledgments

The research task performed as part of this dissertation relied heavily on a number of individuals, citizens, and professionals who generously offered information and advice. In this connection, I particularly want to make note of the invaluable assistance of Rolf Goetze at the Mayor's Office of Public Service who has done the all-important pioneering work in housing conservation and who is responsible, more than anyone, for originating the idea of an early warning system for housing deterioration. Also at O.P.S. I want to thank Tom Hargadon, Deputy Director of the Program Development and Evaluation Section and Vince O'Donnell, both of whom spurred my interest in the problems and prospects of city government.

Much of the most helpful data for the research would not have been possible to obtain were it not for the generous cooperation of Robert Lyons of the Boston Edison Company.

At M.I.T., Professor Langley Keyes kindly consented to assume the task of advising the development of the thesis project in spite of his demanding schedule both as educator and public planner. Though not directly connected to this particular aspect of my studies at M.I.T., I want to make note of Professor Kevin Lynch's help and understanding as my academic advisor. Thanks is also due to Professor John Howard who, as both Department Head and Graduate Advisor, has contributed to my development at M.I.T. Also thanks to Professor Justin Gray for moral support in many despondent moments.

I particularly want to thank my wife, Louise, for her critiques of early drafts, hours of typing, and translating the manuscript into English. In spite of all this assistance, errors, I am sure, remain. These, as well as many judgments and interpretations, are solely mine.

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INTRODUCTION

Each year Americans spend billions of dollars for the maintenance and repair of personal possessions. Few people are in doubt as to what course of action to pursue if the television or the automobile breaks down. Yet, the most costly of the consumer durables, the house, is often left unattended for years. When such neglect is multiplied across the entire housing stock, a major national problem appears. The name of the problem may be slums, blighted areas, ghettos, or old neighborhoods but it amounts to the wasting of one of the most precious and easily the most costly of our national assets. Louis Winnick demonstrates this point with impressive statistics:

> "The stock of housing has become the largest single asset in America's balance sheet, comprising about one-fourth of reproducible national wealth and accounting for an even more impressive proportion of our private debt. The annual fixed cash outlay on housing paid by households approaches the federal personal income tax in size and is of strategic importance in determining the level of disposable income remaining for the purchase of other goods and services. The amount (relatively small) by which the housing stock grows each year is anxiously watched as an indicator of the general state of the economy."

Mr. Winnick's comment[1] was written in 1957 prior to the building boom of the 1960's. It would seem reasonable to assume housing accounts for an even larger share of our total wealth now. Even so, disinvestment in the form of housing deterioration continues unabated except for limited[2] private reinvestment.

Public policy already plays an important role in producing new housing units but makes comparatively very little effort in applying preventive

maintenance to units clearly headed for dilapidation. Too often, the result is that public money must pay the larger bill of replacing old units when a lesser sum could have salvaged them through periodic reinvestment. Some of the tools have already been developed for dealing with the deterioration problem in older neighborhoods. The problems seem to be inadequate funding and the ineffective application of existing government programs.

The purpose of this dissertation is to propose a rational basis for deciding the allocation of public money for housing maintenance in Boston. As a means of approaching the problem, the first portion of the paper outlines the context of local public efforts aimed at maintaining adequate housing conditions. From this is drawn the case for a decision tool to assist policymakers in the disbursement of funds for preventive housing maintenance.

The basic component of the decision tool is its capability to foretell serious declines in housing conditions. Part II reports the development and results of a research effort into the symptoms of housing deterioration. Such symptoms were seen as potential indicators to the decay process and as such could form the early warning system. In a final section, the results of the research are applied to the task of substantiating the indicator theory. Suggestions are also made as to how a housing deterioration monitoring system might be structured and to what kind of housing it might be applied.

PART I HOUSING MAINTENANCE IN BOSTON

Part I is intended to provide the reader with a survey of the current status of housing maintenance and public policy in Boston. Because the functioning of the present housing regulatory structure is so complex and loaded with political and social issues, its treatment here will be skeletal, pinpointing overall operations and basic underlying problems relevant to physical deterioration.[1] In the sections below are outlined the context of public and private efforts promoting adequate housing conditions[2] in Boston, the suggestions most commonly offered as means of improving those efforts, and the case for developing a system of monitoring housing deterioration as a decision tool for future housing conservation policy.

Section 1 - Current Tools for Housing Maintenance

Four kinds of tools are employed by local government agencies and citizens groups to induce owners and landlords to properly maintain their housing units. These are the enforcement by local agencies of building and health codes, the promotion of private reinvestment through property tax abatements and exemptions, the actions brought in courts by tenants under the State's rent withholding and receivership laws, and the programs channeling public money into home improvement and rehabilitation. Each kind of approach noted here tends to function separately from the others with the absence on the part of public agencies to coordinate their efforts to achieve discernible positive impacts on problem housing.[3]

Boston has three general types of codes: Fire, enforced by the Fire Department; Building, enforced by the Building Department; Sanitary, enforced by the Health and Hospitals Department and Housing Inspection Department (H.I.D.). Fire codes deal with both new and old structures but do not apply to overall maintenance problems.[4] The building codes deal primarily with new construction and do not play a role in the maintenance of existing structures. In those instances where the Building Department does become involved with older units, it is usually in the case of dilapidated abandoned buildings recommended for demolition. The Health and Hospitals Department is responsible for enforcing those portions of the State Sanitary Code covering commercial food and health care facilities. Obviously, Health and Hospitals has no relationship with housing. The Housing Inspection Department enforces Article II of the State Sanitary Code which sets "standards of fitness for human habitation"[6] for all housing in the Commonwealth.

H.I.D. therefore is the only city code enforcement agency which relates to housing conservation. The relationship is a tenuous one. Normal H.I.D. operation is confined to responding to complaints of violations, then pursuing those complaints through its punitive process.[7] More comprehensive coding is done by H.I.D. in two concentrated code enforcement areas in Boston (discussed toward the end of this section). The impact of the policing function carried out by H.I.D. on the housing stock is at best slight. There is, regretably, no evidence that the code enforcement function in Boston has had any impact toward

maintaining, much less upgrading, any portion of the City's housing. Some have even made the case that code enforcement has had negative impacts by driving out of the rental market the small owners who, operating with little or no profit, are unable to meet repair costs imposed by the codes. On the other hand, the wealthier multi-unit owner knows the worst that court prosecution has to offer is a moderate fine. In many cases, the fines are so small they are preferable to the more expensive alternative of correcting the violation.[8]

There are several structural problems built into the kind of code enforcement outlined above. First, the system deals with only one or two units per case, totally ignoring code violations as they occur over entire areas or neighborhoods. Second, the punitive nature of the process forces concentration on owners rather than on the more meaningful objective of getting the violation fixed. Third, the legal structure has boxed well-meaning agencies, such as H.I.D., into positions where they feel frustrated and powerless. Agency personnel are human and feel no accomplishment by policing the hard-pressed small owner and no victory at winning a $50 fine from a slumlord after six months in court.

If code enforcement can be characterized as a minimally-effective "stick," incentives derived from property tax abatements and exemptions can be viewed as minimal "carrots."[9] In practice, abatements are granted to those owners who feel their properties are over-assessed. Of course, these tend to be the larger, more sophisticated group of

owners who are more aware of the options given them by law. Tax exemptions are usually granted to disabled or elderly veterans, churches, and educational institutions.[10] It should be made clear that the City does not view abatements and exemptions as deliberate public policy aimed at encouraging private reinvestment. The owner may redirect his tax savings any way he wishes. The same is true of tax delinquency which is viewed by some as a potential two-year, 8% loan by the City to owners for maintenance on their properties. Because there is no binding agreement regarding tax savings, they more often help the owner than the tenant. The proof of this statement may be found in recently published lists[11] of tax abatements showing that over 50% were granted to large owners in Roxbury and North Dorchester. Yet, the condition of most of the housing in these areas indicates that little, if any, of this tax saving finds it way into maintenance expenditures. In spite of current shortcomings, manipulation of the City's taxing power remains as an effective potential tool for promoting private reinvestment in deteriorating structures.

Since the mid-1960's, the State has provided tenants with three legal tools for redressing grievances brought on by lack of maintenance in their buildings. These are the rent receivership law of 1965, the rent withholding law of 1967[12] (commonly known as civil remedies), and the rent review ordinance of 1969. In terms of the current process the laws are usually employed by various tenant groups[13] acting on behalf of all or most occupants of a multi-unit building. Action is initiated in withholding and receivership cases when a tenant files

a request for inspection (I.R.) with the Housing Inspection Department. If H.I.D. verifies that the alleged violations "materially impair the health or safety and well-being of any tenant therein or persons occupying said property"[14] tenants may withhold their rents until the owner or landlord institutes repairs. If the owner refuses to comply, or in cases where violations are so extreme as to make owner response unlikely, the building is sometimes brought into receivership. The receiver is nearly always an organization such as Fair Housing, Inc., Boston Legal Assistance Project, or one of the tenants councils. The object is to assume control of the building thereby channeling rent rolls into maintenance and upkeep. The record of civil remedies in solving deficiencies in upkeep is as poor as efforts made by the City. Withholding of rents has been effective in some cases as a threat to landlords who are anxious to maintain cash flows from their properties. Experience shows however that when the withholding mechanism does not work, the game is over. If the owner remains unmoved at the loss of his rental income, he is usually prepared to walk away from the building. The tenants may then try a receivership action. However, if the owner is willing to relinquish his building, it means its state of repair is at or close to total dilapidation. Rent rolls from low-income tenants simply cannot purchase meaningful repairs in cases where total rehabilitation is needed. The consequence has been further tenant frustration as conditions continue to slide, disaffection between tenants and their new receiver-landlord, and oddly enough, pressure from H.I.D. to correct code violations. In Boston, the result is more abandoned buildings.

Rent review occurs as a function of the City's Board of Rent Appeals[15] when a tenant seeks to nullify an increase in rent or obtain a rent reduction after services or conditions decline. Again, history however brief, shows the tenant fares poorly in most cases. The rent review and more recent rent control mechanisms have not served anyone very well; the Board is hopelessly bogged down with hearings which take five to six hours to resolve a single case.[16] Landlords feel compelled to spend money for legal services, and as noted above, tenants often lose. Obviously, even in instances where rent adjustments are made, no aspect of housing conditions has been improved.

For civil remedies, the judgment is a largely negative one in terms of relieving poor housing conditions. As with the codes upon which they are based, civil laws bring with them structural problems which contribute to their failure. None of the civil processes come close to addressing the shortages of cash flow which lie at the base of many maintenance problems.[17] In addition, civil remedies act as sticks against landlords rather than focus attention on poor physical conditions. On balance, these kinds of "remedies" act as disincentives for owners to operate older, low-income housing.

The fourth, and final, kind of tool public policy brings to the housing conservation problem is the range of home improvement and rehabilitation programs. Worth noting is the most promising of these, the rehabilitation grants for low-income households in urban renewal and code enforcement areas, begun through the Housing and Urban Development Act of 1965 (Section 117).

Concentrated Code Enforcement (C.C.E.), as the program is popularly known, may be summarized by the following description:[18]

> "The basic orientation is toward providing incentives for the homeowner to upgrade his property to eliminate code violations. The primary incentives are grants of up to $3500; loans at 3% interest; temporary freedom from prosecution for code violations; and the construction of public works with only one-third of the cost charged to the city government. In general, this orientation is reflected in the attitudes of the program staff. Actual program operations commenced in May, 1969.
>
> "The program operates, ideally, in the following manner. The property is surveyed and the owner is sent a list of code deficiencies with a financial application. The inspections are usually performed on a systematic basis although they can be done in response to a tenant or owner request. If the owner repairs his property, it is reinspected and certified as being in compliance with the code. If the owner refuses to eliminate the violations, he is subject to normal H.I.D. compliance procedures. If the owner would like federal financial assistance (a grant and/or a loan) to repair his property, he returns his financial application to the C.C.E. office. The rehabilitation specialist then inspects the property and prepares the specifications for the work necessary to bring the property up to code, estimates the costs, and obtains the homeowner's approval. The rehab specialists arrange for the selection of a contractor (either the contractor of the homeowner's choice or a low bidder). The C.C.E. then processes the grant and/or forwards the loan application to the H.U.D. regional office for approval. Upon approval, a check is sent to the Housing Inspection Department payable to the owner. The contractor and the homeowner sign the contract and the rehab work commences. The rehab specialists supervise the actual rehabilitation work and certifies, along with the homeowner, that the work has been completed in satisfactory manner before the contractor is paid."

The local program is administered by a special section of H.I.D. in two areas: Fields Corner-Ronan Park and Jamaica Plain. Applications for eight new and amendatory areas primarily in and around the Roxbury Model Cities area are now pending at the Department of Housing and Urban Development in Washington, D.C. C.C.E. has a three-year history

in Boston in which several hundred thousand dollars have been disbursed for home improvements. Within its limits, the program has been a success and with eight areas added, could provide genuine results in arresting deterioration in those areas.

One unresolved problem of Concentrated Code Enforcement is the area selection process. Currently, selection is carried out primarily by "windshield" surveys. Up to now, there may not have been anything wrong with that approach, but the position of this study is that an additional decision tool, such as a monitoring function for housing, could increase the impact of public expenditures in programs such as Concentrated Code Enforcement.

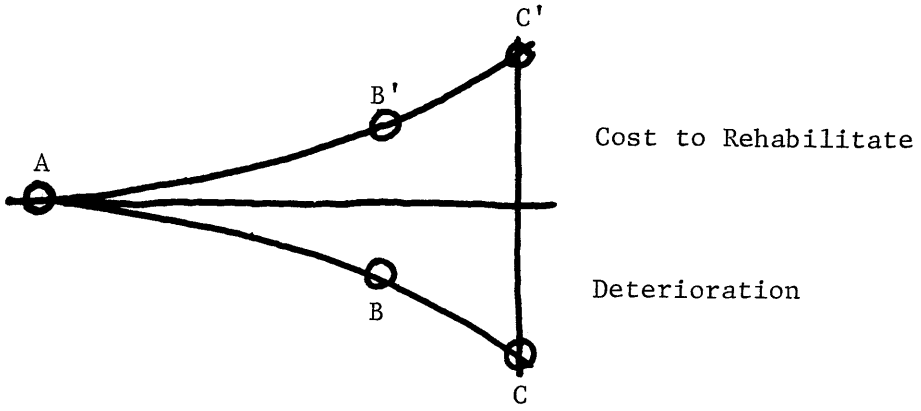
The description of current public tools for housing maintenance has attempted to be objective; however, in describing code enforcement functions and limited incentive programs, the landlord tends to come across as the villain. This is misleading as most dispassionate observers see housing deterioration as a plague on all parties--city agencies, tenants, and owners. To be sure, profiteering landlords exist in Boston but as often as not the owner is as lacking in resources as the tenant.[19] Hopefully, the description of current tools will serve as a basis for understanding suggested new approaches to the housing deterioration problem. The following section outlines several of the more important new directions advocated for housing conservation.

Section 2 - Suggested New Approaches

The overall position taken by many planners and policymakers is that the public sector has placed too much emphasis on creating new housing units in response to the deterioration problem. No one is suggesting that new units are not required and that programs such as 221(d)3 and 236[20] have not had important beneficial effects. The fact is, even dilapidated units are hard to come by in many low-income submarkets and the creation of new housing units is perhaps the most important technique for relieving that shortage. Important, but not absolute. More recently, increased emphasis has been placed on residential rehabilitation and suggestions have been made for a number of preventive techniques.

Local experience with rehabilitation has been fraught with difficulties and controversy which strangely enough may provide this approach with added potential.[21] The Boston Rehabilitation Program (B.R.P.) has yielded meaningful experience in the social, political, and technical problems likely to occur with its large scale approach. B.R.P. is important to housing conservation in two ways. First, it demonstrated that massive rehabilitation can consume many dollars ($27 million for B.R.P.) to purchase the upgrading of comparatively few units (2300). In other words, full rehabilitation costs $12,000 per unit as opposed to the Concentrated Code approach which catches units in better condition requiring perhaps $3,000 per unit to upgrade them to adequate condition. Second, B.R.P. has in effect

set a bottom cost line of $12,000 or more at which local contractors will consent to rehabilitate units.[22] True, these costs may still remain below the cost of creating new units, but they begin to form an incentive to think about bringing the rehabilitation approach in at an earlier stage of deterioration. Perhaps the following diagram[23] will further illustrate this problem.



As a housing unit enters the deterioration process at A and moves down toward dilapidation at C, the costs of rehabilitation rise up toward total rehabilitation at C'. A possible alternative is to take corrective action at B which presumably lowers the rehabilitation cost by the factor of (B'-C').

Toward the goal of saving that (B'-C') amount, several suggestions have been advanced. They are proposals for significant dollar increases in existing preventive maintenance programs, such as Concentrated Code Enforcement; increased court involvement in housing problems; coordinated manipulation of local taxation policies; and finally, a more comprehensive organization of all these approaches into a unified policy for housing preservation.

The first method primarily means action at the federal level which is highly dependent upon the priorities of the governing administration. New and amendatory concentrated code areas have been slow in coming[24] both because of inaction from City Council and delays at H.U.D. Certainly, Concentrated Code is the most promising model for acting against incipient decline, but the dollar flow from Washington hinges on perhaps too many dynamic political factors.

The second proposal is to get the courts more involved with housing through the creation of a special housing court. Basically, say housing court advocates, a special tribunal would remove the criminal stigma from Housing Code violators and allow for more concentration on the central issue--the violations. Further, a housing court would bring with it housing judges who would have the expertise to sort out the technical aspects of housing and recognize repeated offenders.[25] Connected to such courts might be housing clinics which would serve to upgrade the managerial skills of small low-profit owners. In addition, the State might reexamine its position on revolving funds for receivership cases so that court-appointed receivers could go beyond rent roll budgets and institute whatever rehabilitation is needed.[26] The case for establishing a housing court is strongest when viewed in relation to the current criminal court process which has neither the time nor skills to make any progress against housing problems.[27] Yet, in the absence of State rehabilitation loans, no court however specialized can begin to solve the problem of serious disrepair.

One way in which local government may act directly on housing decay is through the manipulation of its property taxation powers.[28] Boston already grants many abatements and exemptions which some observers feel might be used more systematically to promote maintenance and reinvestment in problem housing. There are three specific ideas given as possible means for the City to use the property tax. First would be for the Assessor, working in conjunction with H.I.D., to grant relief from taxes only if the owner redirects the tax savings to correct code violations. Such a scheme could not apply to the resident owner who is often a disabled veteran or elderly. Such a plan, however, seems equitable when applied to the large multi-unit owners whose property holdings account for most of the tax abated properties.[29] Second, when properties are clearly headed toward dilapidation and possible abandonment, the Assessor could lift the tax burden altogether in which case the owner would agree to commit the tax savings to the maintenance needs of his building. Hopefully, this would serve the resident owners in declining areas but it must also be recognized that many owners simply do not have the money for tax payments in the first place. A third idea for heading off extreme deterioration would have the City act as buyer of last resort at a price equal to 100% of the assessed value. This would have two effects, i.e., to keep renter occupants in their units paying rents to the City, and to force the City to maintain assessments close to market value. As serious as deterioration is in units abandoned by owners, total demolition is most often the result of abandonment by residents. Surprisingly many of the units

the City would be buying under the "buyer of last resort" scheme might be in salvageable condition and with some rehabilitation could be resold as stable, tax producing real estate. The idea of keeping assessments at or near true market value would be helpful as an indicator of deterioration and provide a more equitable basis for granting abatements.[30]

The preventive techniques for housing preservation mentioned here become more attractive when brought together into a coordinated system. While pursuing money at the federal level, cities can take the initiative by designating areas in need of preventive maintenance. In such areas, H.I.D. could conduct intensive inspections to uncover code violations with the promise of tax breaks to owners who comply voluntarily. The amount of tax relief given might depend on the amount of reinvestment an owner commits to his property. If the proposed housing court is established, it could vigorously pursue the wealthier multi-unit owner forcing them to keep buildings at code standards.[31]

When federal money becomes available for concentrated code programs, the City could integrate its own tax incentive ideas and court powers to stimulate meaningful and visible upgrading of declining neighborhoods.

The concept of preventive maintenance for older housing is gaining increasing acceptance in Boston. Agency officials favor the preventive approach for its positive incentives which act to correct physical

conditions rather than punish owners. Both elected officials and homeowners appreciate the federal grant aspect (Concentrated Code) of the preventive approach because it means money flowing into neighborhoods for improvements to individual homes.

With popular support, it seems likely that the City will adopt most of the suggested new techniques. The questions that remain relate to how to plan and implement these measures. Until now, little thought has been given to the planning process for existing efforts such as Concentrated Code which as noted earlier relies on windshield surveys for area selection.[32] To make the expanded housing conservation programs more efficient than those currently going on, i.e., upgrade more housing units per unit cost, a more formal means of selecting housing units should precede the disbursement of benefits.

Section 3 - The Need for a Housing Deterioration Monitoring System

The purpose of this section is to examine the need for improving the decision process by which housing units are selected for preventive treatment. In search of specific decision tools, the discussion turns to the questions of approach to the deterioration problem, performance criteria, and overall structure.

There are two reasons for formalizing the decision process of selecting housing units for preventive treatment. First, as noted earlier, money for such programs as Concentrated Code Enforcement is scarce. A more rigorous decision process would tend to maximize[33]

the impact of the funds now available by channeling them to those sound structures in danger of serious decline. Second, a functioning decision process which leads to actions that stabilize or upgrade a few areas would serve to attract greater funding from both federal and local sources for housing conservation programs.[34] One important question that remains is what approach should be taken toward developing the formal decision process?

To form judgments about housing deterioration, one might look either to the causes or to the symptoms of physical decline. The causal approach presents some serious problems in that complex economic, political, psychological and social factors must be accounted for.[35] In addition, a review of studies that attempted to discover some or all of the factors causing decline seems to suggest that causes vary for each case.[36] If this is true, it would be necessary to research at length each area or neighborhood considered for government assistance. Such extensive research is beyond the financial capability of the agencies involved in planning local housing conservation programs. Public planners need an approach that requires minimal research to gain information useful in pinpointing housing in danger of serious deterioration. Against these criteria, a symptoms approach seems to fare much better. The symptoms of physical deterioration appear more openly than do causes[37] and thus would be more immediately available for use in planning public policy. The speed at which information is brought to the decision

problem is important if housing conservation techniques are to act on short notice against incipient deterioration.[38]

The next question relevant to the consideration of a decision method is that of performance criteria. In order to respond to many of the problems incurred under the present approach to housing deterioration, three capabilities seem important. First, any new decision tool should provide reliable information both about deterioration of individual units and the important aspect of neighborhood decline. To enhance the impact of preventive maintenance tools, the planner needs to know the state of specific kinds of units as variations in size, construction type, and age may affect rates of decline. In addition, evidence[39] suggests that physical deterioration occurs over entire areas or neighborhoods; therefore information is needed that will describe that phenomenon. Second, a decision method should be continuously operative describing subtle changes in housing conditions that might foretell more serious problems in the longer range. The kind of information required here would most probably come from a monitoring system which might periodically survey a selected sample of the housing stock to determine the nature of those changes. Finally, the development, implementation, and operation of the decision method must be economically efficient. It must be elementary, requiring little staff attention or expertise and be able to integrate with existing city computer resources. Generally, information gathering about housing deterioration should

be done at a cost that fits into existing city budget categories at an expenditure comparable to existing decision methods.[40]

Both the symptoms approach for relaying information about housing deterioration and the performance criteria just noted lead to some overall structural considerations. It is assumed the decision process would be based on a monitoring function that describes changes in symptoms of deterioration (perhaps building value, code violations, or ownership changes). Such a monitoring function would use these indicators to forewarn public officials of serious declines apt to occur in the future. Acting on such information would presumably be preferable to the current "guessing game" as to which areas are likely to decline.[41]

The task now is to look carefully at the monitoring concept, and form some hypotheses about the use of symptoms of deterioration as indicators to more serious future decay. This is the objective of Part II which reports the development and results of a first attempt at exploring the validity of a housing deterioration monitoring system.

FOOTNOTES - INTRODUCTION

[1]Louis Winnick, American Housing and Its Use: The Demand for Shelter, pp. 3-4.

[2]Rolf Goetze, Conserving the Urban Housing Stock: A Set of Case Studies on the Impact of Government Policy, p. 17.

FOOTNOTES - PART I

[1]A complete analysis of all code and housing regulatory functions in Boston was conducted by the Mayor's Office of Public Service between June and August, 1970, under the title Final Report: Housing Inspection Services Project. In addition to examining all city agencies dealing with any code enforcement activities, the O.P.S. project looked in detail at the various civil or equity remedies used by tenants and tenant groups in Boston.

[2]Adequate housing conditions are defined here as housing which conforms to standards set by Article II of the Sanitary Code of the Commonwealth of Massachusetts. The code also specified the administration of the law and the penalties to be incurred by offending owners and tenants.

[3] The term "problem housing" is defined here as that subset of the Boston housing stock which is repeatedly handled by city agencies such as the Housing Inspection Department for code violations; the Assessor's Department for abatements, exemptions, and reassessments; the Collector-Treasurer for tax delinquencies; and tenant groups for civil and equity redress. As will be shown by the research data, problem housing or highly-deteriorated housing characteristically comes to the attention of all these groups as it slides toward dilapidation.

[4]In rare instances, inspection by the Fire Department can yield slight upgrading of a structure such as installation of new fire escapes, fire doors, or extinguishers; however, for the purpose of this analysis, these items are not viewed as significant evidences of upkeep or reinvestment.

FOOTNOTES - PART I (cont.)

[5]It is difficult to write objectively about the Building Department code enforcing function since it retains a self-imposed isolation that makes analysis close to impossible. Apparently, building inspectors have the authority to enforce their code long before the abandonment stage, but never do so even after referals of building code violations from other city agencies. The predominant view among city observers is that building inspectors find strong incentives to concentrate their efforts at new construction. For a commentary on the interagency standoff, see "Peterboro Street: Destroying the Evidence" in the April 13, 1971 issue of the Phoenix.

[6]Commonwealth of Massachusetts, Department of Public Health, The Sanitary Code, Article II, p. 1.

[7]H.I.D. issues a formal complaint to the owner to correct violations it has verified. If the owner fails to comply within the specified grace period, a hearing is held at which time the owner is granted a time extension to correct the violations. If again there is no compliance, the case goes to H.I.D. Legal Department for court prosecution.

[8]"The Enforcement of Municipal Housing Codes," Harvard Law Review, Vol. 78, No. 4, February, 1969, p. 823.

[9]These terms come from the plow horse analogy: one may drive the beast to labor by beating him with a stick or by coaxing him with a tasty carrot.

[10]These categories refer primarily to residential properties ignoring health and government institutions.

[11]Boston Sunday Globe, April 25, 1971, p. 76.

[12]These refer to the Acts of 1965, Chapter 893, Section 127A-J and the Acts of 1967, Chapter 420, Section 8A, respectively.

FOOTNOTES - PART I (cont.)

[13]In addition to the numerous tenants' councils, Fair Housing, Inc., Boston Legal Assistance Project, and the Roxbury Multi-Service Center often represent tenants in court cases involving civil and equity procedures.

[14]Acts of 1965, Chapter 898, Section 127C, Document 52-1969.

[15]Ordinances of 1969.

[16]Interview with John Grace of the Board of Rent Appeals, October, 1970.

[17]The Massachusetts law establishing rent receivership designated that there be 6% state funds available for limited rehabilitation of receivership units but as with many such laws, no money was ever appropriated by the legislature for that purpose.

[18]Mayor's Office of Public Service, Final Report: Housing Inspection Services Project, pp. 46-47.

[19]The rarely-made case for the plight of owners may be found in the following articles:

"We Need More Slumlords," Joseph Kahn, New York Post.
"A White Slumlord Confesses," Barding Dahl, Esquire, July, 1966, pp. 92-94.
"Civic Group Fails in Attempt to Make Slum Buildings Pay", Steven V. Roberts, New York Times, March 9, 1967, p. 1.

[20]Organization for Social and Technical Innovation (OSTI), "Housing Action: A Guide for Doing Something About Housing Problems in your Community," p. 81-82.

[21]Two recent studies have offered evaluations of the Boston Rehabilitation Program:

Urban Planning Aid, Inc., Evaluation of the Boston Rehabilitation Program (Cambridge, Massachusetts, Sept. 1969).
Keyes, Langley, C., Boston Rehabilitation Program: An Independent Analysis (Harvard-M.I.T. Joint Center for Urban Studies, Cambridge, Massachusetts, 1970).

FOOTNOTES - PART I (cont.)

Criticisms tend to range from the process by which $27 million in federal funds were poured into the quick rehabilitation of 2300 units, and the often unsatisfactory product of that process.

[22]In a recent instance of a 27 unit structure on Dudley Street, the prospective contractor estimated the unit cost of rehabilitation at $14,000.

[23]The basis for diagrams such as these may be found in Chapter 11 of Rolf Goetze's Ph.D. thesis Conserving the Urban Housing Stock: A Set of Case Studies on the Impact of Government Policy (M.I.T., Cambridge, Massachusetts, 1970).

[24]Letter from M. Daniel Richardson, Director of H.U.D. Area Office, Boston, to Mayor Kevin White, February 19, 1971.

[25]Grad, Frank, Legal Remedies for Housing Code Violations, National Commission on Urban Problems, (Washington, D.C., 1968) pp. 70-71.

[26]Cases for both sides of this proposal are given in Frank Grad's Legal Remedies for Housing Code Violations.

[27]Grad, op. cit., pp. 22-33.

Harvard Law Review, Vol. 78, No. 4, February, 1965, "Enforcement of Municipal Housing Codes," pp. 820-826.

Warring, James R., "An Analysis of Civil Code Enforcement Remedies in Boston" p. 6.

[28]Rawson, Mary, "Property Taxation and Urban Development," pp. 8-9.

[29]Boston Sunday Globe, May 2, 1971, p. 1.

An article about the Maurice Gordon real estate holdings estimated to be from $28,284,700 to $44,087,392 with annual gross income of up to $93,333,333. If units in Gordon's control are granted tax abatements, evidence suggests the tax savings could be redirected for maintenance of those units.

FOOTNOTES - PART I (cont.)

[30]Owners would presumably have to put more substantial proof to the Assessor regarding over assessments.

[31]Boston Sunday Globe, May 2, 1971, p. 21.

Such vigorous pursuit, in this case by City agencies, has been suggested for Gordon Realty residential properties.

[32]Windshield surveys refer to the basically non-analytical method currently applied to the selection of Concentrated Code Enforcement areas. As the term suggests, agency planners take prospective areas and judge from visual impressions the need for C.C.E. certification. The analytical data used consists of nothing more than maps on which indices of extreme deterioration such as abandonment and demolition and foreclosures are plotted. The objective is to avoid those areas with extremely poor conditions in favor of "salvagable" neighborhoods.

[33]To maximize the impact of current funding, those responsible for selecting housing units that will receive assistance must determine the lower limits of deterioration at which preventive approaches can be effective. For example, it seems doubtful that some of the housing in the new Egleston Square and South Boston Concentrated Code Enforcement areas can be redeemed by the limited rehabilitation approach of that program.

[34]The attraction principle is important as federal funding sources are disposed to place an emphasis on track records of those applying for funds. Providing the communities get the kind of help they need, there is nothing wrong with visible programs which draw the eye of the appointed federal official who has a boss, whom he must help get reelected every four years.

[35]Sobin, Dennis P., Dynamics of Community Change, The Case of Long Island's Declining "Gold Coast," pp. 13-21.

[36]Gans, Herbert J., The Urban Villagers.
Friden, Bernard J., The Future of Old Neighborhoods, pp. 30-46.
Sobin, op. cit., pp. 161-172.

Langley C. Keyes' Rehabilitation Planning Game also takes the view that diversity is the most likely conclusion to be drawn from

FOOTNOTES - PART I (cont.)

comparisons between neighborhoods, in this case, the diversity of community participation in planning for renewal.

[37]Any medical doctor can testify to this. Also, symptoms are used in other areas such as economics and social science in the prediction of future trends of the economy and society.

Biderman, Albert D., "Social Indicators and Goals," Social Indicators.

[38]In the sequence of events for programs such as Concentrated Code Enforcement, the planning element is very small. Decisions on areas are made surprisingly fast and subjected to few changes upon debate in City Council and negotiations with H.U.D.

[39]The area concept is explored in William Grigsby's book, Housing Markets and Public Policy which views housing submarkets or areas as linked by subtle, mutually-influencing factors.

[40]Informal surveys which now serve as the basis for the selection of Code Enforcement areas.

[41]In the case of current decisions, the emphasis is less on what areas are likely to decline than on areas that now show significant evidence of decline. Again, portions of the newly selected Egelston Square and South Boston Code Enforcement areas prove the point. Many housing units are at the dilapidation stage, well out of the reach of preventive maintenance.

PART II: THE RESEARCH PHASE

Part II reports the development and results of the research phase. The function of the research was to test the validity of three hypotheses relating to the process of housing deterioration. First, prior to various stages in the deterioration of housing there will be exhibited in data concerning such housing, indicators to impending decline. Second, given a research effort of proper and sufficient scope, there will emerge a set of indicators that could reliably predict extreme decline in housing conditions. The third hypothesis is that by utilizing the housing decline index as the basis for an ongoing monitoring system, policymakers may organize more efficiently the disbursements of public money for housing conservation. If these hypotheses could be substantiated, it would then be possible to suggest specific indicators for use in a continuous monitoring system for Boston.

Prior to testing these hypotheses, it was necessary to develop a research method that would deliver raw data about housing deterioration, and to gather and organize that data as a basis for the conclusions made in Section 3. The task of developing a research method based on manual data gathering techniques was of added importance because it would represent a potential prototype for the City monitoring function. The following sections trace the development of the research method and present the results of a formal investigation into the deterioration process.

Section 1 - The Research Design

The research method had to be developed specifically for this project because this kind of research into the physical phenomena of housing deterioration had no exact precedent. The resultant research design can best be termed as evolutionary. The process began by raising two related questions: what are some potential housing deterioration indicators, and which information sources would supply the most descriptive data about those indices? To get at these questions, an exploratory investigation was conducted of housing on two streets. The preliminary effort reduced the number of possible indicators which in turn determined the most promising of the information sources. The exploratory research also pointed up a number of limitations to be expected from the more formal investigation. From this, concern next turned toward the number and type of housing units to be studied and the manner in which they should be distributed geographically. Finally, the research method was constructed to guide the formal data gathering process.

Indicators and Information Sources

The final section of Part I noted that the most promising kind of index for housing decline was one based on symptoms. It was further noted there were a number of precedents for this approach in the fields of medicine, economics, and social science. A symptom has two characteristics which are helpful in considering potential indicators of housing decay. First, the symptom represents a condition which changes over time, e.g., the fever of a common cold

or the index of industrial production. In addition, it is usually possible to detect symptoms through relatively simple techniques. For the most part, the discovery of illness is an inexpensive component of the treatment process; similarly, monitoring of economic indicators is simpler than formulating solutions to the problems they describe. Using these criteria, it was possible to advance a number of prospective symptoms of the decline in condition of housing structures.[1]

1. Value. The value of a housing unit might be expressed in its assessed value or in its sales price. The dollar value of a house might indicate how much reinvestment an owner is willing to commit to the structure, i.e., the more a structure is worth, the more incentive there is to maintain it. Values, both assessed and sales, change over time and are recorded in public records.

2. Ownership. The change in ownership might tell something about the amount of interest an owner has in a particular structure, i.e., a housing unit owned by one person for twenty years is perhaps better maintained than a similar unit owned by ten people over the same period. Ownership type could also be an important indicator of the upkeep given to a unit. Perhaps the large realty trust cares less about the condition of its holdings than a resident owner. Both the number and type of owner may change over time and the number of changes are recorded in public records.

3. Tenants. No one can question the importance of the tenant's role in maintaining housing. If tenants are transient, they may be less disposed to commit their own time and money to their dwelling unit than a long-term resident. Private information sources keep records of tenant turnovers.

4. Forfeitures. If an owner is unable or unwilling to do much about the physical upkeep of his property, he often does not pay his taxes or mortgage allowing foreclosure by the city or banks. The assumption here is that maintenance is deferred prior to delinquency of taxes or mortgage, and that the occurence of a forfeiture may mean impending deterioration of surrounding properties. Public records indicate the number and time of occurence of forfeitures.

5. Code violations. One indication of too little maintenance or reinvestment may lie in the records of Building and Health Codes. Public records hold data on violations over a limited time period.

6. Percentage of return per year on investment. This is a bit different from other indicators in that return on investment takes more of a formula approach. The assumption here is that if the investment an owner makes is perhaps two or three times the annual rent roll, little maintenance will flow back into the structure. This pattern is thought to be common to the owner playing

an "end game"[2] with deteriorating properties. He draws out as much return as he can knowing after two or three years he has recaptured his investment. From this point, any returns are purely profit, thus he may elect to cease all maintenance. Such an indicator is dependent on data about rent rolls which is not readily available in public records. Investment data is indirectly[3] a part of public records.

7. Visual survey.[4] The condition of a structure may be classified sound, deteriorating, or dilapidated through a visual survey which accounts for exterior conditions such as paint, cracks, roof, and structural faults. The visual survey data is accessible but difficult to trace over time.

These rough approximations of what might be useful as indices to housing deterioration formed the basis for proposing information sources.

For any proposed monitoring function to work, information input would have to be easy to obtain, i.e., accessibility would help insure continual and frequent data input and operational efficiency. Therefore, accessibility of information sources formed a criterion for their selection. Below is a list of these sources along with brief outlines giving the nature of the information each source contains and an evaluation of each source based on the criterion

of accessibility and the data they might yield about the indicators:

1. City of Boston Assessor's Department

The Assessor's Department maintains a card for each property parcel in Boston on which is recorded parcel number, building type, parcel area, records for all assessments broken down for land and building, and a record of all ownership since 1955. Some ownership changes are recorded with the amount of sales excise stamps on the deed. The Assessor's records may be considered accurate as of January of the previous calendar year.

Records of building types serve as a good basis for determining how these building types are distributed over specific streets or areas. Parcel area serves as a good cross check with parcel areas printed on the City of Boston Topographic and Planimetric Survey. This is important when locating Assessor's parcels on the map. Records of assessments can give rough indications of the fluctuation of areawide property values. Records of ownership changes may relate to the extent of maintenance and reinvestment a particular building receives. The record of tax stamps show the amount of cash involved in specific transactions.

Generally, data drawn from the Assessor's cards looked promising as a ready source of information about assessed

values and ownership changes. Also, the Assessor's records are accessible on a continuing basis.

2. Banks

Banks formulate and apply their own policies for the granting of mortgage loans. There are certain areas of the City within which banks will not grant mortgage money, as well as certain ownership categories (absentee) from which banks will not grant home loans. Knowledge of bank loan policy with respect to residential properties seemed to be of genuine importance to this project. However, the banks (Provident and others) were unwilling to disclose any information about loan policies. It was not even possible to determine whether banks maintain policies based on statistical analysis of areas, ownership categories, tenant categories, etc. However, their secretive attitude led to the suspicion that banks may have such statistically-based criteria for the granting of home loans and mortgages. Obviously, the banks could not be included for this study, but a formal monitoring function backed by City policy would do well to reapproach the banks and study their lending practices.

3. Metropolitan Mortgage Bureau

The Metropolitan Mortgage Bureau maintains records of all mortgaged real estate transactions, information about which comes from the Registry of Deeds. Such information tends

to be incomplete because it reports only mortgaged properties, leaving out the significant amount of cash transactions.[5] The conclusion was that the Metropolitan Mortgage Bureau could not provide useful data about any of the indicators.

4. Suffolk County Registry of Deeds

The Registry of Deeds maintains daily, up-dated records of ownership changes and shows all leins recorded on property. The Registry forms the primary information source for other agencies discussed here, namely the Assessor's Department, banks, and the Metropolitan Mortgage Bureau. In addition to records of all ownership changes, deed records according to law have State of Massachusetts excise tax stamps placed on them from which may be determined the sales price. (For each $500 of sale price, a tax of $1.14 is paid to the State. Prior to August, 1968, this tax was $1.00 per $500 sales price. Therefore, if a property was sold last month for $10,000, $22.80 in tax stamps would be placed on the deed. If the price was $10,000.01, the tax would be $23.94.) Tax stamps do not indicate the value of property transmitted by mortgage, either by the grantee taking over the existing mortgage or by the grantee giving a mortgage to the grantor (mortgage convenants).

As noted in the section on the Assessor's Department, ownership change may be an important factor in determining

the amount of maintenance and reinvestment given a particular structure. Registry of Deeds has information regarding such changes which is at least one year more current than the Assessor's Department. However, since the approach of this project was to chart prospective indicators over an extended history, the activities of the current year were not critical. Since the Assessor maintains records of the excise tax paid, it might be more efficient to collect such data from that source.

5. Boston Edison Company

As supplier of electric service to all Boston users, the Boston Edison Company (BECO) maintains extensive records on the housing units it serves. BECO records show whether a unit is being serviced (occupancy), who is paying the electric bill and his address, and dates of installation for the current tenant. Also, the BECO records form a cross check on other information sources with respect to the total number of units per structure.

The assumption was that BECO records could provide data regarding tenant turnover and vacancies which when applied over several streets or areas might indicate something about the nature of deterioration in various units. Contacts with BECO officials proved fruitful in terms of assuring accessibility of their records for this project. Also,

these records could be continually available for input to a monitoring system upon granting of minimal compensation and/or feedback[6] to cover BECO's costs of programming and computer time.

6. City of Boston Building Department

The Building Department maintains records on all building permits issued under the City's Building Code from about 1890 and records of all violations of the Building Code. The building permit records give information on the type of structure on each parcel (if built after 1890) and the date of construction. Also given are the histories of additions, alterations, and conversions of the original structure.

Violations of the Building Code usually consist of structural or gross deficiencies of mechanical systems which tend to result either in the abandonment and demolition of the buildings involved. Such information is transferred to the Assessor's records and results in reassessments of property value or tax action against delinquency. Building Department administrative rules disallow free and open access to the Department's records. Addresses must be submitted separately to Department personnel who thereupon institute retrieval of each record from the files. The process is cumbersome and time consuming and was beyond the time capability of this project and that of the Building Department.

7. Census Data

The census provides generally accurate aggregated data on population, income, rent levels, and property value. Much of this information would have been useful to this project; however, the complete release of 1970 census data[7] did not occur within the project time frame (January - May, 1971).

8. City of Boston Collector-Treasurer, Tax Title Division

The Tax Title Division maintains data organized by ward and name of owner showing amounts of tax delinquency, position in foreclosure process,[8] and dates when properties enter various stages of the foreclosure process.

This kind of information deals directly with forfeiture which is viewed as a potential indicator. Although information in the Tax Title Division is not public, it was made accessible to this project. Naturally, the City could count on continuous accessibility from the Collector-Treasurer should it implement a housing monitoring system.

9. City of Boston Housing Inspection Department

The Housing Inspection Department (H.I.D.) files contain records of violations of Section II of the State Sanitary Code. H.I.D. files list the name and address of the current owner, nature of violations, dates of inspections,

date of complaint to owners, date and reason for mark-off (closing of case). Information pertaining to owners could be of value for cross checking absentee ownerships. The nature and number of code violations could give an indication of both the current level of maintenance and the degree to which the building has deteriorated. Such data might form a cross check with visual surveys. The speed with which an owner responds to the H.I.D. enforcement process might be a clue to his willingness to institute proper maintenance or perhaps a clue to his financial capability to initiate repairs. Reasons for mark-offs are important because in cases of serious violations the result is often the vacating and boarding up of a building (abandonment).

