Introduction

This “Pine and Hammock Forestlands of Dade County” report was completed in October 1975 to assist the county in their efforts to preserve natural areas. It was the first inventory of Dade County’s remaining pine and hammock forest communities outside of Everglades National Park. In addition to the report’s finding that only 4 percent of the original pine and hammock forest remained, five outstanding forested areas were recommended for preservation including the Charles Deering Estate and the Tamiami Airport Pineland (now the Nixon Smiley Pineland Preserve). The inventory focused on private lands in danger of development so the Richmond Tract and Navy Wells were not recommended for preservation as they were in federal ownership slated to be transferred to the county. This report raised a red flag on the plight of our dwindling pine rocklands and brought about a change from viewing them as worthless forestlands (as they were characterized by many at the time) to viewing them as a unique and irreplaceable ecosystem worthy of preservation.

-- Clifford Shaw, 2019

THE PINE AND HAMMOCK FORESTLANDS

OF DADE COUNTY

October 17, 1975

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SUMMARY

Dade County's present natural pine and hammock forest communities were inventoried during April to July, 1975. The purpose of the inventory was to determine the location and condition of all viable forested areas within the urbanizing portions of Dade County. Results will aid the County in its efforts to preserve and protect exceptional natural areas for nature study, wildlife habitat, aesthetics and outdoor recreation.

A total of 6047 acres of viable pine and hammock forestlands presently exist along the Atlantic Coastal Ridge portions of Dade County outisde of the Everglades National Park. This represents only 4 percent of the original 151,813 acre Coastal Ridge Forest.

Five outstanding forested areas recommended for preservation are: Charles Deering Estate, 102, 103 on map 22; Snapper Creek Hammock, site 124 on map 17; Indian Mound Hammock, site 21 on map 6; Tamiami Airport Pineland, site 49 on map 14; and Cypress Hammock, site 335 on map 37.

INTRODUCTION

Prior to 1900 Dade County was characterized by extensive pine and hardwood forests surrounded by vast expanses of grasslands and mangroves. Because of the relatively level topography, this unique subtropical forest of both temperate and tropical trees was one of the most distinctive natural features of Dade County.

The size and characteristics of the original forest began to change drastically with the advent of urbanization around the turn of the century. Today, with the exception of the Everglades National Park, only scattered remnants remain of Dade's original forestlands.

Stevenson (1969) gives a good overview of man's effect on the original forestlands of south Florida.

> Man's impact on this flora has been considerable. Indians burned the pinelands to prevent the hardwoods from supplanting the pines, thus insuring themselves of crops of coontie, a pineland plant with a starchy root. The Spanish logged most of the giant mahogany from the keys, and they prized lignum vitae for its supposed medical properties. Black ironwood, so dense that it will not float, was cut by the first settlers for foundation posts. Huge pines were felled for lumber, their heartwood curing to a rocklike consistency that must be drilled for setting nails. Buttonwood was the primary source of charcoal, the cooking fuel in South Florida homes before the advent of kerosene. Cypress swamps have been devastated by lumber companies. Pond apple stands were cleared for farmlands, as were pine woods.

The unique vegetational associations of south Florida were perceived and documented by many naturalists and botanists during the past 75 years. Small (1903, 1933) provided some of the first

taxonomic descriptions of the south Florida flora. Simpson (1920) and Phillips (1940) provided early explanations on the origin and composition of the tropical hardwood hammock.

According to Long (1971) there are over 1600 species of vascular plants present in south Florida. Considered to be the youngest flora in the United States, the south Florida vegetation originated some 5,000 years ago from four major sources; the Caribbean islands, the southeastern United States, endemic Florida sources and man-introduced exotic vegetation (Long, 1971).

One of the earliest systematic studies of the south Florida ecosystem was by Harper (1927). His report included the first set of plant lists arranged according to seven distinct vegetational units. During 1940 the entire area of south Florida was covered by aerial photography for the first time. This enabled Davis (1943) to recheck and update the work of Harper. Davis provided the first detailed vegetational map of south Florida. The original map depicted 29 historic vegetational types located within seven physiographic regions (Big Cypress, Southwestern Coast, Everglades, Miami Rock Ridge, Southern Coast and Islands, Western Flatland and Eastern Flatland).

The recent work by Alexander (1973) covered in depth plant succession and vegetational changes within the south Florida plant communities. All natural and man-caused factors which, during the past 30 years, have significantly altered the vegetational associations were documented. Some important trends noted by Alexander (1973) were: an increase in the total area

covered by mangroves, a drastic reduction in the area of coastal hammocks and the succession of former pineland areas to hardwood hammocks within the Everglades National Park.

The mangrove forests of Dade County were studied by Teas (1974). All mangrove areas from Coral Gables to the Monroe County line were classified into five major mangrove communities. In addition, Teas estimated that the 19,456 acres of Dade County's mangroves produced 37,000 tons of litter (twigs, leaves, etc.) for the detritus cycle.

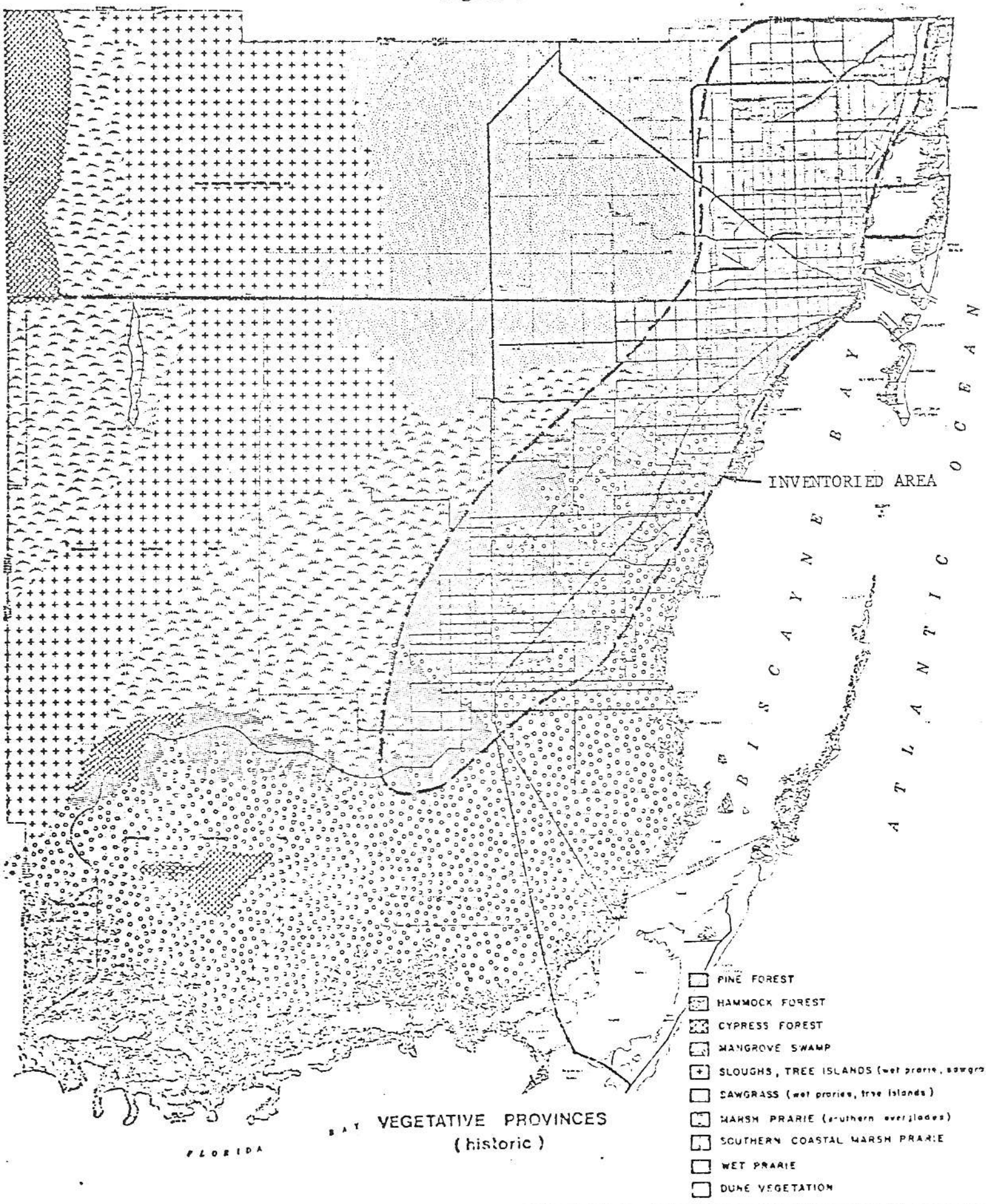
METHODS

To examine the effects of urbanization on the original vegetation, all existing forested areas within the urbanizing portion of Dade County were inventoried. All naturally occuring, viable pine and hammock vegetation communities with predominantly native vegetation existing along the Atlantic Coastal Ridge (outside the Everglades National Park) were located, classified and mapped. The boundary of the inventoried area is shown in figure 1.

The initial location of forested areas was determined from inspection of 1 inch to 300 feet aerial photography located at the County Tax Assessment Department. The photographs, flown early in 1975, covered the entire County outside of Everglades National Park. For the purpose of the inventory, viable forested areas had to meet a minimum size requirement. Pinelands had to cover at least five contiguous acres while hammocks and mixed pine-hammock stands had to be at least two acres in size. Paved roads and canals divided forest stands into separate areas. Acreage figures were estimated by superimposing a transparent section map (divided into 1, 5, 10, 20, 40 and 160 acre blocks) over the aerial photographs. The areas were then numbered and located on a 1 inch to 2000 feet County street map.

Each area was field inspected to determine the forest type and condition of the natural area. Areas were classified into three major forest types; 1) pineland, 2) hammock and 3) mixed stands of pine and hardwood trees. Explanations on the

Figure 1



VEGETATIVE PROVINCES
(historic)

characteristics of the forest types are contained in the sections on pineland and hammocks.

The condition of each area was determined from both the amount and type of exotic vegetation and the viability of the native tree vegetation. Areas choked with massive amounts of exotic vegetation were eliminated from the inventory. The section on exotics describes the types and characteristics of the more common varieties of exotic plants encountered during the inventory.

In determining the condition class, all areas were ranked against an average or typical vegetational condition. This was obtained by examining each area's total size and shape, viability of the native plant species, amount of exotic vegetation, and the uniqueness of any outstanding natural features. Upon completion of the inventory all areas were rated either poor, fair, good, or exceptional.

The condition classes of pineland areas were:

Poor - Stands had medium to heavy amounts of exotic vegetation (over 50 percent) and little or no native understory vegetation. The area would probably receive severe damage from a fire. In some cases areas had already received damage from a recent fire which usually caused a reduction in the pine stocking.

Fair - Stands had medium amounts of exotic vegetation (40 to 60 percent). Fire would not severely

damage the stand. Pine stocking varied from light to heavy.

Good - Stands had little or no exotic vegetation (0 to 40 percent). Pine stocking was medium to heavy with most trees over 25 years in age. Young pine reproduction was usually present, and the understory vegetation was predominately native.

Exceptional - Stands had all the characteristics of the good condition. In addition each area had one or more outstanding features such as the presence of a rare plant species, unusual geological formations or relatively old tree age.

The condition classes of hammocks and mixed stands were:

Poor - Hammock contained little or no native understory vegetation. In most cases the area was moderately invaded by exotic vegetation. Damage from fire, trash or people was usually noted.

Fair - Hammocks had some native understory vegetation. Exotic vegetation was usually present but not in heavy amounts. Damage from public access was noted.

Good - Hammocks were comparatively undisturbed. A wide diversity of native understory plants were present including some reproduction from overstory trees.

Exceptional - Hammocks had all the characteristics of the good condition class. In addition the area had one

or more outstanding features such as the presence of a rare plant species, unusual geological formations or great size and age of the trees.

A considerable amount of the natural pineland was not inventoried due to the five acre minimum size requirement. In order to obtain an estimate on amount of pineland not inventoried, an acreage survey was conducted on all aerial photographs within the study area using the transparent section map.

RESULTS

A list of all inventoried pine and hammock areas located within the study area is given in Appendix B. The location and approximate boundaries of each area are represented on maps in Appendix D. The total forested area by township, range and section is given in Appendix C.

Estimates on the amount of original vegetation adapted from Davis (1943) are shown in Table 1. Most of the original habitat of mangroves, cypress swamps, wet prairies, and sloughs still exist within Conservation Area 3, Everglades National Park, and undeveloped private lands west and south of the Coastal Ridge. Approximately 19,800 acres of pineland still exist within the boundaries of the Everglades National Park (Bancroft, 1975).