Use of such data would have to be carefully applied, however, as H.I.D. cases are nearly always the result of a tenant or tenant group complaint and therefore may not reflect true concentrations of violations or true distribution over time. The reason for this is that in the 1960's a number of tenant groups such as Fair Housing, Inc., and the South End Tenants Council vigorously pressed H.I.D. to act on code violation cases in the Roxbury-North Dorchester communities. Thus, in recent years, H.I.D. files have been filled with relatively great numbers of cases from these areas.[9] Disproportionately large numbers of cases also come from areas such as the Back Bay where student and young professional

residents are in a better position than most other tenants to know what constitutes a code violation and what alternatives of action are available.[10]

H.I.D. is cautious about who may see their case files but cooperates most willingly in situations where their information can be of use to other City functions or agencies.

10. City of Boston Public Works Department, Water Division

The Water Division maintains records of water service to each property parcel in Boston along with information pertaining to ownership, installations and disconnections. Information recorded in the Water Division files must come either voluntarily from owners or by request from the Assessor's Department.

Water is such a basic service, stipulated both in law and formal leasing arrangements, that it offered little hope for insights to maintenance problems. Experience showed non-service of water to be extremely rare; however, when occasional breakdowns of hot water and heat occur, they are generally reported to H.I.D. The conclusion was that because Water Division records were largely second hand and of little significance to the questions raised by this project, it was dropped as a potential information source.

11. Real Estate Agents & Sunday Classified Ads

These were first proposed as possible sources for information regarding prevailing rent levels. Such information might, in fact, have been useful but the immediate problem was in assembling all the available rental-price information into organized data. While overall rental averages could be arrived at, real estate agents and classified ad sources tend only to report formal lease rents. Such sources ignore the many informal non-lease agreements common to many moderate and low-income areas. Also, rents even if accurately and comprehensively reported may not indicate much about housing conditions because rents can be inflated beyond normal expectations (Back Bay-Fenway) and conversely, many rent supplements provide low rents for rather high-quality units.

12. Surveys: Door-to-Door and Visual

Considerations were given to various survey techniques, most notably door-to-door questionnaires to gain information about rents, housing conditions, unit size, unit type, and vacancies; and visual surveys to gather much the same information through records of visual impressions.

The door-to-door technique was beyond the capabilities of this project. It was doubtful the large time expenditure would be justifiably productive given the other

information sources at the disposal of the project. Great use, however, might be made of the visual survey[11] with which cross checks could be made with other information sources regarding exterior physical conditions, vacancies, and abandonments.

Preliminary Investigation

In order to think more constructively about a final research design and to learn which of the indicators and information sources would be most valuable at the formal research stage, a preliminary investigation was conducted. The process consisted of selecting two residential streets, searching through as many information sources as possible for data about the units on those streets, and interpreting the results. In addition to fulfilling the objectives, the crude probe pointed out a number of limitations to be expected at the formal research phase, e.g., number of housing units in the research sample and the prospects for testing completely all the hypotheses.

The criteria for selecting the streets was that they exhibit some evidence of deterioration or be in an area thought to be declining, have primarily a residential land use configuration, and be of small enough size to be surveyed conveniently. A visual survey turned up Monadnock Street in North Dorchester and Greenwich Park in the South End as prospects. Housing on Monadnock appeared to be generally on the decline. Since there were fewer than 100 units, data could be gathered for a 100% sample. Because the units on Greenwich Park

were of the typical South End brick-front variety, it was difficult to ascertain condition purely by visual survey. However, Greenwich was entirely residential with few enough units for a 100% sample. These streets were chosen for the preliminary investigation.

The next task was to provide space for each indicator on a data sheet and reproduce it so that data could be collected for each housing unit. The data sheet provided for assessed value, ownership changes, cash exchanged in sales, records of tax delinquency and forfeitures, and records of code violations. Outside this format, computer readouts were supplied by the Boston Edison Company about current tenants of each unit. The readouts indicated the total number of dwelling units serviced by BECO, and the dates current tenants took occupancy in their units.

In addition to data on assessed value changes, ownership changes, and occasional notations of cash exchanged, basic information on parcel numbers, parcel areas, and building type was obtained from the Assessor's cards for each property. Records of tax delinquencies and foreclosures were obtained from the Collector-Treasurer. Foreclosures were also assumed if the Veterans Administration or a bank appeared as an owner on the Assessor's cards since these institutions do not usually market or manage real estate unless property is "forced" on them through forfeiture. H.I.D. supplied records of Sanitary Code Violations but only for the period 1968-70.

The preliminary test showed that it was difficult to obtain reliable information for sales values (the tax stamp system only indicates cash sales). Without the information about the amount of mortgage at sale, it would not be possible to account for market values. Because market value was also an essential factor in determining the percentage of return per year on investment, the return indicator had to be dropped. Unquestionably, these are important indices of how much upkeep and reinvestment will flow into a building, but the issue here was to select indicators that were both descriptive of deterioration and possible to monitor through available information sources. The formal research task then would test assessed values, ownership changes, ownership type, tenancy changes, forfeitures, and the Sanitary Code violations as potential indicators to the housing deterioration process.

By reducing the number of indicators, it was possible to reduce the number of information sources. The information sources finally chosen were Boston Edison Company, Assessor's Department, Collector-Treasurer Tax Title Division, and the Housing Inspection Department. The visual survey was employed only as a cross check for other data sources.

In addition to guiding the reduction of indicators and data sources, the preliminary investigation raised concern for two issues. First, to proceed toward hypotheses testing, great care would have to be taken in selecting the type of housing units to be studied. Because the housing surveyed in the preliminary investigation varied greatly

in age, construction type and size, no analysis of how indicators behaved could be made. Second, the data collected on Monadnock and Greenwich was far too shallow historically, disallowing any opportunity to observe the behavior of the indicators over time. This suggested that at the formal investigation phase indicators be observed over much longer periods of time.

The experience gained at this stage of the research effort also revealed the limitations to be expected in the more formal investigation. First, there would be definite limits to the number of housing units that could be included in the research sample. The 150 housing unit trial survey of Monadnock and Greenwich expended a week for data gathering, therefore an approximate limit of 350-400 housing units[12] (3-4 weeks data gathering time) was set for the formal investigation. With those limits set, the potential research sample would be large enough to judge the validity of the first hypothesis (which hopefully would lead to the identification of indices to deterioration), but not so large as to be prohibitive to analyzing all necessary data. Regardless of the size of the research sample, conclusions made regarding the second hypothesis would have to be limited to the specific types of housing surveyed. This limitation encourages the selection of a sample based on very few types of housing concentrated in one area so that the only variables would be the prospective indicators. Finally, as for testing the application of a housing decline index as a basis for a decision aid for public policy, final judgment would have to be suspended pending formal commitment to such a

system by policy planners. To encourage such a commitment requires adherance on the part of this project to the criteria that the monitoring system be simple to implement and operate, and compete with the cost of existing decision techniques.

The Selection of Housing Units

To form a basis for selecting housing units at the formal investigation phase, two factors were considered: First, a set of physical criteria and second, a set of geographic distribution criteria.

Three physical criteria for selecting housing units were stated in the preliminary investigation phase section. They are age, construction type, and size. It seemed reasonable to assume age has at least a long-range effect on the process of deterioration as well as potential impacts on maintenance costs. Building type was important because it accounted for construction cost per unit area which is a rough index of the quality of materials and construction. In other words, the assumption is that a three-family, three-floor wood walk-up built in 1910 has deteriorated more rapidly or costs more to maintain than a three-family, brick walk-up built in the same year and given the same care. In two respects size was an important consideration. First is the number of units per structure which determines the total cash flow for a building. In larger structures, a superintendent devotes full time to maintenance while in smaller (two- or three-family) units only periodic attention may be given to upkeep. Second is the number of rooms per unit which usually determines the number

people per unit. Larger units naturally attract families with several children and children tend to be more intense users of the home environment.[13] Rather than mixing in these variables at the analysis stage, the decision was made to hold age, type and size constant for all units.

Further thought about the selection of housing units raised questions about their geographic distribution. The experience of the Monadnock-Greenwich test suggested the concentration of the research sample in one area. The concept of area is important for another reason. Existing public policies such as urban renewal and residential rehabilitation have tended to focus on the problems of particularly blighted areas or neighborhoods. Even the Section 117 Limited Rehabilitation Program discussed in Part I seeks to arrest decay at the scale of neighborhoods. This approach is not true of the more traditional code enforcement, civil remedy, and tax abatement tools which respond to individual problems as they are brought to the attention of the public agency. Clearly, this randon treatment process has contributed to the failure of traditional tools to act effectively against large-scale housing deterioration.

Since public efforts toward preventive maintenance for housing will, in all probability, continue to act on a neighborhood-wide basis, the decision aid proposed here logically should warn of deterioration at the same scale.

In searching out specific neighborhoods, three criteria were applied: size, variation in housing conditions and the impact of neighborhood selection on agencies involved with housing conservation. Following is the basic reasoning behind the use of these criteria.

Because the project was limited to a survey of 350-400 housing units, the neighborhood in which those units were located would have to be small enough for that sample to be representative of housing conditions.

To form authoritative conclusions about the validity of indicators and their value as an early warning device, the neighborhood should display a wide variety of housing conditions. In addition, variations in conditions would be helpful to an historical analysis which, when applied to dilapidated units, deteriorating units, and adequately-maintained units, provides two perspectives of how potential indicators behave. First, the histories of the dilapidated units show whether the symptoms have grown worse over time. Second, comparisons of the behavior of indicators in dilapidated units with those of deteriorating and adequately-maintained units will demonstrate whether salvagable units are following a pattern toward serious decline. Barring the existence of such mixed conditions, it was hoped that well-maintained housing could be found nearby to act as a control.

Finally, it was important that the decision on a particular neighborhood be made in conjunction with the interests of agencies currently involved in housing conservation efforts because it is they who will set the policy this study seeks to influence. As outlined in

Part I, current Concentrated Code Enforcement programs offer the most promising model for redeeming many housing units now slipping toward serious deterioration. Locally, the Housing Inspection Department, the Model Cities Administration of Boston[14] and to a lesser degree the Office of Public Service (O.P.S.) maintain interests in the administration and expansion of Concentrated Code programs. If, in fact, increased federal resources are made available for this program and others like it, decisions regarding local policy would most certainly lie with H.I.D. and M.C.A. Model Cities has within its neighborhoods most of the areas designated for future Concentrated Code Enforcement (see map, p. 50). Therefore, as it stands now, M.C.A. seems to hold the greatest potential role in future local housing conservation programs; therefore, it was from this agency advice was sought on neighborhood selection.

The question now was how the housing units should be distributed within neighborhoods. The preliminary testing procedure showed streets to be important organizing units for data gathering as most potential information sources either deal in terms of streets (Boston Edison, H.I.D.), or could easily do so (Assessor's Department).

To gain "representative" streets, factors such as proximity to commercial and public facilities, and the impacts of government policy were kept constant. The easiest way to do this was simply to select streets that had no commercial or public facilities and had not "benefited" from government renewal and rehabilitation programs.

EXISTING NEW AND AMENDED CONCENTRATED CODE ENFORCEMENT AREAS (SHADED) AND MODEL CITIES AREA

Consideration was also given to distances from commercial and public centers as well as distances from obvious job markets. The underlying rationale was to hold constant the market desirability of streets, realizing that commitments to reinvestment may vary according to the demand or desirability of housing units. The number of streets selected within the neighborhood was influenced by the size of the sample (350-400 units). If Monadnock Street (~100 units), surveyed in the preliminary investigation, were used as a guide, the formal investigation could examine three or four streets of 75-100 units each. The decision was made to survey four streets.

As well as participating in the selection of the neighborhood, Model Cities was asked to suggest a number of prospective streets within that neighborhood. The reasons for bringing M.C.A. into this aspect of choosing the sample are the same as those for neighborhood selection.

The Research Method

The objective of the research phase was to test the validity of the three hypotheses stated on page 28. To accomplish this objective, it was necessary to develop a research method capable of delivering the kind of data that would generate conclusive results about the hypotheses. By pulling together considerations made in the previous subsections, the final methodology for the formal investigation emerges.

This method may be viewed as a three-stage process. First, a set of probable indicators to housing deterioration are proposed along with a set of matching information sources. The indices are drawn

from symptoms of the decay process, making no claim to account for causes. The information sources are selected on the basis of how well they dispense descriptive and accessible data concerning the indicators. Second, the three hypotheses which allege the existence and describe the behavior of indices are tested through an historical analysis of a housing sample. Third, the selection of the housing sample, which is to include no more than 400 units, is made in accordance with two sets of criteria. One relates to physical characteristics of age, construction type and the sizes of building and units; the other set of criteria relates to the geographic distribution of the housing sample. Two geographic components are important to this kind of study. The first is neighborhood, the selection of which is governed by the mixture of housing conditions, size as a function of area, and consultation with the Model Cities Administration. The second component is streets, the selection of which is governed by proximities to commercial and public facilities and the absence of public policy impacts, size, and the interests of Model Cities Administration.

Upon the selection of housing units for the study, sample data about the prospective indicators is collected for each unit, then organized for analysis. The format of data organization was left unstructured until the collection stage when the amount and nature of the data could be assessed. Tentatively, a data sheet similar to the one used for the preliminary investigation was created to receive raw data for each of the housing units in the sample. (See data sheet p. 64)

To further clarify the methodological process, the diagram on the following page is included, tracing the steps outlined above.

Section 2 - The Formal Investigation

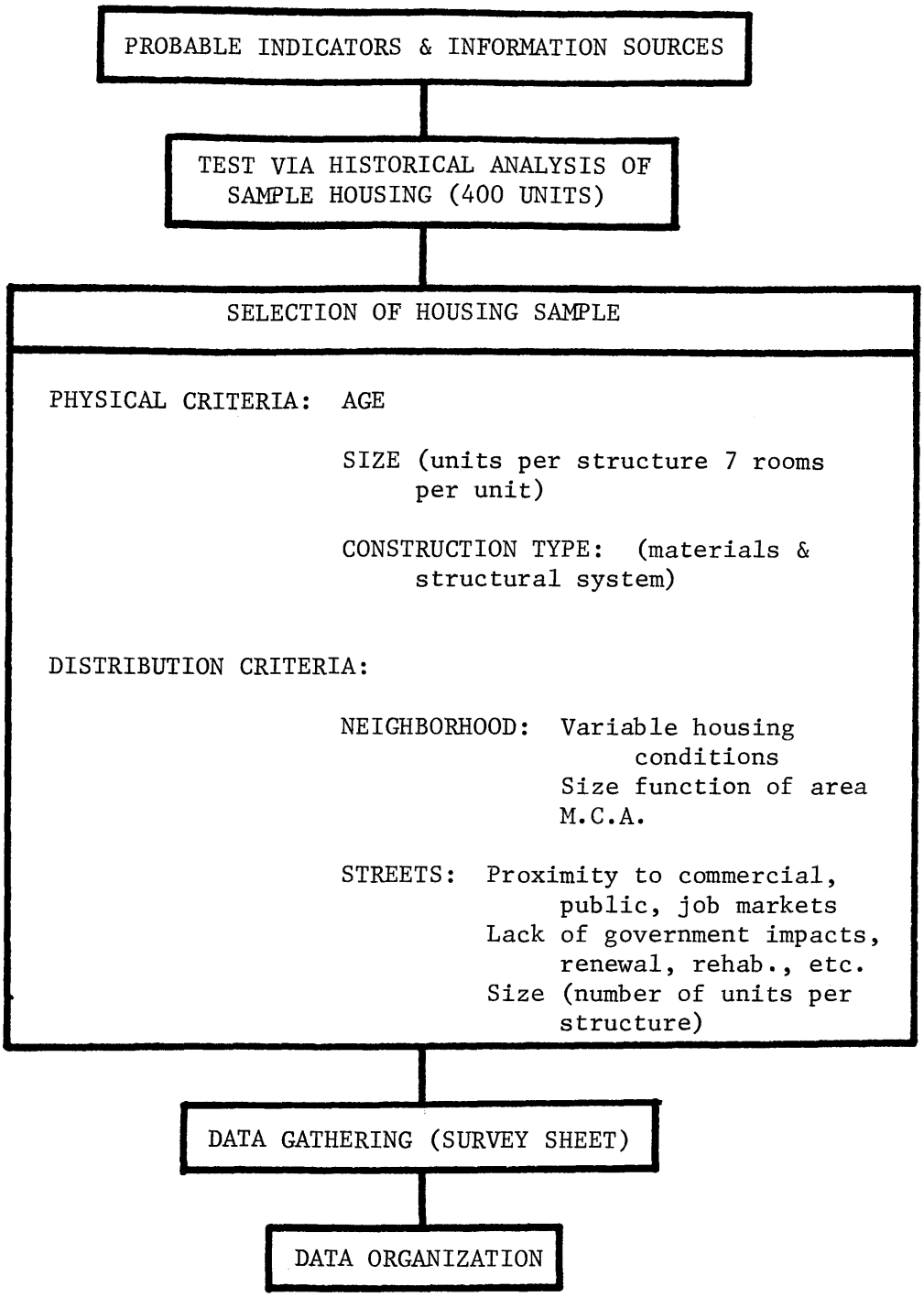
Guided by this final methodological structure, it was possible to proceed with a formal investigation. In accordance with that structure, a four-stage process followed: first, a restatement of the prospective indicators drawn from the Section 1; second, the selection of housing for the research sample; third, the gathering of data about each indicator for each housing unit; and finally, the organization of that data by street and by indicator.

Prospective Indicators and Information Sources

As noted earlier, the preliminary investigation of Monadnock Street and Greenwich Park reduced the number of prospective indicators to assessed value, ownership changes, ownership type, tenancy changes, forfeitures, and Sanitary Code violations. These form the set of prospective indices with which to test the hypotheses. Data concerning these prospective indicators are to be drawn from the Assessor's Department, the Boston Edison Company, the Collector-Treasurer Tax Title Division, and the Housing Inspection Department. These represent accessible data sources both for this study and any proposed deterioration monitoring function developed by the City.

The Housing Sample

The primary task of the investigation was to select a sample of housing units that would fit the criteria established by the research


PROBABLE INDICATORS & INFORMATION SOURCES
TEST VIA HISTORICAL ANALYSIS OF SAMPLE HOUSING (400 UNITS)
SELECTION OF HOUSING SAMPLE
PHYSICAL CRITERIA: AGE
SIZE (units per structure 7 rooms per unit)
CONSTRUCTION TYPE: (materials & structural system)
DISTRIBUTION CRITERIA:
NEIGHBORHOOD: Variable housing conditions
Size function of area M.C.A.
STREETS: Proximity to commercial, public, job markets
Lack of government impacts, renewal, rehab., etc.
Size (number of units per structure)
DATA GATHERING (SURVEY SHEET)
DATA ORGANIZATION

method. The first limitation was the size of the sample, calculated from the preliminary test at 350-400 units. The other criteria related to the physical characteristics of age, type and size, as well as geographic distribution by neighborhood and streets.

The physical criteria were to be held constant over all the units selected. To fulfill that requirement, 2 1/2- and 3-floor wood frame walk-up structures were designated as the construction type. Thousands of these two and three deckers, as they are popularly known, were built from the late 1800's to the beginning of WWI. [15] This suggested the age of sample housing should date from the late 1890's to pre-WWI. The number of rooms per unit is quite uniform for this kind of housing type. Most have two or three bedrooms or four to five rooms.[16]

The next concern was the spacial distribution of the sample. The first consideration was given to the neighborhood component. Visual surveys done for the preliminary investigation showed the area surrounding Monadnock Street to be residential and rich in 2 1/2- and 3-floor wood framestructures. Included in this area was a portion of the Model Cities district in Roxbury (see map, p. 56) Model Cities is divided into subareas which roughly correspond to neighborhoods. [17] Immediate interest centered on Model Cities subareas 4, 5, and 6. Taken as one, these subareas accounted for nearly all the neighborhood criteria. A few streets could be taken as representative of areawide conditions. Also, there were evidences of various levels of housing[18] maintenance except for any significant number of units

MODEL CITIES AREA. SUBAREAS 3, 4, 5 & 6 INDICATED.

or streets in truly prime condition. As a part of the Model Cities district, results from research into the deterioration of this neighborhood perhaps would be of interest to M.C.A.

The second consideration was the distribution of the housing sample over particular streets. Working within the Model Cities neighborhood a number of streets[19] were proposed which could fulfill the criteria. From these, three seemed well suited for the investigation. Below, is a brief description of each of the streets finally selected noting responsiveness to the selection criteria.

1. Ellington Street is located at the southern end of the study neighborhood straddling subareas 5 and 6. It is situated within two blocks of commercial and public facilities on Blue Hill Avenue. Government impacts were not apparent from the visual survey. The size of Ellington Street, however, was beyond the proposed limits of 100 units per street but it was possible to view Ellington as really two streets because the upper and lower halves had distinctly separate identities. The structures on Ellington Street date from pre-1900. Housing was divided roughly in half between 2 1/2-floor wood frames and 3-floor wood frames. The distribution of the housing was such that primarily two-deckers were situation on the upper leg of the street with three-deckers along the bottom leg. Ellington had the added feature of rather

pronounced variation in the conditions of the two housing types. The two-family units on Upper Ellington appeared in generally good repair (deteriorating), while the lower end was severely blighted (dilapidated) with evidences of abandonment and demolition.

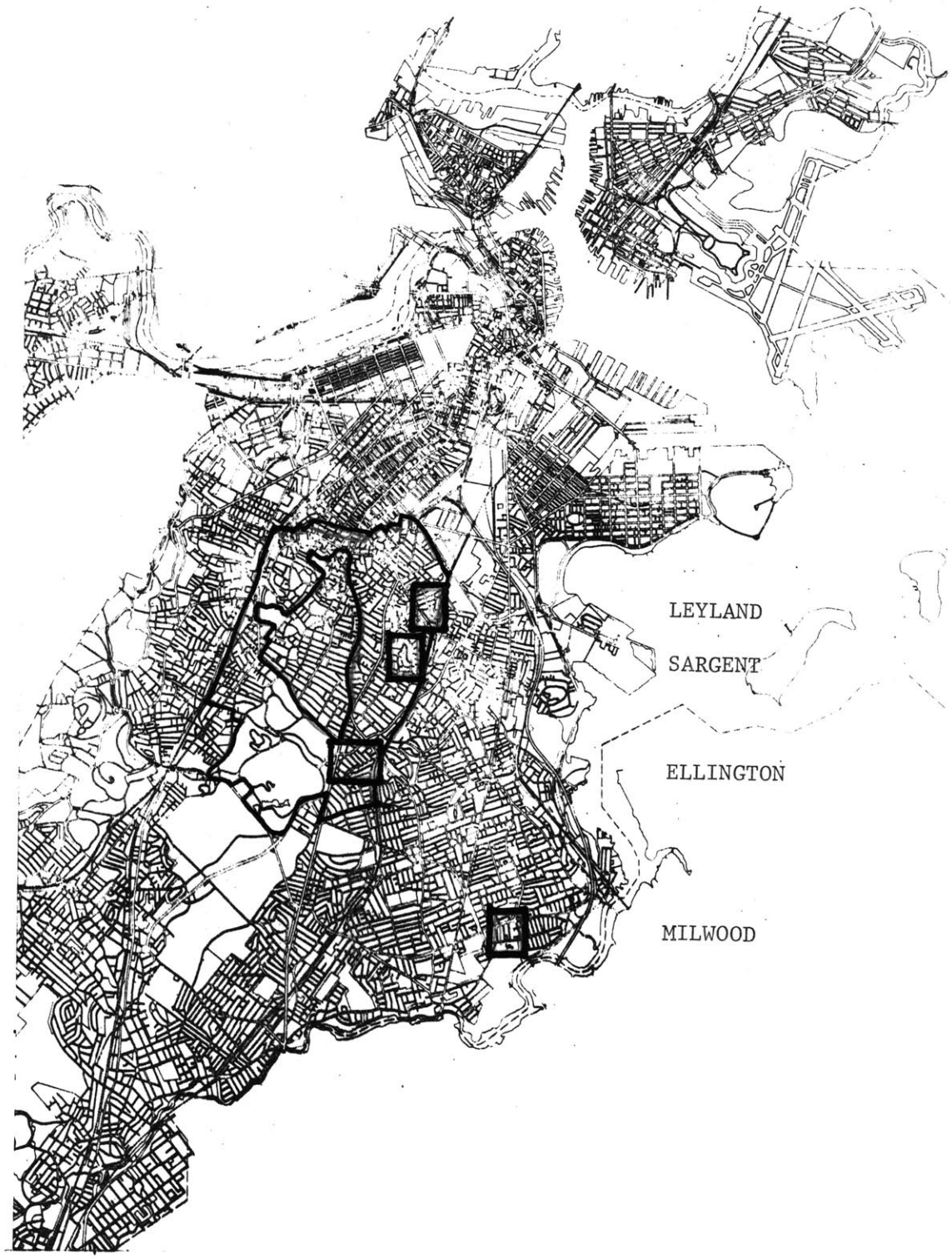
2. Leyland Street is situated in Model Cities subarea 4 and typifies the often dilapidated state of the housing in the northern end of the study neighborhood. It has a three block proximity to major shopping and public facilities on Dudley Street at Columbia Square. There appeared no evidence of any benefits from public policy. Indeed, the only evidence of any reinvestment on Leyland was the presence of a small community school at the northwest corner housed in two converted three-family brick buildings. Leyland fit the size criteria well with about 65 units, most of which were pre-1900 vintage. However, about 30% of the units were in three-family brick structures which breaks with the construction type criteria. (Were the selection process to be repeated, Leyland probably would be excluded[20]) Originally, Leyland was viewed as an overriding choice based on the consideration of criteria noted above. All units, both wood and brick, were the 3-floor variety with no more than five rooms to a unit.

3. Sargent Street is located in Model Cities subarea 4, three blocks south of the commercial and public center mentioned in the section on Leyland Street. Housing conditions can best be summarized as deteriorating but far from dilapidated. Impacts of private or public reinvestment were not apparent for any of the units on Sargent Street. In terms of size, it met the criteria with about 100 units. All of the predominantly two-family wood frame structures were built prior to WWI. The unit sizes were of the 4-5 room variety.

Together, these streets represented the gradation of conditions in the Model Cities neighborhood which run from deteriorating to dilapidated. Also, all the streets were completely residential bearing similar relationships to the commercial and public amenities thought important to their market desirability.

The neighborhood, however, lacked an essential street type, a street in prime condition and with no evidences of disrepair, which would form a control at the testing stage. To find a street with adequately-maintained housing units, there arose the problem of having to search outside the Model Cities district. The first thought was to look toward North Dorchester, which is characterized by well-kept three deckers. However, most of the area in which good conditions prevail is within the Fields Corner-Ronan Park Concentrated Code Enforcement area, clearly a significant impact of public policy.[21] To move in other directions was equally fruitless. No prime housing of the type

LOCALE OF SAMPLE STREETS IN BOSTON



used in this study can be found anywhere north of the Model Cities area unless Cambridge is considered. To the east, South Boston is the closest area with well-maintained three-deckers. To the west, the only possible choice is in Jamaica Plain. The only reasonable alternative was in comparatively nearby South Dorchester. A visual survey of this area led to the selection of Milwood Street.

4. Milwood Street is located in South Dorchester just two blocks from commercial and public facilities on Gallivan Boulevard (see map, p. 60). Being in a relatively outlying area, although the southeast expressway is only a half mile to the east, Milwood has not been impacted directly from public policy. In terms of size, Milwood fit the criteria well with about 60 units, distributed in two and three-family wood frame structures. All but two of the buildings were pre-WWI, the two exceptions being single family houses built in the late 1950's. The predominance of two and three deckers made Milwood an excellent control for the streets in the Model Cities neighborhood.

With the housing sample selected, the next task was to gather data about all the prospective indicators for all the housing units.

The Data Gathering Process

The data gathering process was important as a potential model for a monitoring system developed by the City. Such systems might operate either through a fine-grain approach similar to this project or

through a more sophisticated machine-oriented approach similar to the Philadelphia monitoring system for housing. [22] Either method would require efficient interfaces with information sources both to reduce operational costs and to insure frequent input to the system. Therefore, the objective of the data gathering function for this project was to collect the data in an efficient and organized manner.

Data was brought to the project in two ways: first, data submitted to the project by the information sources; second, data collected by the project from records of the information sources. Data from the Boston Edison Company was gathered via the first method while data from the Assessor's Department, Collector-Treasurer, and the Housing Inspection Department were collected through the second.

Because the records of Boston Edison are stored on computer tape and the company has strict union regulations governing access to the tapes, BECO requested they submit computer programs for the specific data required by the project. This data came in the form of computer readouts, listing the address, name of customer, and billing address if different than the service address, and the date of installation for each dwelling unit serviced. This provided a "one dimensional view" of tenancy by indicating the date on which current tenants took occupancy in their units. BECO does not keep histories of occupancies for the units they service therefore the numbers and frequencies of tenancy changes could not be determined. BECO, however, provided a genuine service to this project by offering the readouts for all

streets requested at no cost. In terms of a proposed monitoring system where input would be required in greater numbers with greater frequency, the City or agency involved would have to extend compensation to BECO for computer and programming time. This compensation might take the form of both cash fees paid to BECO and feedback to BECO regarding errors in their records.

Data drawn from the records of the Assessor's Department, Collector-Treasurer, and Housing Inspection Department was organized on the Boston Housing Conservation Study survey sheet (see p. 64), using one sheet for each parcel. This portion of the data gathering process began at the Assessor's Department where basic items such as address listings for each street, parcel numbers, and building type were collected. The important data regarding assessment and ownership histories since 1955 were also recorded for each parcel. Next, each parcel was checked through the Collector-Treasurer Tax Title Division for histories of tax delinquencies and foreclosures. Finally, H.I.D. records for each street were checked and violations recorded for each address. The H.I.D. records only cover the last three years, thus allowing only a limited view similar to the BECO tenant records. The entire data gathering process took one man-week of time which means that manual data gathering could be used in a City early warning function that monitored housing once per quarter or as often as once per month.

BOSTON HOUSING CONSERVATION STUDY - OPS SURVEY SHEET

Assessor Records:

Wd/Pct. _____ Parcel No. 2455
Address 48 Ellington Building Type 6F 3 W D53

		Land	Building	Total
Area		5668		
Valuation				
		$1,700	$8,800	$10,500
	1962	1,700	7,800	9,500

Ownership History:

Name Goldsmith, Wm. H, Jr. & Marilyn Name _____
Address 12 Columbia Rd. Dor(B.E.) Address _____
Date $13.20 11/1/65 7993 281 Date _____

Name Bayer, Bernice Name _____
Address _____ Address _____
Date _____ Date _____

Name _____ Name _____
Address _____ Address _____
Date _____ Date _____

Collector-Treasurer:

"Demand" NO
C-T Records Tax Taking in Court _____
"Ripe" for Foreclosure _____
Registered Citations _____
Foreclosure Decrees _____

H.I.D. Building Department Records of Violations

Legal Notice		Reinsp.	Hearing	Reinsp.	Nature of Violation	Case Closed
Written	Served					
7/29/69 5-Day	7/30/69				Plumbing leaks Broken windows	8/30/69

In addition to the survey sheets, maps for each street at the scale 1" = 100' were obtained at the B.R.A. for use in cross checking address locations, and 1" = 200' for the presentation of findings.

Data Organization

The basic approach of this study was to meet the project objectives through the historical analysis of deteriorating housing units. An initial suggested time frame was 15-20 years, or that time period prior to which most of the housing considered in this analysis was still in adequate or prime condition.[23] The sixteen-year time frame was chosen for convenience as the current Assessor's data cards were begun in 1955 and records changes in assessment and ownership since that date. In addition, the sixteen-year time frame, 1955-1970, has been divided into three periods (1955-60, 1961-65, and 1966-70) for the purpose of breaking down the data for comparative analysis.

The nearly two hundred sheets of raw data are not presented here as it was obviously more efficient to refine the data and present it in chart and map form (see appendix page 97). For each street there is a total of five charts and thirteen maps. On the charts, recorded for each address are assessment changes, ownership changes and ownership type, the term of occupancy for each current tenant, forfeitures, and the number and nature of Housing Code violations. The maps correspond to each of these categories and are included to show graphically dramatic changes in assessments, ownership type, tenant occupancies, forfeitures and Sanitary Code violations. The map series also dramatizes the variance of each indicator as compared over the four streets.

Section 3 - Findings

To facilitate the understanding of the data, a brief section is devoted to the findings for each street describing the behavior of the prospective indicators over time, in the form of brief summaries for each of the streets. Charts and maps are included which present complete data for each property. The presentation has been organized so that the most deteriorated streets (Lower Ellington and Leyland) appear first, followed by the less decayed streets (Upper Ellington and Sargent) and finally the control street (Milwood).

Lower Ellington Street

The Assessor's records show a total of 144 dwelling units in 48 structures on Lower Ellington Street. One hundred of the units are occupied with 44 either temporarily vacant or abandoned. Below, for each of the prospective indicators is a summary of the data from the charts.

Assessed Value Changes: The general direction of assessment changes on the lower portion of Ellington Street has been one of decline. Of the 48 structures, only three, or 6%, have remained at their 1955 assessed values. The following table summarizes the assessment declines for the various five-year periods relative to the 1955 base.

Segment	# of Structures to Decline: over 25%	over 50%	over 75%
1955-60	2	0	0
1961-65	17	2	1
1966-70	23 ~50%	13 ~30%	10 ~23%

Ownership Changes: A glance at the charts and maps indicates rather evenly distributed ownership changes over time. Below is given total changes for Lower Ellington for the various five-year segments. Of the 48 structures, only 7, or 15%, were not traded during the sixteen years, 1955-70.

Segments	Total Ownership Changes
1955-60	44
1961-65	28
1966-70	29

Ownership Type: From the data, it was possible to spot obvious absentee owners such as realty trusts which appear in the Assessor's records. Also, the addresses of owners listed in H.I.D. cases were cross checked for absenteeism. Finally, the BECO records were programmed to list the billing addresses. In those cases where the address of the unit serviced with electricity and the billing address were not the same, the assumption was that these represent cases in which an absentee landlord is paying for electric service. Following is a breakdown of the total number of proven absentee owners of property on Lower Ellington for each of the five-year periods.

Segments	# of Absentee Owners	% of Total Structures
1955-60	17	28%
1961-65	12	25%
1966-70	18	30%

Forfeitures: Over the sixteen-year period, 19 structures, or 40%, have been foreclosed at least once by the City, banks, or Veteran's Administration. The occurence of these forfeitures are summarized below for each of the five-year periods.

Segments	# of Forfeitures	% of Total Structures
1955-60	3	6%
1961-65	6	12%
1966-70	13	25%

Code Violations: For the period January, 1968 through December, 1970, 13 structures, or 25%, had at least one code violation. The total number of individual cases brought by H.I.D. was 50, which were evenly split with 50% serious building systems breakdowns (no heat, water, plumbing), and 50% routine (rubbish).

Tenancy Changes: The tenancy records give a view of current tenants only by listing the dates on which they moved into their units. The chart on page 74 indicates the dramatic (70%) turnover of dwelling units in the period 1966-70. Only 9 units (~9%) are occupied by long-term (pre-1955) residents.

Leyland Street

The Assessor's records show a total of 104 dwelling units in 35 structures on Leyland Street. Electric service is only being delivered to 40 units indicating over half are temporarily vacant or abandoned. Following is a summary of the sixteen-year history, 1955-70, for each prospective indicator.

Assessed Value Changes: Surprisingly, in spite of so many abandoned units, assessed values have not declined as sharply as Lower Ellington. Of the 35 structures on Leyland, 12 have not declined in assessed value since 1955, which amounts to just under 40% of the street's stock. A more detailed view of assessments is given in the following table.

Segment	# of Structures to Decline: over 25%	over 50%	over 75%
1955-60	2	2	0
1961-65	2	0	1
1966-70	11 ~36%	10 ~35%	8 ~26%

Ownership Changes: Overall ownership changes are declining but the total number of changes for each segment is quite high relative to total of all structures on the street. Three structures, or 8%, were not traded between 1955-70.

Segments	Total Ownership Changes
1955-60	57
1961-65	43
1966-70	34

Ownership Type: Piecing together data from the Assessor, H.I.D. and BECO, there follows a breakdown of proven absentee ownerships.

Segments	# of Absentee Owners	# of Total Structures
1955-60	10	27%
1961-65	25	73%
1966-70	16	48%

Tenancy Changes: The tenancy records give a view of current tenants only and the dates on which they moved into their units. The chart on page 130 depicts the heavy turnover in units from 1966 to 1970 preceded with a smaller number of longer-term residents.

Forfeiture: During the sixteen years covered by this study, 13, or 40%, of the structures have been foreclosed at least once by the City, banks, or Veteran's Administration.

Segments	# of Forfeitures	% of Total Structures
1955-60	3	8%
1961-65	4	10%
1966-70	10	30%

Code Violations: For the period January 1968 through December, 1970, 9 structures, or 25%, of the total stock on Leyland Street had at least one Sanitary Code violation. The total number of cases was 13 which were primarily serious building system failures.

Upper Ellington

There are a total of 70 dwelling units in 23 structures on Upper Ellington Street; 48 of the units are currently served by Boston Edison indicating that 22 units are temporarily unoccupied or abandoned. Included below is an analysis of Upper Ellington Street for each indicator covering the period 1955-70.

Assessed Value Changes: Of the 23 buildings on Upper Ellington 8, or 30%, have not been reassessed since 1955. Of the reassessed properties, one has increased in value while the remaining 14 have declined. The table below demonstrates the trend of declines over the period 1955-70.

Segment	# of Structures to Decline: over 25%	over 50%	over 75%
1955-60	1	0	0
1961-65	2	2	2
1966-70	7 ~27%	6 ~25%	5 ~23%

Ownership Change: Generally, ownership changes have tended to decline over the three segments. A total of 6, or 25%, of the 23 structures have not been traded in the sixteen-year analysis period.

Segments	Total Ownership Changes
1955-60	20
1961-65	16
1966-70	10

Ownership Type: The table below illustrates the distribution of proven absentee owners over the three analysis segments.

Segments	# of Absentee Owners	% of Total Structures
1955-60	6	25%
1961-65	8	30%
1966-70	5	23%

Tenancy Changes: Of the units reported through BECO records, fully 90%, or 48, have changed occupants in the last five years of the sixteen-year analysis period. Only two units are currently occupied by pre-1955 residents.

Forfeitures: Only 5 of the 23 structures, or 19%, were foreclosed during the sixteen-year analysis period. The table below indicates the total number of forfeitures and their distribution.

Segments	# of Forfeitures	% of Total Structures
1955-60	2	8%
1961-65	1	4%
1966-70	3	12%

Code Violations: Six structures were involved in Sanitary Code violation cases in the 1968-70 period. Of these, 3 were serious building function breakdowns.

Sargent Street

The Assessor shows 54 units on Sargent Street in 41 structures with 38 of the units now supplied with electric service. Thus, 16 units, or 30%, are temporarily unoccupied or abandoned. Following is the historical analysis of Sargent in terms of each indicator.

Assessed Value Changes: Of the 41 structures on Sargent Street, 12, or 27%, have no records of reassessment from 1955-70. Of the 29 reassessed properties, five were increased in value, the others represent declines. Below is a summary of the reassessed properties for the time segments given.

Segments	# of Structures to Decline: over 25%	over 50%	over 75%
1955-60	0	0	0
1961-65	3	2	2
1966-70	15 ~35%	8 ~20%	2 ~5%

Ownership Changes: The number of ownership changes are rather evenly distributed over the three time segments and of 41 total structures 8, or 20%, have not been traded in the 1955-70 period. Below is a summary of ownership changes for the three time segments.

Segments	Total Ownership Changes
1955-60	18
1961-65	23
1966-70	32

Ownership Type: Again, many proven absentee owners could be found by cross checking data from the Assessor's files, BECO, and H.I.D. Generally, Sargent Street has had a history of proportionately fewer non-resident owners than Lower Ellington and Leyland.

Segments	# of Absentee Owners	% of Total Structures
1955-60	1	2%
1961-65	4	10%
1966-70	18	48%

Tenancy Changes: The records of current tenants supplied by Boston Edison show over 50% of the units have changed occupants in the period 1966-70. Only 5 residents, 12% of the total, are pre-1955.

Forfeitures: Of the 41 structures on Sargent Street, 11 or 27%, have been foreclosed at least once. As the table below indicates, essentially all the foreclosure activity has occurred in the last five years.

Segments	# of Forfeitures	% of Total Structures
1955-60	0	0
1961-65	1	2%
1966-70	12	28%

Code Violations: Only four units on Sargent Street were involved in Sanitary Code violation cases during the period January, 1968 to December 1970. Of these, 3 involved serious failures in building function.

Milwood Street

The Assessor's records show a total of 46 dwelling units in 24 structures all of which are served with electricity indicating 100% occupancy. Below for each prospective indicator is a summary of the data from the charts.

Assessed Value Changes: Most of the five reassessments made on Milwood between 1955 and 1970 were for increases in values. A total of 19 structures, or 76%, remained at their 1955 base assessment. Below is a summary of the declines.

Segments	# of Structures to Decline: over 25%	over 50%	over 75%
1955-60	1	0	0
1961-65	1	0	0
1966-70	1 ~4%	0	0

Ownership Changes: The trading of properties is a part of history on Milwood Street. In the last five years, no properties have changed hands. The table illustrates the number of changes for the three segments.

Segments	Total Ownership Changes
1955-60	12
1961-65	8
1966-70	0

Ownership Type: There were no proven absentee owners on Milwood Street. Both the Assessor's records and the BECO data showed no evidence of anything but resident owners.

Tenancy Changes: Of the current tenants, 13 or 27% moved onto the street in the period 1966-70. The bulk of the current tenants, 60%, date from the pre-1960 period.

Forfeitures: In the sixteen years surveyed by this study, no properties were foreclosed on Milwood Street.

Sanitary Code Violations: For the period 1968-70, no code violations were recorded for Milwood Street.

FOOTNOTES - PART II

[1]Such prospective indicators were drawn in part from the work of George Sternlieb in Newark, New Jersey and New York City.

Sternlieb, George, The Tenement Landlord, pp. 40-61.
Sternlieb, George, The Urban Housing Dilemma, pp. 15-21.

[2]Sternlieb, George, The Tenement Landlord, p. 139.

[3]Section on Registry of Deeds.

[4]The visual survey is the prime method used by the Census Bureau for determining housing conditions.

U.S. Department of Commerce, "Measuring the Quality of Housing: An Appraisal of Census Statistics Methods," p. 1.

[5]This is born out by personal experiences in the Roxbury-Fenway area where elderly often have life savings invested in their homes.

[6]BECO is particularly interested in feedback possibilities, i.e., the correction of their records.

[7]In an interview with Alexander Ganz, Director of Research for the Boston Redevelopment Authority, it was learned that the B.R.A. will make use of 1970 census data for its own housing study. As presently constructed, the B.R.A. study will report housing conditions on something approximating the scale of wards, but does not deal with the finer-grain analysis planned for this research effort.

[8]That process is summarized by the following steps:

a. "Demand" sent out for unpaid taxes,
b. Entry into court by Collector-Treasurer to foreclose property,
c. Foreclosure by the court,
d. Registered citation sent out to owner,
e. Foreclosure decreed in the City Record.

[9]Interview with Mrs. Sadelle Sacks, Director of Fair Housing, Inc., August, 1970.

FOOTNOTES - PART II (cont.)

[10]Interview with Frank Henry, Director of the Housing Inspection Department, August, 1970.

[11]The visual survey is valuable as it is applied to the process of making preliminary decisions about Concentrated Code areas. The monitoring system can aid in detailed analyses necessary for final selection.

[12]A distinction should be noted between parcel of land and housing units. Parcels may have on them several units of housing.

[13]An analysis of the St. Joseph's Cooperative Homes prepared in December, 1970, showed rather conclusive proof that children represent an added burden on maintenance efforts.

[14]Refer to the Boston area map. The Model Cities district occupies most of Roxbury in Central Boston.

[15]Warner, Sam B., Streetcar Suburbs, p. 50.

[16]The term rooms is used here to indicate either living room, dining room, bedroom or kitchen. This excludes bathrooms and hallways.

[17]The term neighborhood is used here to define an area of generally homogeneous population and housing type.

[18]The terms dilapidated, deteriorating and sound were meant to describe the prevailing conditions on the streets in question, i.e., the condition of most of the housing on the street. Lower Ellington and Leyland Street were termed dilapidated because most of the housing on those streets exhibited some or all of the following critical defects:

1. Holes, open cracks, or rotted, loose or missing material over large areas of the foundation, outside walls, roof or chimney (materials may be clapboard siding, shingles, bricks, concrete, stonework, plaster or floorboards).

FOOTNOTES - PART II (cont.)

2. Substantial sagging of walls or roof.
3. Extensive damage by fire, vandalism or weather conditions.

Upper Ellington and Sargent Streets were classified deteriorated because most of the housing on those streets exhibited some or all of the following intermediate defects:

1. Holes, open cracks, rotted, loose or missing materials in foundation, walls, roof or chimney but not over a large area.
2. Shaky or unsafe porches, steps or railings.
3. Some rotted or loose windowframes or sashes.
4. Few broken or missing windowpanes.
5. Wear on doorsills, doorframes, outside or inside steps or floors.

Milwood Street was termed sound because most of the housing on this street exhibited no critical or intermediate defects.

The above classification was drawn from a paper of the U.S. Department of Commerce titled "Measuring the Quality of Housing: An Appraisal of Census Statistics and Methods," Working Paper No. 25, Washington, D. C., 1967, p. 1 and p. 56. Reference was made to this document on page 38 of the preceding text.

[19]The full list of proposed streets were:

Ellington, Erie, Howard, Hartford, Sargent, Leyland, Clifton, and Robey.

[20]Leyland fit well the size and age criteria and as noted represented well the conditions in the North Roxbury community.

[21]Concentrated Code has been operative in the two Boston areas for three years extending limited rehabilitation to several hundred units.

[22]Journal of Housing, Nos. 1, 2 and 3, 1971.

[23]The data presented in Section 3 - Findings corroborates this assertion.

PART III RESULTS & CONCLUSIONS

Working with the data as it is organized in the preceding section on findings, the task now is to interpret the meaning of the study data as it applies to the hypotheses stated in Part II. To reach conclusions regarding the hypotheses, two kinds of preliminary analyses will be made: first, a macro view of the data for each street at specific points in time; second, a more micro-based view of the data for each of the prospective indicators as they have behaved over the sixteen-year study history. The function of these analyses will be to select the most useful of the six potential indicators and apply them to testing the hypotheses.

Section 1 - The Streets

In structuring this study, much effort was applied to the criteria for selecting a housing sample. One of the important variables was street condition with much time spent at early stages of the study choosing streets which exhibited a variety of physical conditions ranging from dilapidated (Lower Ellington and Leyland Streets) through deteriorating (Upper Ellington and Sargent Streets) to sound (Milwood Street). It will be recalled that the selection was done by visual survey which applied the physical criteria listed on page 78, footnote 18.

Initially, the expectation was that evidences of the potential indices would at any point in time be more pronounced on heavily blighted streets than on those streets in various states of better condition. This assumption relates to the first hypothesis which stated prior to various stages of deterioration of housing there will be exhibited in data

concerning such housing indicators to impending decline. Important to the forewarning aspect of data on a set of indicators is that at any point in time those indices reflect the variety of physical conditions present in the monitored stock.

The analysis of the sample streets has been organized to test the assumption about prospective indicators at two points in time, 1970 and 1965. 1970 was chosen because it is the year for which data is available closest to the time of the visual survey (1971) which classified the streets as dilapidated, deteriorated or sound. 1965 was selected because an analysis of streets and possible indicators for that year would form a check on conclusions made about the 1970 analysis.

As a means of presenting data for the point-in-time analysis, two Tables are included, Table 3.1 for 1970 and Table 3.2 for 1965. The Tables are organized by street condition and degree of impact the indices have made on the streets. All but the code violations points per dwelling unit category are self explanatory. In the case of code violations, a distinction was made between serious and routine with each serious violation given two points per violation and each routine given one point per violation. Points were then totaled for each street and divided by the number of occupied dwelling units on each street. Such an elaborate accounting procedure is not necessary for other indicators because there is no distinction among declines in value, numbers of owners, types of owners, tenants, or forfeitures.

One does not have to examine the Tables very long to see that the degree to which the indices appear on any street does not clearly

TABLE 3.1

POINT IN TIME (1970) ANALYSIS FOR EACH STREET

Condition / Degree	Dilapidated (Visual Survey)		Deteriorated (Visual Survey)		Sound (Visual Survey)
	Lower Elling'n	Leyland	Upper Elling'n	Sargent	Milwood
% of Struct. to decline in Assessed Value>25%	50%	36%	27%	35%	4%
% of Struct. to Change Owners	12%	17%	12%	14%	0%
% of Struct. Held by Absentee Owners	50%	40%	32%	26%	0%
Tenancy Changes*	39%	14%	50%	10%	4%
% of Struct. Forfeited	2%	9%	8%	5%	0%
Points/D.U. for Code Violations**	.52	.23	.21	.18	.00

* % of current (1971) tenants to take occupancy in 1970

** Points per dwelling unit for code violations are computed by assigning one point to each routine violation and two points to each serious violation then dividing the sum for each street by the number of occupied dwelling units on each street.

TABLE 3.2

POINT-IN-TIME (1965) ANALYSIS FOR EACH STREET

Condition / Degree	Dilapidated (Visual Survey)		Deteriorated (Visual Survey)		Sound (Visual Survey)
	Lower Elling'n	Leyland	Upper Elling'n	Sargent	Milwood
% of Struct. to decline in assessed value > 25%	36%	10%	10%	7%	4%
% of Struct. to Change Owners	14%	27%	18%	15%	12%
% of Struct. Held by Absentee Owners	32%	40%	34%	5%	0%
Tenancy Changes*	2%	10%	0%	5%	6%
% Struct. Forfeited	0%	0%	0%	0%	0%
Points/D.U. for Code Violations**	n.a.	n.a.	n.a.	n.a.	n.a.

* % of current (1971) tenants to take occupancy in 1965.

** Points per dwelling unit for code violations are computed by assigning one point to each routine violation and two points to each serious violation then dividing the sum for each street by the number of occupied dwelling units on each street.

correspond to the condition of the streets. In fact, the only real distinction that can be made is between those streets which exhibit dilapidated or deteriorated conditions and the street in sound condition.

It is difficult, without additional data on more streets, to assess the meaning of the rather random distribution of percentages over the various street conditions. There are several interpretations that might be made of the point-in-time analysis. First, there may be no validity to the assumption that the presence of the prospective indicators should correlate with street condition. Second, the information sources simply may not be sufficiently sensitive to fine changes in conditions to produce data that describes street conditions. Third, assuming the data was accurate, its behavior across street types might well act in other than a correlative pattern. For example, Table 3.1 shows Leyland (dilapidated) and Sargent (deteriorated) to be statistically similar. Perhaps this is due to the fact that Leyland reached its extremely decayed state several years ago and is now ignored by the information sources used for this study. Therefore, the level of the indices reflects deteriorating rather than dilapidated conditions.

Again, this issue could only be properly settled with the addition to the study of more data for several more streets. Perhaps the real conclusion to be drawn at this stage is that the concept of using indicators to forewarn of incipient decline in older neighborhoods is likely to yield only a rough or approximate picture rather than a precise accounting of the deterioration process. In other words, what the study hoped for was something on the order of a laboratory-controlled

decay analogue used by physicists while in actuality the early warning system will be more analogous to an archeologist's comparatively imprecise carbon dating process.

The idea of early warning for housing decay as a rough determinate of future conditions is reinforced by the sharp and consistent variations between the group of four dilapidated and deteriorated streets and the one sound street. Applying this differential in the level of the six prospective indicators, tentative "danger" or "critical" points may be defined for each of the indices:

Decline in Assessed Value. Table 3.1 shows high percentages of assessed value decline for the four dilapidated or deteriorated streets (over 25% of the structures on each street). However, Milwood Street has had only 4% of its structures devalued since 1955. Using the 4% to over 25% spread between sound and blighted conditions a danger level or early warning point might be suggested between these two points. Tentatively then, if as many as 10% of the structures in a monitored sample of housing declines in assessed value more than 25%, policy planners should take notice. The 1965 figures tend to support the 10% warning point. Assuming Upper Ellington and Sargent Streets (now dilapidated) were in fair condition in 1965, the 10% of sample structures declining over 25% would have served as an alarm for worsening conditions.

Number of Ownership Changes. The only point made by the figures for the numbers of ownership changes in Tables 3.1 and 3.2 is that they do not have much meaning to the housing conservation problem. The

figures reinforce the intuitive notion that ownership change alone does not signify much about housing conditions. There are, after all, numerous examples of middle-income suburban areas with high rates of ownership change coexisting with adequate maintenance and reinvestment.

Structures Held by Absentee Owner. Here an accounting of ownership may have significance as a warning of oncoming physical decline. As with the declines in assessed values, the percent of sample structures held by absentee owners is high, over 25%, for the four blighted streets while Milwood Street is 100% resident owned. If a danger point were defined at 10% absentee ownership in the sample stock, local officials could have been warned in 1965 or earlier to investigate conditions on what are now dilapidated and deteriorating streets.

Changes in Tenantry. As with ownership changes, the turnover of tenants as reported by the BECO data does not seem to correlate with housing condition. For example, Table 3.1 (1970) shows no striking differential between Leyland (dilapidated), Sargent (deteriorated) and Milwood (sound). For tenants taking occupancy in 1965, the highest rate occurs on Milwood. Overall, tenant flows in and out of units do not seem to forewarn changing conditions. However, in two cases extremely high rates of turnover, more than 40%, occur on streets that are heading for serious decline. The only apparent value of tenant changes is as a cross check for other indices such as assessed value decline and absentee ownership.

Forfeitures. The occurence of literally one forfeiture on a given street according to the figures on Table 3.1 should cause concern among

officials interested in the conservation of urban housing. Defining the danger level so close to 0% makes sense in the case of forfeitures because the willingness of an owner to abandon all interest in a property, as is the case with many forfeitures, indicates a number of underlying problems[1] which can produce rapid and extreme declines in neighborhood conditions.

Violations of the State Sanitary Code. The figures for code violations points per dwelling unit on Table 3.1 seem to suggest that an index of .10 among sample units or 10% of the monitored units is enough to warrant concern of local officials. Such a level of housing code violations is contingent on uniform inspection over the entire sample stock which is not the case in the study sample. Given uneven inspection practices, violations of housing codes might be of most value as corroboration for other indices.

To summarize, the danger points for the various indicators are defined as follows:

1. For declines in assessed value, public officials should take notice if over a defined period 10% of the monitored stock declines in assessed value over 25%.
2. For number of owners, no limit could be found.
3. For the number of absentee owners, planners should be concerned if over a defined period 10% of the monitored stock is held by non-resident owners.
4. For tenancy changes, there is cause for concern if over a defined period 40% of the monitored units change tenants

and other key indices such as assessed value decline and absentee ownership have also reached their defined critical levels.

5. For forfeitures, public officials should worry if at any point one or more properties in a monitored sample are foreclosed by banks, city or other agency.
6. For violations of the Health or Sanitary Code there is cause for concern if 10% of the monitored stock are charged with both serious and routine violations and there exists in the locale of the monitored stock both uniform housing inspections and the presence of other key indices at their danger points.

This section has attempted a macro analysis of the behavior of prospective indicators across street type at points in time. The expectation, which the figures did not substantiate, was that the occurence of possible indices to housing deterioration would correlate inversely with housing condition. Because only sharp differences could be found between the presence of the indicators on generally blighted streets and the single sound street, the early warning concept was seen to have its greatest value as a rough guage to impending neighborhood decline. Applying this approach to the indicators as early warning devices, a critical level for each of the prospective indices was defined. It now remains to be seen how the indices behave over time and if in a simultaneous manner they work to forewarn housing deterioration.

Section 2 - The Indicators

The next component of the analysis, the micro-based view, examines each of the potential indicators as they behaved over the sixteen-year history for each street. The objective is to see if a significant number of indicators depicted the advent of worsening conditions over time and did so fairly simultaneously so that planners might have been able to use them as early warning devices.

To illustrate the micro analysis, Table 3.3 has been included tracing the behavior of the indicators over time for each of the five sample streets. The boxed figures indicate the year in which the various indices passed over the danger levels as defined in Section 1.

Assessed Value Decline. By 1961 those streets now in some form of blighted condition had about 10% of their housing over 25% lower in assessed value than 1955. Within the period 1955-60 assessed value declines may have been reflective of a basic change in what are now either dilapidated or deteriorated streets. By 1966 the percentages for assessed value decline reflected conditions close to the advanced decay of the present.

Ownership Type. With the exception of Sargent Street, all of the blighted streets had over 10% absentee ownership by 1958. This critical level for absenteeism tends to correspond with the assessed value decline danger levels within the time frame 1955-60. Public officials should have looked closely at these streets at that time for as the 1966 figures and the visual survey show, these streets may now be beyond preventive maintenance programs.

TABLE 3.3

The figures shown for assessed value decline, ownership type and forfeitures are percentages of the total number of structures for the various streets. Figures for 1955, 1961 and 1966 are given as references to illustrate the general increases in the levels of the three indices. In addition, boxed figures show the year and exact percentage in which the indices first passed over the critical levels defined in Section 1. Figures are not quoted for tenancy change or Sanitary Code violations because accurate data for past time segments are not available. BECO records describe only the dates on which current tenants took occupancy of their units. Housing Inspection Department records only cover the span 1968-1970.

	Assessed Value Decline					Ownership Type					Forfeitures				
	Lower Elling'n	Leyland	Upper Elling'n	Sargent	Milwood	Lower Elling'n	Leyland	Upper Elling'n	Sargent	Milwood	Lower Elling'n	Leyland	Upper Elling'n	Sargent	Milwood
1955	4%	6%	5%	0%	4%	[10%]	0%	5%	0%	0%	0%	0%	0%	0%	0%
56								[15%]							
57	[10%]											[3%]	[5%]		
58							[25%]				[6%]				
59															
60															
1961	36%	[10%]	[10%]	7%	4%	28%	34%	10%	2%	4%	0%	0%	0%	[2%]	0%
62				[10%]											
63															
64															
65															
1966	52%	36%	27%	35%	4%	32%	42%	40%	[13%]	0%	0%	0%	0%	7%	0%
67															
68															
69															
70															

Forfeitures. Again, in the case of those streets now exhibiting some form of decay, the critical point for numbers of forfeitures was reached in the 1955-60 time period. It can now be demonstrated that three key indices, assessed value decline, ownership type and forfeitures, were in the periods 1955-60 giving some degree of early warning to what were to become either dilapidated or deteriorating conditions. None of these indicators ever became critical on Milwood Street.

Because they tell only of recent years, the prospective indicators tenancy change and Sanitary Code violations do not work in the historical analysis. However, if they had been read in the period 1955-60 and were at or above the danger points defined in Section 1, these indicators could have served as valuable corroborative evidence that these streets were in trouble.

It will be recalled that the defined levels at which the indicators are to be taken seriously were rather arbitrary, based only on the point-in-time analysis. Using these definitions for the indicator analysis has yielded a rather definite time frame in which to read the index. For this analysis, the time period is five years but other streets might yield data that would require a shorter time frame (if the process of deterioration were much quicker than the eleven to sixteen years of the study sample). Lowering the percentages which define the danger levels would also shorten the time frame.

Together, the two analyses presented above led to the conclusion that of the six prospective indicators, three (assessed value decline, ownership type, and forfeitures) seem to have reasonable value as

early warning devices while an additional two (tenancy change and Sanitary Code violations) might act as secondary or corroborative indices. The overall value of this kind of early warning approach is as a rough check that would pinpoint obvious first signs of decay in aging neighborhoods. It would then be the task of local planning agencies to subject such areas to detailed analysis aimed at discovering the causes of the early warning symptoms. If after such analysis it is felt the indicators are in fact forewarning serious neighborhood deterioration, officials may then commit program resources to deter further decline and stabilize physical conditions.

Section 3 - The Hypotheses

Having completed the analyses, consideration may now be given to the testing of the hypotheses first stated on page 28. In paragraphs below the question of each hypothesis is dealt with separately drawing on information developed in the preceding two sections.

The first hypothesis stated that prior to various stages in the deterioration of housing there will be exhibited in data concerning such housing indicators to impending decline. The study has amassed fairly detailed data for a set of prospective indices on five streets. Some of the prospective indices began to show value as forewarning devices when danger levels were defined for each indicator. Applying these indicators to the street histories it was shown that the danger points were reached at a time preventive maintenance may have been able to save the housing surveyed in this study.

The indicators are viewed here only as an early warning to be followed by more extensive analysis of the areas in question. If such analysis can determine the validity of the early warning alarm and find the causes of neighborhood decline, officials concerned with the preservation of older housing may then commit program funds to those areas.

The second hypothesis states that given proper and sufficient scope there will emerge a pattern of indicators that could reliably predict extreme decline in housing conditions. This project cannot offer a conclusive response to this hypothesis. What has been researched here is a specific type of residential street with a rather exact mix of housing types, ages and sizes. Consequently, the results of the research effort are framed within those limitations. The data on approximately 400 units supports the soundness and reliability of the index outlined above, but more research on more types of housing must be made prior to developing an index that will reliably predict housing deterioration.

If this project cannot establish with absolute authority the validity of the index forwarded above, it can conclude responsibly that the idea of identifying indicators to housing deterioration and applying them to the problem of housing maintenance and reinvestment is a worthwhile effort. Future research into other kinds of housing situations applying greater amounts of data to conclusions about housing indices should receive the attention of those responsible for public policy in housing maintenance.

The third hypothesis maintains that more rational disbursements of public funds for housing maintenance can be achieved if policymakers consult a housing deterioration monitoring system. A prototype now being developed at the Mayor's Office of Public Service could act as a test for this hypothesis depending on the extent to which data from that system is applied to housing conservation policy. In terms of Boston, the basic decisions toward increased housing conservation effort have been made. Up to eight Concentrated Code Enforcement areas are to be added to the two current C.C.E. programs. The monitoring function can act now to insure maximum impact for incoming federal dollars directed at community improvement.

The structure of a housing deterioration monitoring system for Boston could take a variety of forms. This study indicates a system based on manual data gathering could easily monitor a thousand units requiring two full-time staff.[2] That one thousand unit sample could be spread much thinner over neighborhoods than the 100% street sample used in this study. In areas with generally homogeneous housing types such as the neighborhood used for this study, the sample might well be based on one unit in 50 or 100. In this manner, a one thousand unit sample could monitor several neighborhoods. The strategies for disbursing the sample are, inevitably, the decision of the agencies involved.

Section 4 - The Future of the Deterioration Monitoring Function

In the long range, other strategies seem applicable. Model Cities Administration might implement a monitoring system for housing

deterioration to help insure proper attention to the numerous streets in the M.C.A. district still in good condition. This refers to streets such as Sargent and Hartford which against pressure have remained stable and relatively decent. The City of Boston might erect a "monitoring ring" around dilapidated areas to catch signs of deterioration in sound units before they go bad. Monitored stock for this system might be in South Boston, Dorchester, and Jamaica Plain. Looking away from this area of the country, the housing deterioration monitoring concept might have greatest potential in smaller towns (50,000-100,000) which have predominantly homogeneous housing stocks. Examples are cities such as Orlando, Florida, Huntsville, Alabama, and San Jose, California where nearly all the housing is post-WWII vintage.

The research effort directed at improving techniques for the conservation of urban housing has begun in Boston, but results of this project may be applied to similar efforts elsewhere. Prior to greater commitments of federal, state and local funds for maintenance programs, localities can bring a range of decision tools into existence that will aid in disbursing scarce funds now and will insure impressive impacts for more generous funds in the future. The overall conclusion of this project is that the monitoring system, based on the deterioration index, represents one of those decision tools.

FOOTNOTES - PART III

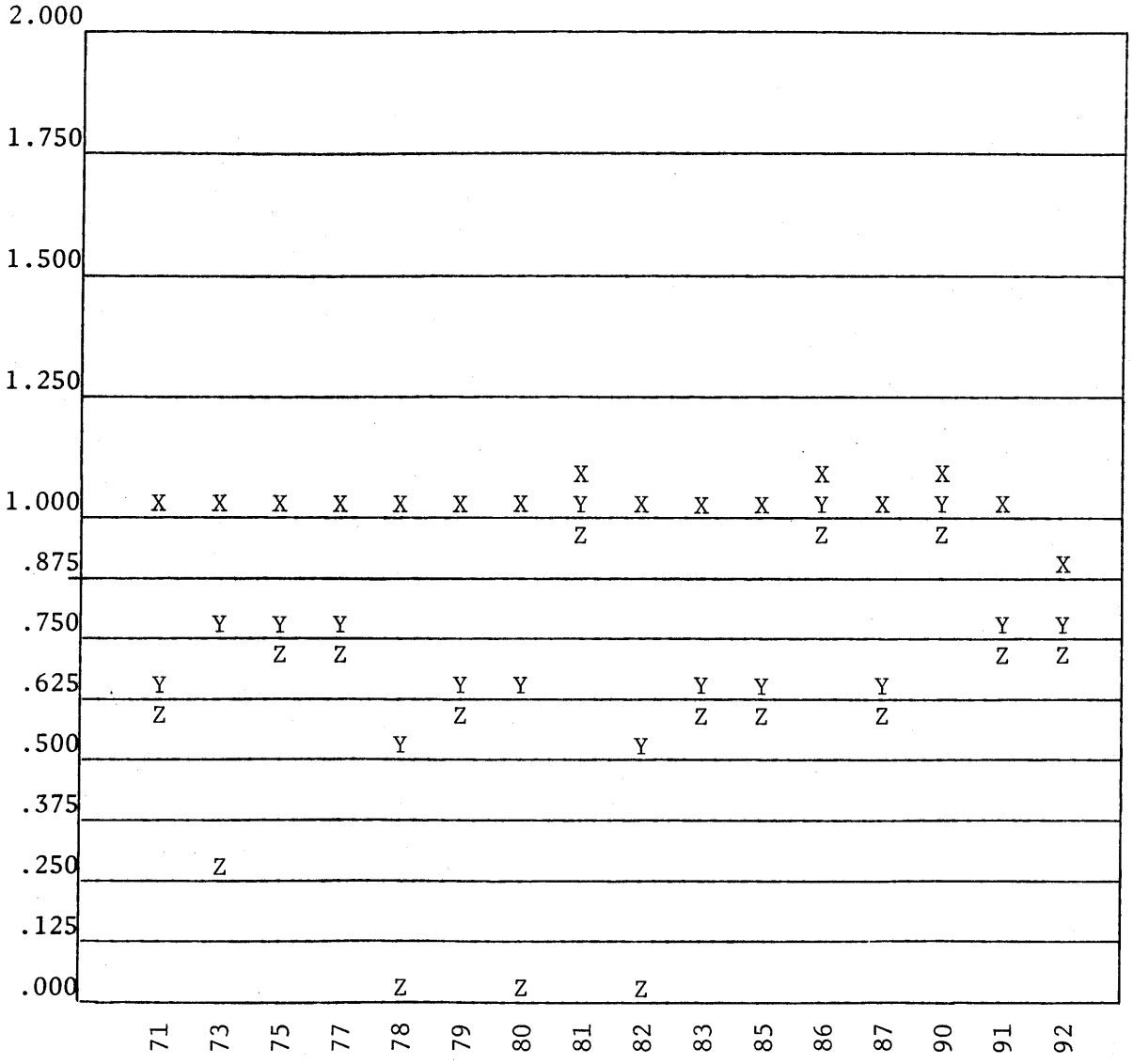
[1]It is assumed here that prior to deferring tax or mortgage payments on his property, an owner first defers his cost of maintenance. Therefore, a property that is forfeited by its owner is assumed, by this study, to already have entered the deterioration process and this being the case other properties nearby may be following in this process.

[2]An explicit determination of manpower needs has been done for the Mayor's Office of Public Service in which several alternatives were proposed for the prototype monitoring function. The full-time staff can be taken as a full-time equivalent (FTE) to be filled by a number of work-study students under the supervision of a full-time O.P.S. employee. Work-study people could either be hired for the entire year or for one to two months per year if the monitoring function were similar to a yearly spot check. Dollar estimates for running the monitoring system ranged from less than $1000 per year for the one month per year check of housing conditions to about $4000 per year for a full-time or continuous monitoring of selected neighborhoods. Such estimates do not include the significant costs of detailed follow-up analyses.

APPENDIX: CHARTS & MAPS

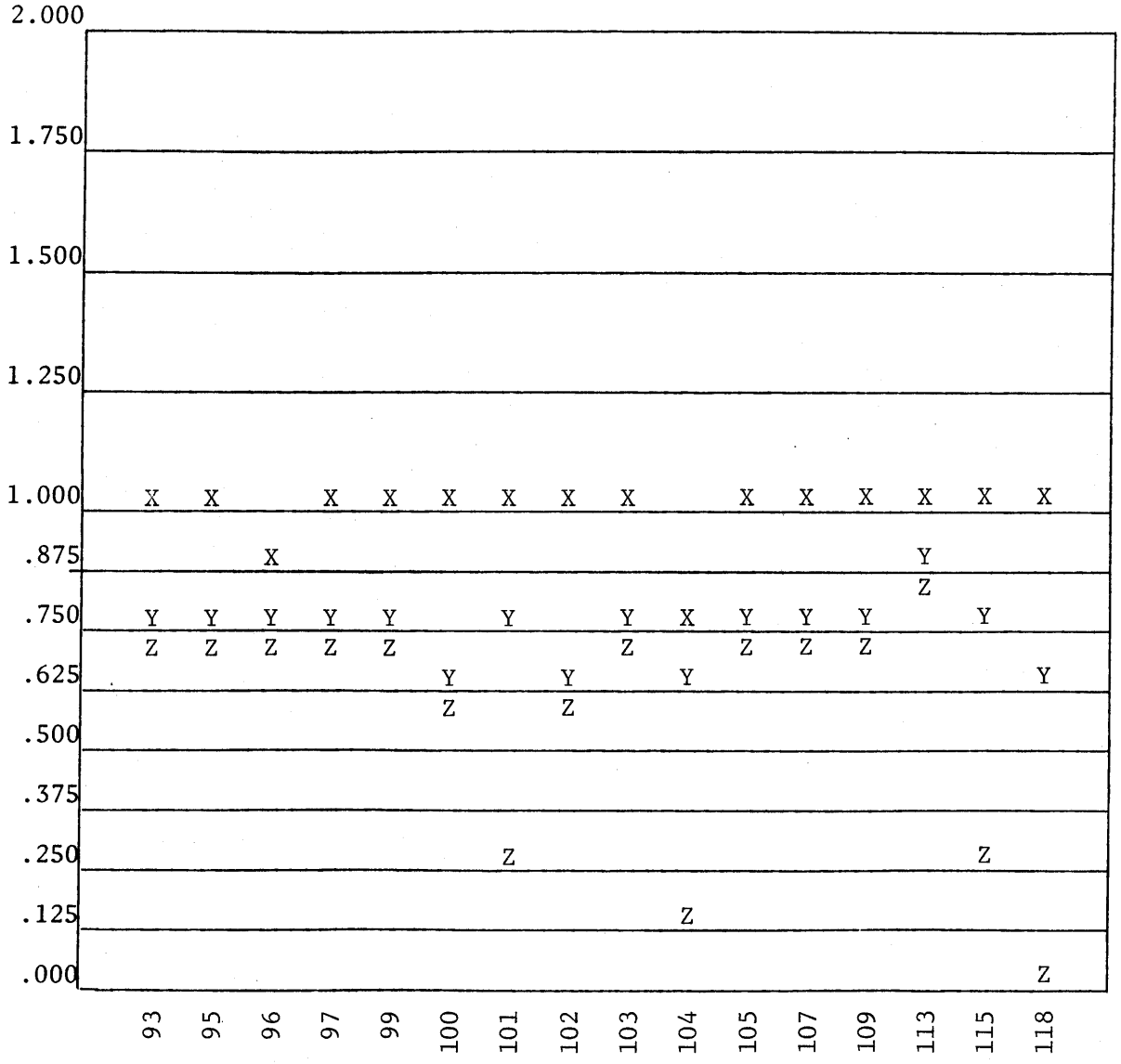
ASSESSED VALUE CHANGES: LOWER ELLINGTON STREET

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



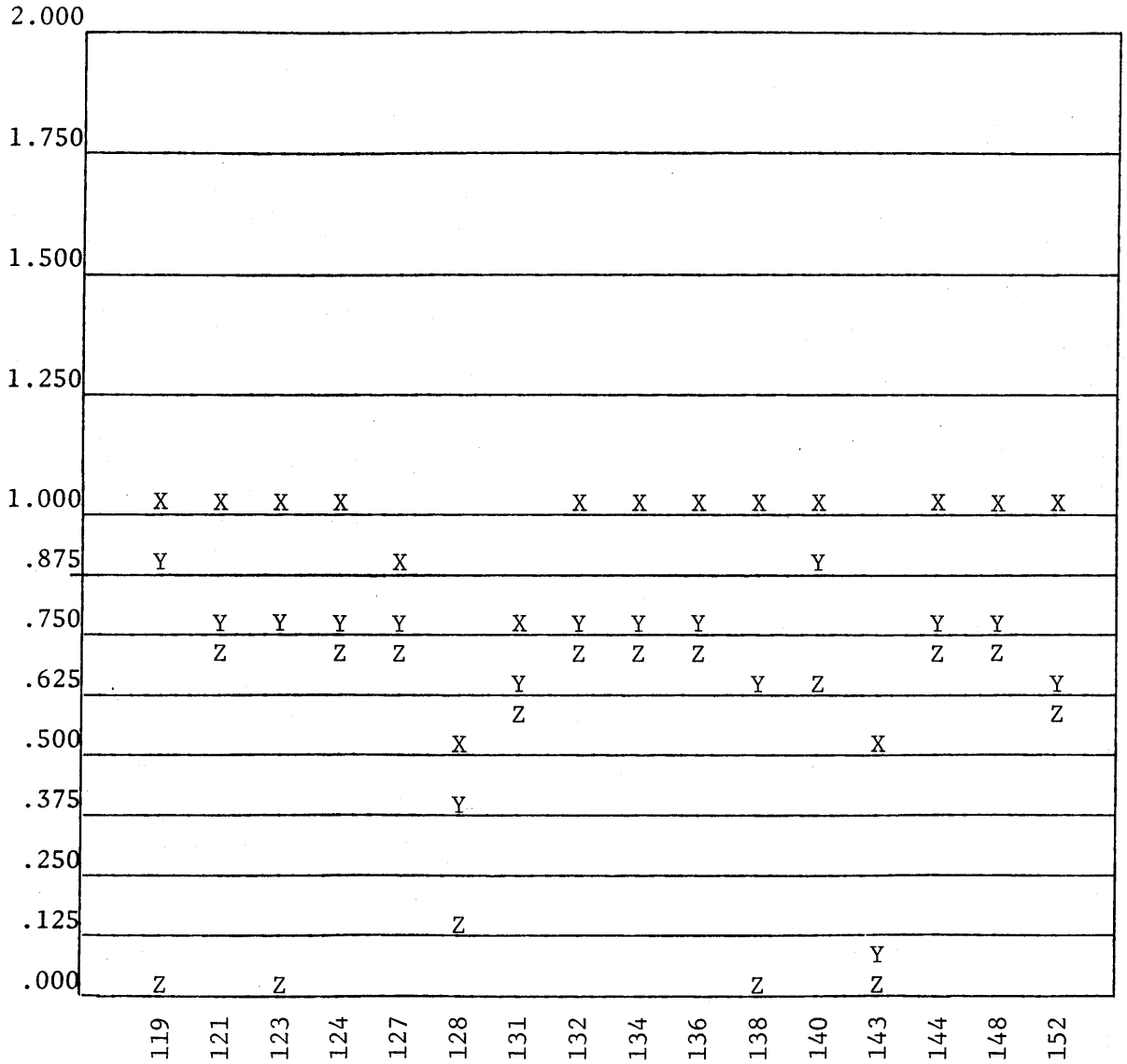
ASSESSED VALUE CHANGES: LOWER ELLINGTON STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



ASSESSED VALUE CHANGES: LOWER ELLINGTON STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



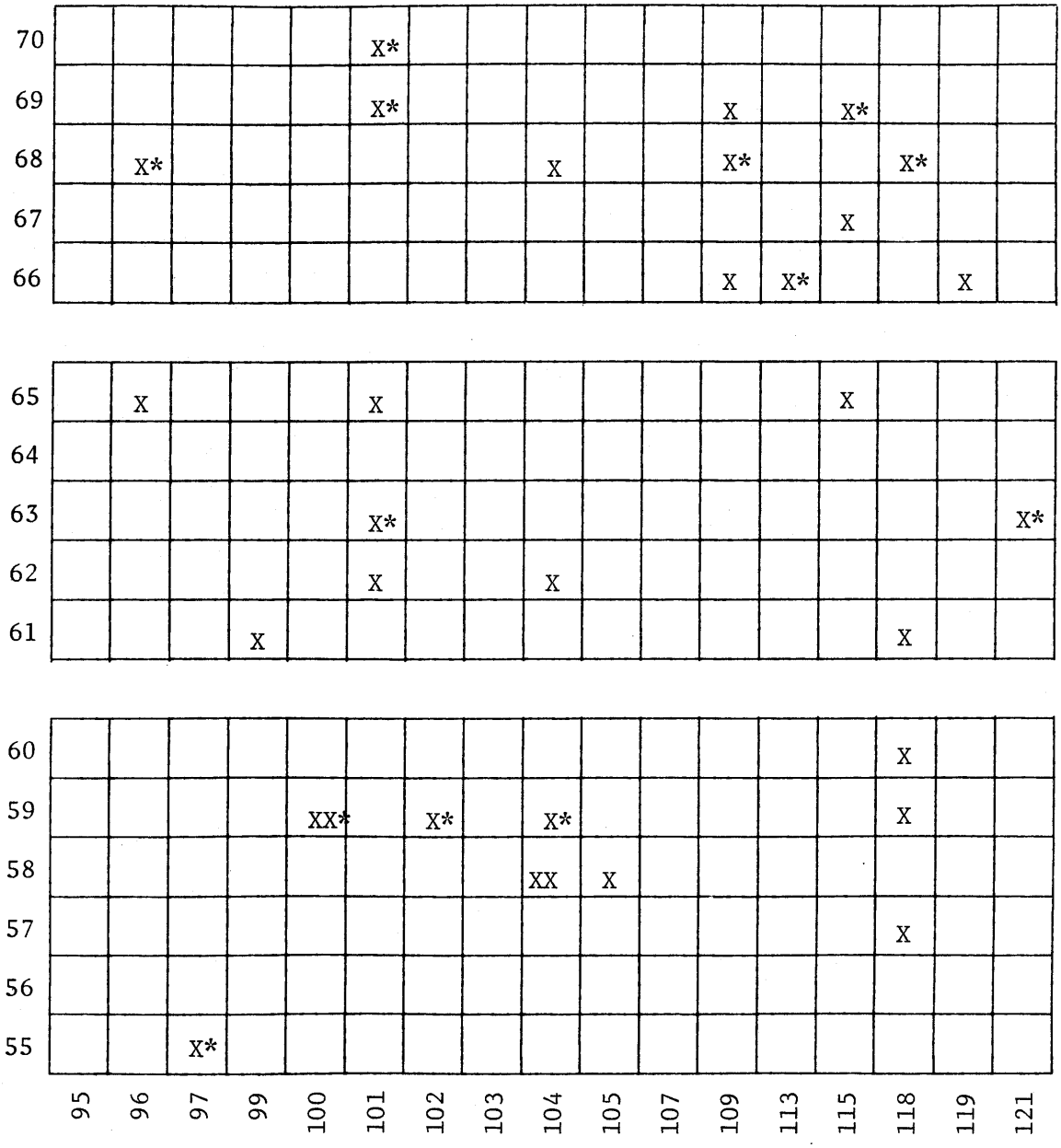
OWNERSHIP CHANGES: LOWER ELLINGTON STREET

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

	71	73	75	77	78	79	80	81	82	83	85	86	87	90	91	92	93
70							X										
69	X*																
68								X*		X*							
67					X*									X			
66					X			X*		X*							
65															X	X*	
64							X*		X*						X		
63					X					X*							
62		X*								X*							
61		X*			X*			X			X						
60					X*				X*	X							
59					X*												
58					X*		X*			X*							
57			X							X							
56			X							X*			X		X		
55												X					X*

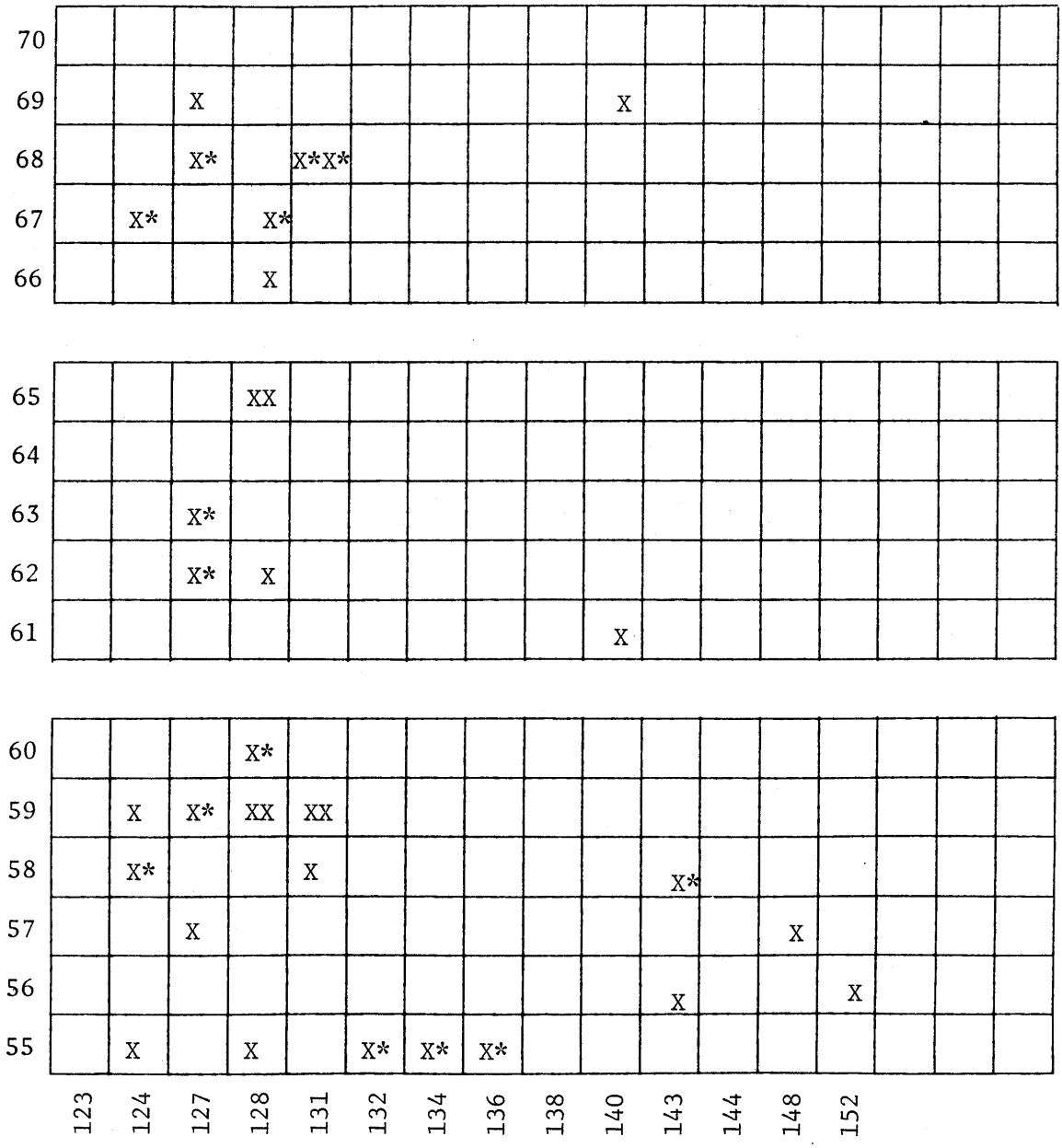
OWNERSHIP CHANGES: LOWER ELLINGTON STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.



OWNERSHIP CHANGES: LOWER ELLINGTON STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.



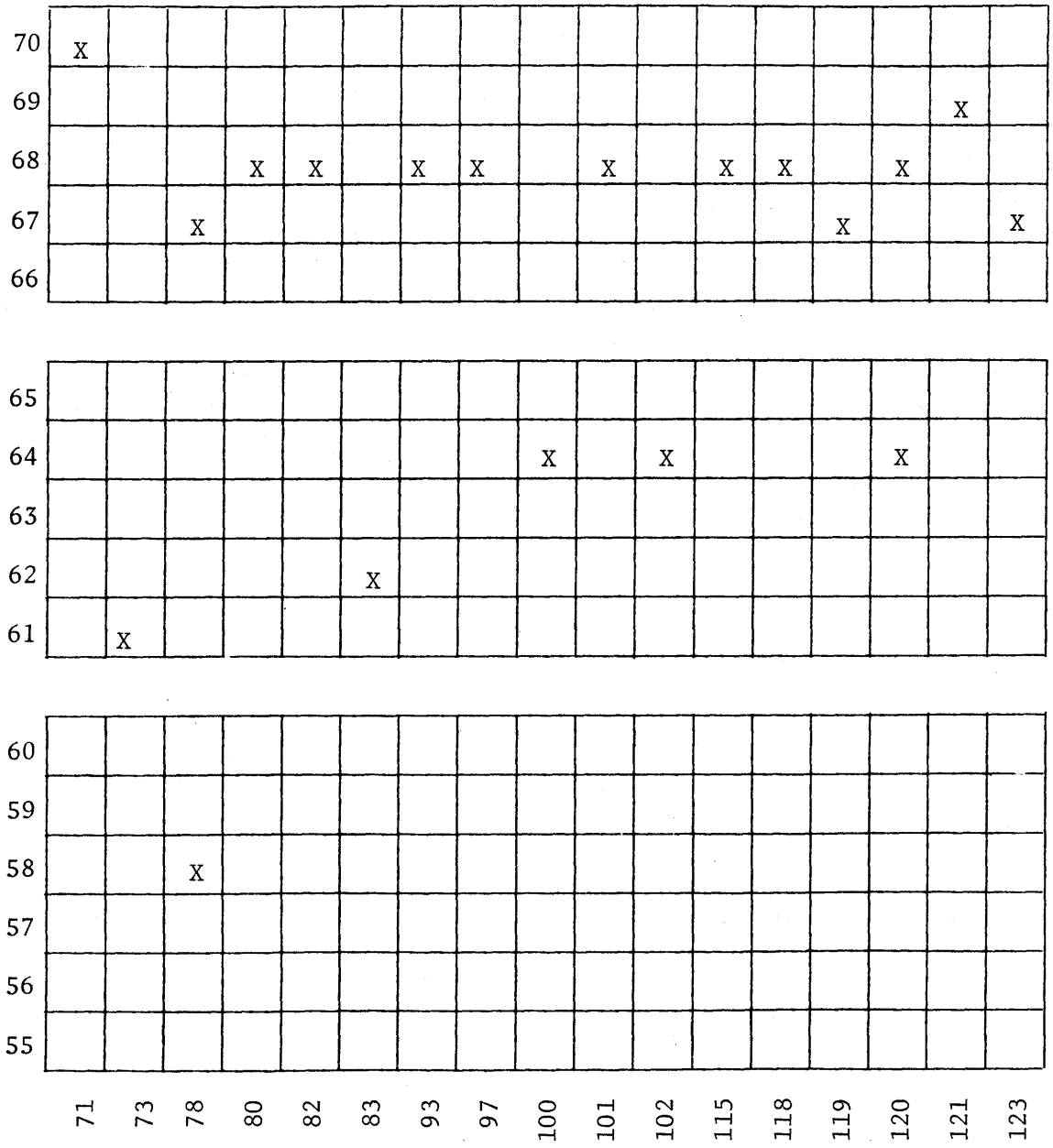
TENANCY STARTS: LOWER ELLINGTON STREET

This chart records the year current tenants moved into their units. For each of sixteen years is given the total number of tenants who took occupancy in that year. In the last column is given the total number of these "occupancy starts" for each of the periods 1955-60, 1961-65, 1966-70. Numbers at the bottom of the chart followed by a + indicate the number of tenants in occupancy prior to 1955.