Table 2 gives the number and acreage of all inventoried pine, hammock and mixed stands by condition. The total present forestlands within the study area are compared to an estimated historical area in Table 3.

During approximately the last 100 years, man has eliminated 95 percent of the original pine and hammock plant communities from along the Coastal Ridge portion of Dade County.

Table 1

AREA OF ORIGINAL VEGETATIONAL COMMUNITIES IN DADE COUNTY

Vegetation Type	Acres
Pineland	182,700
Hammock	11,300
Mangrove	99,700
Cypress Swamp	28,500
Coastal Vegetation	12,600
Wet Prairies	547,700
Sloughs and Ponds	182,700
Total	1,315,000

Source: U.S. Geological Survey

Table 2

AREA OF VIABLE HAMMOCK AND PINELANDS INVENTORIED IN DADE COUNTY[1]

Forest Type	Condition	Areas	Acres
Pineland	Poor	28	343
	Fair	163	2,086
	Good	73	2,067
	Exceptional	4	772
	Total	268	5,268
Hammock	Poor	5	21
	Fair	18	69
	Good	20	151
	Exceptional	14	343
	Total	57	584
Mixed Pine and Hammock	Poor	1	7
	Fair	4	38
	Good	3	56
	Exceptional	2	94
	Total	10	195

Source: Field Survey, 1975

[1]Area along the Atlantic Coastal Ridge not including the Everglades National Park.

Table 3

PRESENT AND HISTORIC

FORESTLANDS IN DADE COUNTY[1]

Inventoried Pinelands	5,268 acres
Non-Inventoried Pinelands	2,102 acres
Hammocks	584 acres
Mixed Stands	195 acres
Present Total Area	8,149 acres
Historic Total Area[2]	151,813 acres
Percent Destroyed	95%

Source: Field Survey, 1975

[1]Area along the Atlantic Coastal Ridge not including the Everglades National Park.

[2]Estimated from soil types given in a soil associations map of Dade County prepared by the University of Florida Agricultural Experiment Station (Circular S-77A, Sept. 1965).

PINELANDS

The predominant historical forest type in Dade County was the pineland (see figure 1). Pinelands extended from the Dade-Broward County line to the Everglades National Park in a 65 mile long, 6 mile wide curving arc along the Atlantic Coastal Ridge. Once broken only by 15 transverse glades, the pineland forest was dominated by south Florida slash pine (Pinus elliottii var. densa). Virgin, oldgrowth pines, locally known as Dade County pine, were reported to be two feet in diameter and over 90 feet tall (Craighead, 1971).

The south Florida pineland evolved from, and is adapted to periodic fires. For thousands of years, fires caused by lightning have allowed slash pine and over 100 species of fire-resistant plants to dominate the Atlantic Coastal Ridge. Without fire the pineland forest would revert, by natural succession, to a hardwood hammock community in about 25 years.

In order to preserve a viable pineland community, management biologists at the Everglades National Park have instigated a program of prescribed controlled burning since the late 1950's. The program has succeeded in stemming the invasion of hardwood species. Research on the effects of prescribed burning (Hofstetter, 1973) has indicated that fire should be introduced into pine areas every three to seven years depending on stand conditions of temperature, wind velocity, and soil moisture. Young slash pine seedlings, however, are particularly susceptable to fire damage during the first three to five years and should

not be burned during this period.

Some of the more important plants in the pineland community are: south Florida slash pine (Pinus elliotti var. densa), varnish leaf (Dodonea viscosa), shortleaf fig (Ficus citrifolia), sabal palm (Sabal palmetto), tetrazygia (Tetrazygia bicolor), myrsine (Myrsine guianensis), saw palmetto (Serenoa repens), poisonwood (Metopium toxiferum), marlberry (Ardisia escallonioides), sumac (Rhus copallina), brazilian pepper (Schinus terebinthefolius), silver palm (Coccothrinax argentata), ladder brake fern (Pteridium aquilinum var. pseidocaudatum), pine fern (Anemia adiantifolia), fire grass (Andropogon cabanissii), and coontle (Zamia intergrifolia).

Because the Atlantic Coastal Ridge is the highest and driest area in Dade County, all of the original pines were destroyed around 1900 for timber, farmland and urban development. The last area of original virgin pine, located on Long Pine Key (Everglades National Park), was cut for lumber during the late 1930's.

Only three sizable areas of pineland presently exist in Dade County outside the Park. The largest area (1060 acres) is on the inactive Richmond Naval Air Station (map 20, Appendix C). The area is transected by numerous roads which have allowed easy public access. Because of this, the area has suffered a considerable impact from trash dumping, wildfires and invasion of exotic vegetation. Repeated yearly fires have eliminated most of the pine reproduction. Many federal agencies are currently utilizing portions of the area. The new Dade County Zoo,

scheduled to be built in the next two to three years, will be located on the southeast portion of the area.

The oldest and largest stand of slash pines in Dade County is located directly east of the new Tamiami Airport (49 on map 14). The relatively undisturbed site has exceptionally large specimens (15 inch diameter, 65 feet tall) of slash pines, many over 66 years old. Except for a few scattered pockets of exotic vegetation, the area represents the finest remaining example of what Dade's original pineland was like prior to 1900.

The third large area of pineland is on the Navy Aqueduct, properly located southwest of Florida City (309 on map 36). The area is particularly unique because of the mixed pine age classes and diverse collection of native understory plants. A large portion of the area was planted with slash pines five to ten years ago. This represents the only sizable example of pine reforestation ever undertaken in Dade County. The Navy is currently proceeding to dispose of portions of the pineland as surplus property.

Results of the survey indicated that nearly all of Dade County's original pineland has either been destroyed or severely degraded by man's activities during the last 75 years. If current trends continue, it is doubtful whether any sizable area of pineland, outside of the Everglades National Park, will exist by the year 2000.

HAMMOCKS

The tropical hammock forest, unique in the United States to south Florida, is characterized by closely spaced evergreen hardwood trees of both temperate and tropical origin. Scattered within the vast pine forest along the Atlantic Coastal Ridge, the hammock represents the final stage in natural succession for all elevated areas in Dade County.

Each hammock is a unique association of over 200 plant species. A hammock will usually contain one or more endemic plants rarely seen in other hammocks. Because of extensive plant collecting, many species, especially ferns and orchids, are currently in danger of becoming extinct.

Hammocks are usually found either surrounding one or more solution holes or along elevated coastal areas. In both cases, the additional humidity created by the presence of water maintains a humid atmosphere necessary for fire protection. The warm humid atmosphere created by the closely spaced trees also provides the needed habitat for many rare varieties of tropical plants.

Two major types of hammocks were encountered along the Coastal Ridge during the inventory. The oak hammock, characteristic of areas in the northern half of the county, was the first type. The overstory tree vegetation consisted almost entirely of live oak (Quercus virginiana), a temperate tree found as far north as Virginia. In undisturbed sites, numerous specimens of sabal palm (Sabal palmetto) were found in close association with

the live oaks. Occassionally specimens of gumbo-limbo (Bursera simaruba) and strangler fig (Ficus aurea) were found with the oak overstory. Wild coffee (Psychotia undata) and myrsine (Myrsine guianensis) formed the major portion of the understory vegetation.

Most oak hammocks, however, had received considerable impact from past urban developments. The finest example of a young undisturbed oak hammock is located directly south of the new Tamiami Airport (50 on map 19). An additional outstanding area is the 40 acre hammock on the County owned Kendall Home site (32 on map 11). The exceptionally large area, however, has received considerable impact from foot and vehicle traffic which have opened large areas allowing the establishment of many exotic plants.

The second hammock type noted was the tropical hammock. The majority of trees within this hammock type were West Indian in origin (see Appendix A). The most prevelant tree encountered was the wild tamarind (Lysiloma bahaminse). In addition many specimens of pidgeon plum (Coccoloba diversifolia), mastic (Mastichodendron foetidissimum), live oak (Quercus virginiana), gumbo-limbo (Bursera simaruba), white stopper (Eugenia axillaris), and poisonwood (Metopium toxiferum) were noted.

The largest area of existing hammock is Castellow Hammock Park (207 on map 24). Over 80 percent of the 128 plant species noted by Phillips (1940) were West Indian in origin. A gradual drying out of Castellow and many other hammocks in Dade County

because of drastically lowered water tables is presently eliminating many of the original plant species.

Brickell Hammock is considered to be the oldest and at one time the largest hammock in Dade County. The hammock originally ran for five miles south of the Miami River to Coconut Grove along Biscayne Bay. Approximately 47 acres are all that remain of Brickell Hammock which, according to early accounts, probably covered over 1300 acres.

Craighead (1971) estimated that Dade County once had over 500 hammocks. Because of their aesthetic appeal and mild microclimate, most of the hammocks, especially along the Atlantic Coastal Ridge, have been destroyed for urban development. Long Pine Key within the Everglades National Park contains some 125 hammocks--all of which have, from time to time, been seriously damaged by fire and other man-related activities.

Most of the remaining hammocks of Dade County are now under public ownership. Some of the finest publicly owned hammocks are Matheson (123 on map 17), Cutler (117 on map 22), Brickell (35, 38, 39 on map 10), Castellow (207 on map 24), Bauer (236 on map 29) and Fuchs (278 on map 32). Two of the finest remaining hammocks not in public ownership are Deering (103 on map 22) and Snapper Creek (124 on map 17).

A unique hammock type now almost extinct in Dade County is the cypress hammock. The dominant tree species, bald cypress (Taxodium distichum), red maple (Acer rubrum), cocoplum (Chrysobalanus icaco) and dahoon holly (Ilex cassine), grow in

areas with flowing water subject to seasonal flooding. The only example of the cypress hammock open to the public in Dade County is a small portion of the Parrot Jungle (89 on map 16). The largest and only undisturbed cypress hammock is located near the Everglades National Park (335 on map 38).

EXOTICS

Next to the destruction by land development, the most serious threat to the native forests of Dade County is from the rapid spread of exotic plant species. Introduced relatively recently by man (1900) exotic plants lack natural environmental population controls which allow them to invade and displace native vegetation.

The ecosystem in south Florida contains some of the youngest vegetation associations in the United States (Long, 1971). These associations exist on a fragile foundation of water levels, rocky soils and periodic droughts, which, during the past 40 years, have been drastically altered by man. It is these vast areas of disturbed sites which have become the primary sites for the establishment of exotic vegetation.

The most common exotic plant encountered during the inventory was Brazilian pepper (Schinus terebinthifolius). Introduced as an ornamental plant because of its attractive red fruits, the Brazilian pepper has now spread to every pine and hammock area in Dade County. Once established on abandoned farmlands, canal banks and vacant lots, the extremely fast growing tree forms dense thickets up to 30 feet high. In pineland areas, where fire has been excluded for a number of years, Brazilian pepper will eventually form a large mass preventing the establishment and reproduction of pine and native understory plants. A wildfire sweeping through a heavily impacted pine stand will usually kill most of the overstory pine.

The only practical control of Brazilian pepper in natural areas is by periodic prescribed burning. Controlled fire, however, is impractical in the fire-sensitive hammocks where the overstory tree vegetation must be protected. Brazilian pepper, like most other exotic vegetation, will usually not become established under the shade of a healthy viable hammock overstory.

The Australian pines (Casuarina spp.) are major invaders of disturbed dry sites. The salt tolerant trees, unrelated to the true pines (Pinus spp.), have wind-blown seeds which have allowed them to spread to all warm coastal areas, worldwide. Cape Florida State Park on Key Biscayne, once covered with beach and coastal hammock vegetation, is now completely covered with a forest of Australian pines. Vast expanses of Australian pines presently exist on the abandoned farmlands and drained areas southeast of Homestead. The trees, however, are susceptible to fire and require full sunlight to survive. As with areas invaded by Brazilian pepper, a prescribed program of controlled fire will usually eliminate Australian pines from pineland areas.

The Melaleuca (Melaleuca quinquenervia) is an extremely fast growing, fire-resistant tree invading large areas of former everglades in areas where man has disrupted the natural ecosystem. The tree was found growing in all Dade County's ecosystems and may have the potential to become established throughout the County. With the possible exception of aerial

applications of herbicides proposed recently by the Florida Game and Fresh Water Commission, no known control of Melaleuca presently exists.

Additional exotic tree species reproducing naturally in pine and hammock areas were: Bishofia (Bischofia javanica) found thriving in many hammocks outside Homestead, earleaf acacia (Acacia auriculaeformis) located in many small urban pineland areas, and womans tongue (Albizia lebbeck) found in most pine and hammock areas. Many additional exotic plant species undoubtably have the capacity to become established within Dade's remaining natural areas.

The area covered by exotic vegetation is increasing rapidly within all portions of Dade County. Considering the present trends of drainage, land clearing, and wildfire, exotic vegetation will probably become the dominant forest type in the undeveloped lands of urban Dade County by the year 2000.

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APPENDIX A

List Of The More Important Trees Associated With The Hammocks Of The Miami Limestone*

Acacia farnesiana L.	**T. Acacia
peninsularis(Small) Standl.	
tortuosa (L.) Willd.	
Acer rubrum L.	N. Maple
Achras emarginata L.	T. Wild dilly
Albizia lebbeck (L.) Benth.	I. Womans tongue
Alvaradoa amorphoides Liebm.	T. Alvaradoa
Amyris balsamifera L.	T. Torchwood
elemifera L.	
Annona glabra L.	T. Pond Apple
Ardisia escallonioides Schlecht & Cham.	I. Marlberry
solanacea Roxb.	
Baccharis glomeruliflora Per.	N. False willow
halimifolia L.	N. Silver bush
Bauhinia purpurea L.	I. Orchid Tree
Bourreria ovata Miers	T. Strongbark
revoluta HBK	
Bucida buceras L.	I. Black Olive
spinosa (Northr.) Jennings	I. Spiny Bucida
Bumelia reclinata Vent.	T. Buck Thorn
tenax (L.) Willd.	
Byrsonima lucida (Sw.) DC.	T. Locust berry
Bursera simaruba (L.) Sarg.	T. Gumbo Limbo
Calyptranthes pallens Griseb.	T. Spice bush
zuzygium (L.) Sw.	
Canella winterana (L.) Gaertn.	T. Cinnamon Bark
Capparis cynophallophora L.	T. Jamaica Caper
flexuosa L.	T. Limber Caper
Carica papaya L.	T. Papaya
Casuarina equisetifolia Forst.	I. Australian Pine
lepidophloia (F.) Muell.	I. Beefwood
Celtis laevigata Willd.	N. Southern Hackberry
Cephalanthus occidentalis L.	N. Buttonbush
Chrysobalanus icaco L.	T. Coco-plum
Chrysophyllum oliviforme L.	T. Satin leaf
Citharexylum fruticosum L.	T. Fiddlewood
Citrus aurantifolia (Christm.) Swingle	I. Key Lime
limon (L.) Risso	I. Lemon
aurantium L.	I. Sour orange
sinensis Osbeck	I. Sweet orange
Coccoloba diversifolia	T. Coco-plum
uvifera (L.) Jacqu.	
Coccothrinax argentea (Lodd.) Sarg.	P. T. Silver palm
Cocos nucifera L.	P. I. Coconut
Colubrina arborescens (Mill.) Sarg.	T. Colubrina
asiatis (Jacq.) Brongn.	T.
reclinata (L'Her.) Brongn.	T. Naked wood
Conocarpus erecta L.	T. Buttonwood
Cordia sebestena L.	T. Geiger tree
Cornus foemina Mill.	N. Stiffcornel
Crossopetalum rhacoma L.	T. Rhacoma
Diospyros virginiana L.	N. Persimmon
Dipholis salicifolia (L.) A.DC.	T. Bustic
Dodonaea famaicensis DC	T. Varnish leaf
Drypetes diversifolia Krug. & Urban	T. Milkbark
lateriflora (Sw) Krug. & Urban	T. Guiana plum
Ehretia rigida L.	T. Golden dewdrop
Erythrina herbacea L.	I. Cherokee bean
Eugenia axillaris (Sw) Willd.	T. White stopper
buxifolia Berg	T. Twin berry
longipes Berg	T. Pineland stopper
simpsonii Small	T. Simpson stopper

* Craighead, F. C., "Hammocks of South Florida"..Edited by Patrik J. Gleason, Environments of South Florida: Present and Past, Miami Geologic Society, 1974, pp. 58-9.

Exostema caribaeum (Jacq.) R&S	T. Prince wood
Exothea paniculata (Juss.) Radlk.	T. Ink wood
Ficus aurea Nutt	T. Strangler fig
citrifolia Mill.	T. Wild Banyan
Forestiera pinetorum Small	T. Pineland olive
segregata (Jacq.) Krug & Urban	T. Blue olive
Guettarda elliptica Sw.	T. Velvet seed
scabra Vent.	T. Rough leaf
Gymnanthes lucida Sw.	T. Crabwood
Hamelia patens Jacq.	T. Scarlet bust
Hypelate trifoliata Sw.	T. White ironwood
Ilex cassine L.	N. Dahoon holly
krugiana Loes.	T. Kruger holly
Krugiodendron ferreum (Vahl.) Benth.	T. Lead tree
Leucaena glauca (L.) Benth.	T. Black ironwood
Licaria triandra (Sw.) Kostern	T. Gulf licaria
Lysiloma bahamensis Benth.	T. Wild tamarind
Manilkara emarginata (L.) Britt & Wils	T. Wild dilly
Melaleuca leucodendron L.	I. Cajeput
Metopium toxiferum (L.) Krug & Urban	T. Poisonwood
Morus rubra L.	N. Mulberry
Myrica cerifera L.	N. Wax myrtl
Nectandra coriacea (Sw.) Griseb.	T. Lancewood
Paurotis wrightii (Griseb.)	P. T. Paurotis
Persea borbonia (L.) Spreng.	T. Red bay
Phoenix dactylifera L.	P. T. Date palm
Picramnia pentandra Sw.	T. Bitter bush
Pinus clausa (Engelm.) Sarg.	N. Sand pine
elliottii var. *densa* Little & Dorman	N. Slash pine
Piscidia piscipula (L.) Sarg.	T. Jamaica dogwood
Psidium guajava L.	I. Guava
Psychotria sulzneri Small	T. Coffee berry
undata Jacq.	T. Coffee
Pseudophoenix sargentii Wendl.	P. T. Sargent's palm
Randia aculeata L.	T. White Indigo Berry
Rapanea guianensis Aubl.	T. Myrsine
Rhus copallina (L.)	N. Sumac
var. *leucantha* (Jacq.) DC.	
Roystonea elata (Bartr.) Harper	P. T. Royal palm
Rhizophora mangle L.	T. Red mangrove
Sabal palmetto (Walt.) Lodd.	P. T. Cabbage palm
Salix caroliniana Michx.	N. Southern willow
Sambucus simpsonii Rehder	N. Southern elderberry
Sapindus saponaria L.	T. Soapberry
Schinus terebinthifolus Raddi	I. Brazilian holly
Schoepfia chrysophylloides (A.Rich)Pl.	T. Grey twig
Serenoa repens (Bartr.) Small	P. T. Saw palmetto
Mastichodendron foetidissimum (Jacq.) Cron.	T. Mastic
Simaruba glauca DC.	T. Paradise tree
Solanum verbascifolium L.	T. Potato tree
Swietenia mahagoni Jacq.	T. Mahogany
Tabebuia pallida L.	I. Tabebuia
Tecoma stans (L.) Juss.	T. Yellow elder
Tetrazygia bicolor (Mill.) Cogn.	T. Tetrazygia
Thrinax microcarpa Sarg.	P. T. Thrinax
parviflora Sw.	P. T. Thrinax
Torrubia longifolia (Heimerl)	T. Blolly
Trema micrantha (L.) Blume	T. Florida trema
Vallesia glabra Cav.	T. Pearl berry
Ximenia americana L.	T. Hog plum
Yucca aloifolia L.	I. Spanish bayonet
Zanthoxylum fagara (L.) Sarg.	T. Wild lime

**N - Temperate Zone Species
T - Tropical species
I - Recent introductions
P - Palms

APPENDIX B

List of Inventoried Hammocks and Pinelands

MAP CODE - Number of inventoried area.

MAP - Map number in Appendix D

TYPE - P - Pineland
H - Hammock
M - Mixed hammock and pineland

CONDITION - P - Poor
F - Fair
G - Good
E - Exceptional

ACREAGE - Number of acres

REMARKS - 1 - Destruction imminent due to development
2 - Recent destructive fire
3 - Oldest and largest slash pines
4 - Young pines - 15 years old or less
5 - Greynolds Park
6 - Biscayne College
7 - Oak Grove Park
8 - Enchanted Forest Park
9 - Arch Creek
10 - Legion Memorial Park
11 - Sewell Park
12 - Simpson Park
13 - Wainwright Park
14 - Viscaya
15 - Parrot Jungle
16 - Matheson Hammock Park
17 - Snapper Creek Hammock
18 - Richmond Naval Air Station
19 - Deering Hammock
20 - Monkey Jungle
21 - Cutler Hammock Park
22 - Castellow Hammock Park
23 - Camp Owaissa Bauer
24 - Orchid Jungle
25 - Fuchs Hammock
26 - Loveland Hammock
27 - Navy Well Fields
28 - Reark's Hammock
29 - Miami-Dade Community College
30 - Bird Drive Park
31 - Dade County Kendall Home Area
32 - County Park
33 - Rare fern - Spenomeris clavata
34 - Collection of planted hammock trees
35 - Many virgin Dade County pines
36 - Outstanding cypress stand
37 - Old Indian mound hammock

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
1	1	P	F	5	1
2	3	H	F	3	
3	3	H	G	4	
4	3	H	P	3	
5	3	H	F	3	
6	3	H	F	5	1
7	2	H	F	5	
8	2	P	P	8	
9	1	M	F	5	
10	1	H	F	2	
11	2	H	F	2	
12	2	M	F	3	
13	5	H	F	4	
14	4	P	F	40	6
15	4	H	F	3	
16	3	H	G	6	5
17	3	H	P	2	
18	3	H	F	2	
19	3	H	F	5	5
20	3	H	G	5	5
21	6	H	E	6	37
22	6	H	F	5	7
23	6	H	P	8	8

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
24	6	H	P	6	9
25	6	P	F	13	
26	8	H	G	2	11
27	7	H	F	2	10
28	12	P	F	10	30
29	12	H	P	2	30
30	9	P	F	5	
31	11	H	F	3	
32	11	H	F	38	31
33	11	H	G	5	31
34	9	P	G	23	
35	10	H	F	8	12
36	10	H	G	3	
37	10	H	G	4	
38	10	H	E	12	13
39	10	H	E	18	14
40	10	H	G	2	
41	13	H	G	8	
42	13	P	P	6	
43	13	P	P	5	1
44	18	P	F	25	
45	18	P	F	18	
46	14	P	F	6	4