YEAR	YEARLY TOTALS	FIVE-YEAR CUMULATIVE TOTALS
1970	39	
1969	13	
1968	12	72
1967	4	
1966	4	
1965	2	
1964	2	
1963	6	14
1962	3	
1961	1	
1960	1	
1959	1	
1958	0	5
1957	1	
1956	1	
1955	1	
		9+

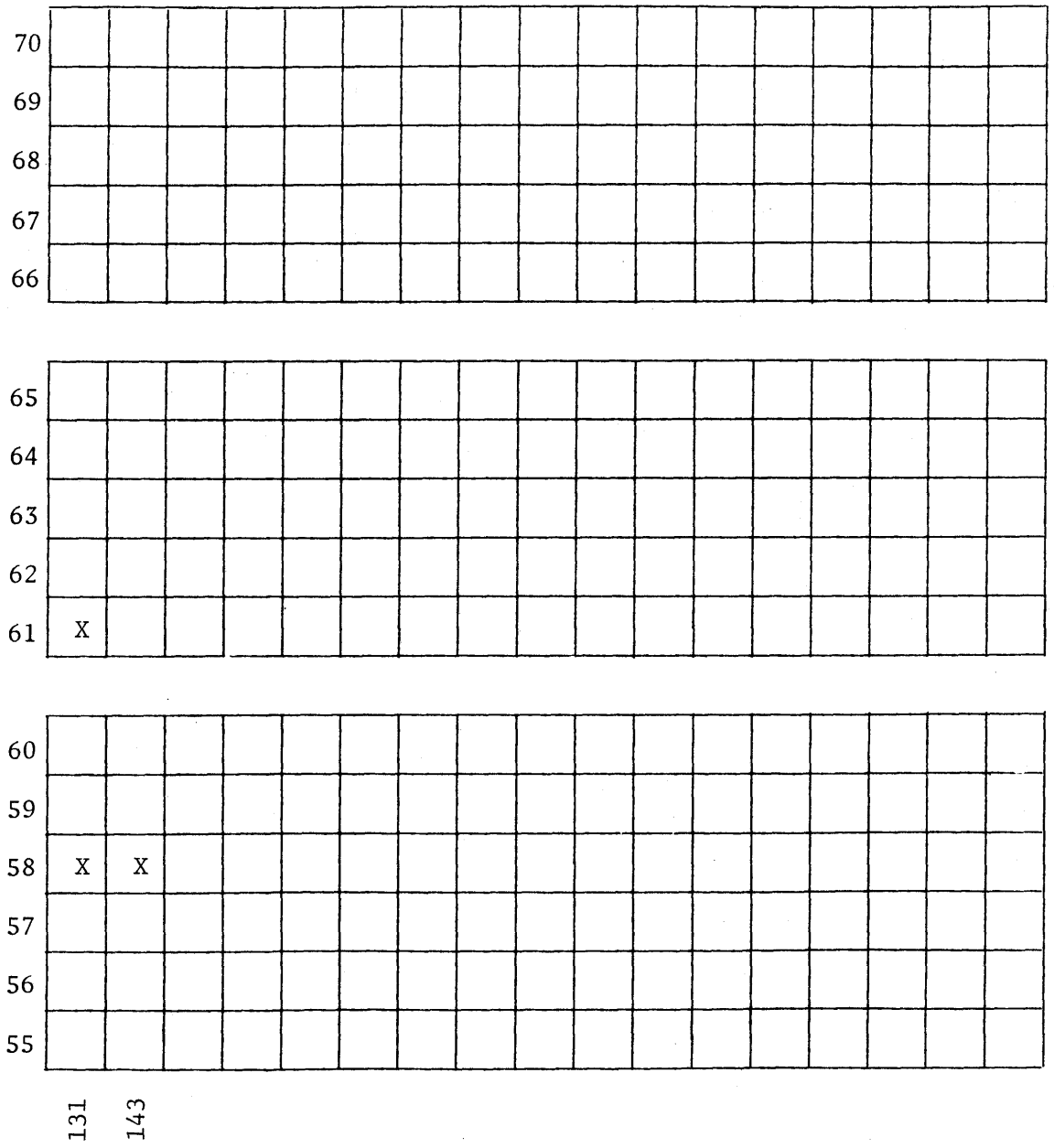
FORFEITURES: LOWER ELLINGTON STREET

The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.



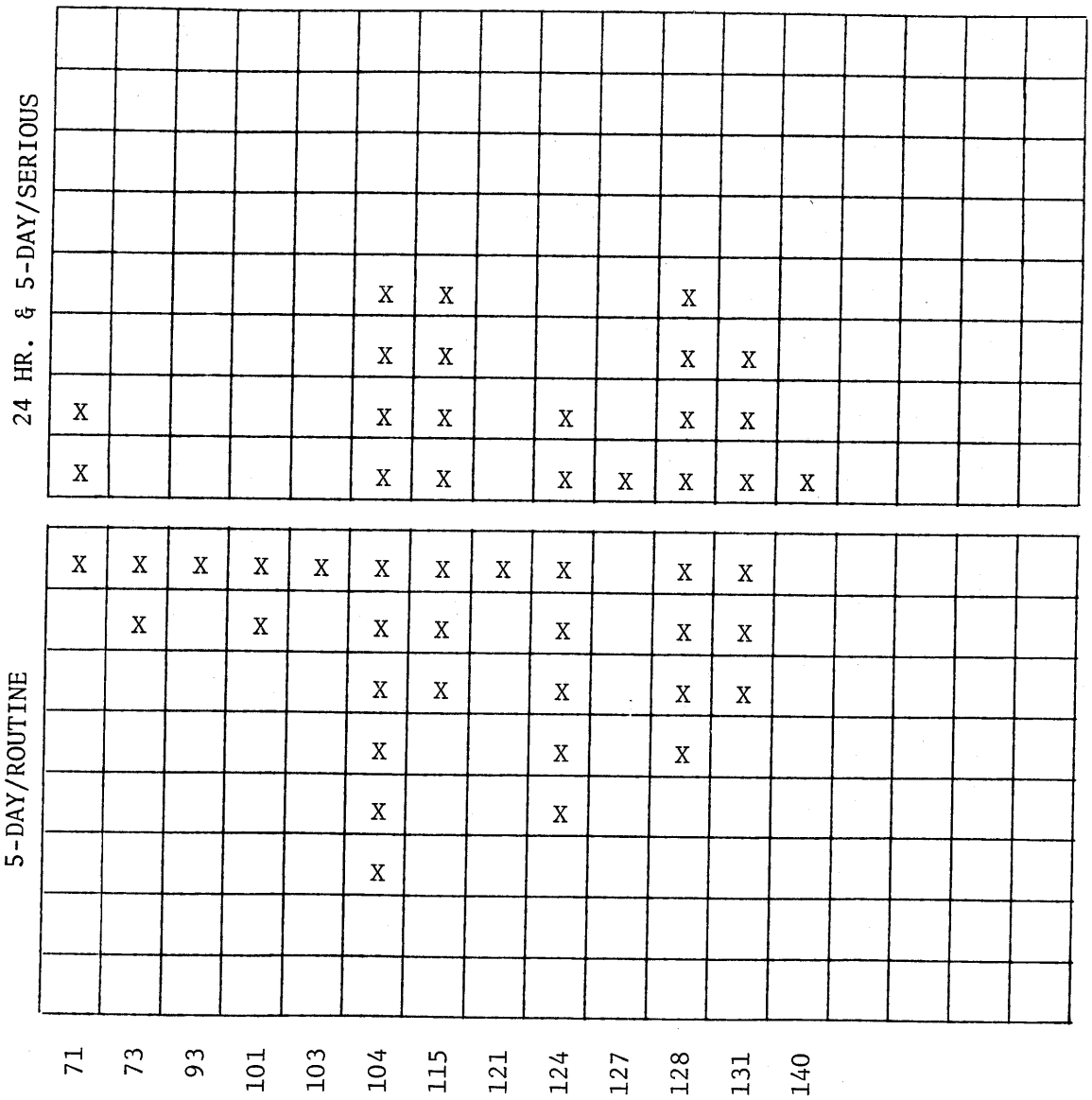
FORFEITURES: LOWER ELLINGTON STREET (cont.)

The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.



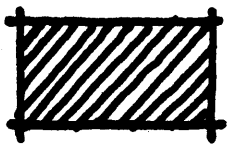
SANITARY CODE VIOLATIONS: LOWER ELLINGTON STREET

The X's indicate one code violation case handled by the Housing Inspection Department (H.I.D.) for the addresses listed at the bottom. The position of the X above or below the center space indicates the nature and severity of the violation.

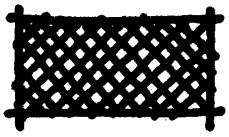


KEY TO ASSESSED VALUE CHANGES

DECLINED OVER 25%

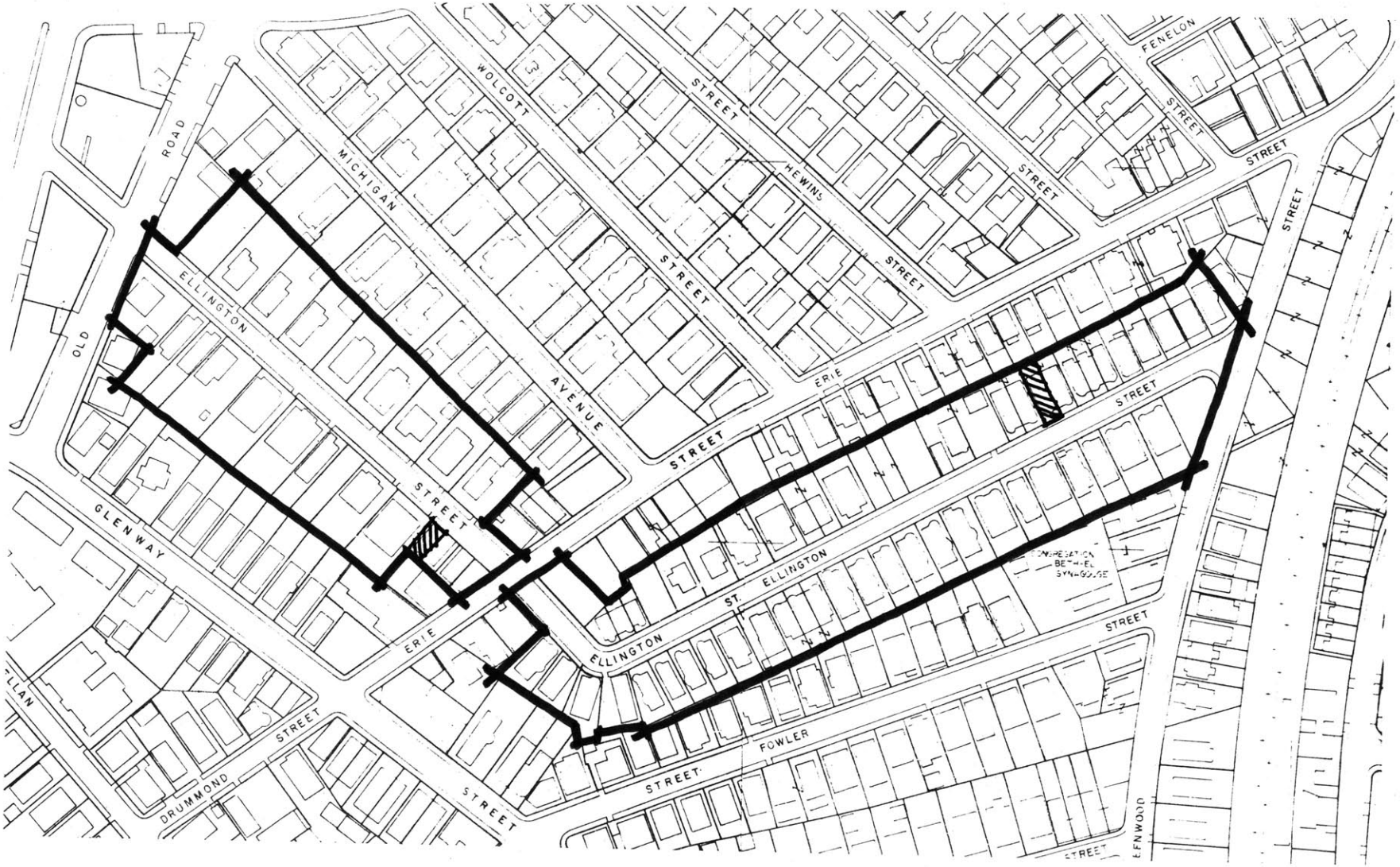


DECLINED OVER 50%

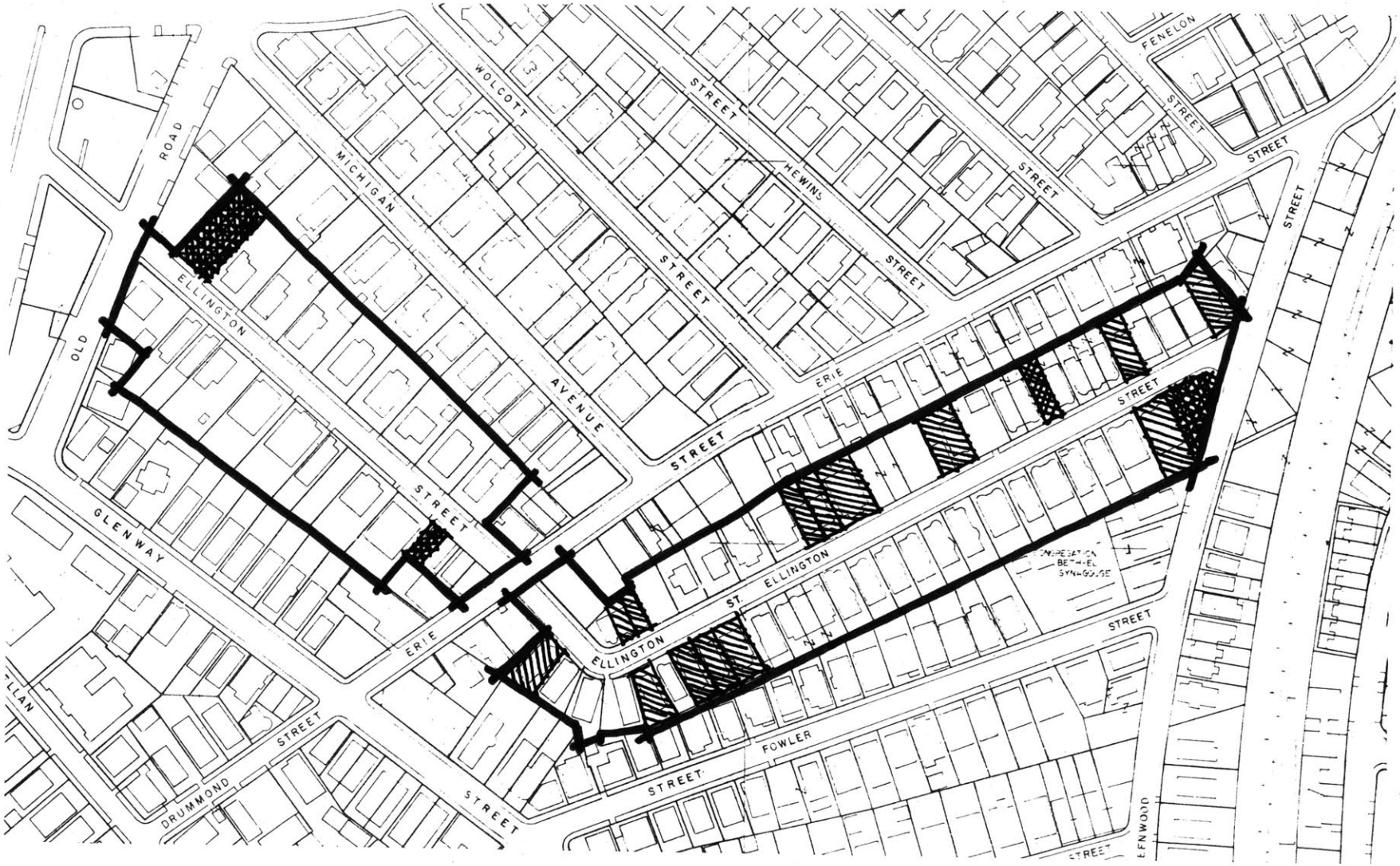


DECLINED OVER 75%

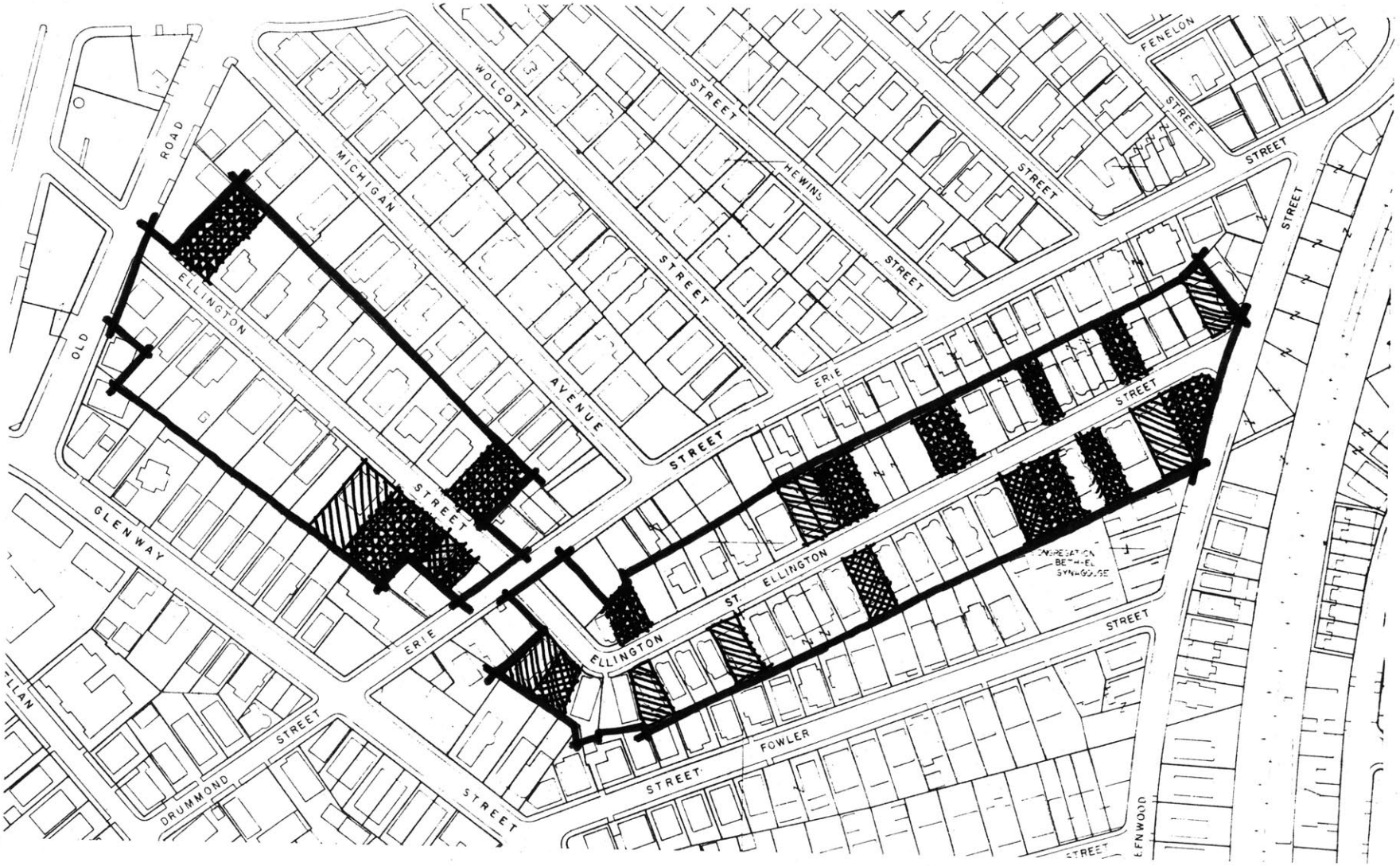
ASSESSED VALUE CHANGES 1955-60



ASSESSED VALUE CHANGES 1961-65

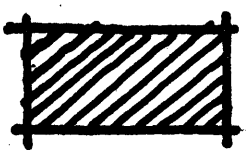


ASSESSED VALUE CHANGES 1966-70

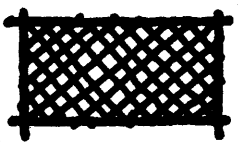


KEY TO ABSENTEE OWNERSHIPS

ONE ABSENTEE IN 5 YEARS

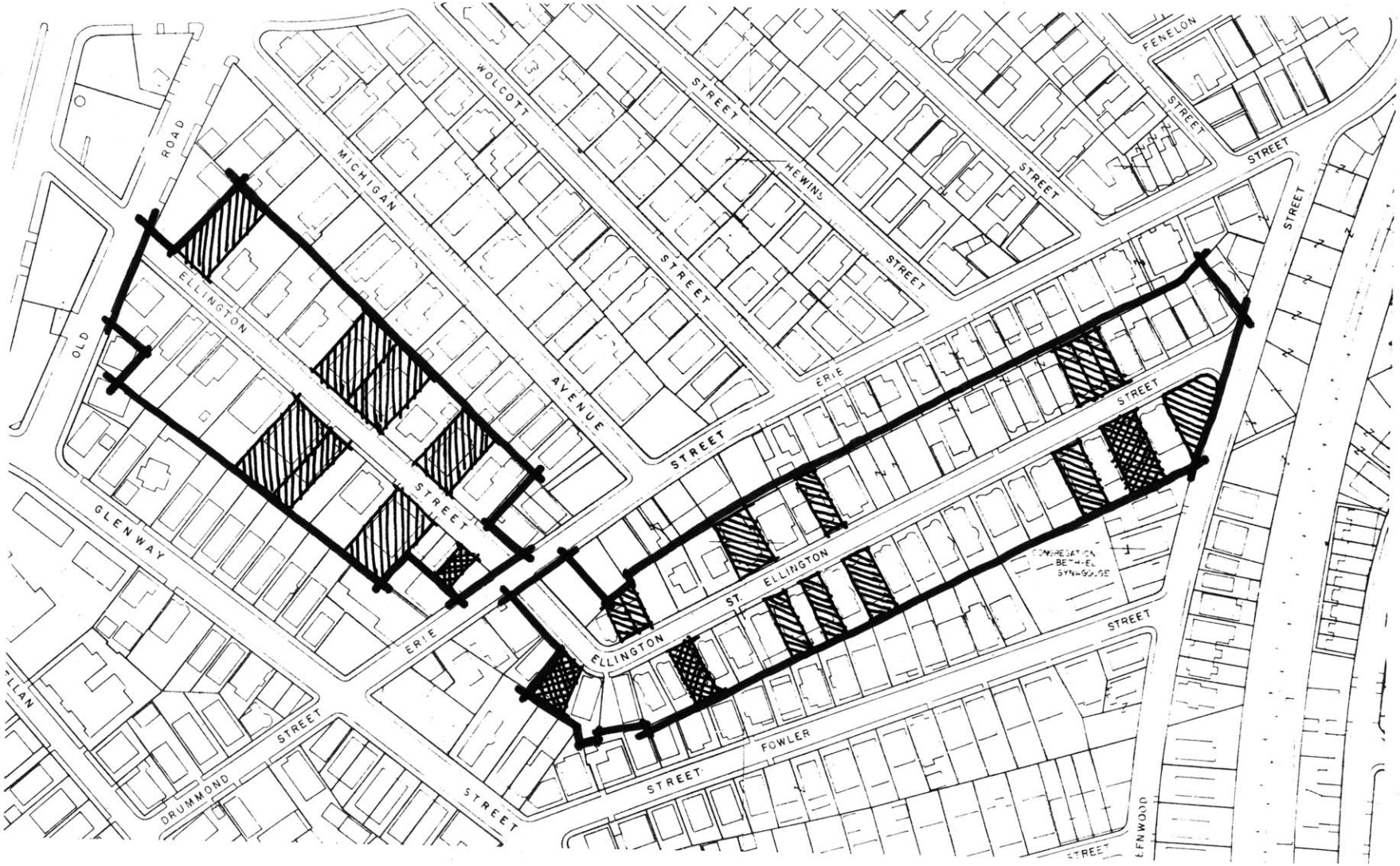


MORE THAN ONE ABSENTEE IN 5 YEARS

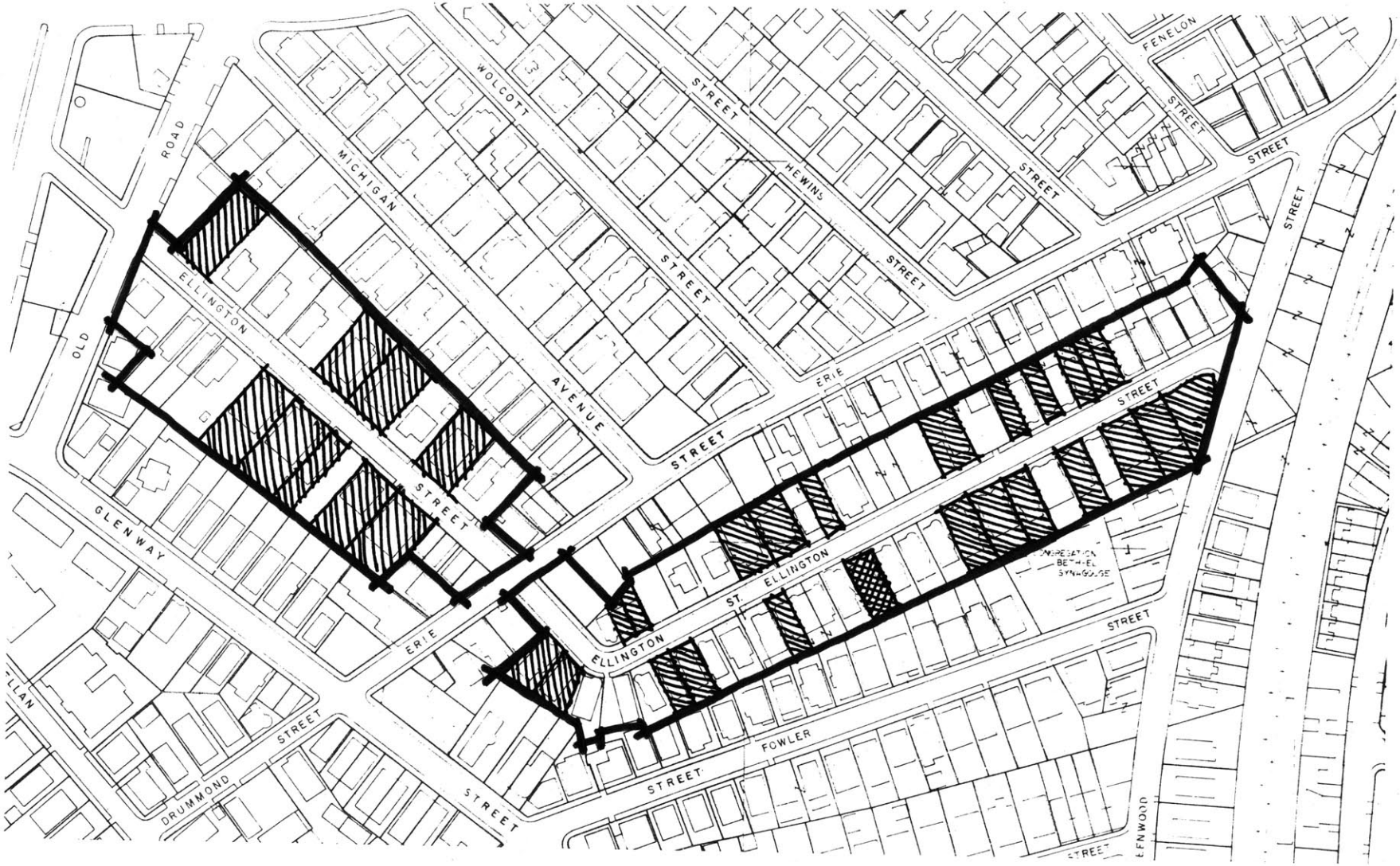


PROPERTIES HELD IN ABSENTEE OWNERSHIP 1955-60

PROPERTIES HELD IN ABSENTEE OWNERSHIP 1961-65



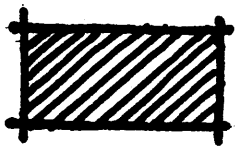
PROPERTIES HELD IN ABSENTEE OWNERSHIP 1966-70



KEY TO TENANCY STARTS

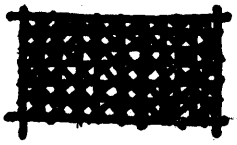
MOST OR ALL THE TENANTS IN THE VARIOUS STRUCTURES:

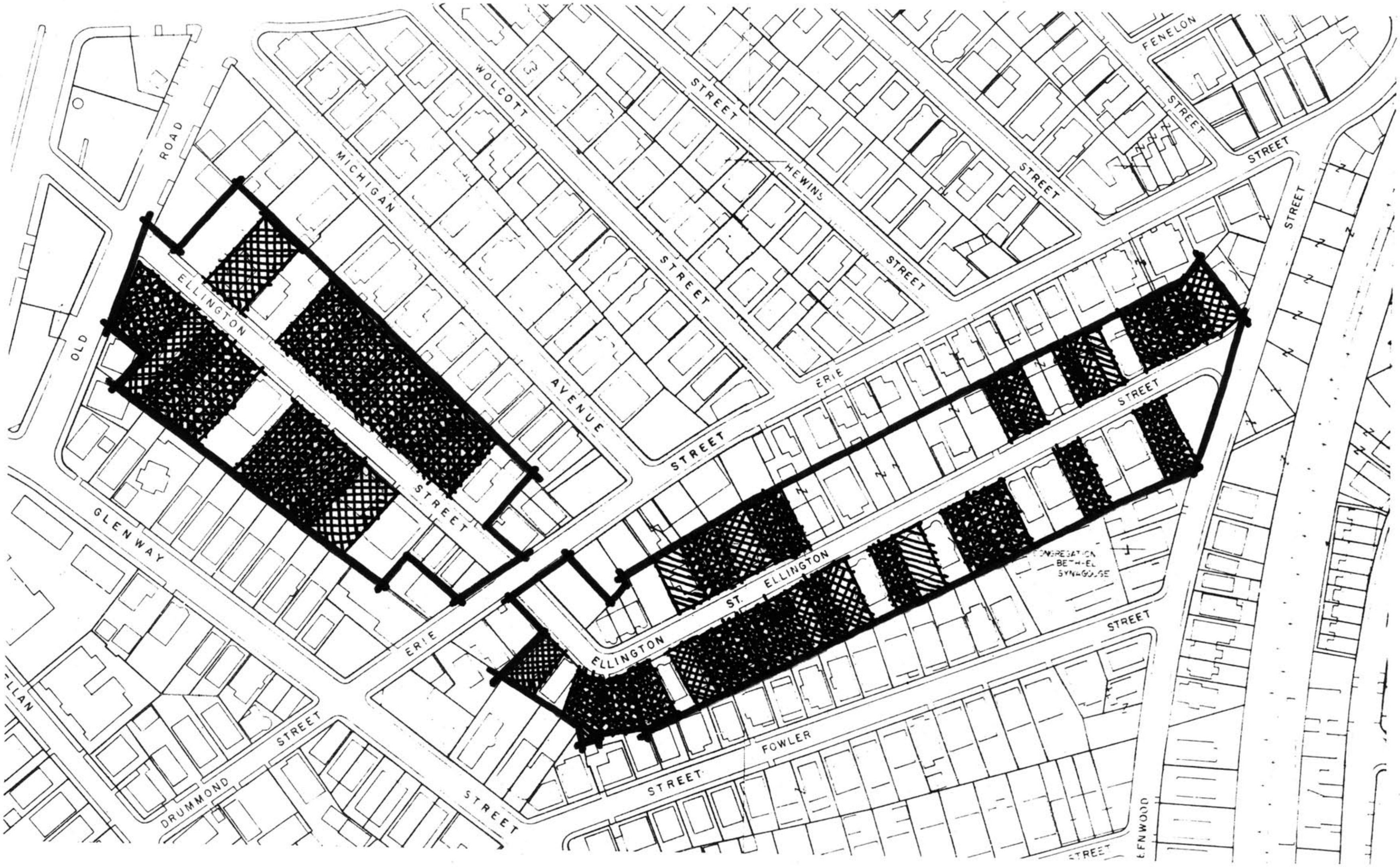
TOOK OCCUPANCY 1955-60



TOOK OCCUPANCY 1961-65

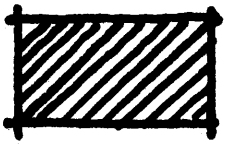
TOOK OCCUPANCY 1966-70




OLD ROAD
MICHIGAN AVENUE
WOLCOTT STREET
HEWINS STREET
STREET
FENELON STREET
STREET
STREET
ELLINGTON STREET
ERIE STREET
ERIE STREET
ELLINGTON ST.
ELLINGTON STREET
STREET
CONGREGATION BETH-EL SYNAGOGUE
STREET
GLENWAY
DRUMMOND STREET
STREET
FOWLER STREET
STREET

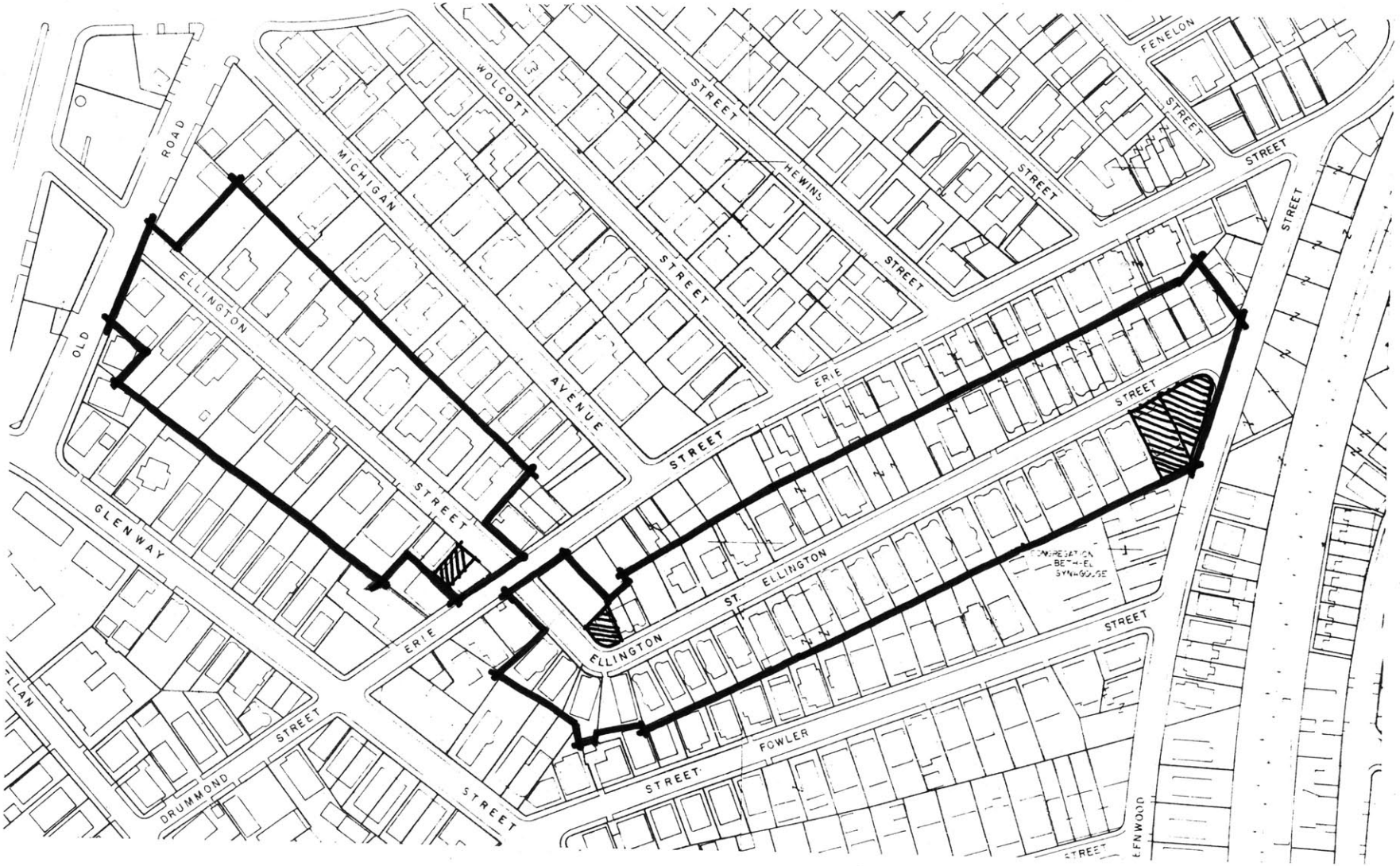
KEY TO FORFEITURES

ONE FORFEITURE IN 5 YEARS

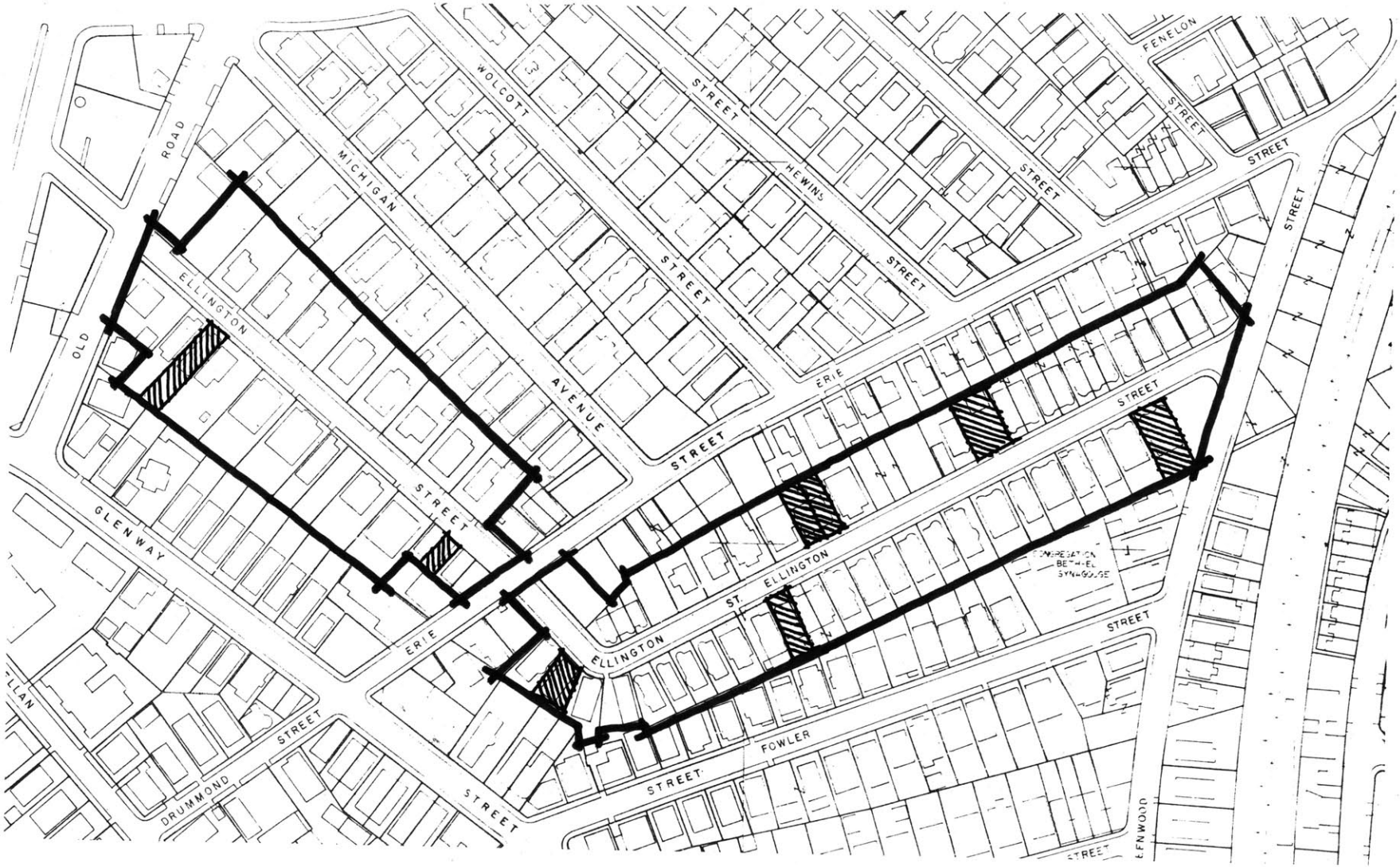


MORE THAN ONE FORFEITURE IN 5 YEARS

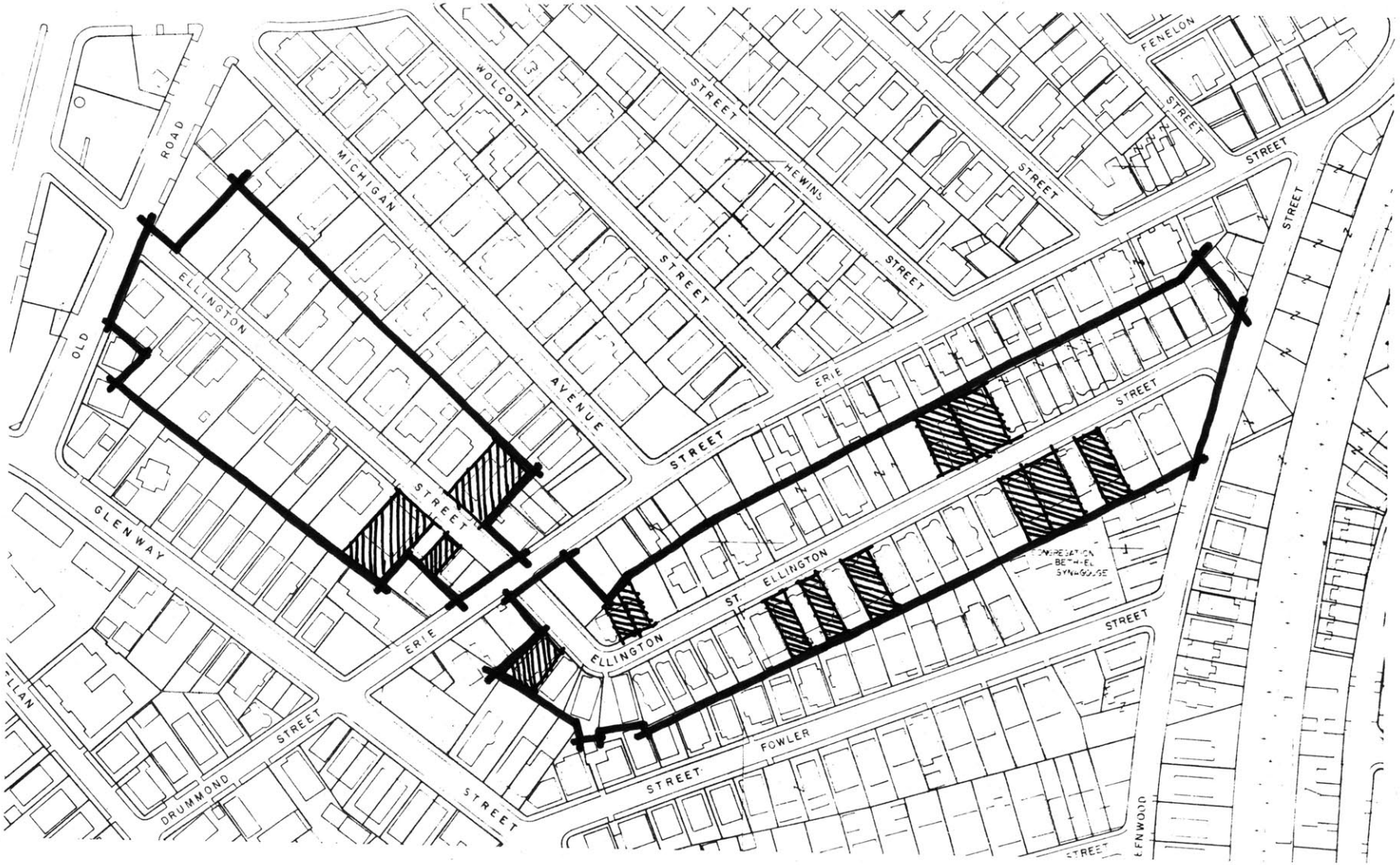
FORFEITURES 1955-60



FORFEITURES 1961-65

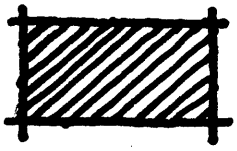


FORFEITURES 1966-70

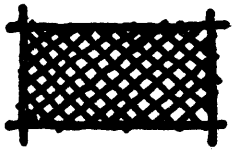


KEY TO SANITARY CODE VIOLATIONS
1968 - 1970

MINOR OR ROUTINE CASE



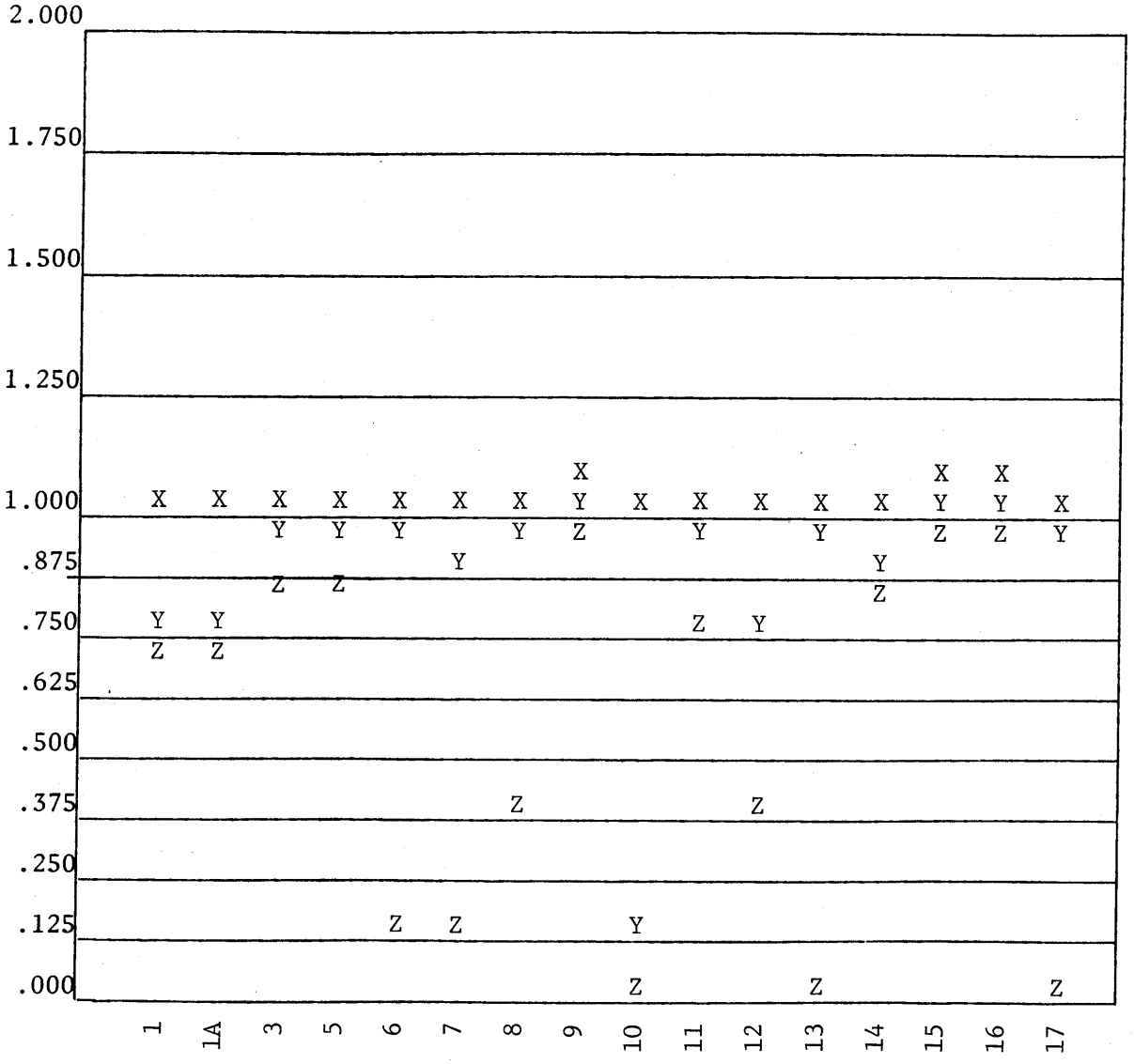
BREAKDOWN IN VITAL BUILDING FUNCTION




STREET
STREET
STREET
STREET
STREET
HEWINS
STREET
STREET
WOLCOTT
AVENUE
MICHIGAN
STREET
ELLINGTON
ROAD
OLD
GLENWAY
STREET
ELLINGTON
ST.
FOWLER
STREET
STREET
STREET
DRUMMOND