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
47	14	P	F	120	
48	14	P	F	5	
49	14	P	E	390	3
50	19	H	G	9	
51	20	P	F	8	
52	20	P	F	11	
53	20	P	G	6	
54	20	P	G	15	18
55	20	P	G	6	18
56	20	P	F	70	2,18
57	20	P	G	30	18
58	20	P	G	165	18
59	20	P	G	15	18
60	20	P	G	50	2,18
61	20	P	G	110	18
62	19	P	F	12	
63	19	P	F	40	2
64	19	P	G	15	
65	19	P	G	8	
66	19	P	G	20	
67	19	P	F	11	
68	20	P	F	5	
69	20	P	F	7	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
70	20	P	G	230	18
71	20	P	G	140	18
72	20	P	G	160	18
73	20	P	G	70	18
74	16	P	F	20	
75	16	P	P	10	
76	15	P	P	12	
77	15	P	F	10	
78	15	H	G	4	1
79	15	P	F	26	
80	15	P	F	21	29
81	15	P	F	5	
82	15	P	F	8	
83	15	P	F	6	
84	15	P	G	18	1
85	15	P	G	55	1
86	15	P	F	6	
87	15	P	F	8	
88	15	P	F	5	
89	16	H	E	4	15
90	16	P	G	13	
91	15	P	G	20	
92	15	P	F	5	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
93	15	P	F	5	
94	15	P	F	10	2
95	15	P	G	28	1
96	21	P	F	8	1
97	21	P	F	30	
98	22	P	P	8	2
99	22	P	F	10	
100	22	P	F	10	
101	22	P	F	5	
102	22	P	G	75	19
103	22	H	E	100	19
104	22	M	G	7	
105	22	H	G	16	
106	21	P	F	9	1
107	21	P	G	145	2
108	21	P	F	22	1
109	21	P	F	23	1
110	21	P	G	12	
111	21	P	G	5	
112	21	P	F	10	
113	21	P	F	10	
114	21	P	F	8	
115	21	P	G	5	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
116	22	P	P	20	2
117	22	H	E	21	21
118	22	P	F	8	
119	22	P	G	7	1
120	22	M	G	24	
121	22	P	F	12	35
122	17	H	G	5	
123	17	H	E	50	16
124	17	H	E	13	17
125	17	P	P	12	
126	23	P	F	5	
127	23	P	F	5	
128	23	P	F	9	
129	23	P	F	12	
130	23	P	F	13	
131	23	P	F	9	
132	23	P	F	10	
133	23	P	G	6	
134	23	P	F	30	
135	23	P	F	10	
136	28	P	P	6	
137	28	P	P	10	
138	28	P	G	13	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
139	28	P	F	10	
140	28	P	G	10	
141	28	P	F	5	
142	28	P	F	5	
143	28	P	F	10	
144	28	P	F	10	
145	28	P	G	10	
146	28	P	F	12	
147	28	P	F	8	
148	28	P	F	7	
149	28	P	P	5	
150	28	P	F	6	
151	28	P	G	10	
152	28	P	F	13	
153	28	P	F	5	
154	28	P	E	22	34
155	28	P	G	5	
156	28	P	F	8	
157	28	P	F	12	
158	25	P	F	8	
159	25	P	F	8	
160	25	P	F	17	
161	24	P	G	30	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
162	24	P	F	35	
163	24	P	G	26	
164	24	P	G	18	
165	24	P	G	6	
166	24	P	F	5	
167	24	P	F	6	
168	24	P	F	10	
169	24	P	P	18	
170	24	P	G	5	
171	24	P	F	5	
172	24	P	F	7	
173	24	P	G	14	
174	24	M	G	25	20
175	25	P	F	60	
176	25	P	F	9	
177	25	P	F	14	
178	25	P	F	32	
179	25	P	G	5	
180	25	P	G	5	
181	25	P	G	10	
182	25	H	G	5	
183	25	P	F	5	
184	25	P	F	20	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
185	25	P	F	21	
186	25	P	F	6	
187	25	P	G	15	
188	25	P	F	16	
189	25	P	F	5	
190	25	P	F	8	
191	25	P	F	5	
192	25	P	F	10	
193	25	P	P	10	
194	25	P	F	10	
195	25	P	F	8	
196	25	P	F	10	
197	25	P	F	10	
198	25	P	F	25	
199	24	P	F	8	
200	24	P	G	10	
201	24	H	G	30	
202	24	P	F	7	
203	24	P	F	7	
204	24	P	F	10	
205	24	P	G	20	
206	24	H	E	10	28
207	24	M	E	76	22

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
208	29	P	F	10	
209	29	P	F	15	
210	29	P	F	15	
211	29	P	F	5	
212	30	P	F	10	
213	30	P	P	5	
214	30	P	G	8	
215	30	P	P	8	
216	30	P	P	5	
217	30	P	P	5	
218	30	P	F	12	
219	30	P	F	20	
220	30	P	F	20	
221	30	M	F	10	
222	30	M	F	20	
223	30	P	F	10	
224	30	P	F	5	
225	30	P	F	7	
226	30	P	F	9	
227	29	P	F	18	
228	29	P	F	5	
229	29	P	G	5	
230	29	P	G	5	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
231	29	M	P	7	2
232	29	P	G	14	
233	29	P	G	16	
234	29	P	F	16	
235	29	P	G	9	
236	29	H	E	15	23
237	29	P	F	60	23
238	29	P	F	50	2
239	29	P	P	5	
240	29	P	F	20	
241	29	P	F	11	
242	29	P	G	7	
243	29	P	G	5	
244	29	P	G	7	
245	29	P	F	5	
246	29	P	F	5	
247	29	P	G	12	
248	29	M	E	18	24
249	29	P	F	32	
250	29	P	F	7	
251	30	P	G	7	
252	30	P	G	17	
253	30	P	G	26	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
254	30	P	E	20	33
255	27	P	G	7	
256	27	P	G	5	
257	26	H	G	4	
258	26	P	G	10	
259	26	P	F	14	
260	26	H	G	3	
261	26	P	F	7	
262	26	H	G	3	
263	26	P	P	20	
264	26	P	P	6	4
265	26	H	F	3	
266	32	P	G	20	
267	32	P	G	9	
268	32	P	P	27	
269	32	P	F	15	
270	32	P	F	5	
271	31	P	F	5	
272	31	H	F	5	
273	31	P	F	5	
274	31	P	F	5	
275	31	P	P	30	
276	32	P	G	20	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
277	32	P	G	35	
278	32	H	E	23	25
279	32	P	F	5	
280	32	P	P	10	
281	32	P	F	5	
282	32	P	F	5	
283	32	P	F	5	
284	32	P	P	5	
285	32	P	F	5	
286	32	P	F	5	
287	32	P	F	7	
288	32	P	F	8	
289	32	P	F	20	
290	32	P	F	24	
291	32	P	F	10	
292	35	P	G	20	
293	36	P	F	8	
294	36	P	F	7	
295	36	P	F	5	
296	36	P	F	10	
297	36	P	F	5	
298	36	P	G	8	
299	36	P	G	16	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
300	36	P	G	6	
301	36	P	G	19	
302	36	P	G	15	
303	36	P	G	8	
304	36	P	P	30	2
305	36	P	F	5	
306	36	P	F	5	
307	36	P	F	16	
308	36	P	F	8	
309	36	P	E	340	27
310	36	P	F	7	
311	36	P	F	10	4
312	36	P	F	19	
313	35	P	F	20	
314	35	H	G	13	26
315	36	P	F	20	
316	36	P	G	37	
317	36	P	P	10	
318	34	P	G	20	
319	34	P	P	7	
320	33	P	F	7	
321	33	P	G	5	
322	33	P	F	7	

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK
323	33	P	G	25	
324	33	P	F	8	
325	33	H	F	6	
326	33	P	F	7	
327	33	P	F	10	
328	33	P	F	7	
329	33	P	P	40	
330	33	P	F	6	
331	38	H	F	8	
332	38	P	F	15	
333	38	H	G	20	
334	37	H	F	3	
335	37	H	E	25	36

LOCATION		FOREST VEGETATION			
MAP CODE	MAP	TYPE	CONDITION	ACREAGE	REMARK

APPENDIX C

Forest Acreage by Township, Range and Section

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
51	41	32	5	5	
51	42	32			7
		33			11
52	41	2			5
		3	8		
		9			7
		10			5
		15			4
		16	40	10	
		20			3
52	42	4			6
		5			4
		9			10
		16			6
		18			5
		20			8
		21	13	20	6
		33		5	
53	41	34			2
53	42	13			2
54	40	14	10		2
		24		5	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
54	40	24		5	
		25		4	
		26	5	14	
		27		19	
		29			3
		31		4	43
		33		9	
		34		2	
		35	23	4	
		36		5	
54	41	12			15
		13			12
		14			18
		15			2
		21			8
		31		5	
		32	11	9	
55	38	36	43	10	
55	39	1	6		
		10	120		
		11	5		
		12		5	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
55	39	12		5	
		13		23	
		14	390	6	
		15		5	
		21		6	9
		23		8	
		24	25	16	
		25	286	14	
		26	175	38	
		27		13	
		28	12	15	
		29		1	
		30	40	2	
		32	43	14	
		33	11	8	
		34	12	5	
		35	370		
		36	230		
55	40	1	20	25	
		2		23	
		3	10	30	
		4	22	17	4

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
55	40	5		4	
		6	66	28	
		7	73	7	
		8		8	
		9	19	28	
		10		15	
		11		4	
		12		15	4
		13	13	9	
		14		2	
		15		5	
		16	20	17	
		17	20	36	
		18	28	10	
		19	8	9	
		20		10	
		21	30	4	
		22	8		
		23	10	24	
		24	15	3	
		26	75	9	123
		27		2	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
55	40	28		6	
		29		5	
		30	199		
		31	27	15	
		32	18	8	
		33	5	6	
		34	35	12	21
		35	12	5	24
55	41	6			55
		7		5	13
		18			12
56	38	1	19		
		11	25	6	
		12	25	22	
		14	40	10	
		22	6	12	
		23	10	33	
		24	23	38	
		25	10	24	
		26	40	21	
		27	20	17	
		33		14	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
56	38	34	18	7	
		35	55	18	
		36	20		
56	39	1	16	14	
		2		29	
		3	17	12	
		4	65	15	
		5	55	15	
		6	6		
		7	28	4	
		8	17	20	
		9	14	7	25
		10	69	23	
		11	56	9	
		12	15	21	5
		13	106	86	
		14	38	15	
		15	35	34	
		16	62	42	40
		17		11	76
		19		14	
		20		23	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
56	39	21	45	29	
		22	15	24	
		23	26	12	
		24	52	51	
		25		10	30
		26	22	12	
		27	9	23	
		28	63	18	7
		29	25	10	
		30	60	14	15
		31	105	11	
		32	22	10	
		33	39	28	18
		34		13	
		35	70	8	
56	40	3	12	28	
		4	10	7	4
		5	14		
		6		18	
		7	7	10	6
		9	20	10	
		10		2	

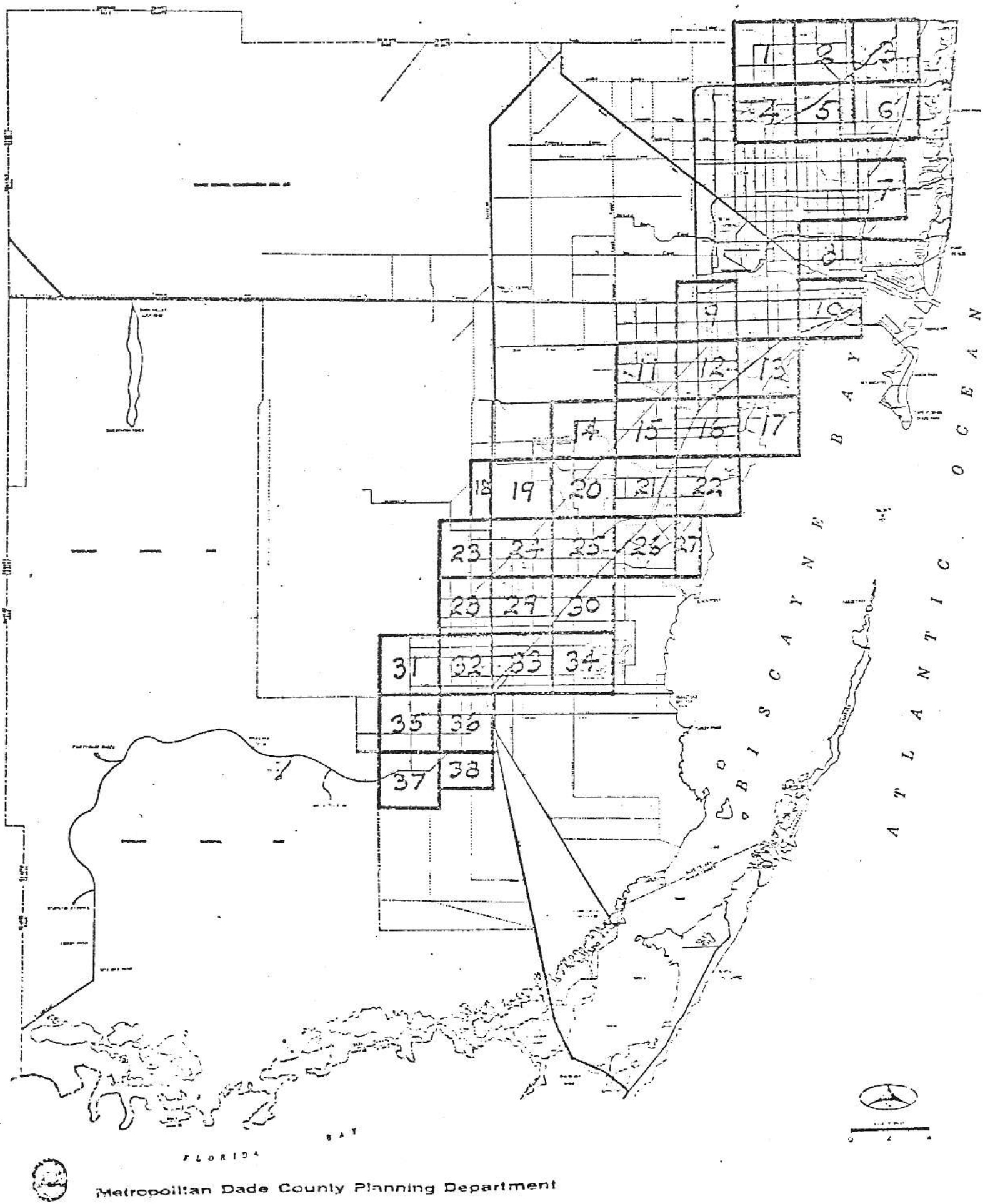
LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
56	40	17		6	
		18	6	13	
		19		37	
		20			3
57	38	1	20	13	
		2	51	8	
		3	5	7	
		4	5	3	
		5			5
		9	40	16	
		10	70	22	23
		11	15	12	
		12	5		
		13		5	
		14	25	28	
		15	54	19	
		21	20	5	
		22	43	8	
		23	64	19	
		24		15	
		25	30	10	
		26	374	23	

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS
57	38	27	26	7	
		28	20	10	
		29		14	
		32			13
		33		6	
		34	57	2	
		35	10	4	
		36		9	
57	39	2	20	10	
		3	7	10	
		4	7	12	
		5	37	11	
		6	15	16	6
		7	10	9	
		8	47	10	
		16		9	
		17	6	2	
		18		3	
58	38	2			8
		3	15		20
		4			3
		18			25

LOCATION			FOREST TYPE		
TOWNSHIP	RANGE	SECTION	INVENTORIED PINELANDS	NON-INVENTORIED PINELANDS	HAMMOCKS AND MIXED STANDS

APPENDIX D

Maps



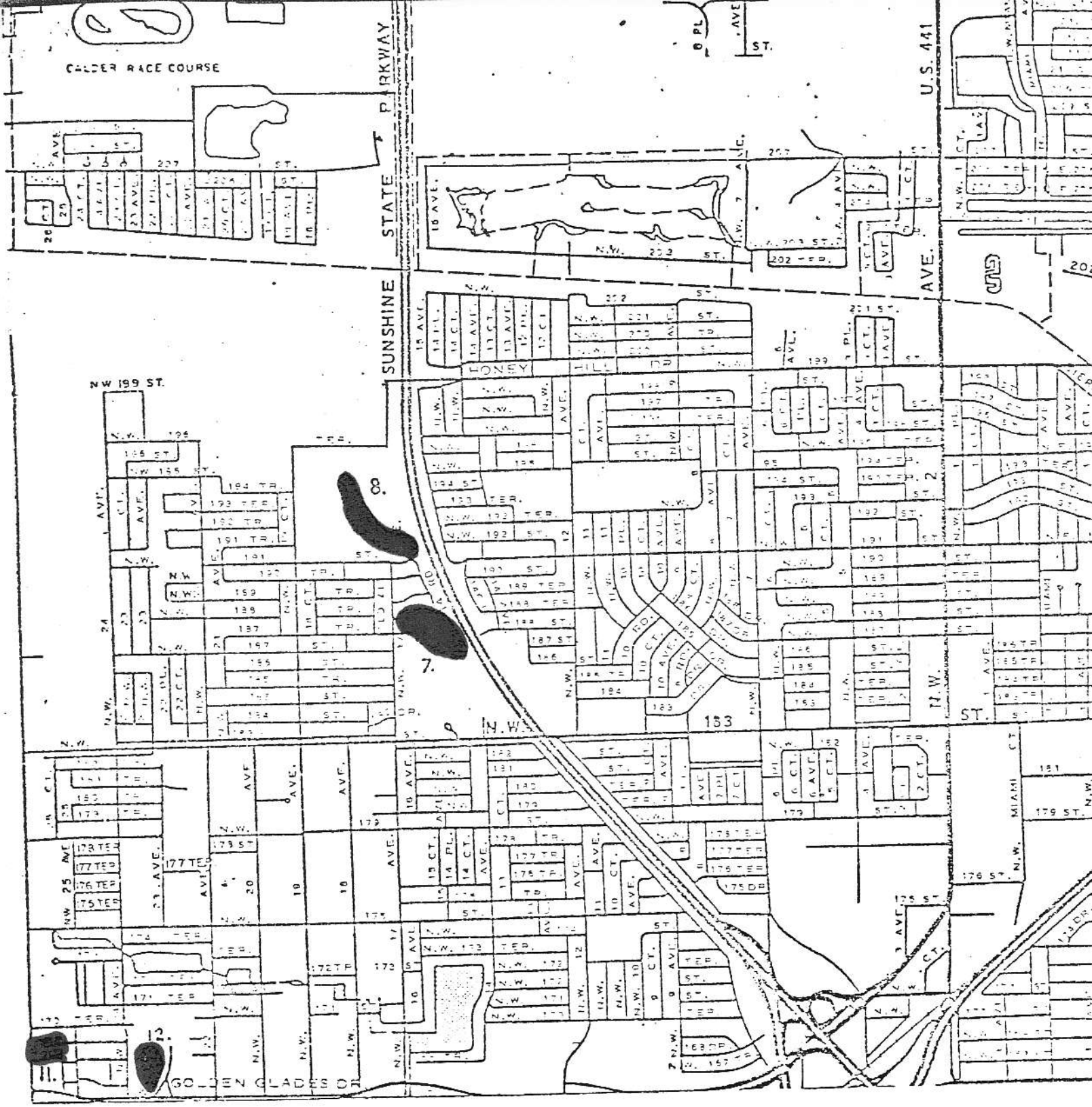
Metropolitan Dade County Planning Department