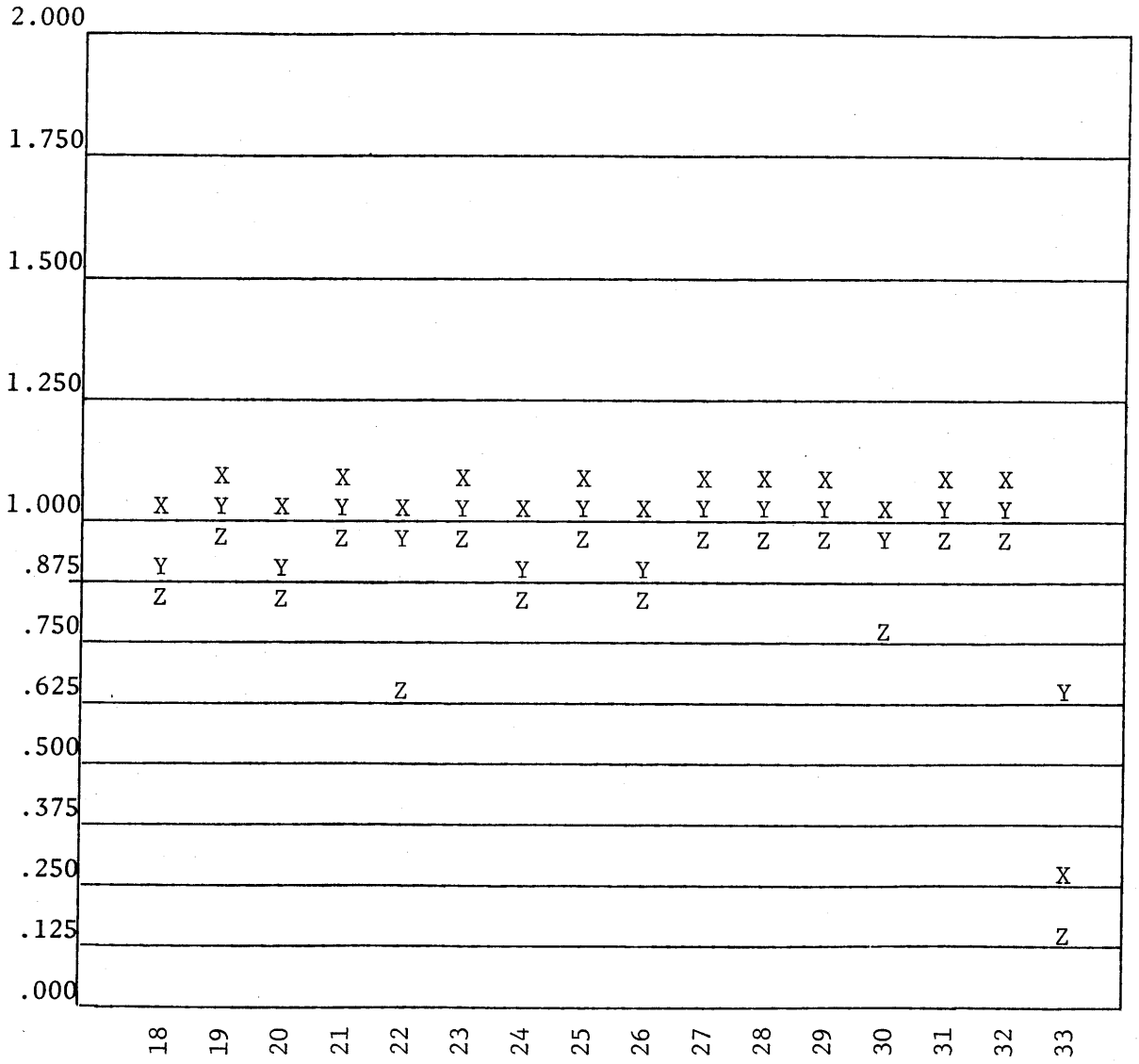
ASSESSED VALUE CHANGES: LEYLAND STREET

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



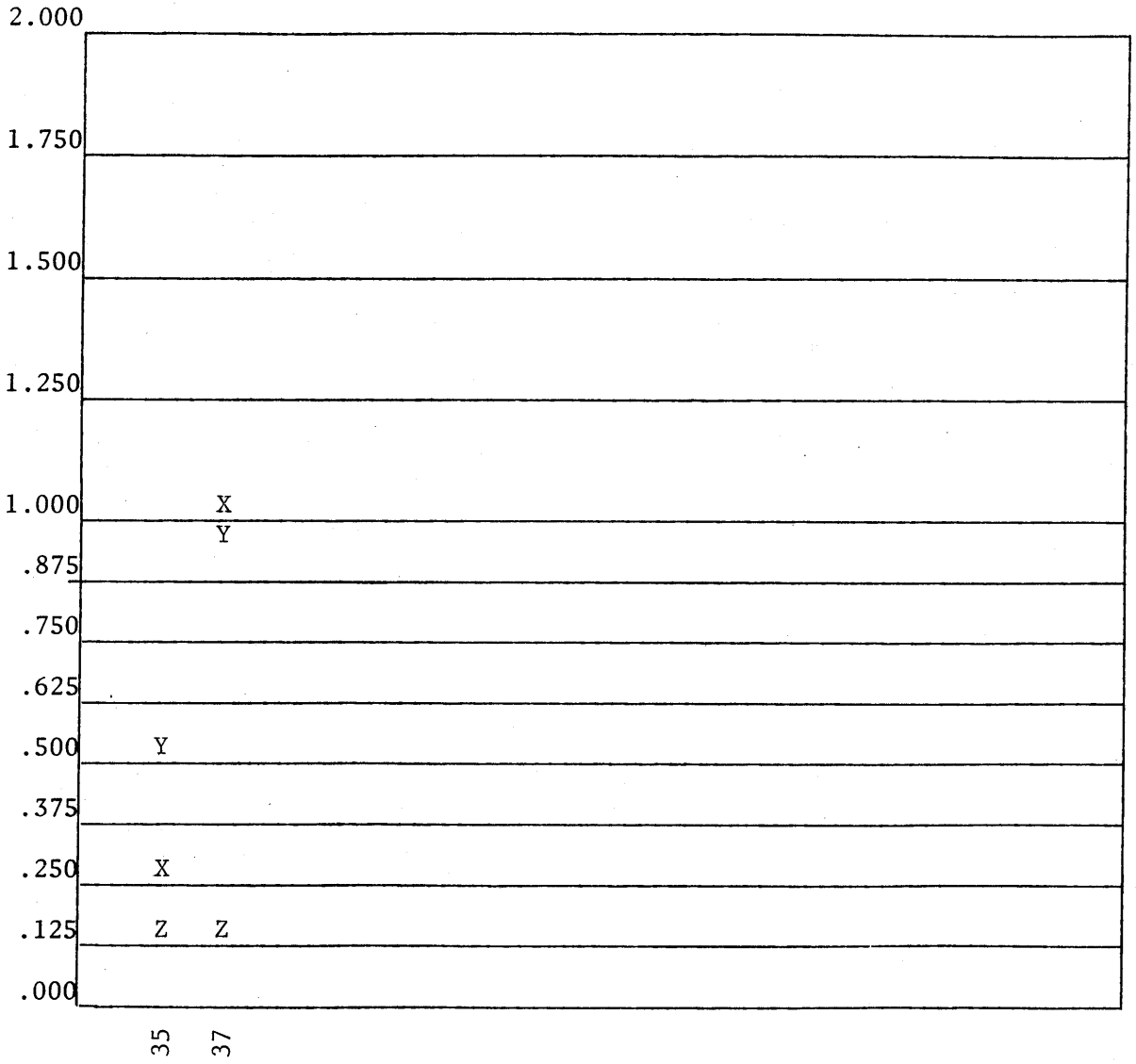
ASSESSED VALUE CHANGES: LEYLAND STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



ASSESSED VALUE CHANGES: LEYLAND STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



OWNERSHIP CHANGES: LEYLAND STREET

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

	1	1A	3	5	6	7	8	9	10	11	12	13	14	15	16	17	18
70																	
69																	
68						X*			X*	X							
67	X	X			XX				XX		XX*						
66									X					X			
65			X*										X	X*			
64			XX*													XX	
63											X				XX*	X*	
62											X*						
61						X*					X*	X*					
60						X											
59						X*											
58	X	X				X											X
57											X	X					
56								X			X						
55									X		X		X				

OWNERSHIP CHANGES: LEYLAND STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
70			X*		X*		X*		X*		X*		X*				
69				XX		X											
68						X*										X	
67						X								X			
66			X*		X*	X	X*		X*		X*		X*				
65			X*		X*		X*		X*		X*		X*	X*			
64														X			
63	X	X				X*											
62			X*X		X*X	X	X*X		X*X		X*X		X*X				
61														X	X*		
60															X		
59			X*		X*		X*		X*		X*		X*		X*	X	X*
58			XXX		XXX		XXX		XXX		XXX		XXX				
57	XXX							X									
56		X								X							
55	X		X		X		X		X		X		X				

OWNERSHIP CHANGES: LEYLAND STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

70																
69																
68	X															
67																
66																

65																
64	X*X															
63																
62																
61																

60	XX															
59																
58	X															
57																
56																
55																

TENANCY STARTS: LEYLAND STREET

This chart records the year current tenants moved into their units. For each of sixteen years is given the total number of tenants who took occupancy in that year. In the last column is given the total number of these "occupancy starts" for each of the periods 1955-60, 1961-65, 1966-70. Numbers at the bottom of the chart followed by a + indicate the number of tenants in occupancy prior to 1955.

YEAR	YEARLY TOTALS	FIVE-YEAR CUMULATIVE TOTALS
1970	6	
1969	11	
1968	5	25
1967	2	
1966	1	
1965	4	
1964	1	
1963	1	8
1962	0	
1961	2	
1960	0	
1959	1	
1958	2	6
1957	1	
1956	2	
1955	0	
		1+

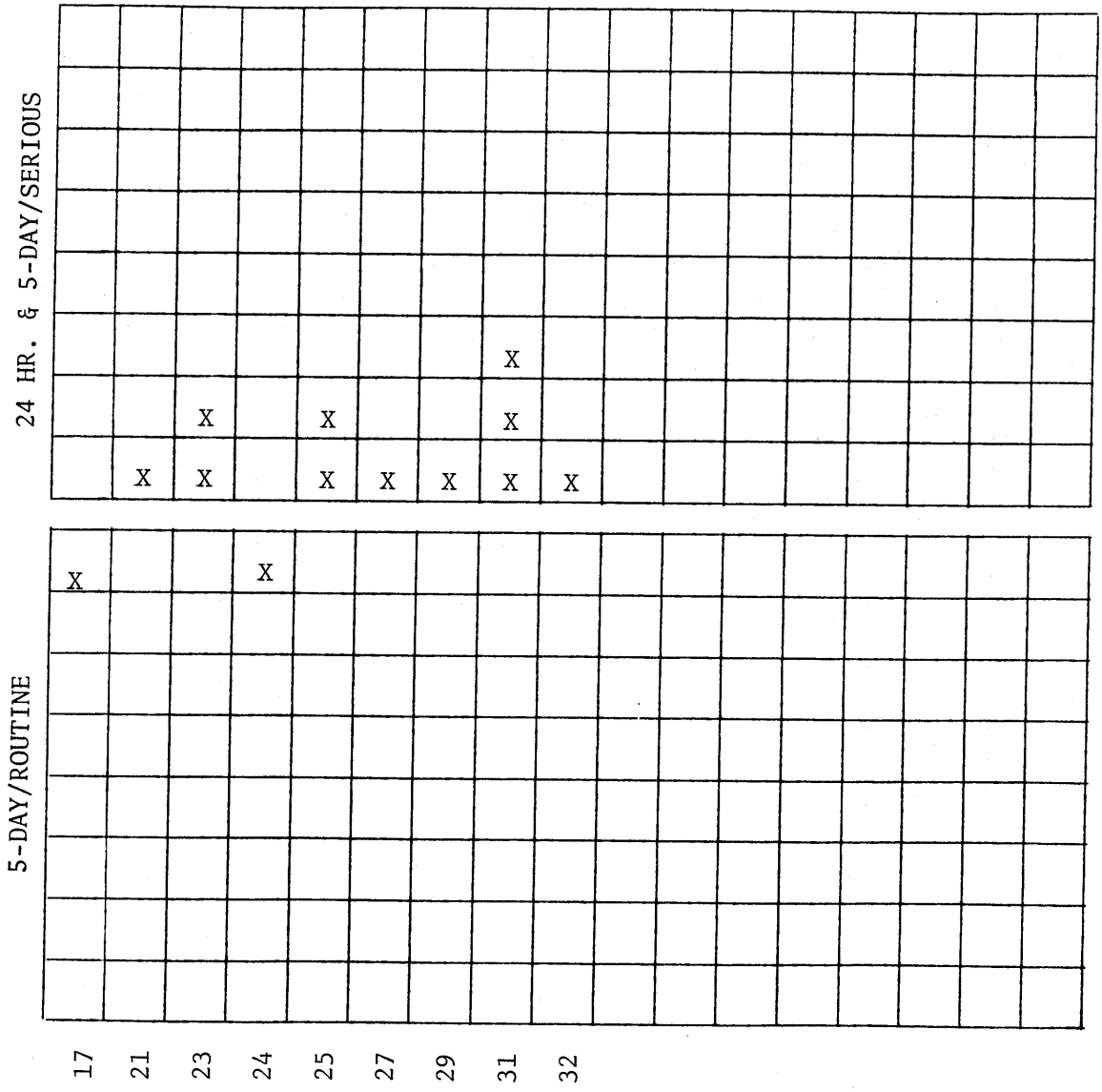
FORFEITURES: LEYLAND STREET

The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.

	3	7	10	11	12	13	16	17	19	21	33	35	37
70								X	X	X			
69				X	X	X					X	X	
68			X										
67					X								
66													
65													
64	X												X
63							X	X					
62													
61													
60													
59		X											
58		X											
57									X				
56													
55													

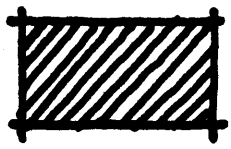
SANITARY CODE VIOLATIONS: LEYLAND STREET

The X's indicate one code violation case handled by the Housing Inspection Department (H.I.D.) for the addresses listed at the bottom. The position of the X above or below the center space indicates the nature and severity of the violation.

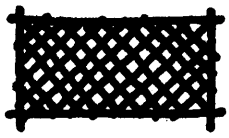


KEY TO ASSESSED VALUE CHANGES

DECLINED OVER 25%



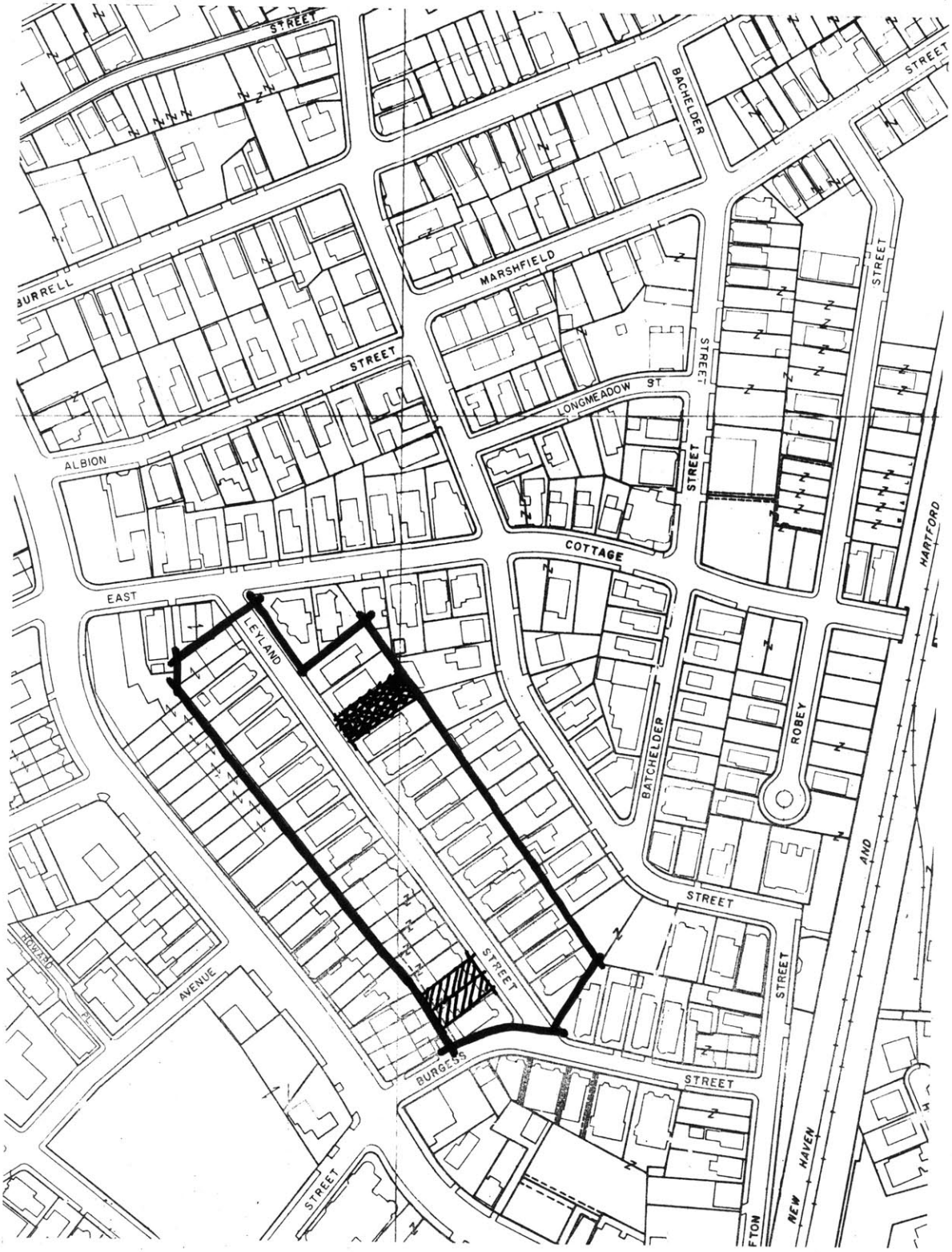
DECLINED OVER 50%



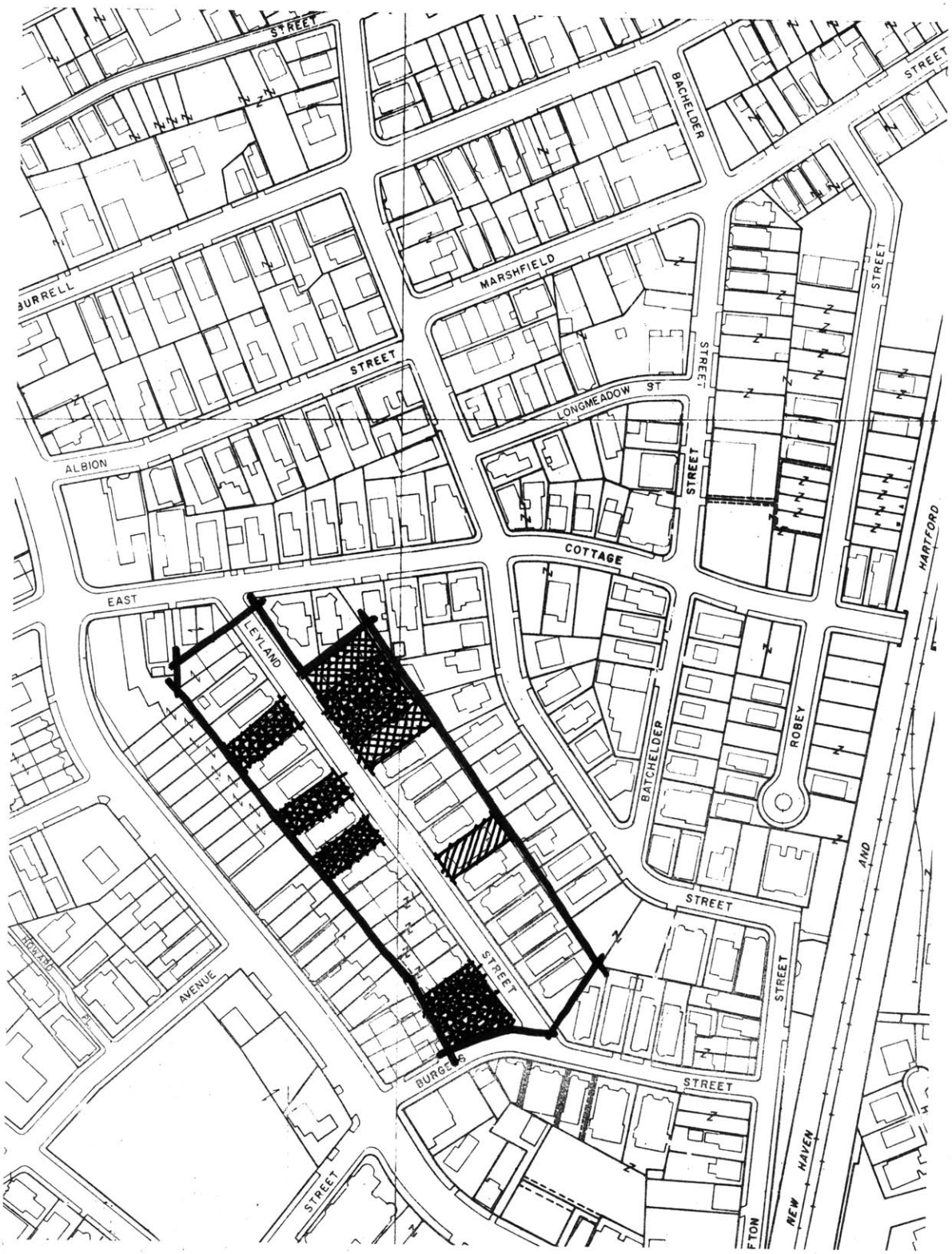
DECLINED OVER 75%

ASSESSED VALUE CHANGES 1955-60

ASSESSED VALUE CHANGES 1961-65

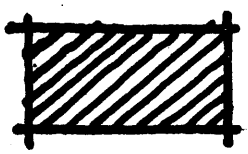


ASSESSED VALUE CHANGES 1966-70

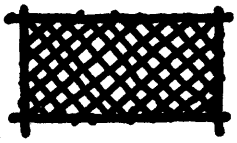


KEY TO ABSENTEE OWNERSHIPS

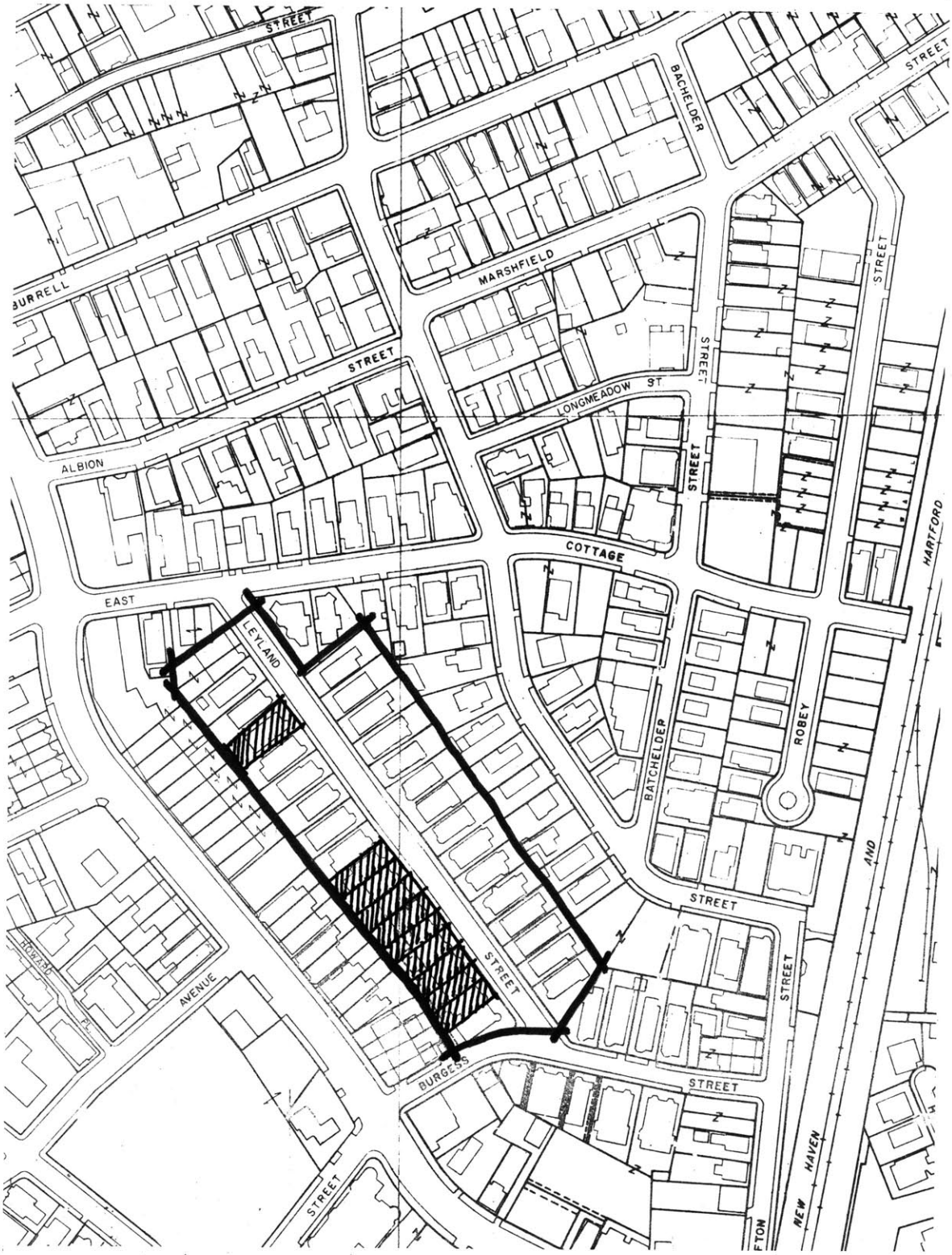
ONE ABSENTEE IN 5 YEARS



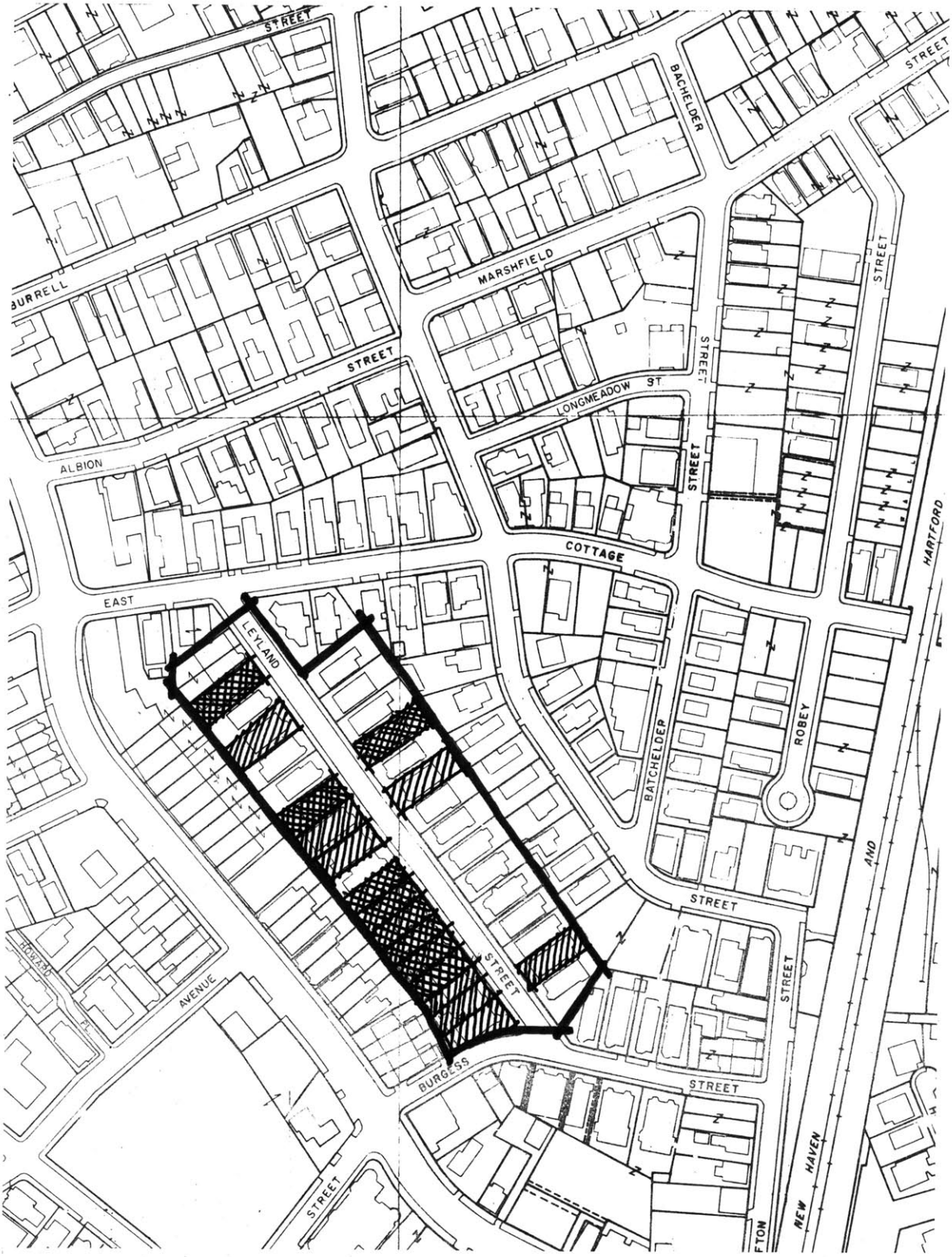
MORE THAN ONE ABSENTEE IN 5 YEARS



PROPERTIES HELD IN ABSENTEE OWNERSHIP 1955-60



PROPERTIES HELD IN ABSENTEE OWNERSHIP 1961-65

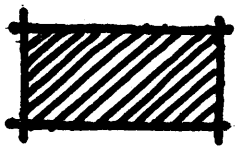


PROPERTIES HELD IN ABSENTEE OWNERSHIP 1966-70

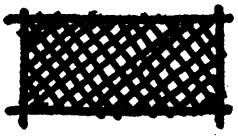
KEY TO TENANCY STARTS

MOST OR ALL TENANTS IN THE VARIOUS STRUCTURES:

TOOK OCCUPANCY 1955-60



TOOK OCCUPANCY 1961-65

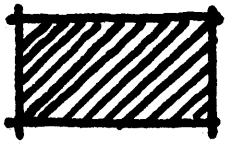


TOOK OCCUPANCY 1966-70


STREET
BACHELDER
STREET
BURRELL
STREET
MARSHFIELD
STREET
LONGMEADOW ST
STREET
ALBION
STREET
COTTAGE
HARTFORD
EAST
LEYLAND
BATCHELDER
ROBEY
AND
STREET
STREET
STREET
AVENUE
BURGESS
STREET
STREET
NEW HAVEN

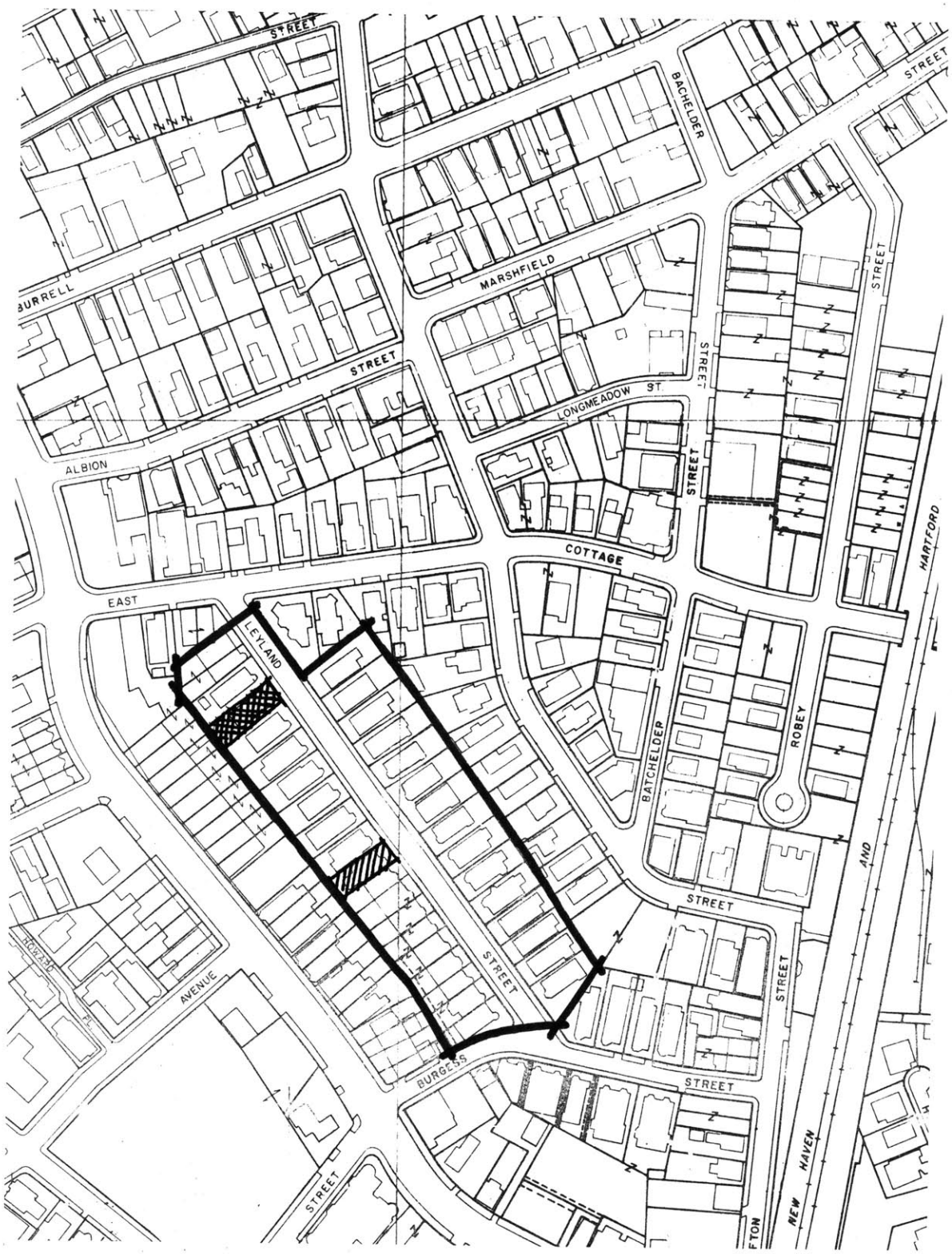
KEY TO FORFEITURES

ONE FORFEITURE IN 5 YEARS

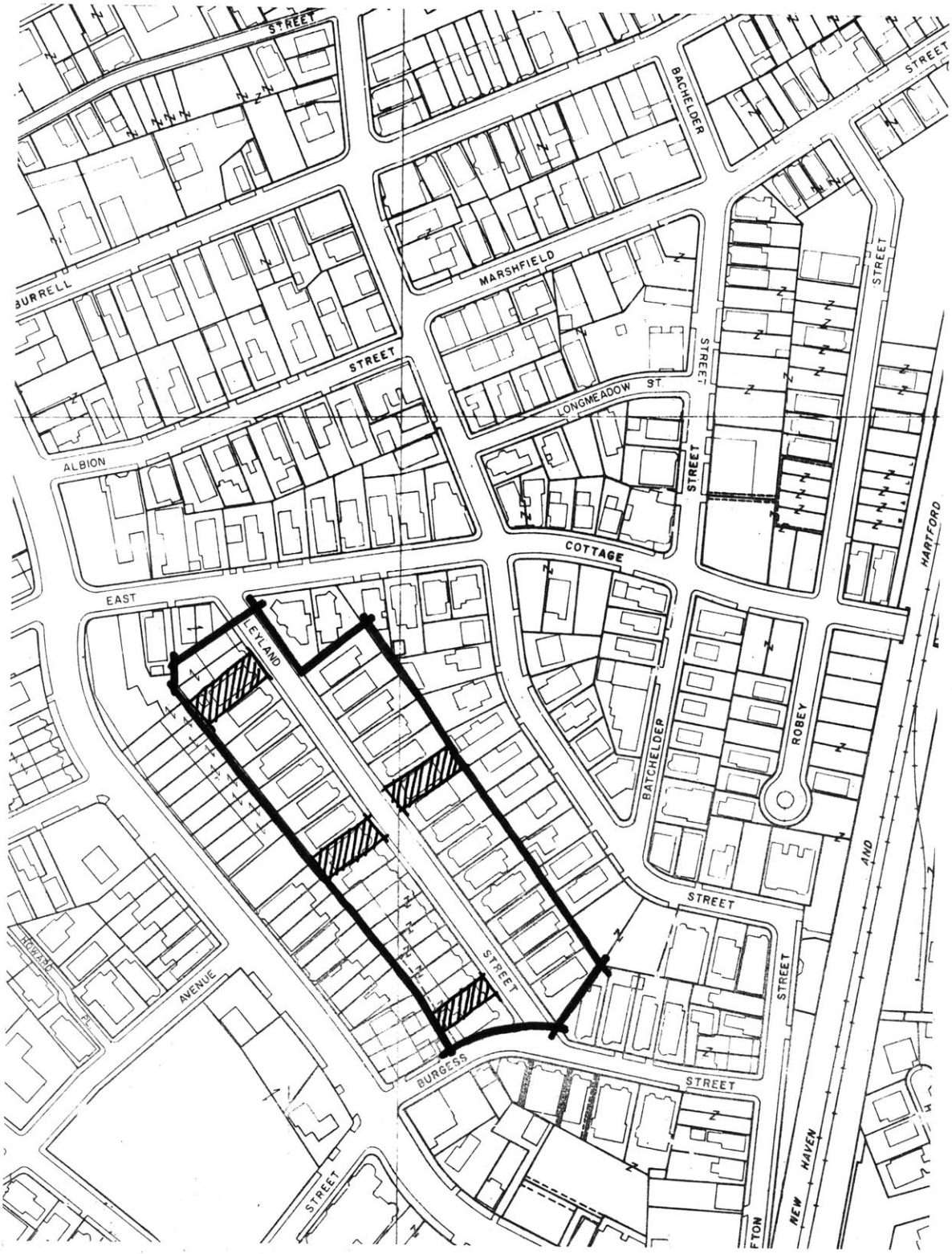


MORE THAN ONE FORFEITURE IN 5 YEARS

FORFEITURES 1955-60



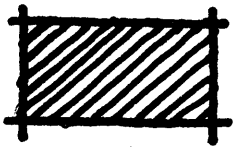
FORFEITURES 1961-65



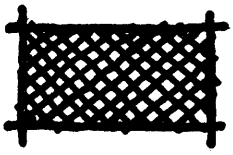
FORFEITURES 1966-70

KEY TO SANITARY CODE VIOLATIONS
1968 - 1970

MINOR OR ROUTINE CASE



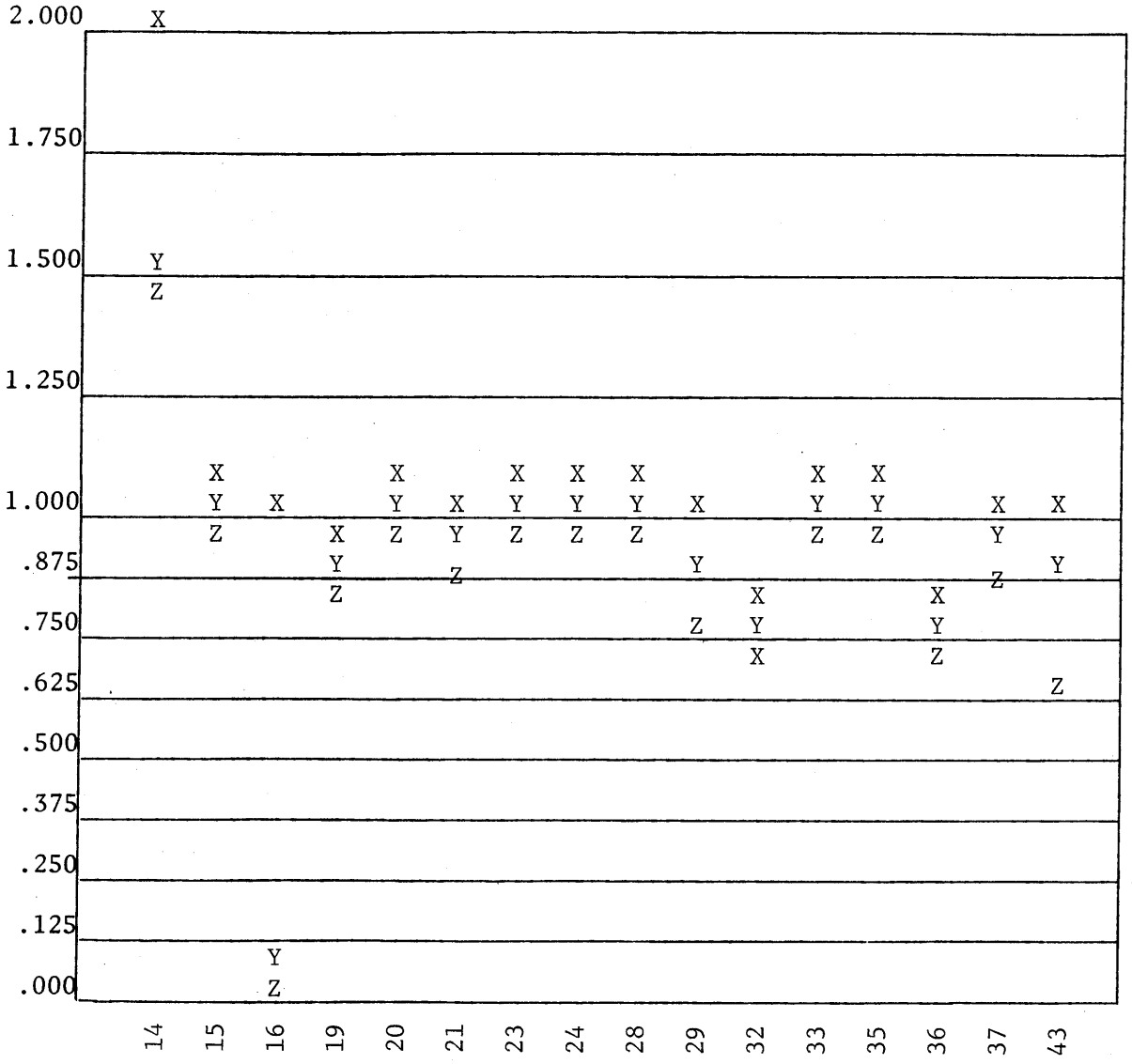
BREAKDOWN IN VITAL BUILDING FUNCTION




STREET
BACHELDER
STREET
BURRELL
STREET
MARSHFIELD
STREET
LONGMEADOW ST
STREET
ALBION
COTTAGE
EAST
LEYLAND
HARTFORD
BATCHELDER
ROBEY
AND
STREET
STREET
AVENUE
STREET
BURGESS
STREET
STREET
NEW HAVEN