MAP 1

SECTION 31 32 33 TOWNSHIP 51 RANGE 41

SECTION 6 5 4 TOWNSHIP 52 RANGE 41

7 8 9



MAP 2

SECTION 34 35 36 TOWNSHIP 51 RANGE 41

SECTION 3 2 1 TOWNSHIP 52 RANGE 41

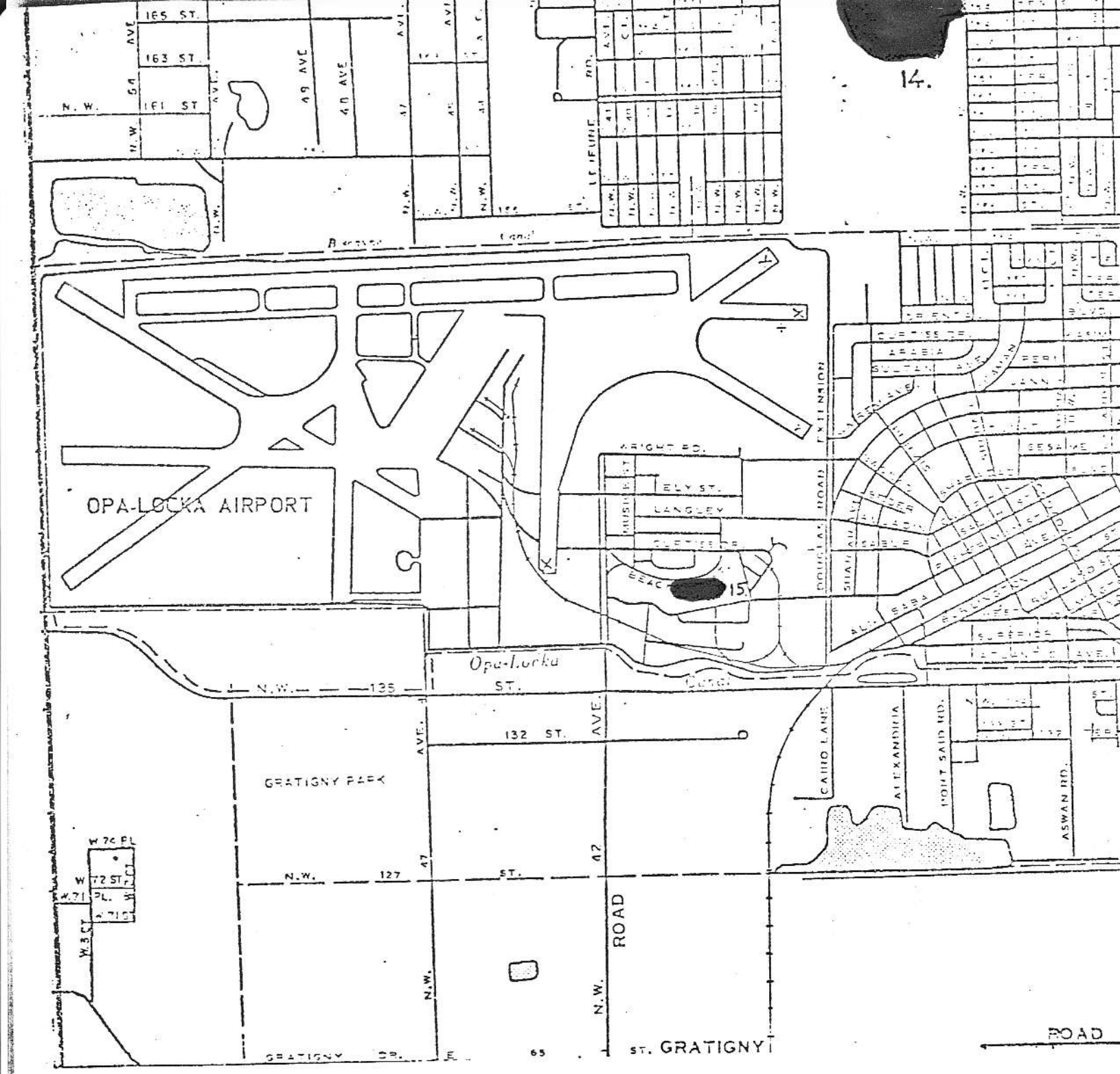
10 11 12

MAP 3

SECTION 31 32 33 TOWNSHIP 51 RANGE 42

SECTION 6 5 4 TOWNSHIP 52 RANGE 42

7 8 9

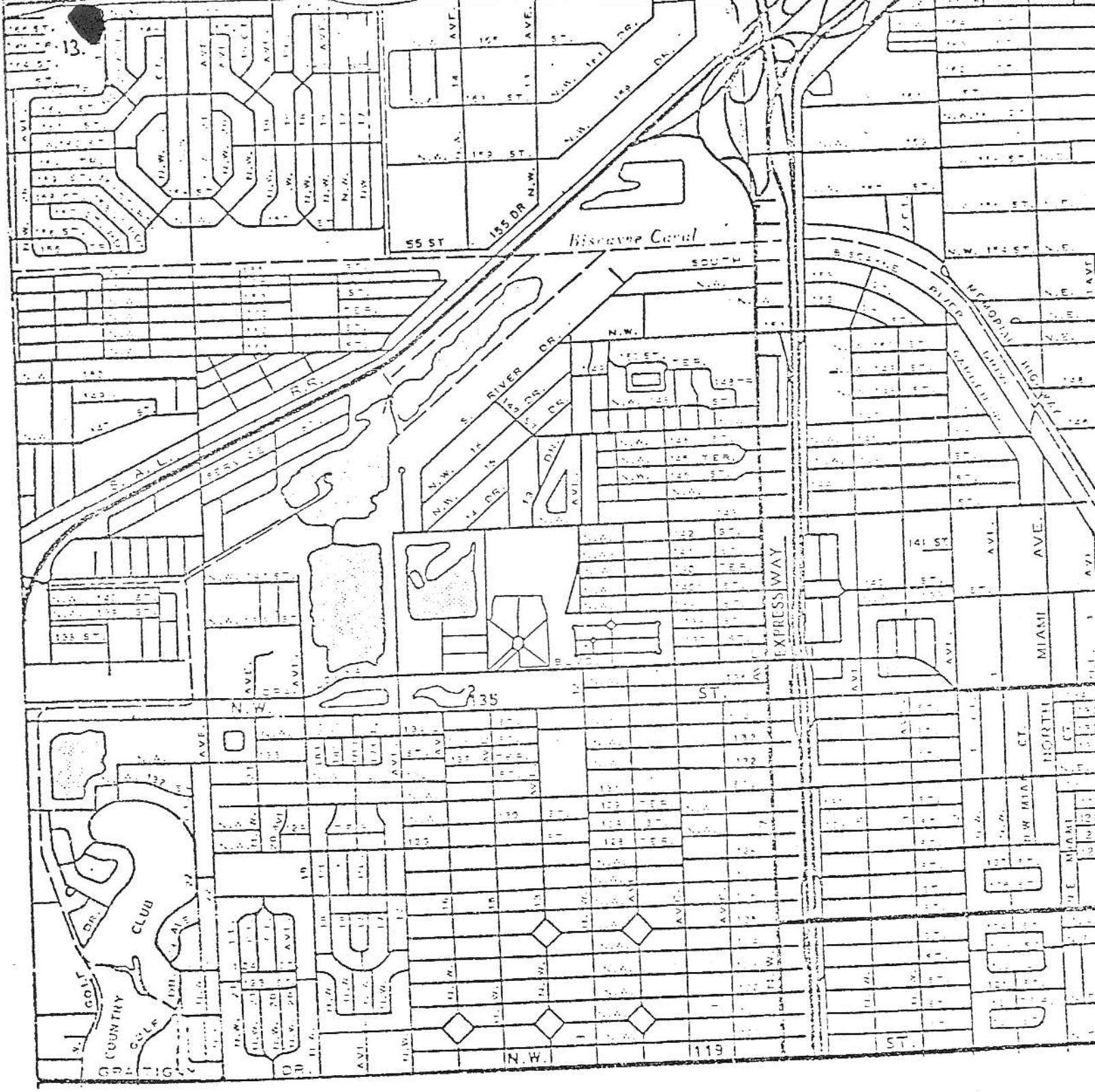


MAP 4

SECTION 18 17 16 TOWNSHIP 52 RANGE 41

19 20 21

30 29 28



MAP 5

SECTION 15 14 13 TOWNSHIP 52 RANGE 41

22 23 24

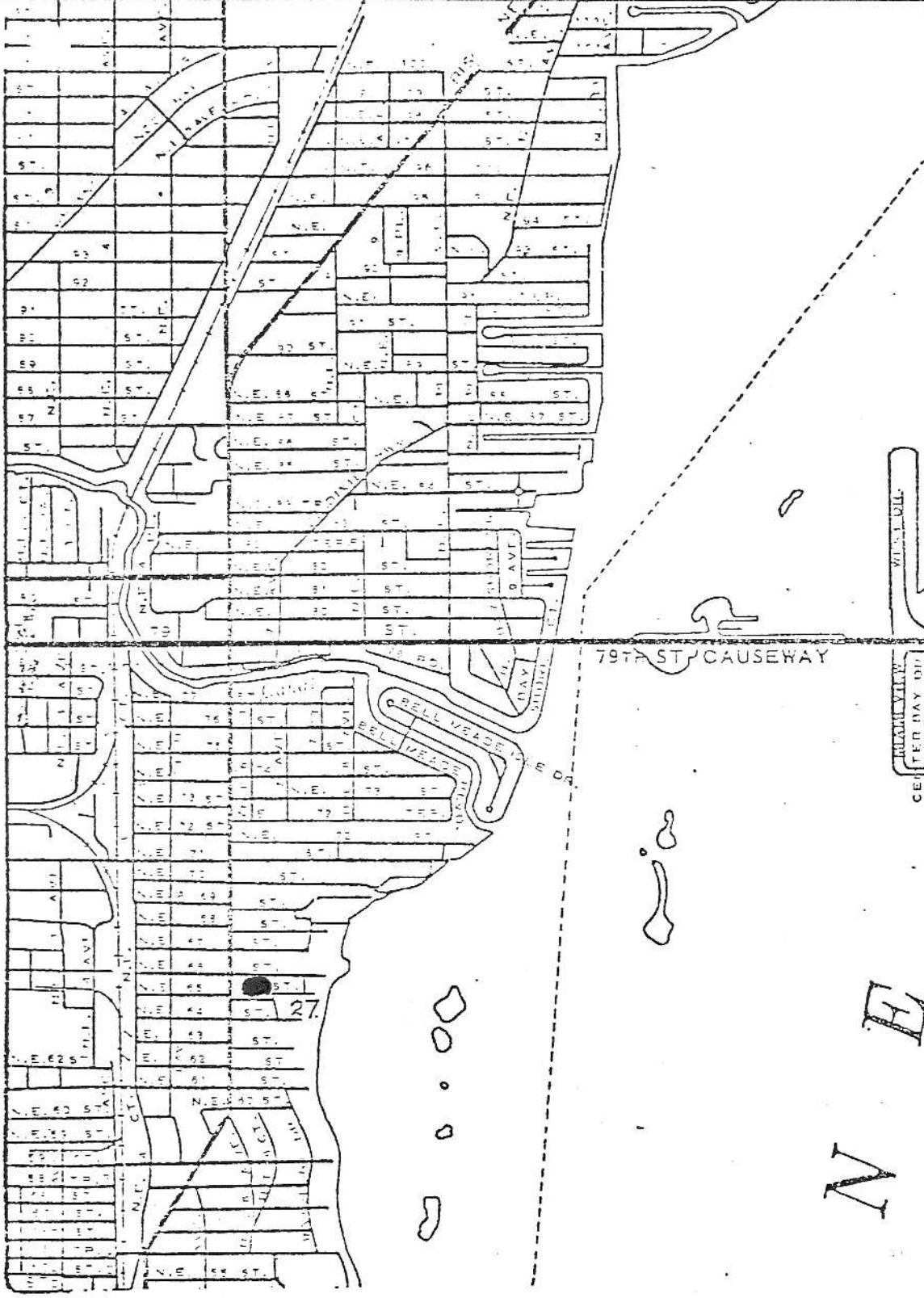
27 26 25

MAP 6

SECTION 18 17 16 TOWNSHIP 52 RANGE 42

19 20 21

30 29 28