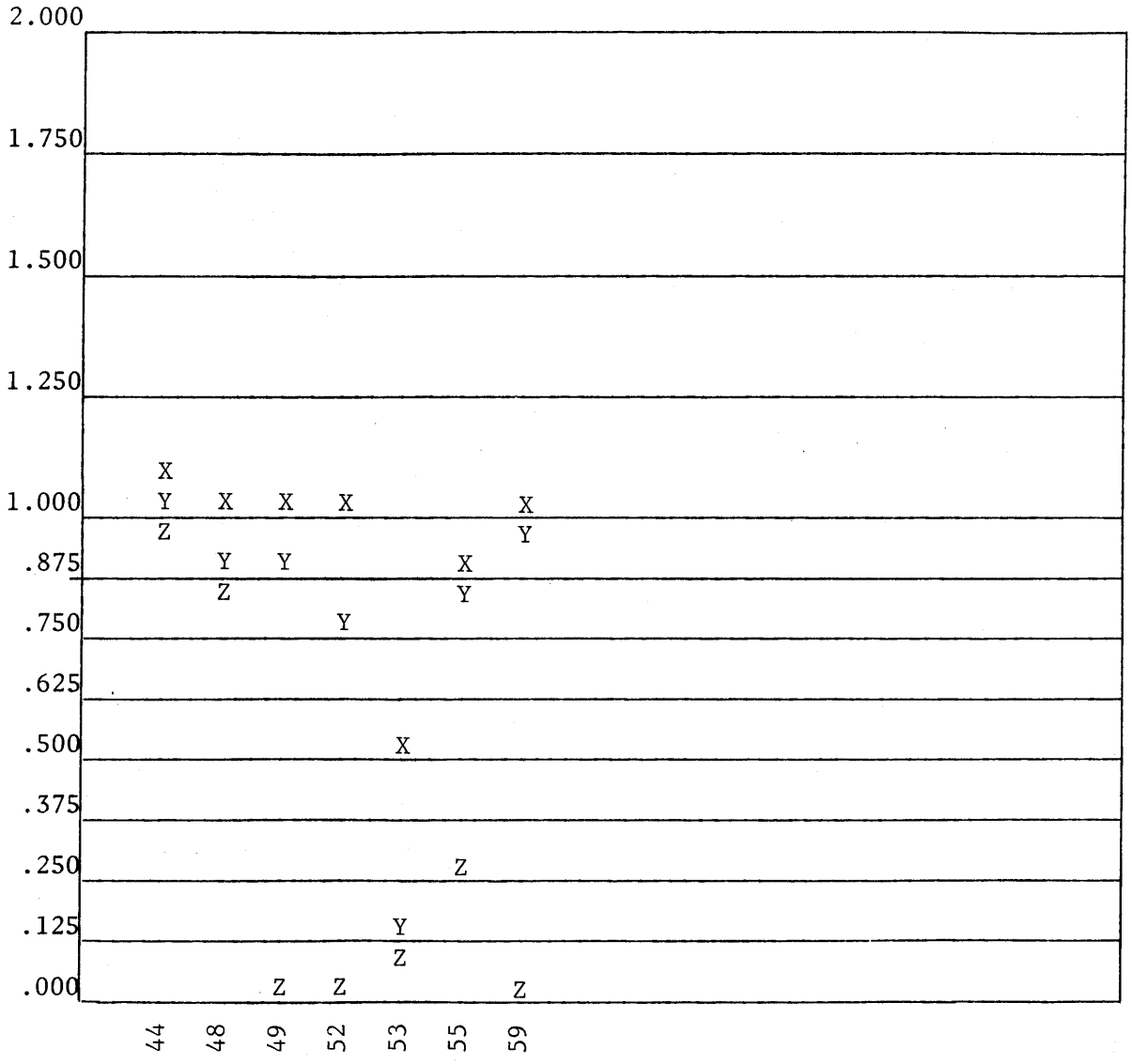
ASSESSED VALUE CHANGES: UPPER ELLINGTON STREET

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



ASSESSED VALUE CHANGES: UPPER ELLINGTON STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



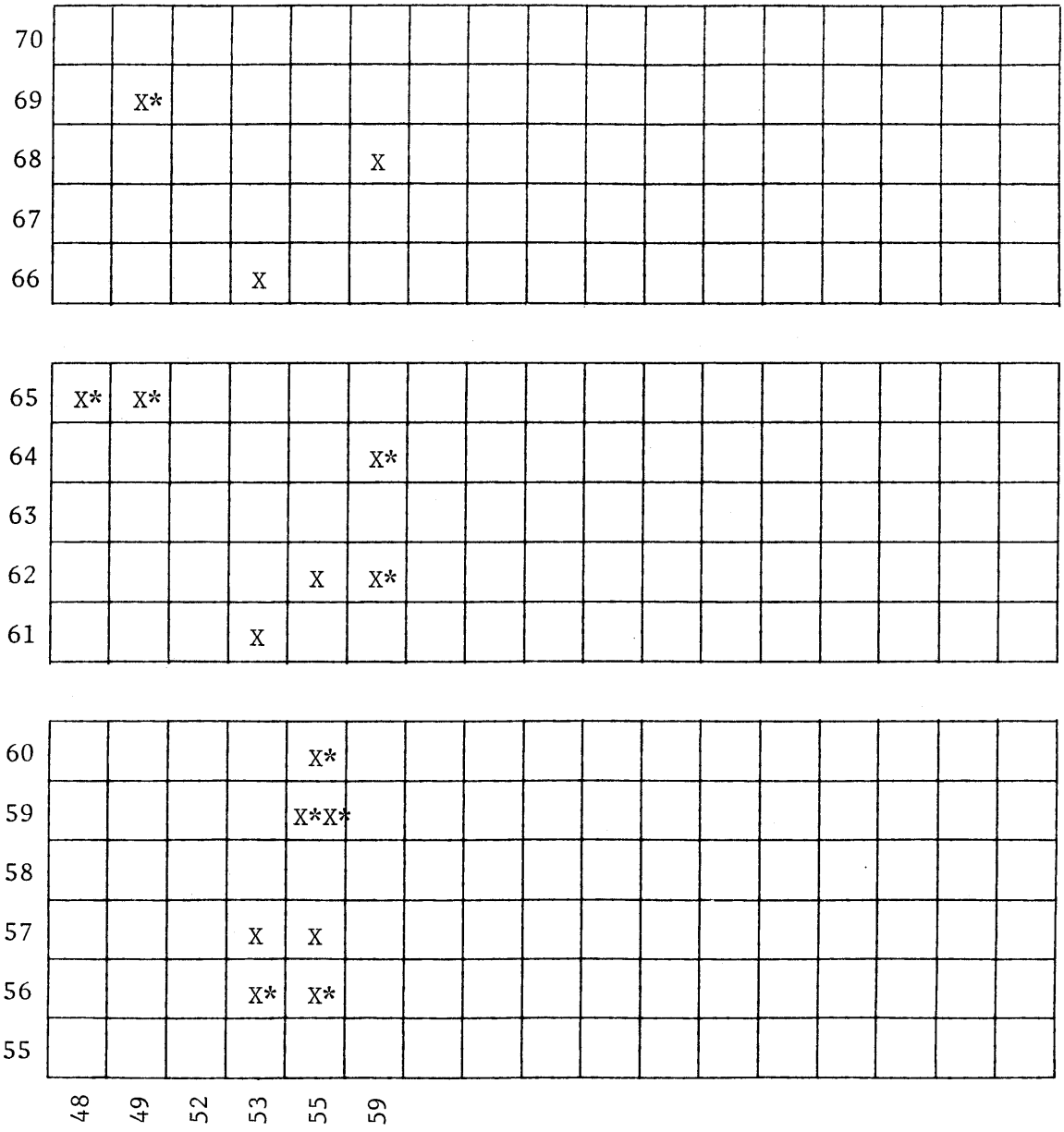
OWNERSHIP CHANGES: UPPER ELLINGTON STREET

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

	14	15	16	19	20	21	23	24	28	29	32	33	35	36	37	43	44
70																X*	
69		X								X*							
68																	
67									X		X*			X*			
66													X*				
65											X*			X*			
64							X			X		X*				X	
63																X	
62					X								X*				
61			X*														
60																	
59						X	XX										
58																	
57	X					X*						X					
56		X															
55		XX				X*X	X					X					

OWNERSHIP CHANGES: UPPER ELLINGTON STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.



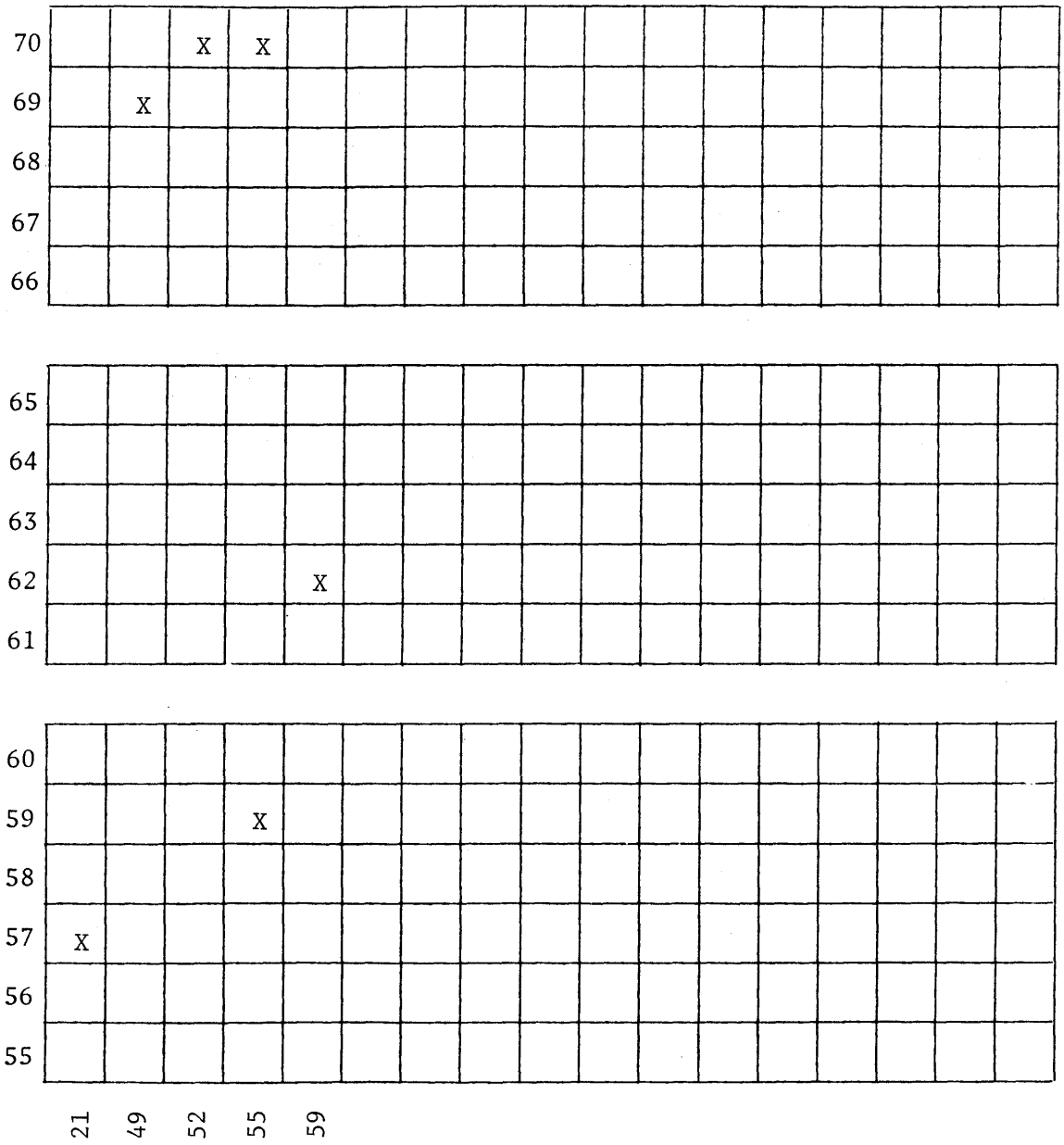
TENANCY STARTS: UPPER ELLINGTON STREET

This chart records the year current tenants moved into their units. For each of sixteen years is given the total number of tenants who took occupancy in that year. In the last column is given the total number of these "occupancy starts" for each of the periods 1955-60, 1961-65, 1966-70. Numbers at the bottom of the chart followed by a + indicate the number of tenants in occupancy prior to 1955.

YEAR	YEARLY TOTALS	FIVE-YEAR CUMULATIVE TOTALS
1970	23	
1969	13	
1968	3	48
1967	5	
1966	4	
1965	0	
1964	4	
1963	0	5
1962	1	
1961	0	
1960	0	
1959	0	
1958	0	0
1957	0	
1956	0	
1955	0	
		2+

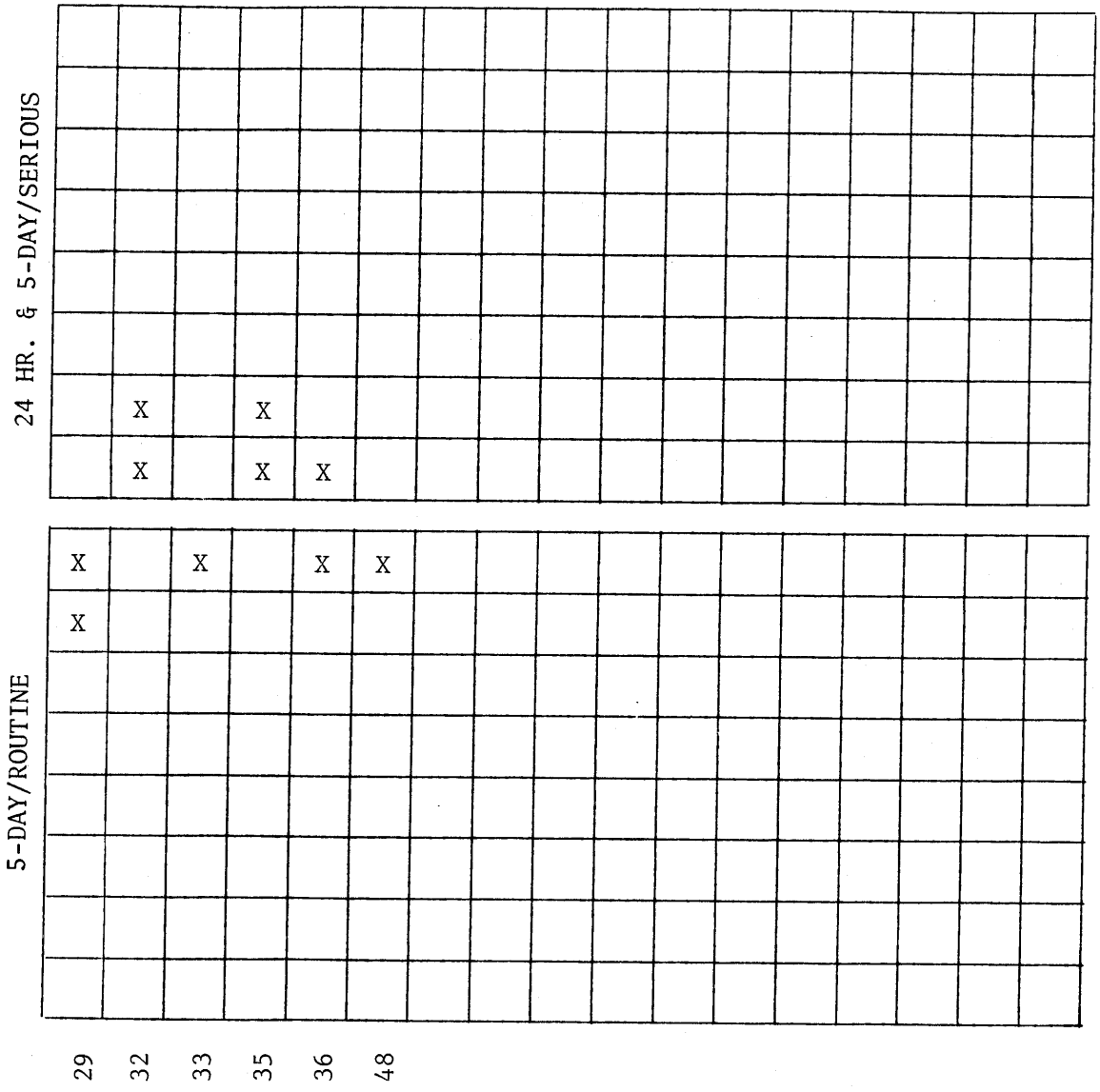
FORFEITURE: UPPER ELLINGTON STREET

The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.



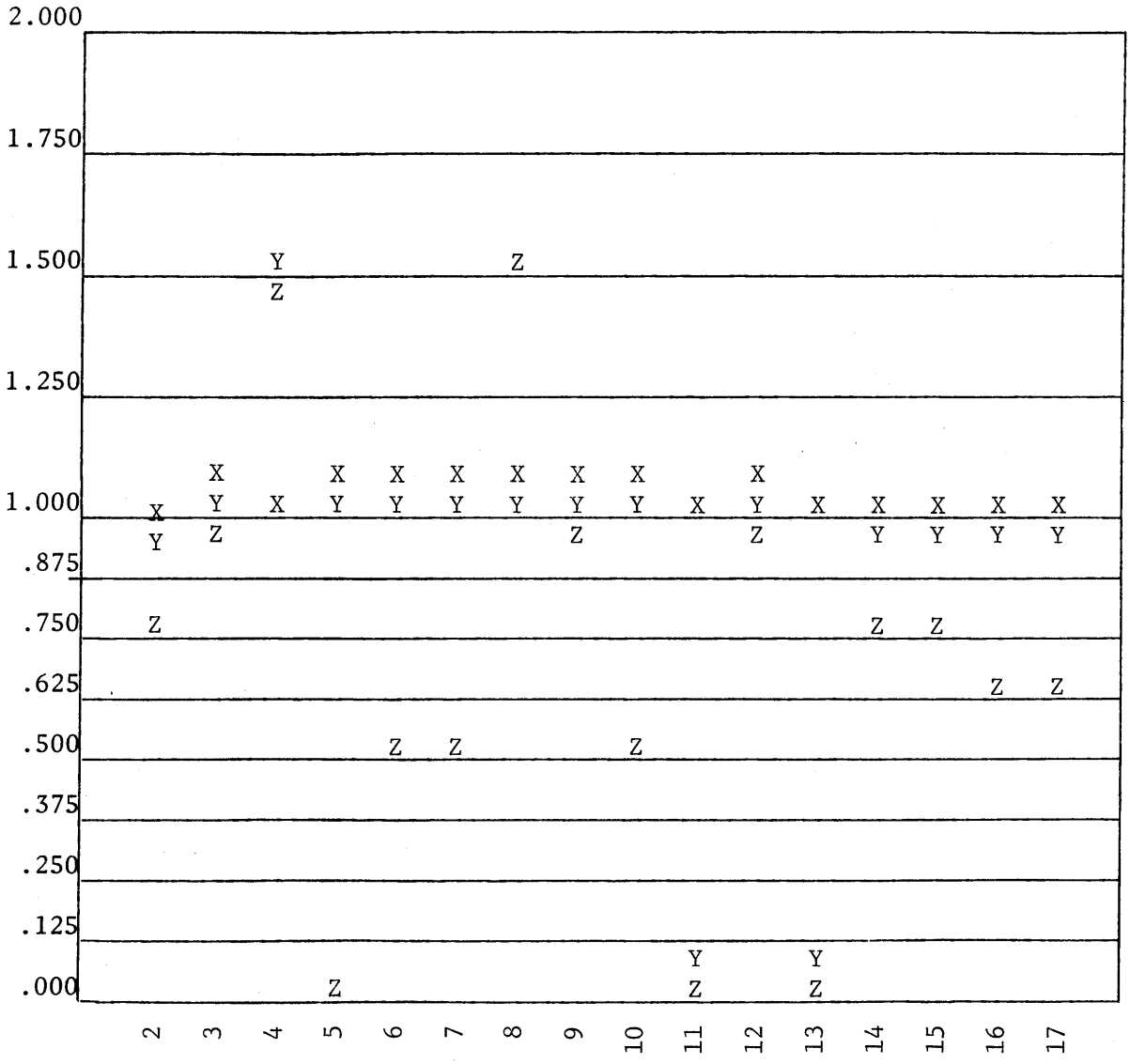
SANITARY CODE VIOLATIONS: UPPER ELLINGTON STREET

The X's indicate one code violation case handled by the Housing Inspection Department (H.I.D.) for the addresses listed at the bottom. The position of the X above or below the center space indicates the nature and severity of the violation.



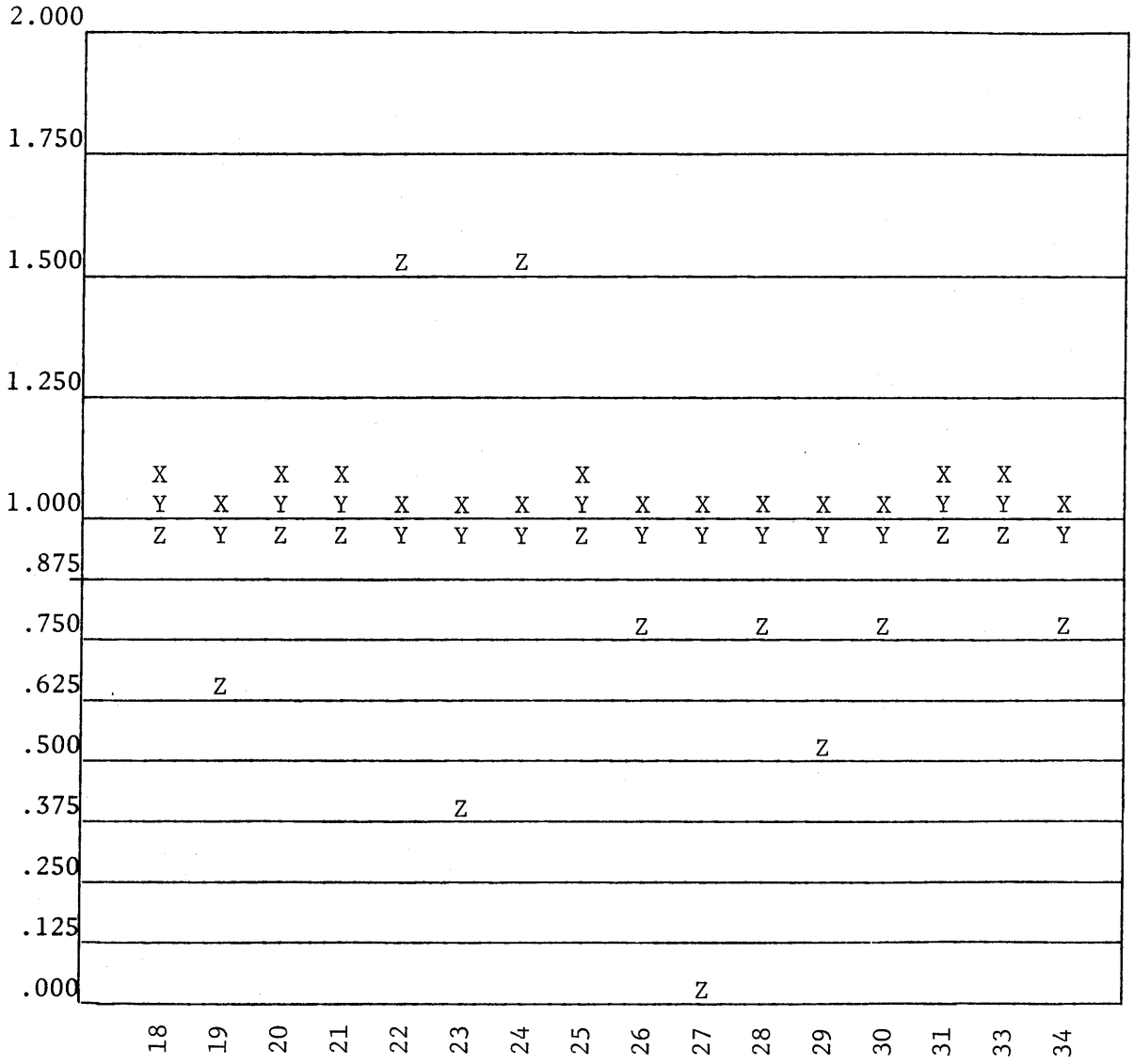
ASSESSED VALUE CHANGES: SARGENT STREET

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



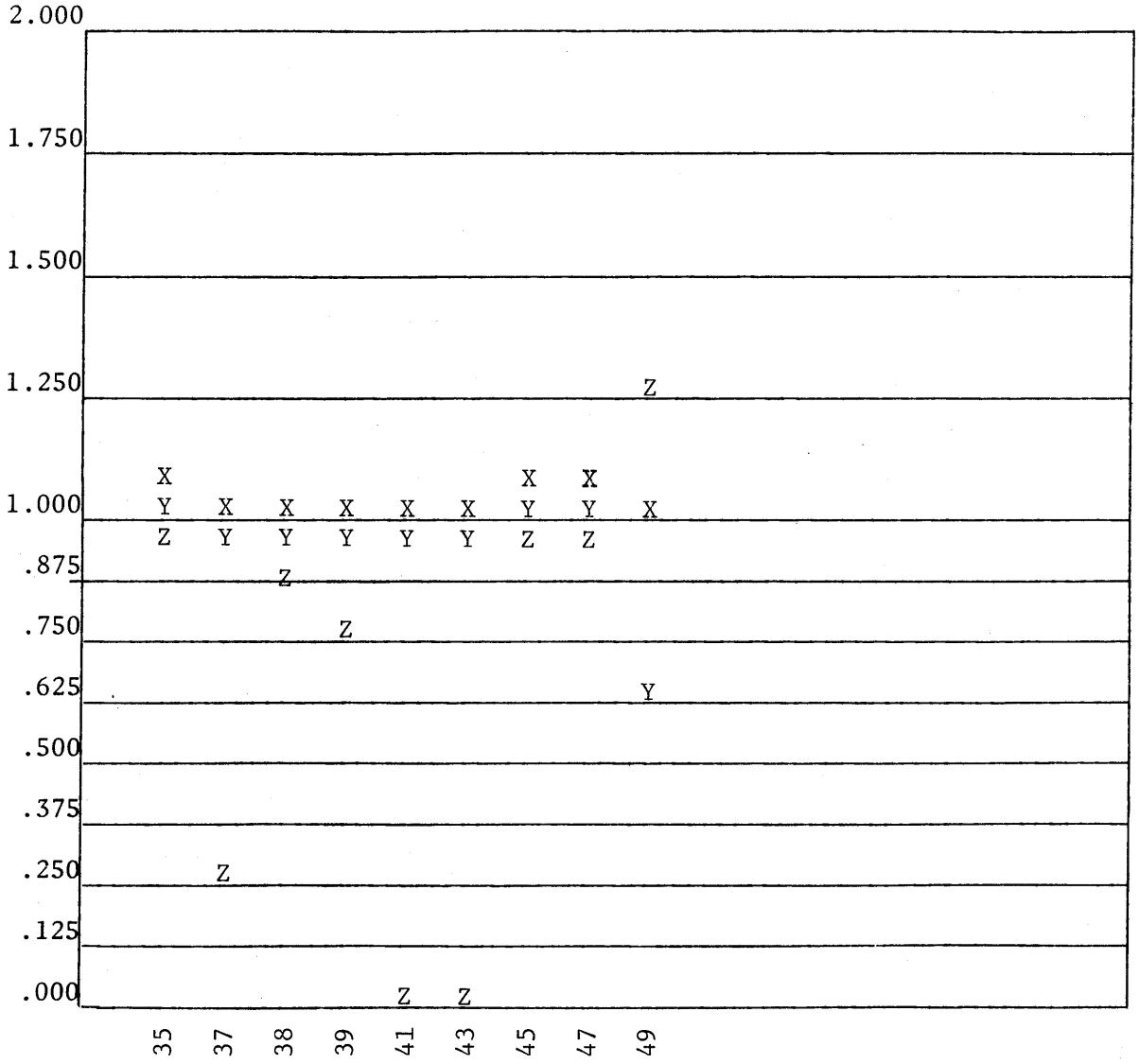
ASSESSED VALUE CHANGES: SARGENT STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



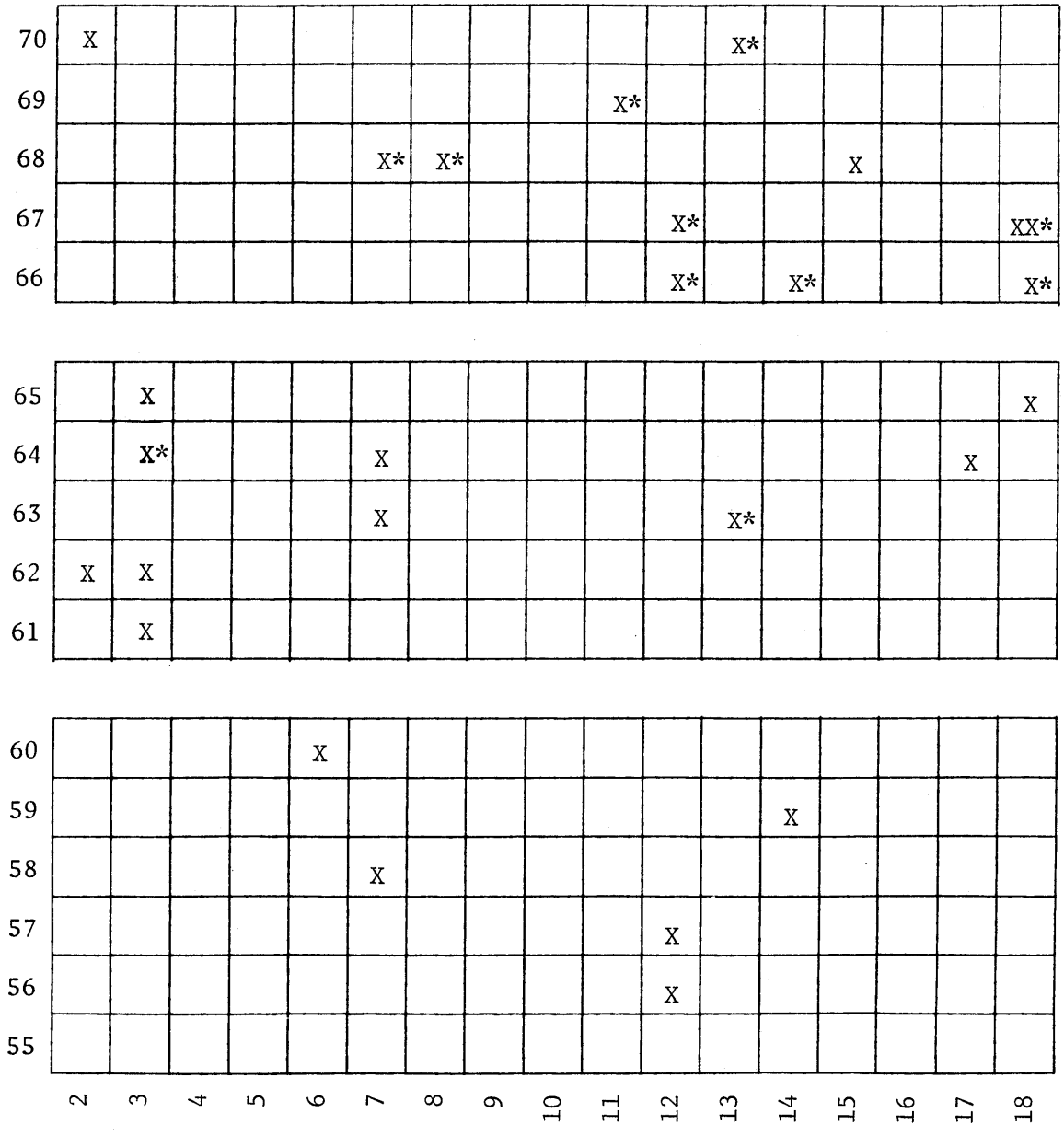
ASSESSED VALUE CHANGES: SARGENT STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



OWNERSHIP CHANGES: SARGENT STREET

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.



OWNERSHIP CHANGES: SARGENT STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	37
70		X*								X							
69					X						X		X				
68	X				X*						X*			X		X	
67		X									X*						
66												X		X			
65		X												X			X*
64										X							
63					X		X		X								X
62															X		
61																	
60						X					X						
59																	
58								X			X						
57																	
56							X	X*									
55					X	X		X									

OWNERSHIP CHANGES: SARGENT STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.

	38	39	41	43	45	47	49
70		X*	X*				
69		X*	X*				
68							
67					X		
66					X*		
65						X	
64				X			
63							
62					X		
61					X*		
60	X						
59							
58				X	X		
57						X	
56							
55							

TENANCY STARTS: SARGENT STREET

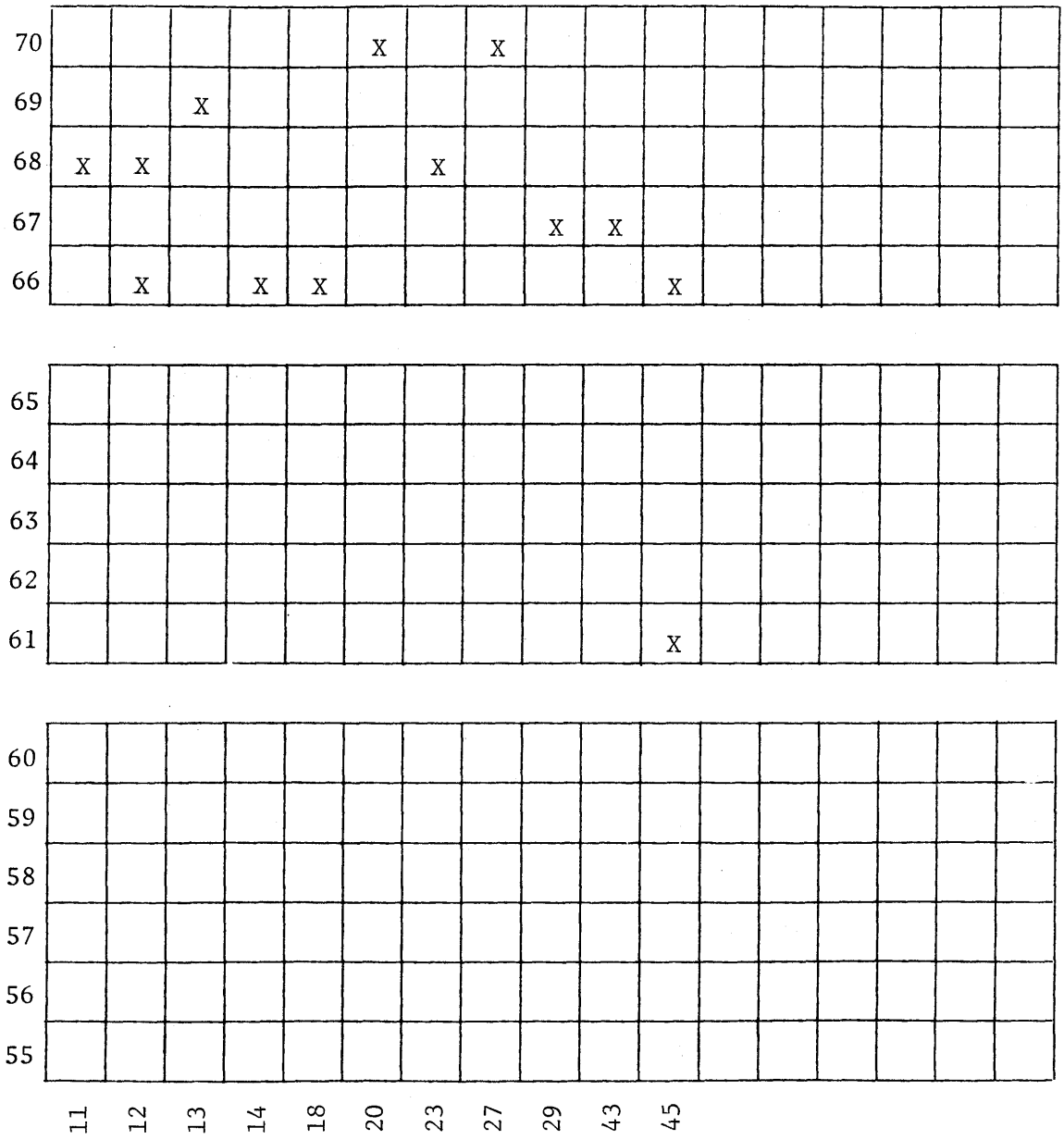
This chart records the year current tenants moved into their units. For each of sixteen years is given the total number of tenants who took occupancy in that year. In the last column is given the total number of these "occupancy starts" for each of the periods 1955-60, 1961-65, 1966-70. Numbers at the bottom of the chart followed by a + indicate the number of tenants in occupancy prior to 1955.

YEAR	YEARLY TOTALS	FIVE-YEAR CUMULATIVE TOTALS
1970	4	
1969	4	
1968	7	21
1967	5	
1966	1	
1965	2	
1964	2	
1963	1	9
1962	3	
1961	1	
1960	1	
1959	0	
1958	1	3
1957	0	
1956	1	
1955	0	

5+

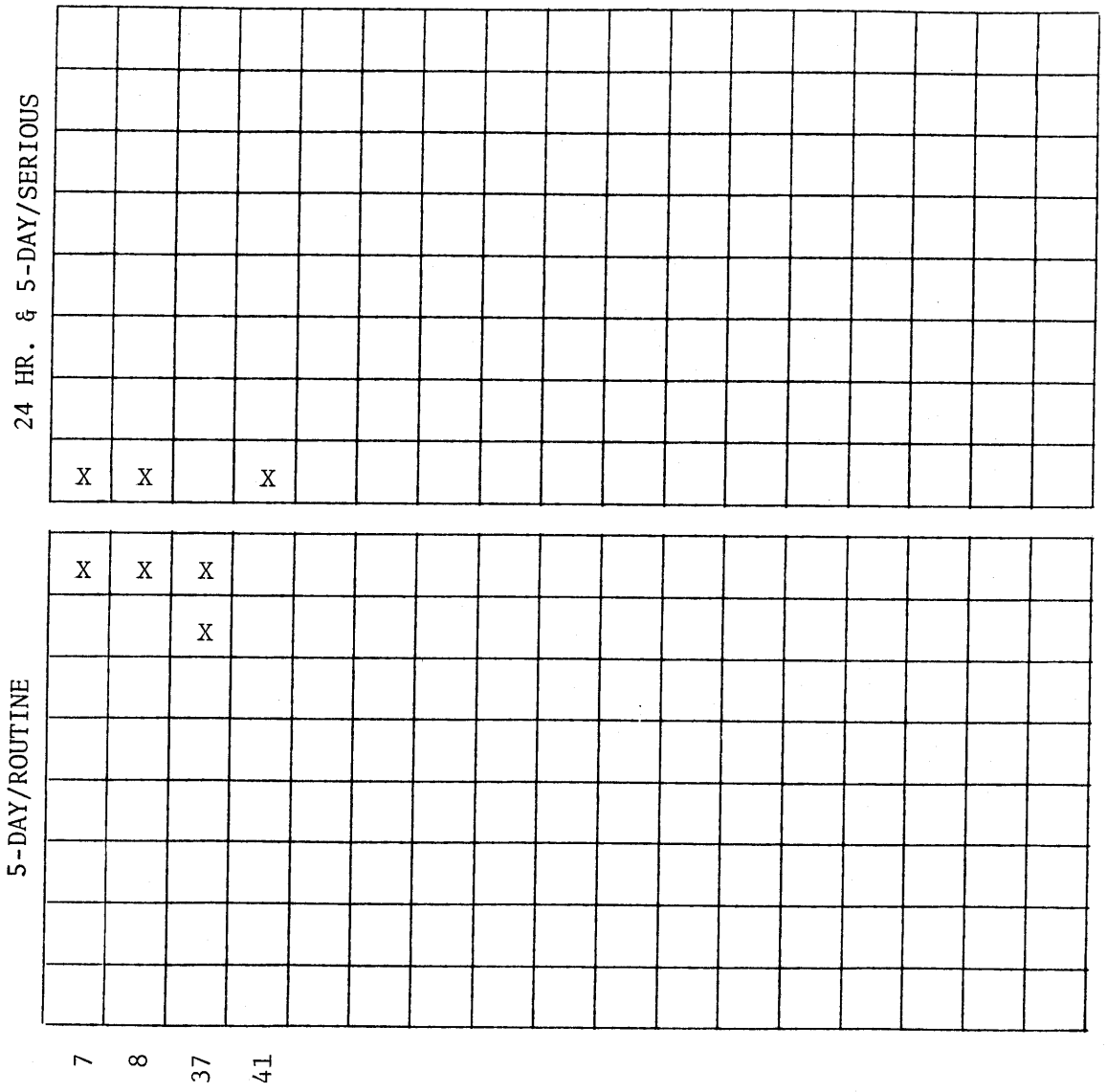
FORFEITURES: SARGENT STREET

The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.



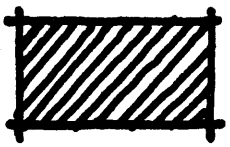
SANITARY CODE VIOLATIONS: SARGENT STREET

The X's indicate one code violation case handled by the Housing Inspection Department (H.I.D.) for the addresses listed at the bottom. The position of the X above or below the center space indicates the nature and severity of the violation.

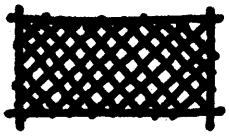


KEY TO ASSESSED VALUE CHANGES

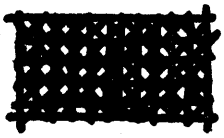
DECLINED OVER 25%



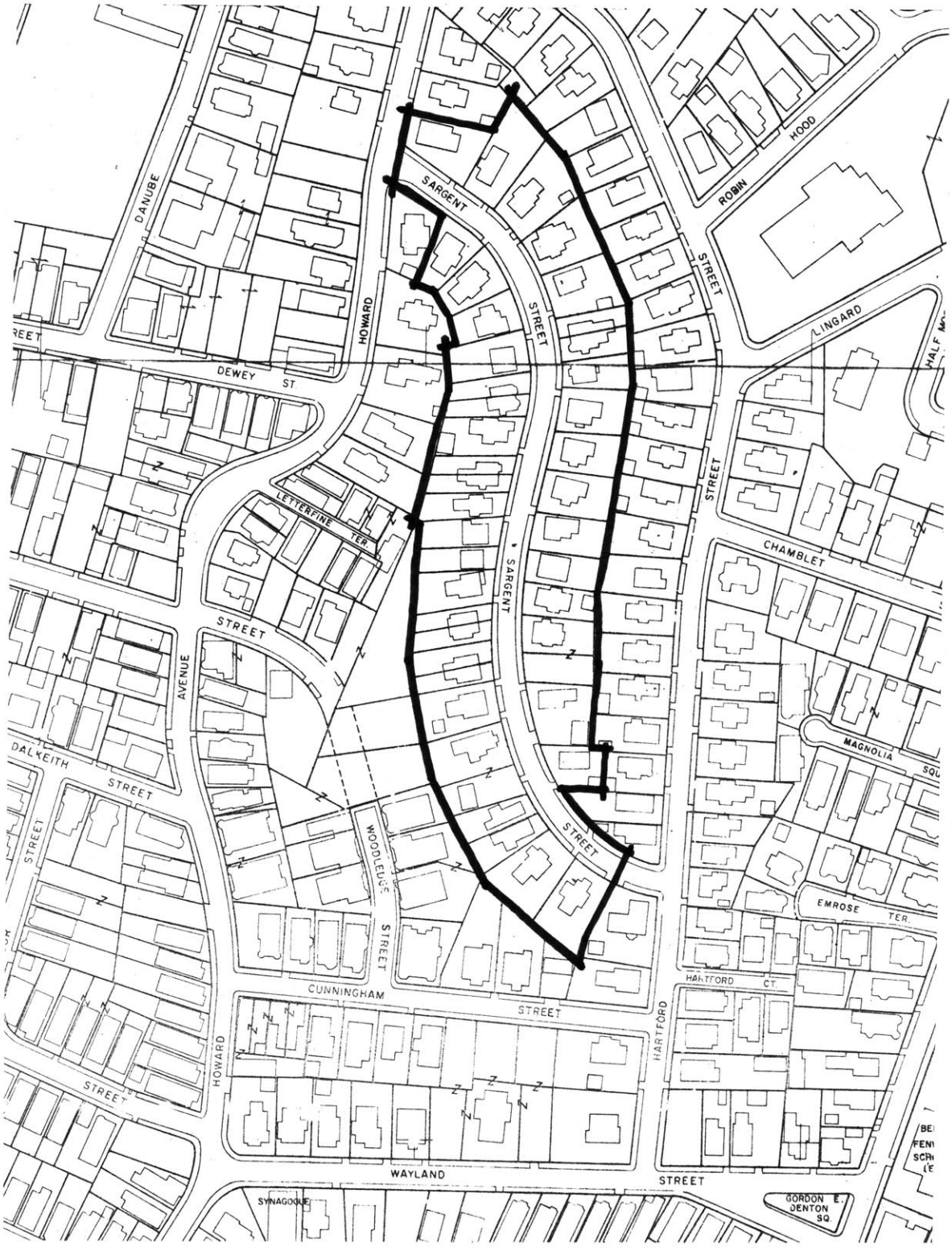
DECLINED OVER 50%



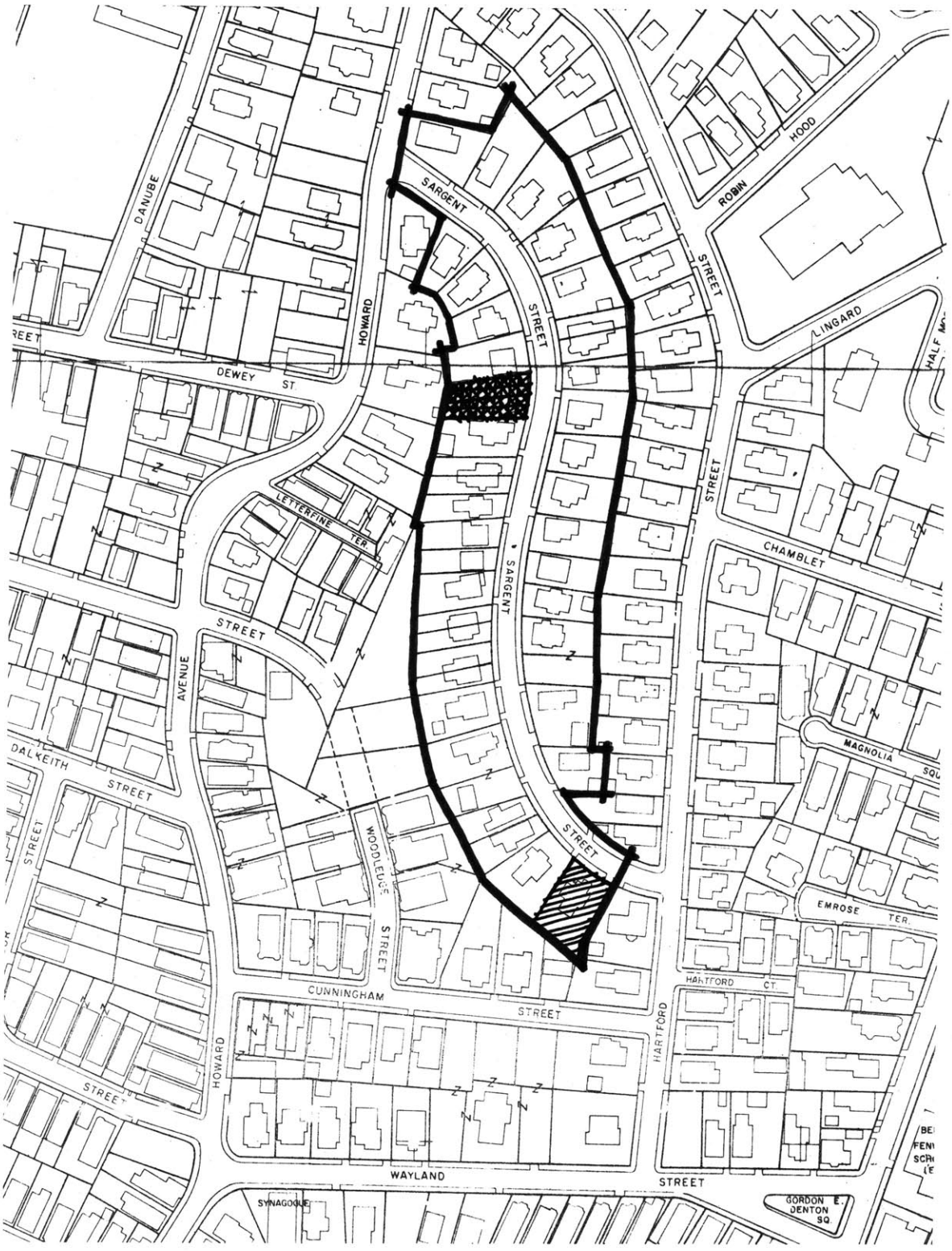
DECLINED OVER 75%



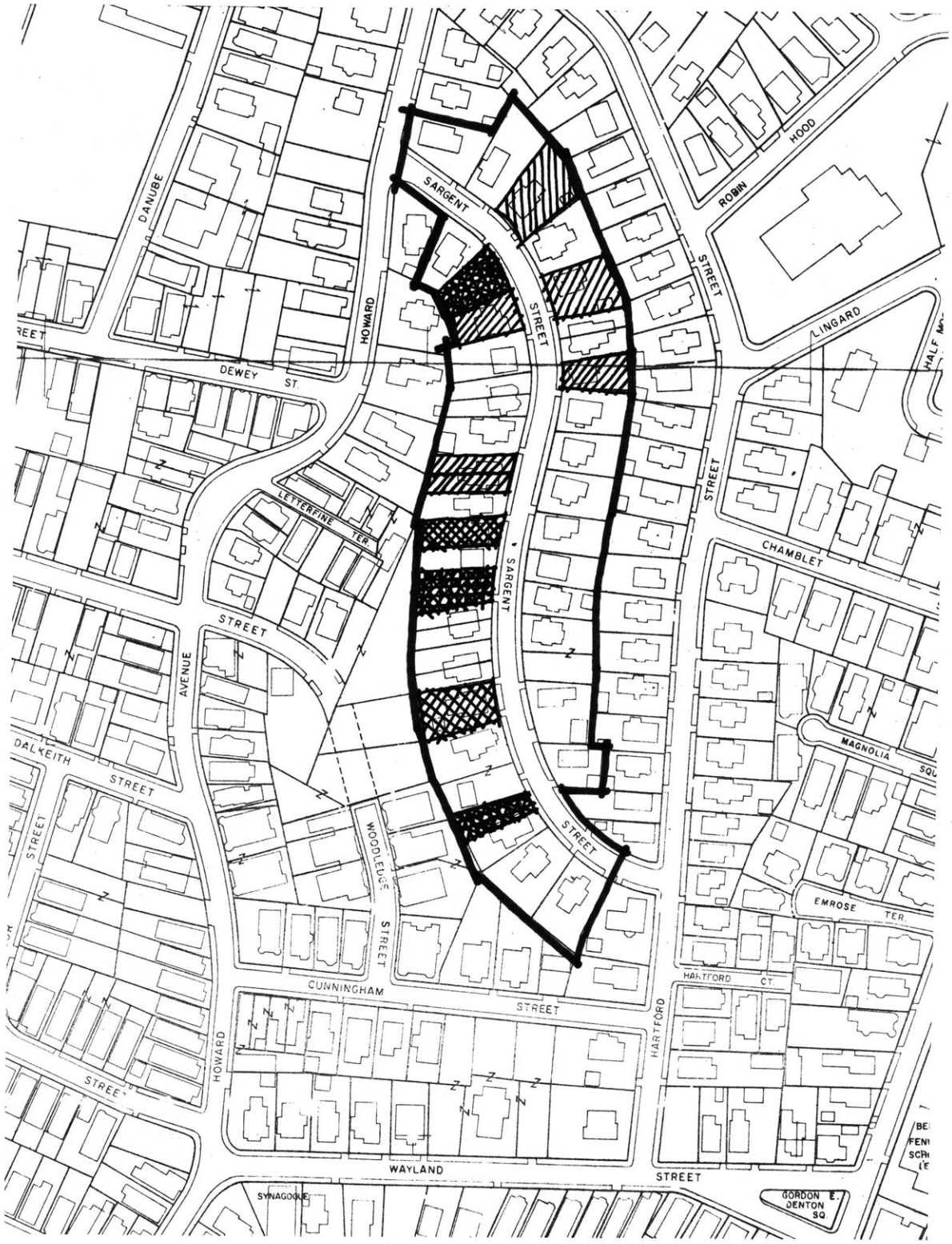
ASSESSED VALUE CHANGES 1955-60



ASSESSED VALUE CHANGES 1961-65

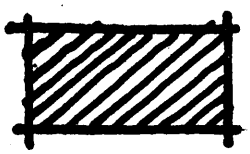


ASSESSED VALUE CHANGES 1966-70

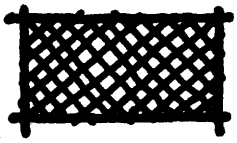


KEY TO ABSENTEE OWNERSHIPS

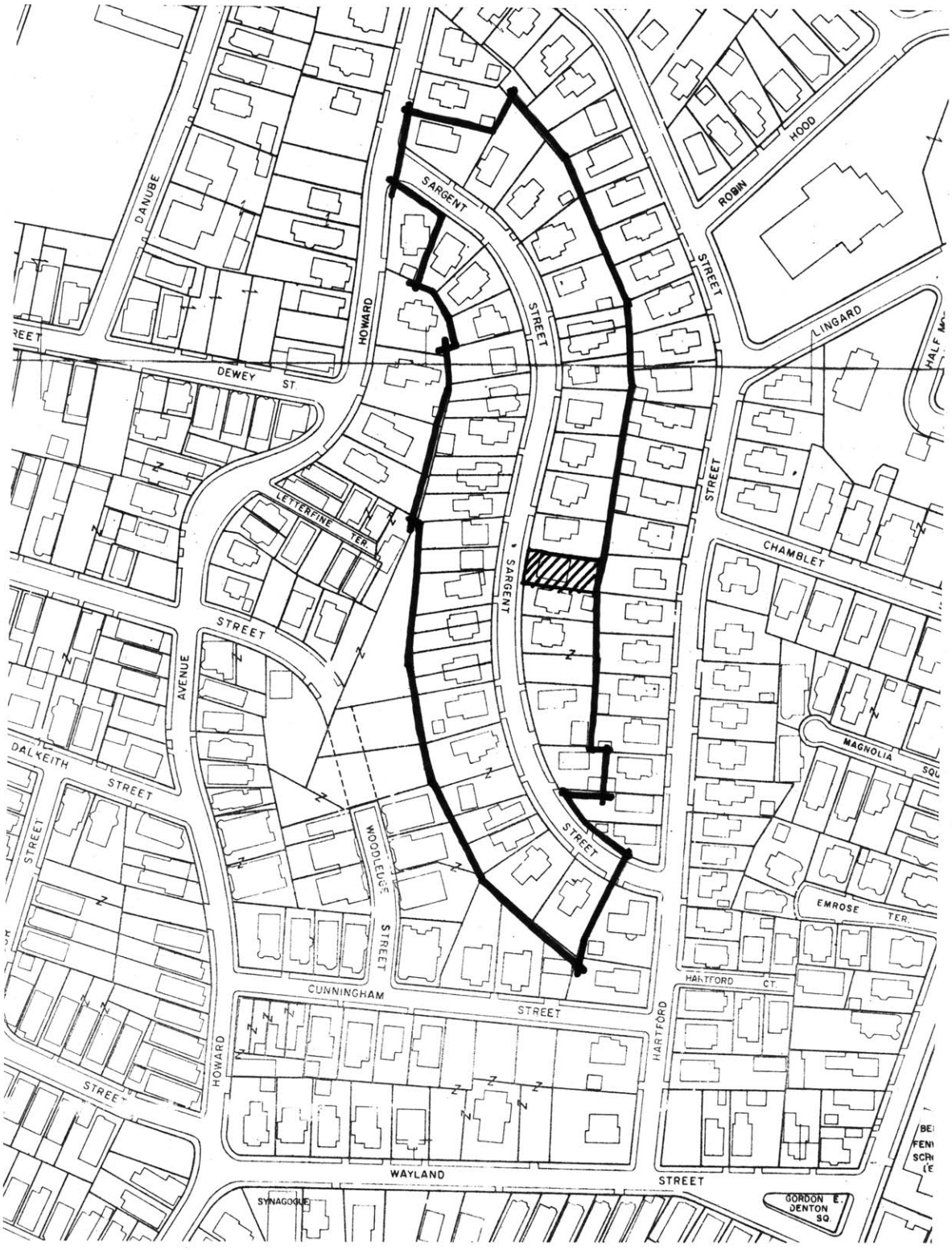
ONE ABSENTEE IN 5 YEARS



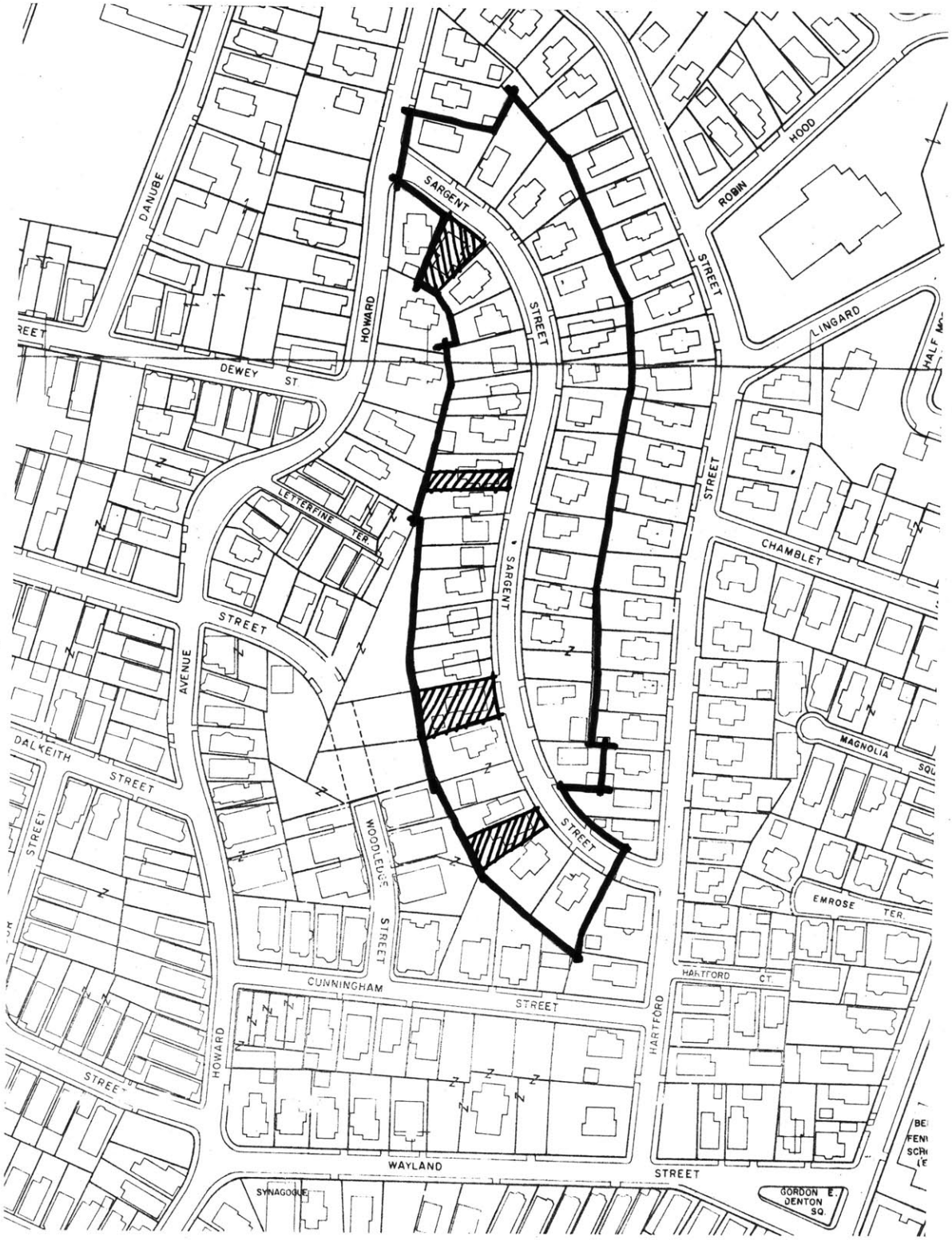
MORE THAN ONE ABSENTEE IN 5 YEARS



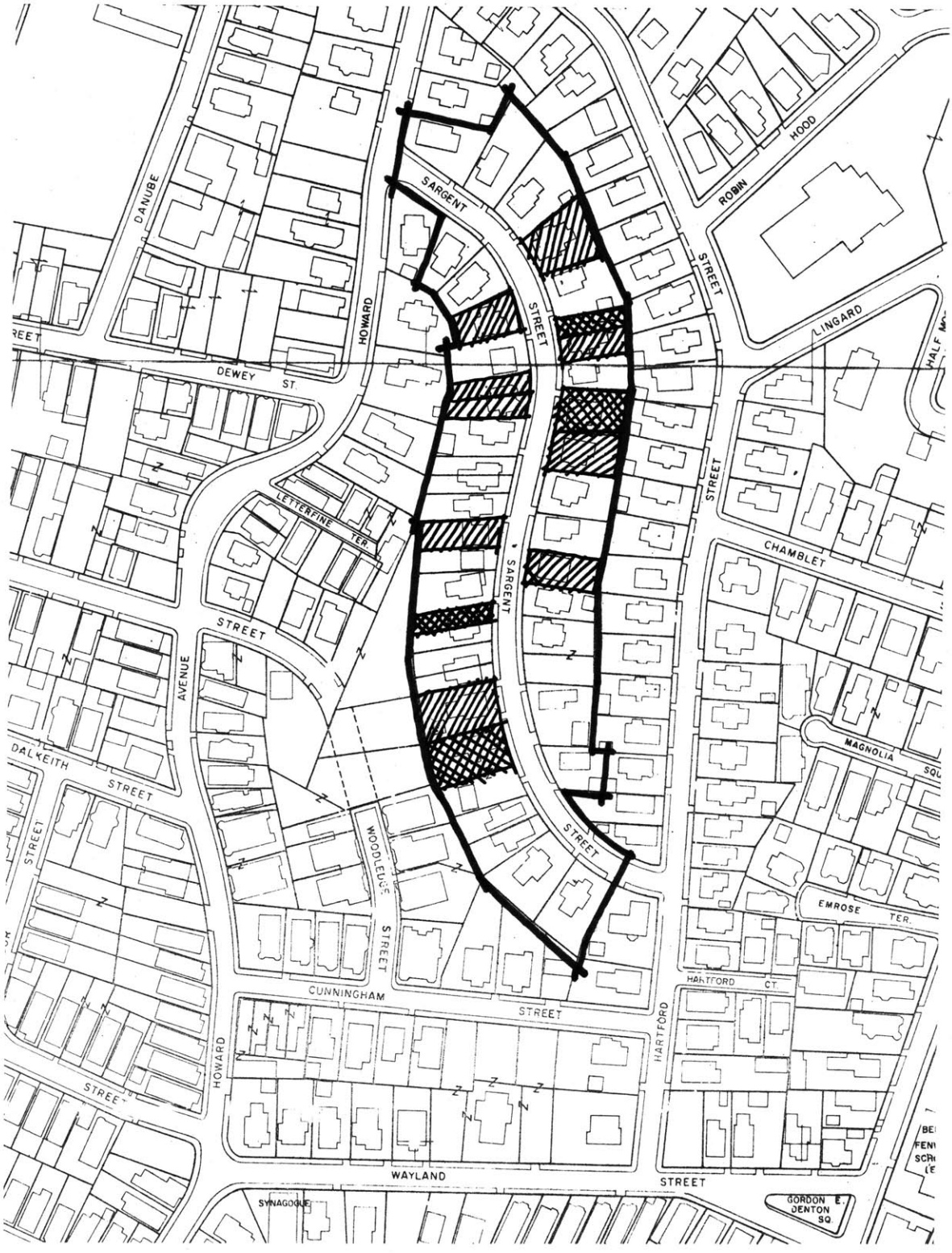
PROPERTIES HELD IN ABSENTEE OWNERSHIP 1955-60



PROPERTIES HELD IN ABSENTEE OWNERSHIP 1961-65



PROPERTIES HELD IN ABSENTEE OWNERSHIP 1966-70

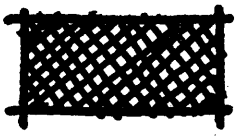


KEY TO TENANCY STARTS

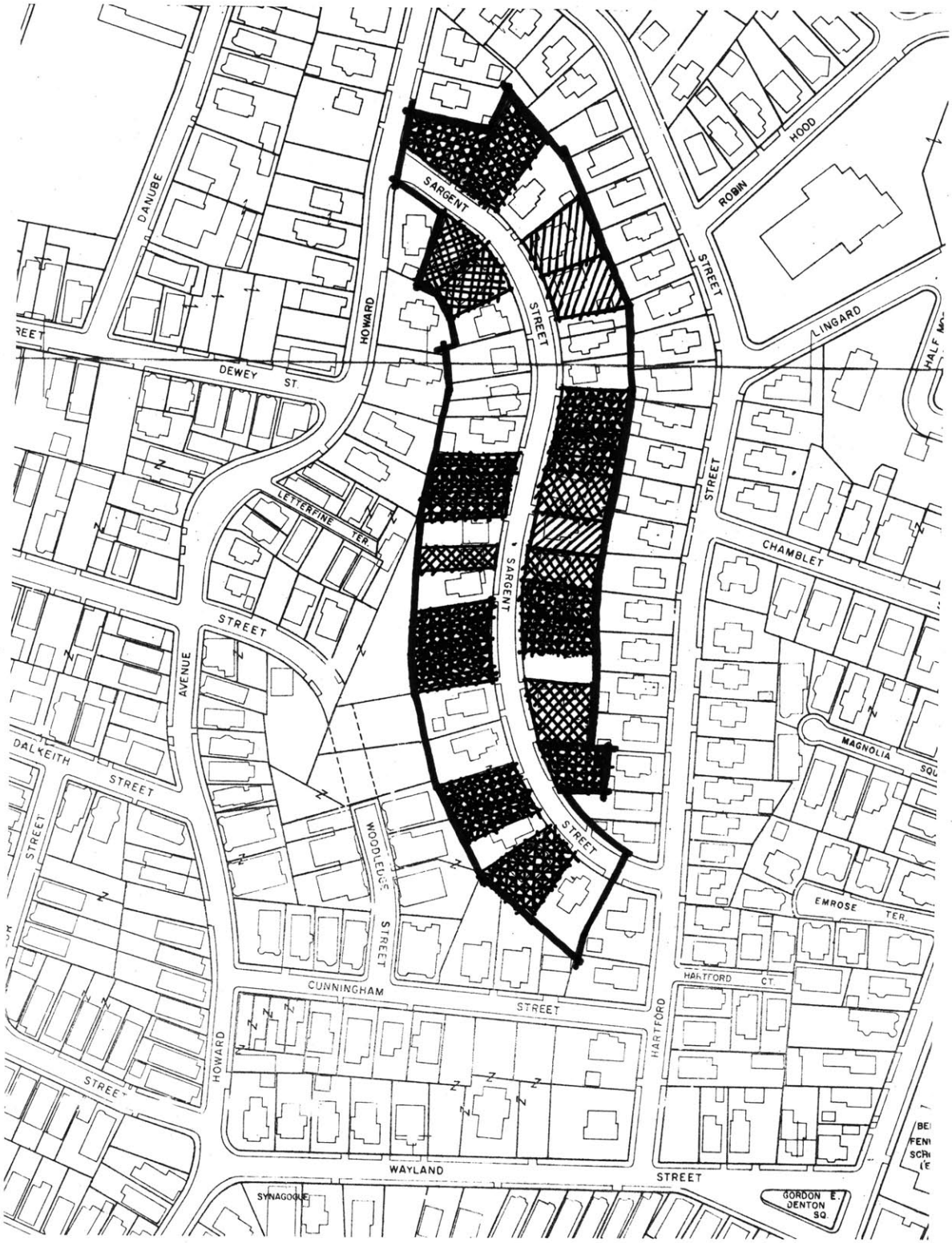
MOST OR ALL TENANTS IN THE VARIOUS STRUCTURES:

TOOK OCCUPANCY 1955-60

TOOK OCCUPANCY 1961-65

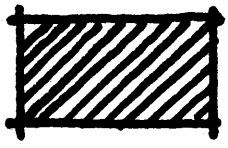


TOOK OCCUPANCY 1966-70


DANUBE
SARGENT
STREET
ROBIN
HOOD
HOWARD
STREET
LINGARD
DEWEY ST.
LETTERFINE TER.
STREET
CHAMBLET
STREET
SARGENT
AVENUE
MAGNOLIA
DALKEITH
STREET
STREET
STREET
WOODLEIGH
STREET
EMROSE TER.
HARTFORD CT.
CUNNINGHAM
STREET
HOWARD
HARTFORD
STREET
WAYLAND
STREET
SYNAGOGUE
GORDON E. DENTON SQ.

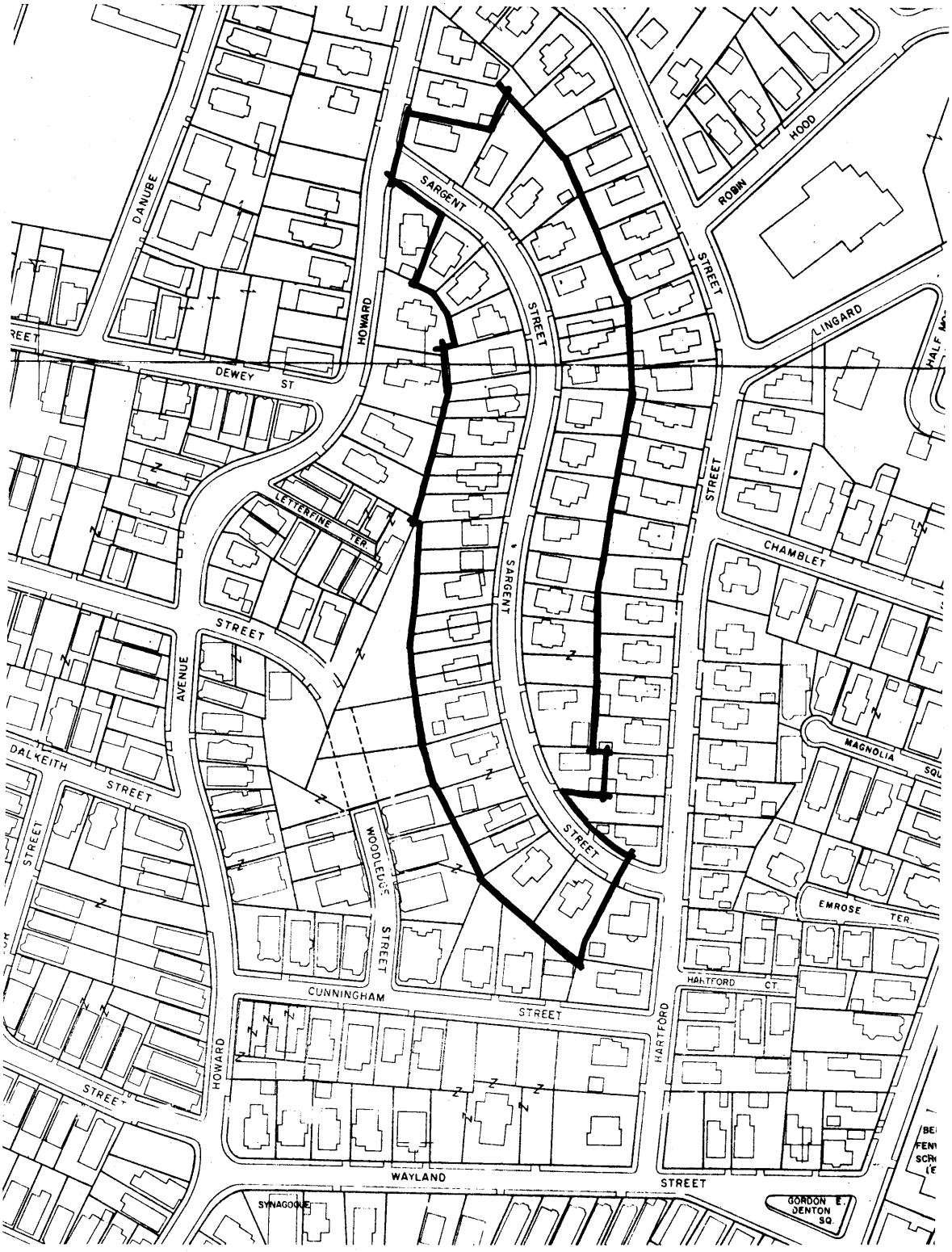
KEY TO FORFEITURES

ONE FORFEITURE IN 5 YEARS

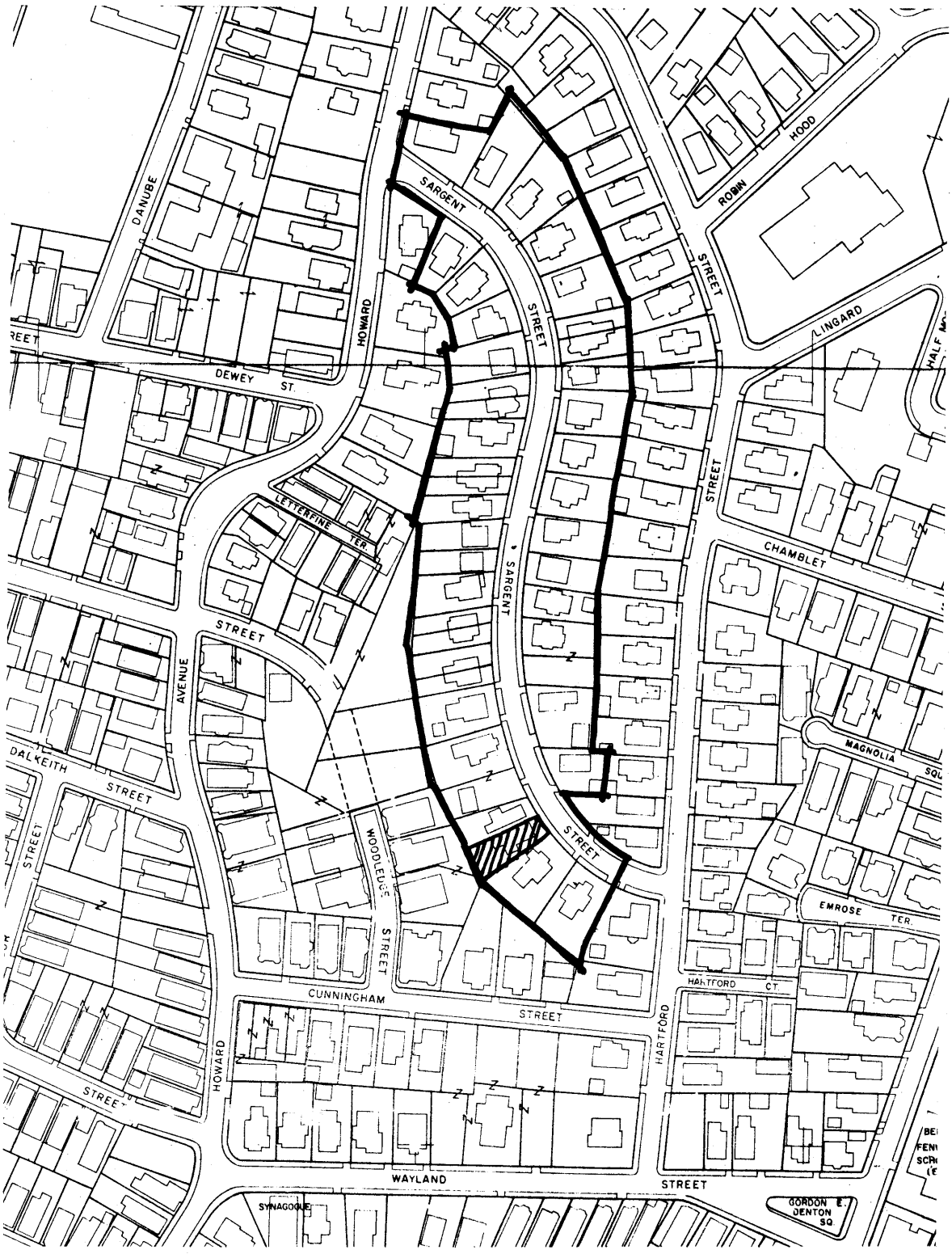


MORE THAN ONE FORFEITURE IN 5 YEARS

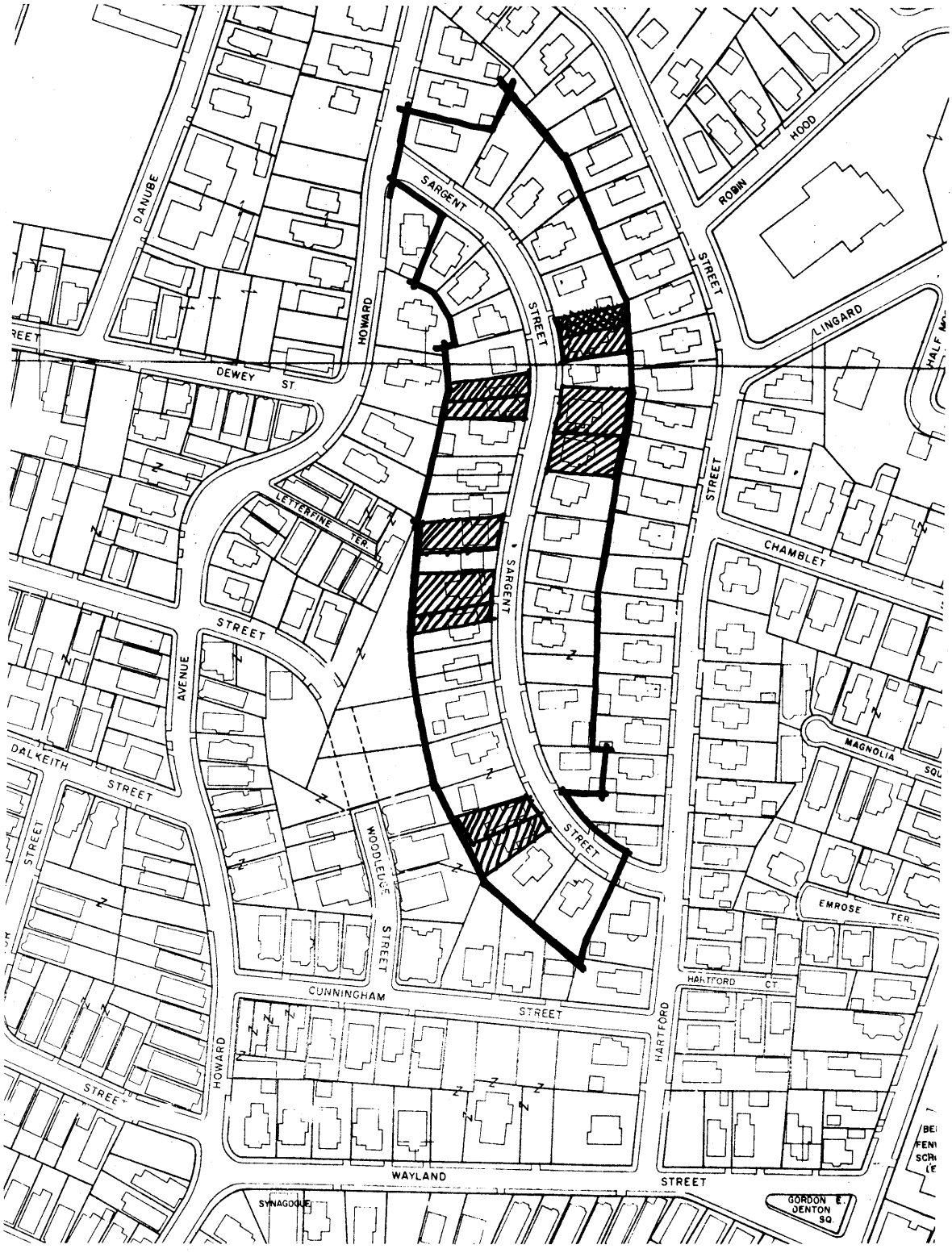
FORFEITURES 1955-60



FORFEITURES 1961-65

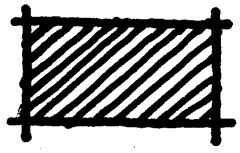


FORFEITURES 1966-70

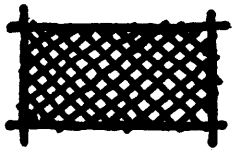


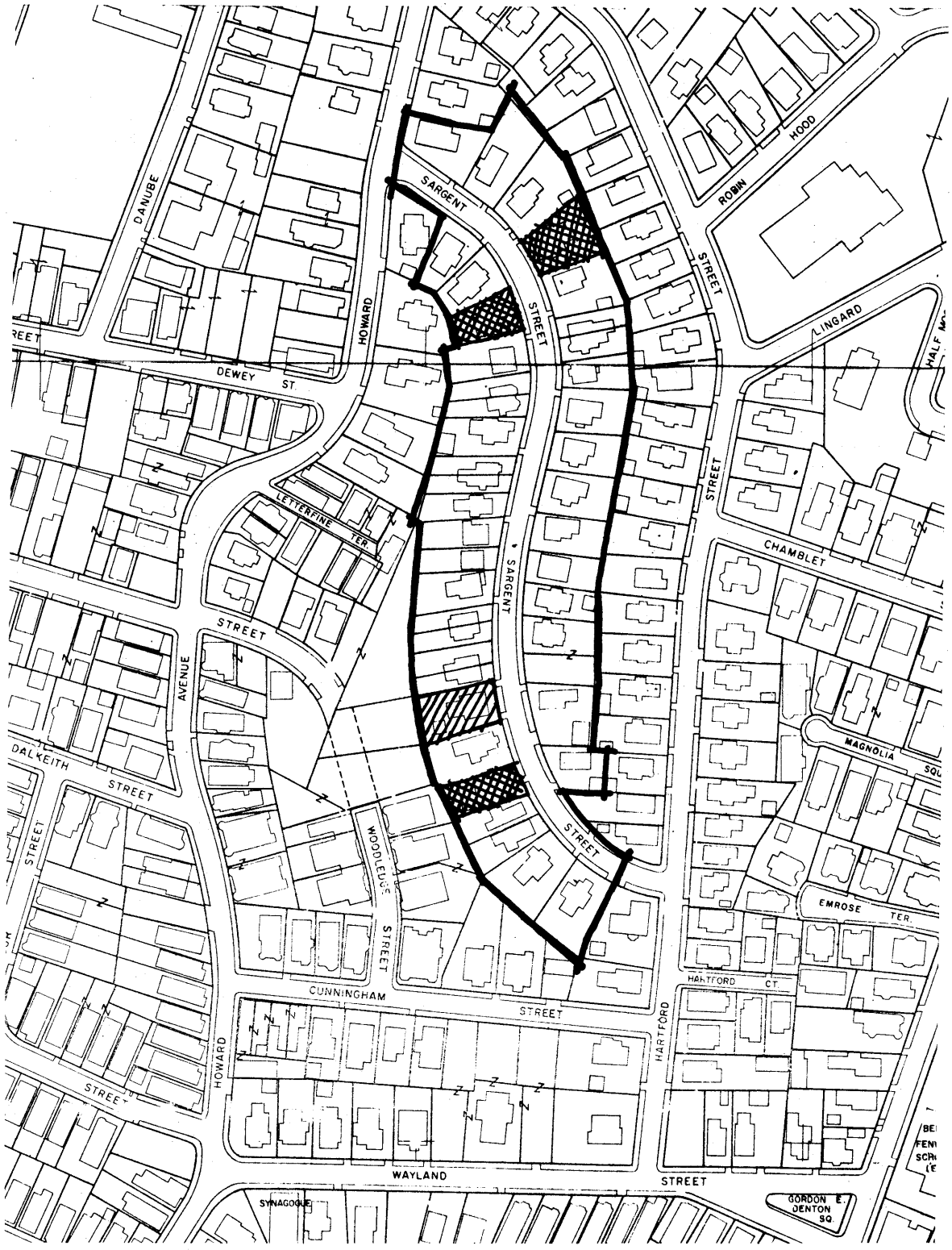
KEY TO SANITARY CODE VIOLATIONS
1968 - 1970

MINOR OR ROUTINE CASE



BREAKDOWN IN VITAL BUILDING FUNCTION




DANUBE
HOWARD
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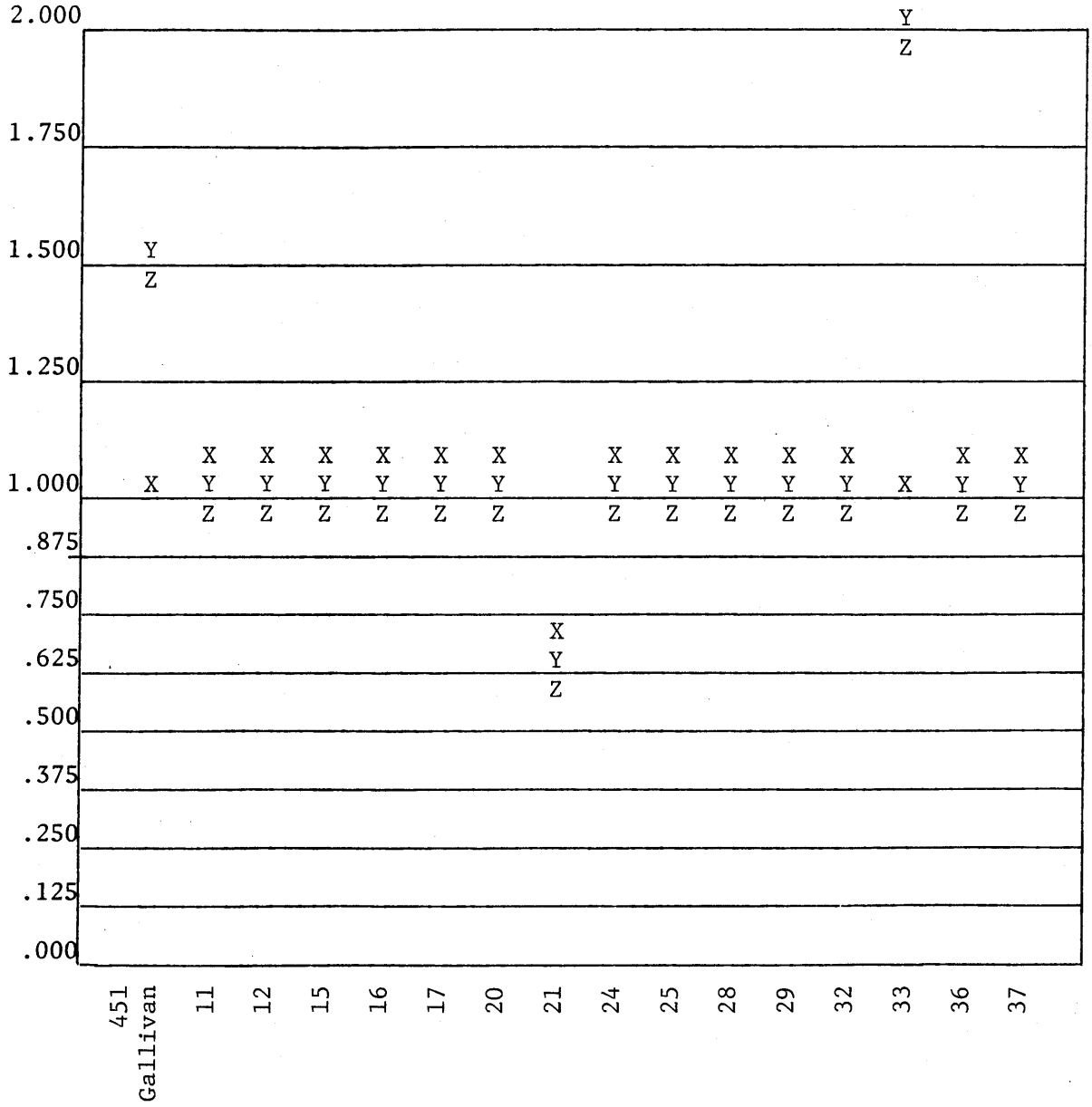
ROBIN HOOD
LINGARD
DEWEY ST.
LETTERFINE TER.
CHAMBLET
AVENUE
DALKEITH
MAGNOLIA
EMROSE TER.
WOODLEIGH STREET
CUNNINGHAM
HARTFORD CT.
HARTFORD
WAYLAND
SYNAGOGUE
GORDON E. DENTON SQ.