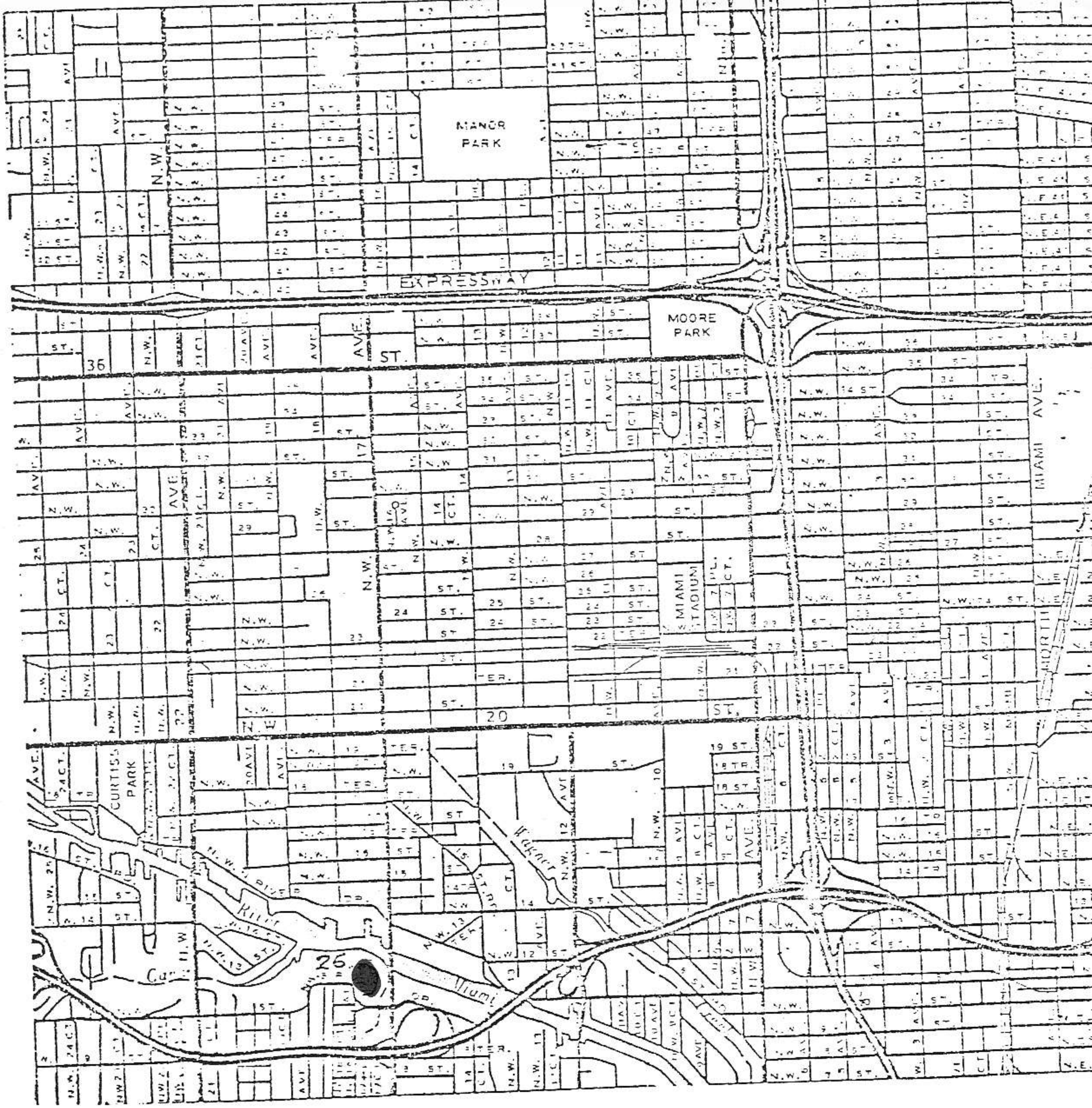


MAP 7

SECTION 6 5 TOWNSHIP 53 RANGE 42

7 8

18 17

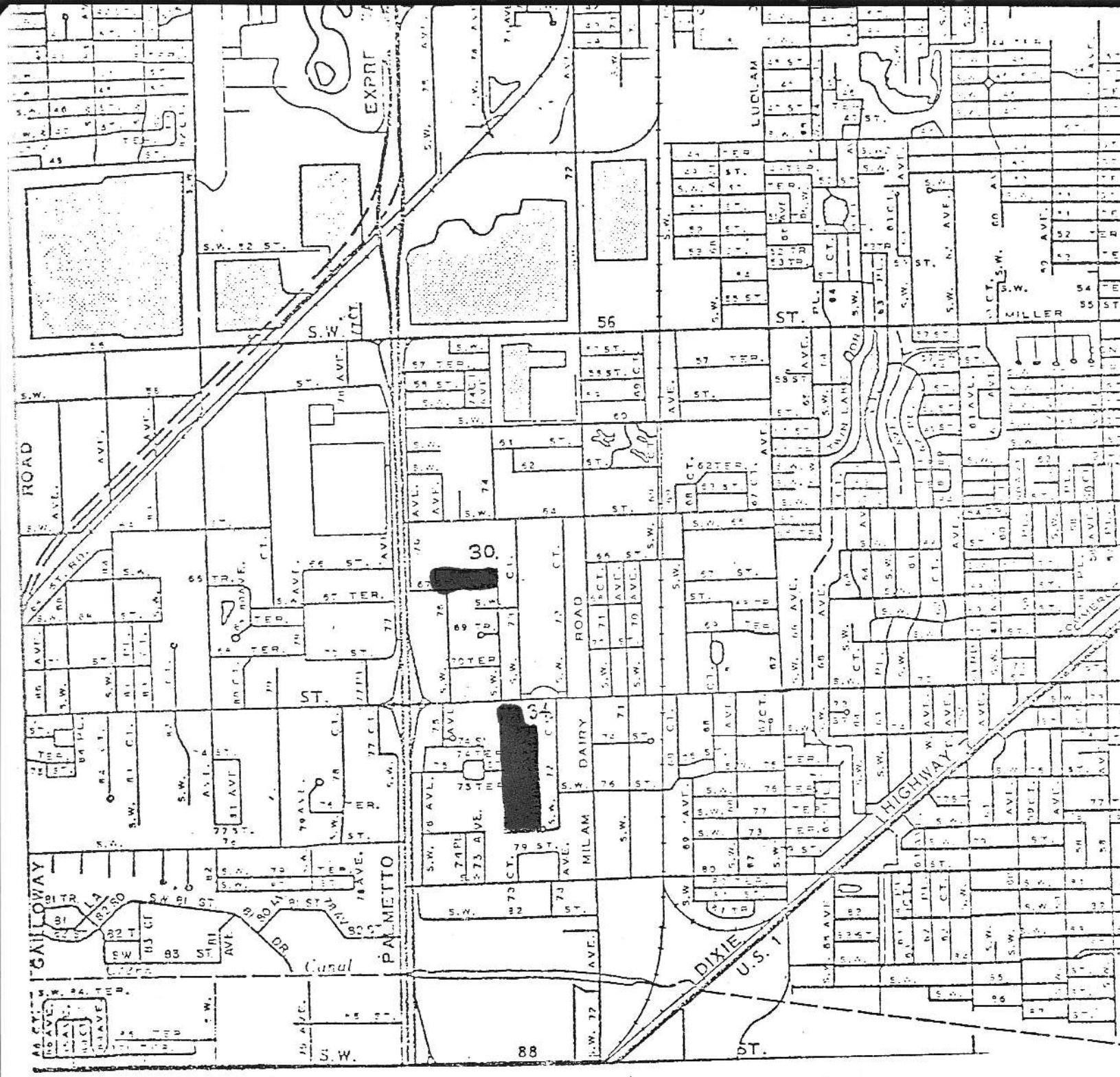


MAP 8

SECTION 22 23 24 TOWNSHIP 53 RANGE 41

27 26 25

34 35 36



MAP 9

SECTION 3 2 1
22 23 24
10 11 12
27 26 25
15 14 13
34 35 36

TOWNSHIP 55 ~~54~~ RANGE ~~39~~ 40

MAP 10

SECTION 3 2 1 TOWNSHIP 54 RANGE 41

10 11 12

15 14 13

MAP 11

SECTION 19 20 21 TOWNSHIP 54 RANGE 40

30 29 28

31 32 33

MAP 12

SECTION 22 23 24 TOWNSHIP 54 RANGE 40

27 26 25

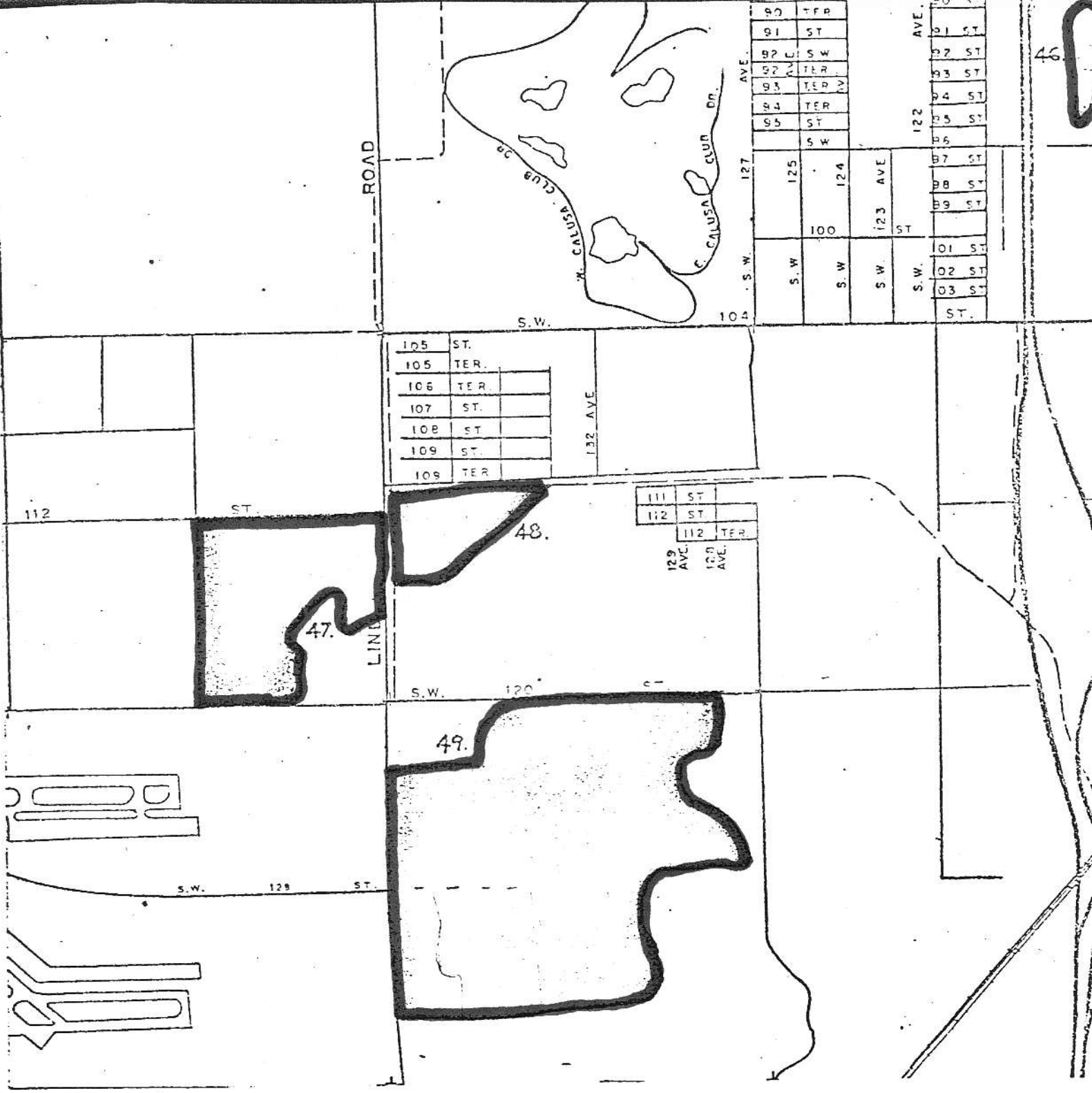
34 35 36

MAP 13

SECTION 19 20 21 TOWNSHIP 54 RANGE 41

30 29 28

31 32 33