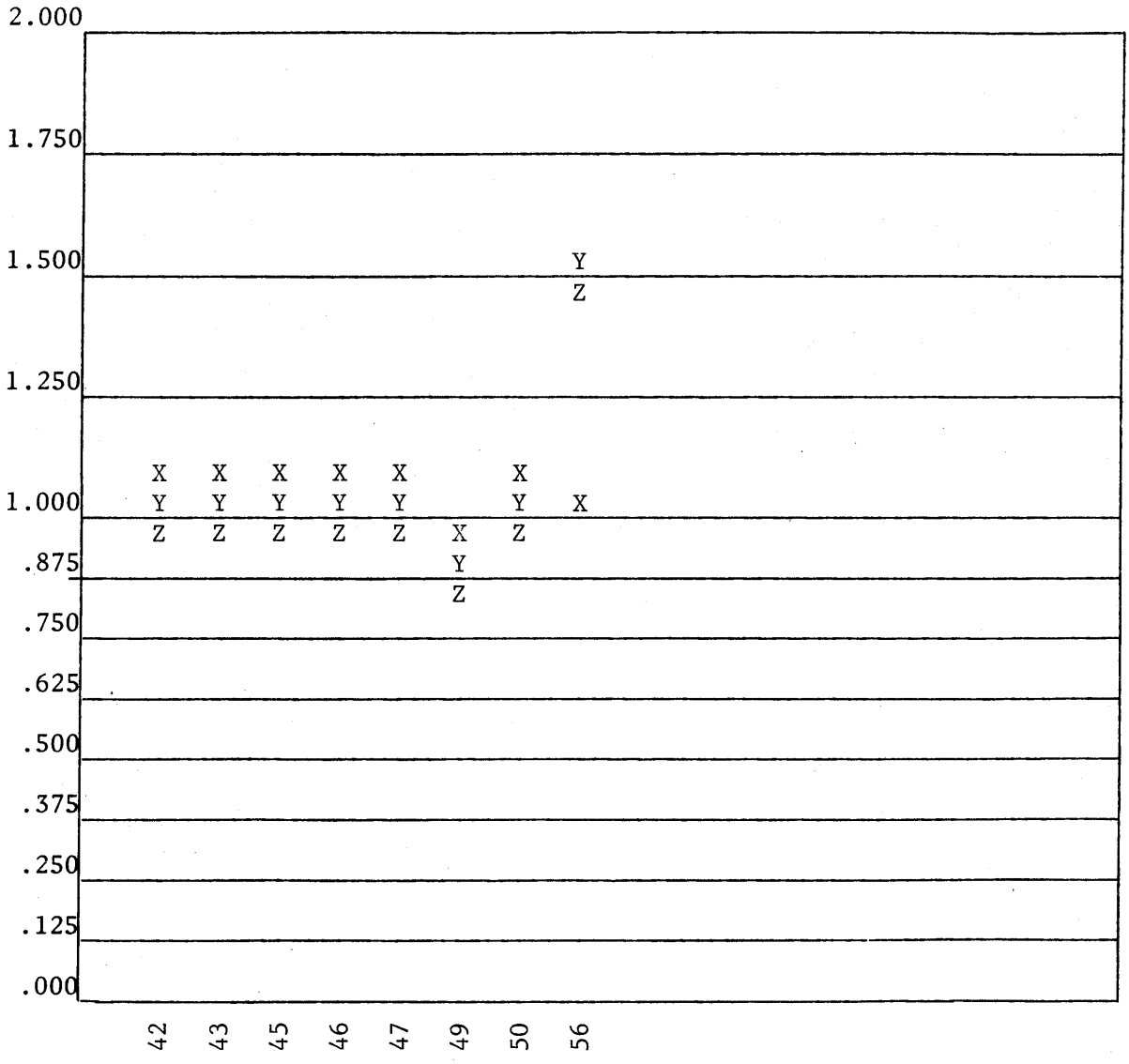
ASSESSED VALUE CHANGES: MILWOOD STREET

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



ASSESSED VALUE CHANGES: MILWOOD STREET (cont.)

The X's indicate assessed values of the various addresses listed at the bottom relative to the 1955 base year assessment (1.000). For example, if 101 Ellington Street has an X above the line .250, that means its assessed value in 1970 is one-quarter the assessed value of 1955. The chart is further organized into three sections. The first range of X's indicates assessment changes up to 1960 relative to 1955, the second range indicates changes up to 1965 relative to 1955, and the third range indicates changes up to 1970 relative to 1955. X=1955-60, Y=1961-65, Z=1966-70.



OWNERSHIP CHANGES: MILWOOD STREET

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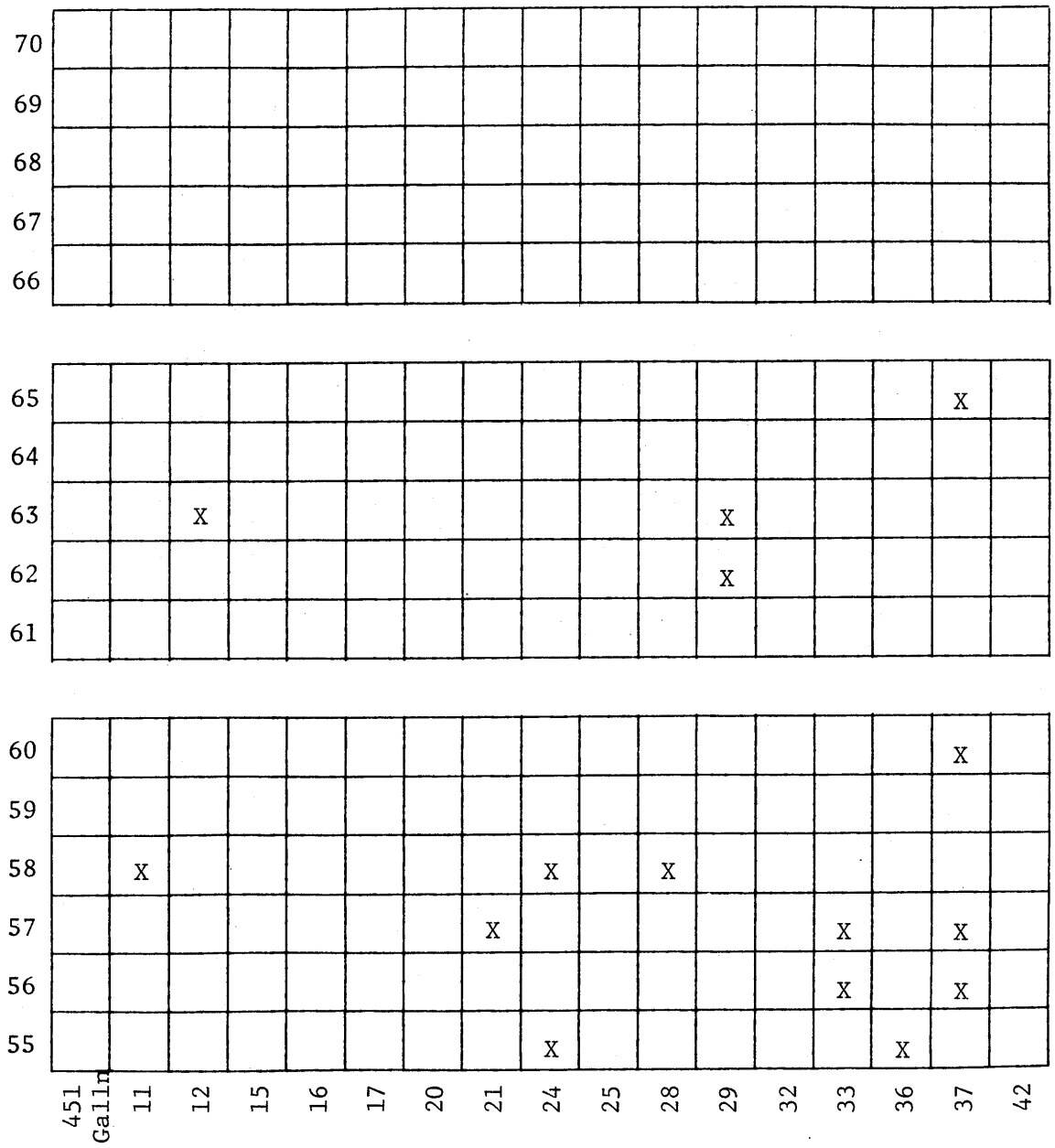
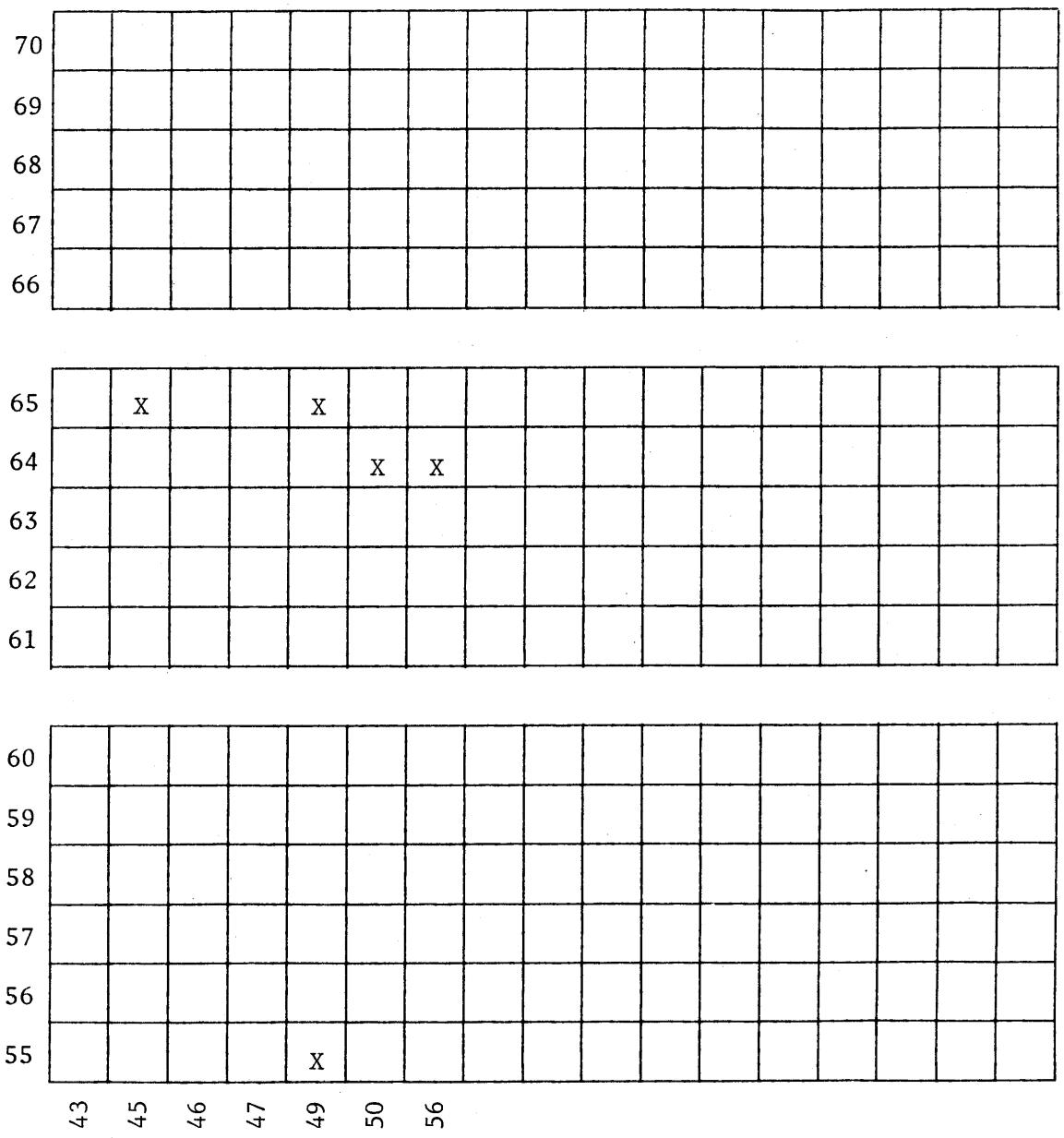


OWNERSHIP CHANGES: MILWOOD STREET (cont.)

The X's indicate an ownership change (sale or transfer) as it corresponds with the year it occurred at left, and the address of the property at the bottom. To demonstrate variations over time, the chart is divided into three periods, 1955-60, 1961-65, and 1966-70. X* indicates realty trust or other type of absentee owner.



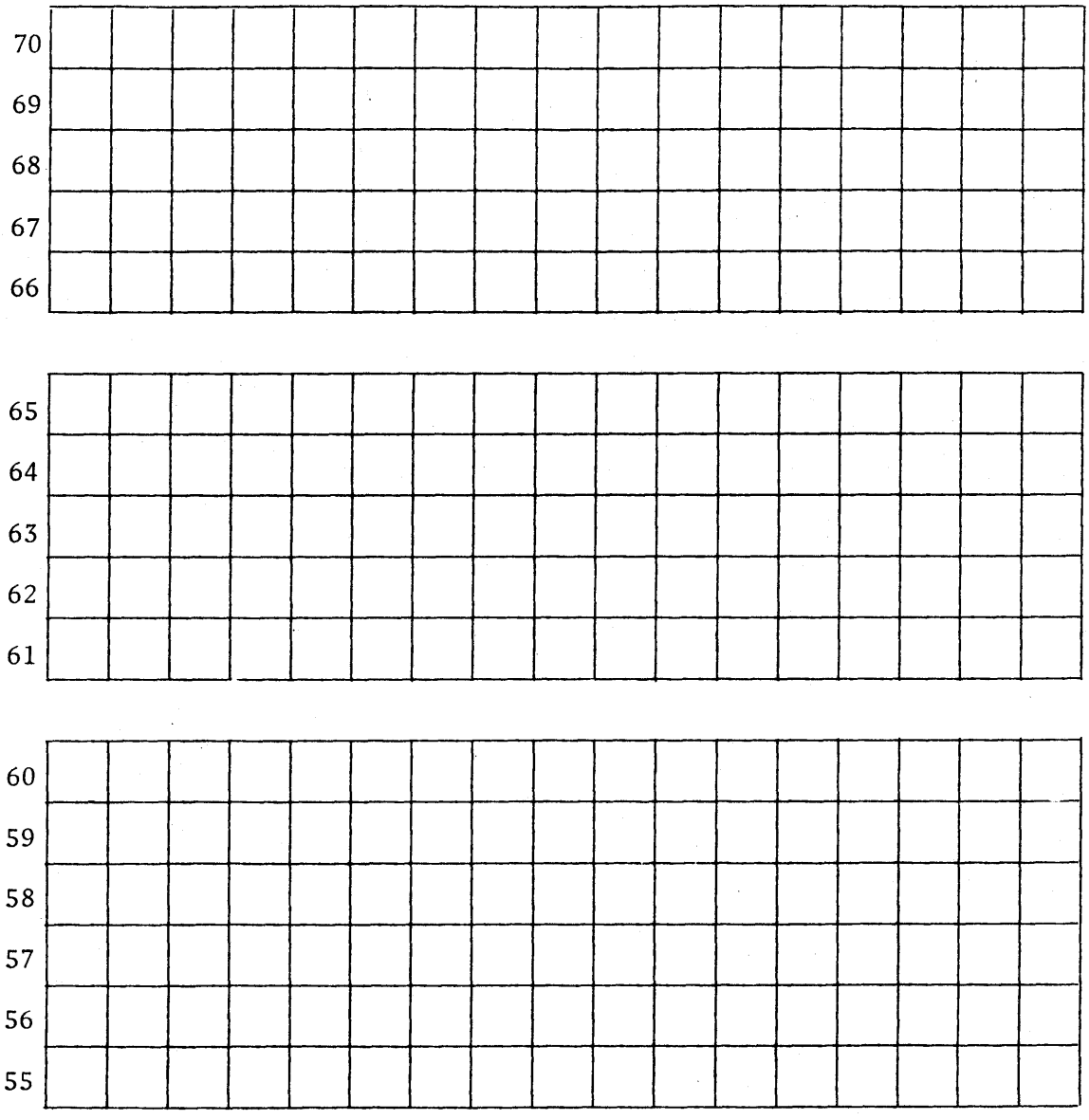
TENANCY STARTS: MILWOOD STREET

This chart records the year current tenants moved into their units. For each of sixteen years is given the total number of tenants who took occupancy in that year. In the last column is given the total number of these "occupancy starts" for each of the periods 1955-60, 1961-65, 1966-70. Numbers at the bottom of the chart followed by a + indicate the number of tenants in occupancy prior to 1955.

YEAR	YEARLY TOTALS	FIVE-YEAR CUMULATIVE TOTALS
1970	2	
1969	2	
1968	3	13
1967	1	
1966	5	
1965	3	
1964	0	
1963	4	8
1962	0	
1961	1	
1960	3	
1959	0	
1958	4	13
1957	1	
1956	2	
1955	3	
		13+

FORFEITURES: MILWOOD STREET

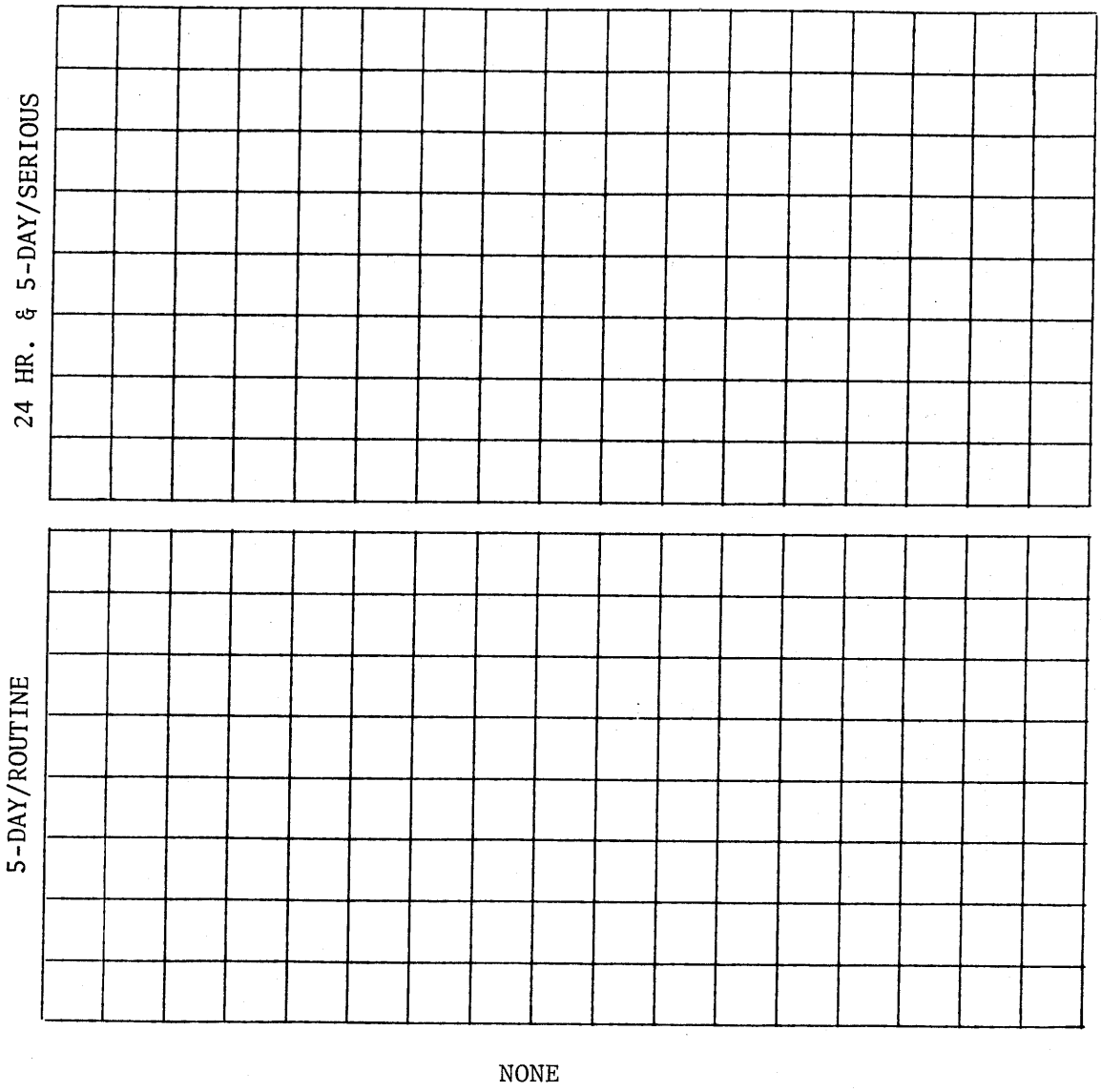
The X's indicate either a tax, bank, or Veterans Administration foreclosure as they correspond to the year of occurance at the left and the address of the property at the bottom. The chart has been divided into three sections, 1955-60, 1961-65, and 1966-70 to illustrate trends in forfeitures over time.



NONE

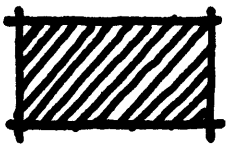
SANITARY CODE VIOLATIONS: MILWOOD STREET

The X's indicate one code violation case handled by the Housing Inspection Department (H.I.D.) for the addresses listed at the bottom. The position of the X above or below the center space indicates the nature and severity of the violation.

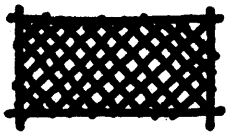


KEY TO ASSESSED VALUE CHANGES

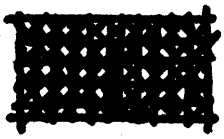
DECLINED OVER 25%



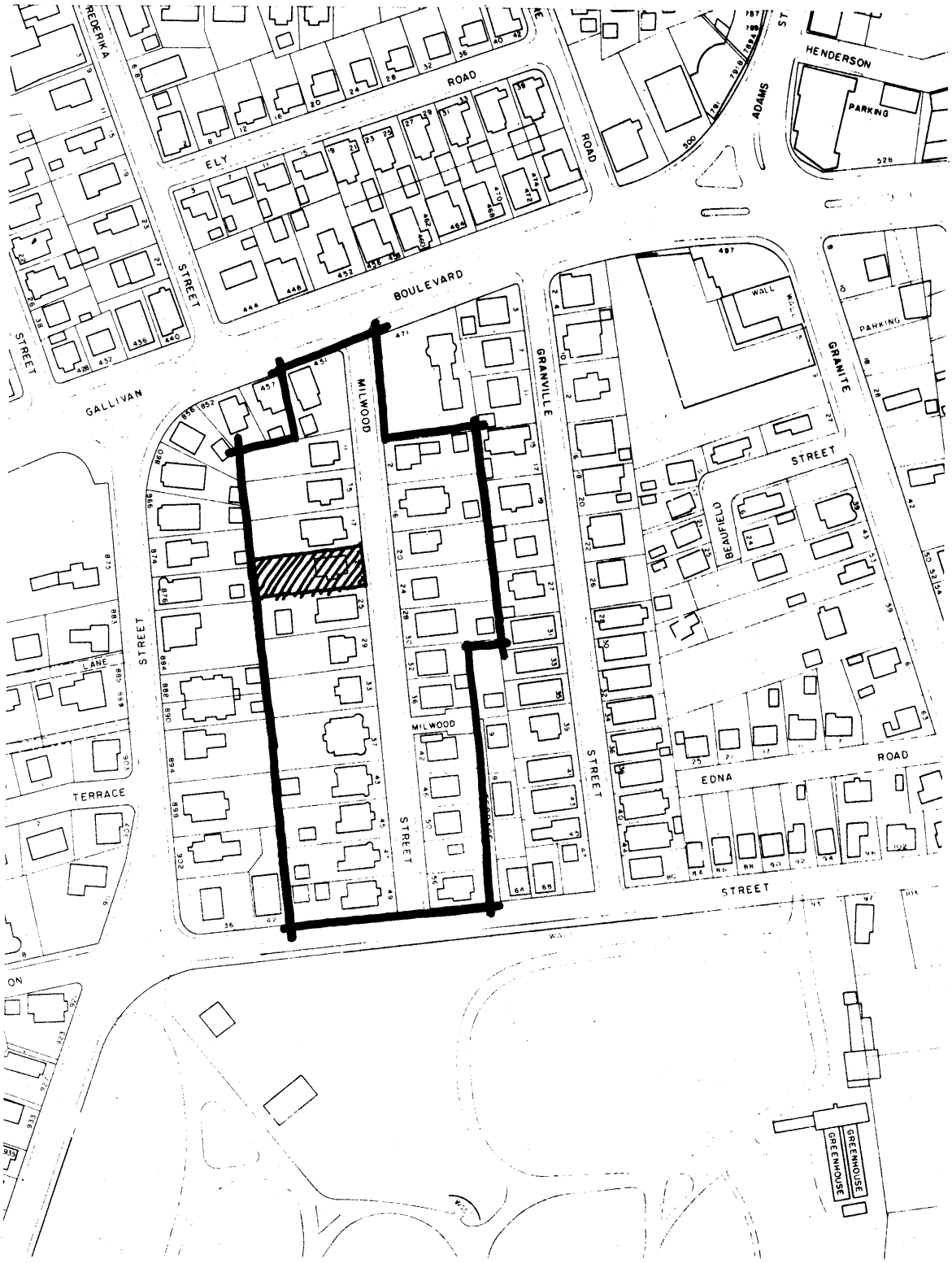
DECLINED OVER 50%



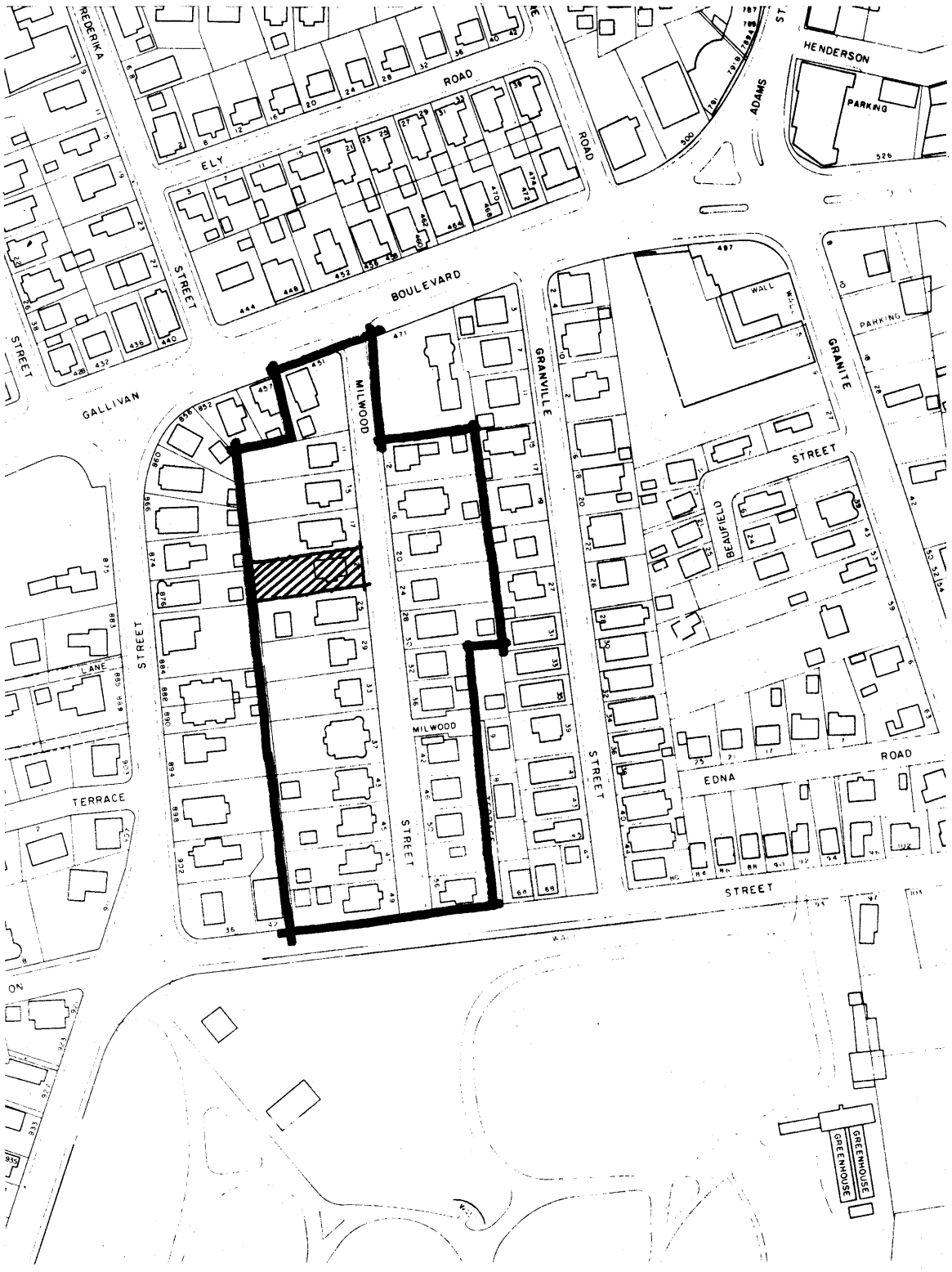
DECLINED OVER 75%



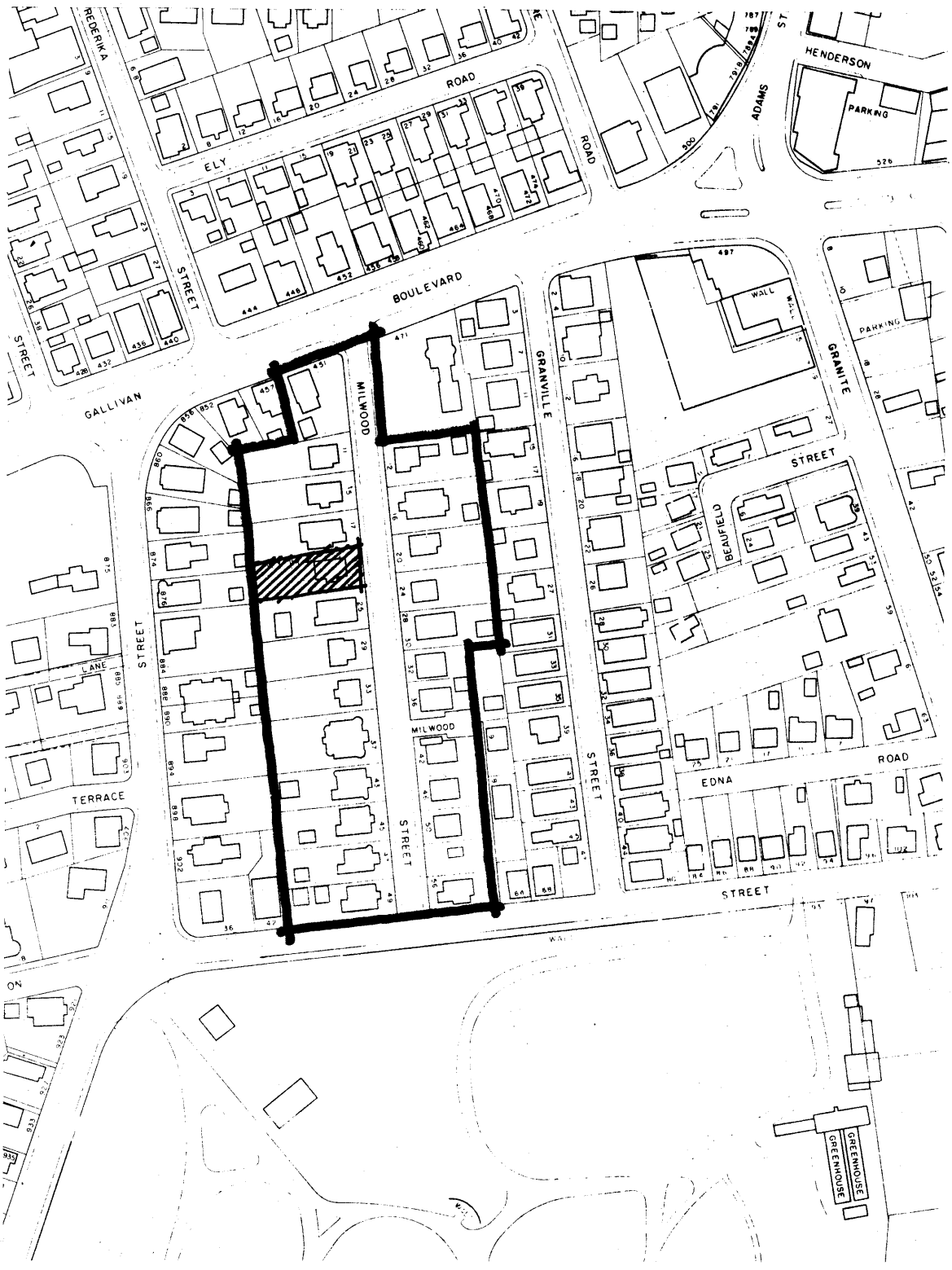
ASSESSED VALUE CHANGES: 1955-60



ASSESSED VALUE CHANGES 1961-65



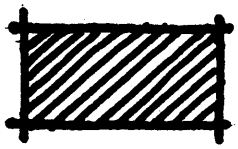
ASSESSED VALUE CHANGES 1966-70



KEY TO TENANCY STARTS

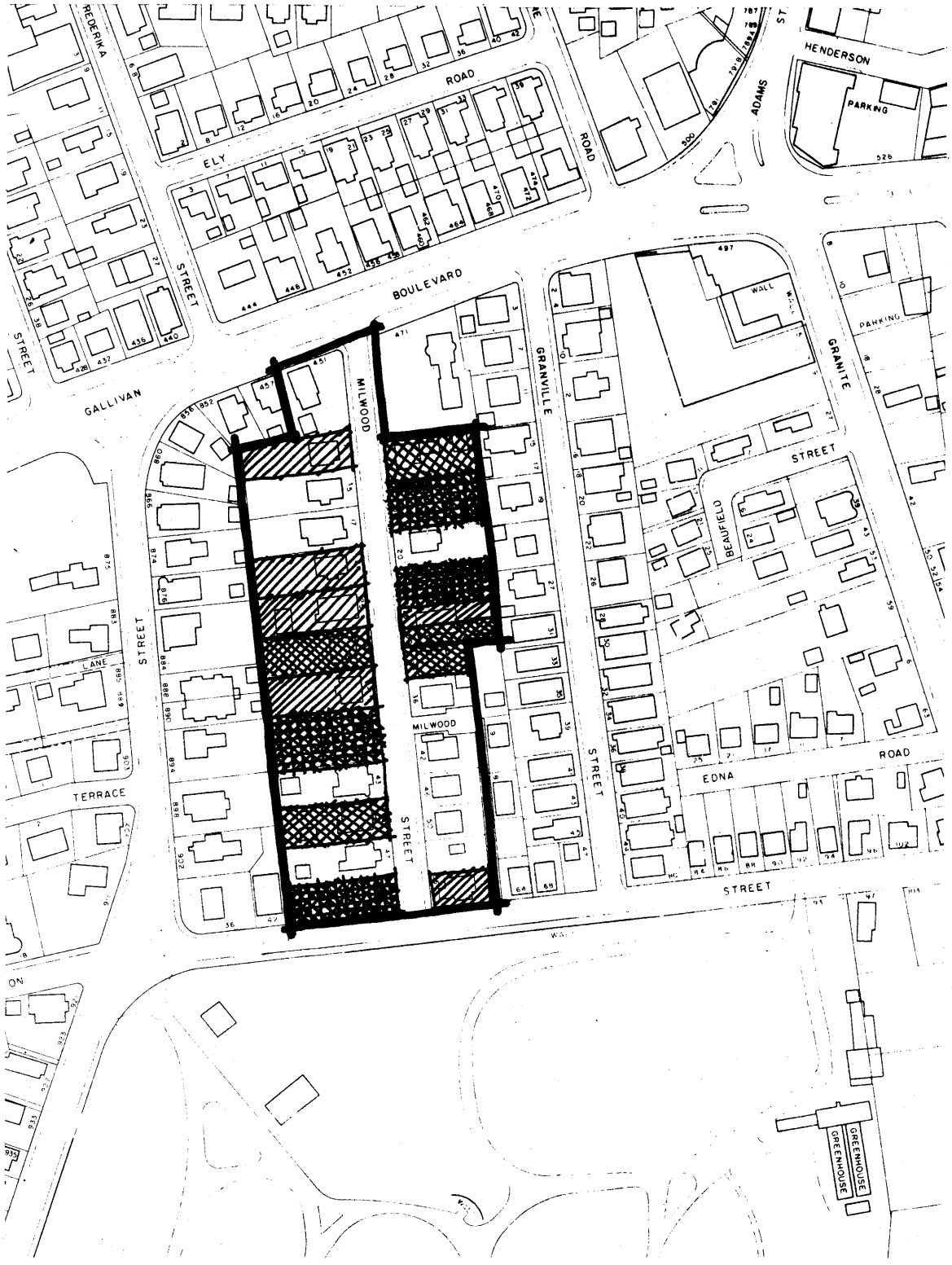
MOST OR ALL TENANTS IN THE VARIOUS STRUCTURES:

TOOK OCCUPANCY 1955-60



TOOK OCCUPANCY 1961-65

TOOK OCCUPANCY 1966-70


REDERIKA
STREET
ELY
ROAD
BOULEVARD
GALLIVAN
HENDERSON
PARKING
ADAMS
WALL
GRANVILLE
GRANITE
MILWOOD
STREET
BEAUFIELD
EDNA
ROAD
LANE
TERRACE
GREENHOUSE

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