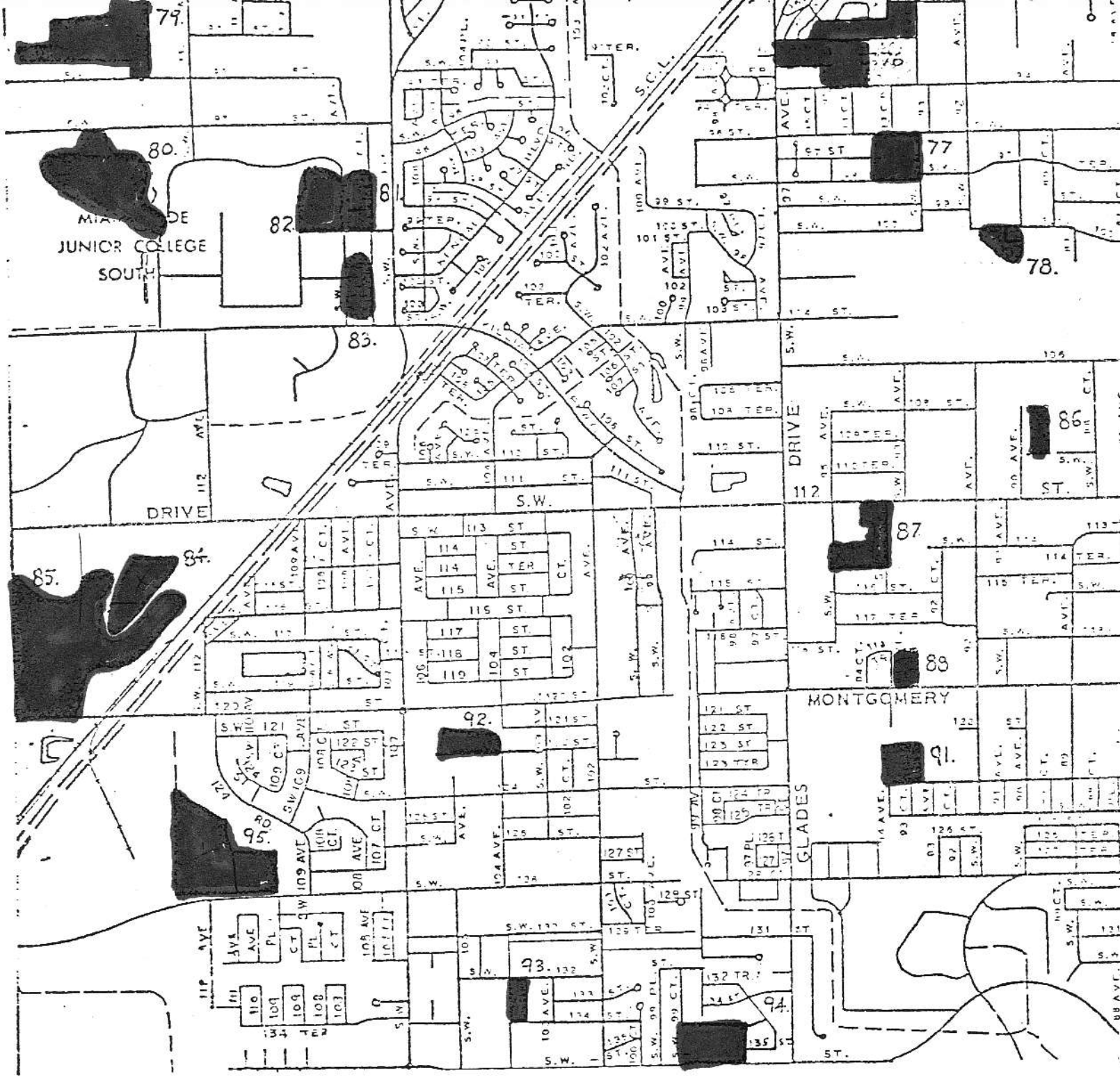


MAP 14

SECTION 3 2 1 TOWNSHIP 55 RANGE 39

10 11 12

15 14 13

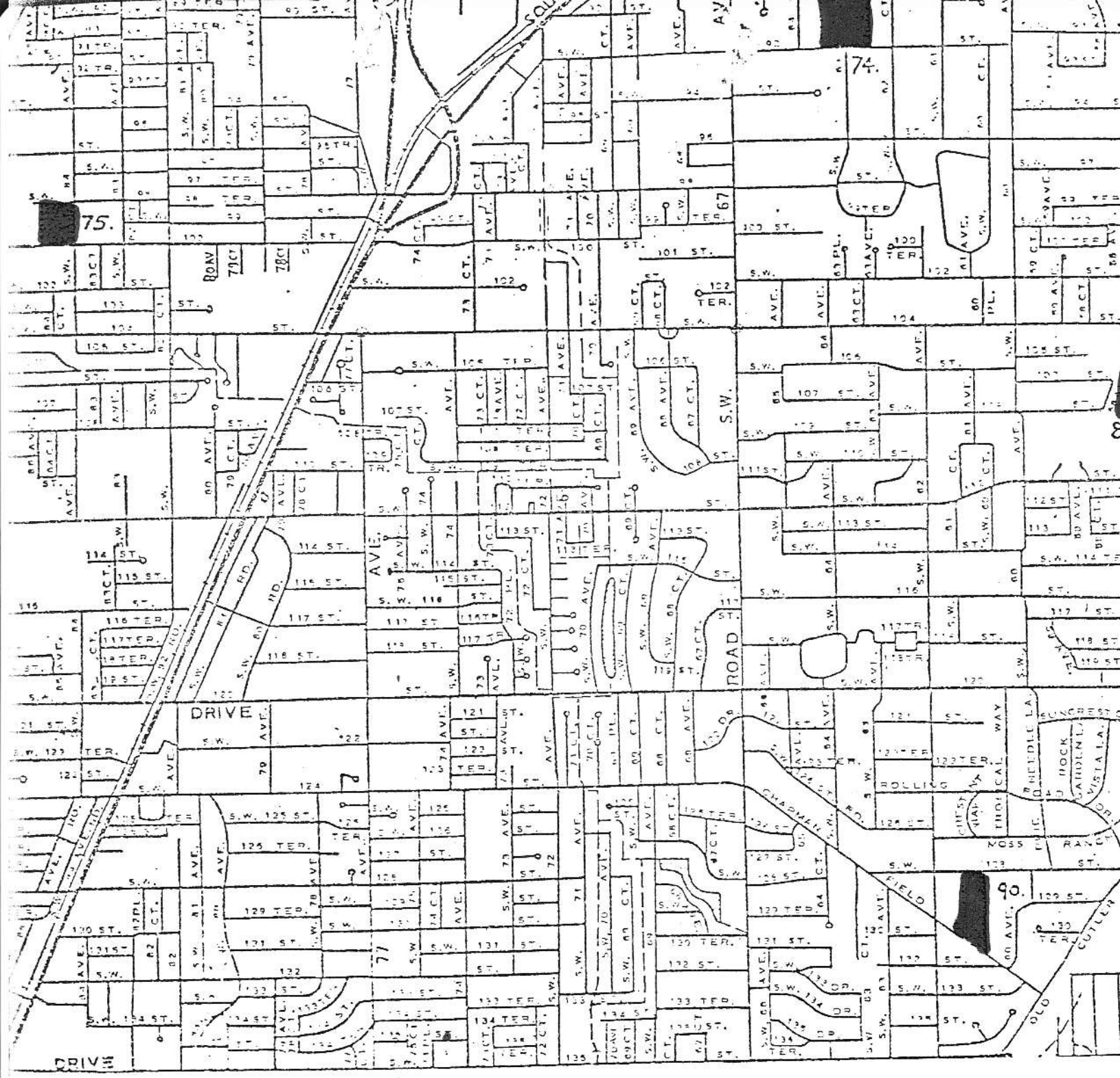


MAP 15

SECTION 6 5 4 TOWNSHIP 55 RANGE 40

7 8 9

18 17 16

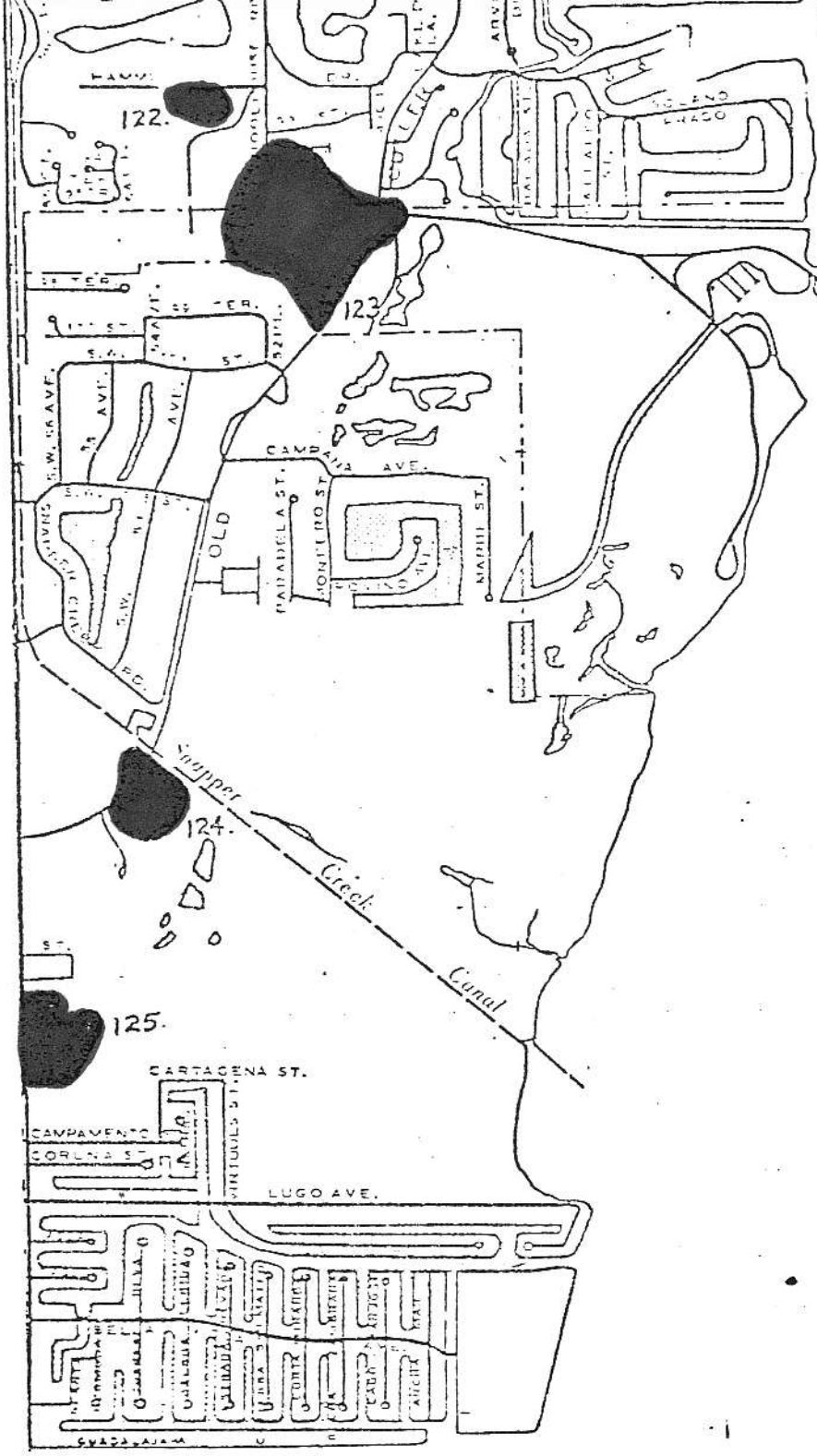


MAP 16

SECTION 3 2 1 TOWNSHIP 55 RANGE 40

10 11 12

15 14 13

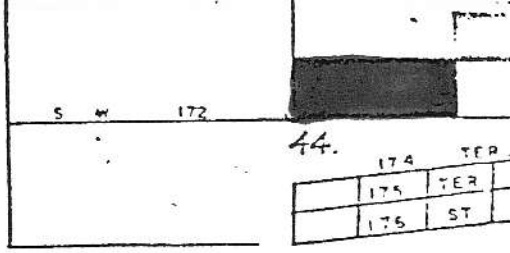


MAP 17

SECTION 6 5 TOWNSHIP 55 RANGE 41

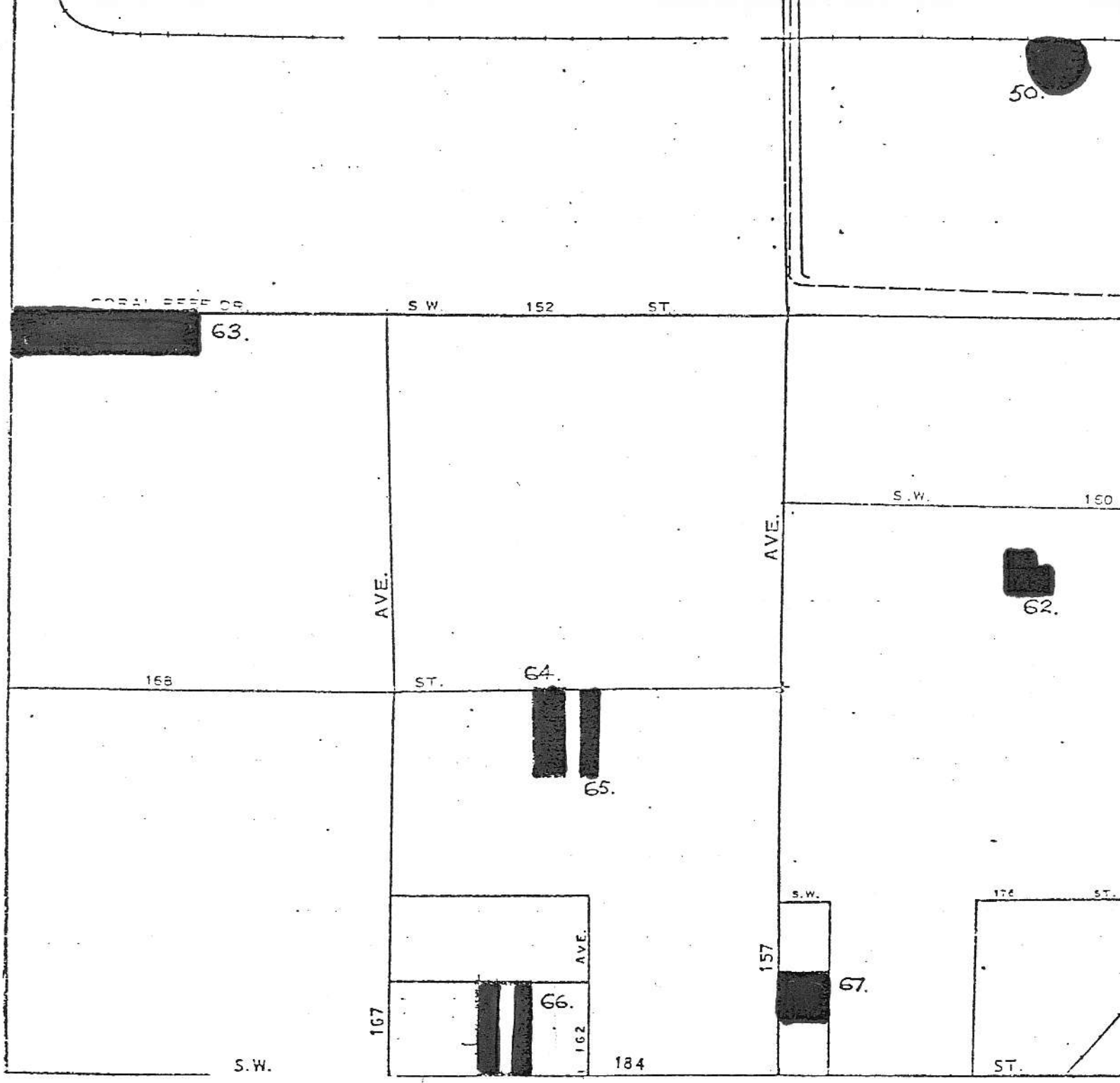
7 8

18 17



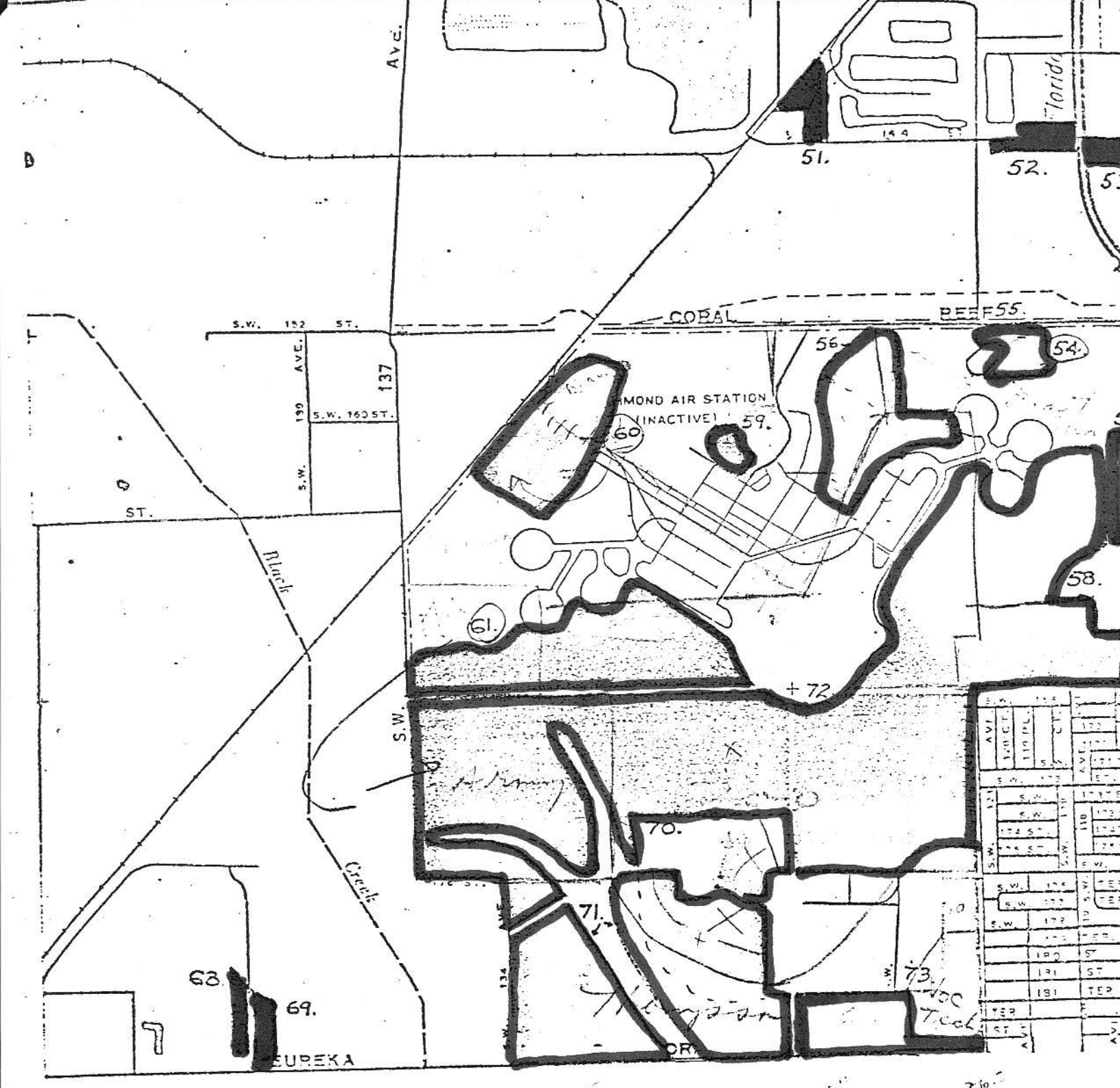
MAP 18

SECTION 36 TOWNSHIP 55 RANGE 38



MAP 19

SECTION	19	20	21	TOWNSHIP 55	RANGE 39
	30	29	28		
	31	32	33		

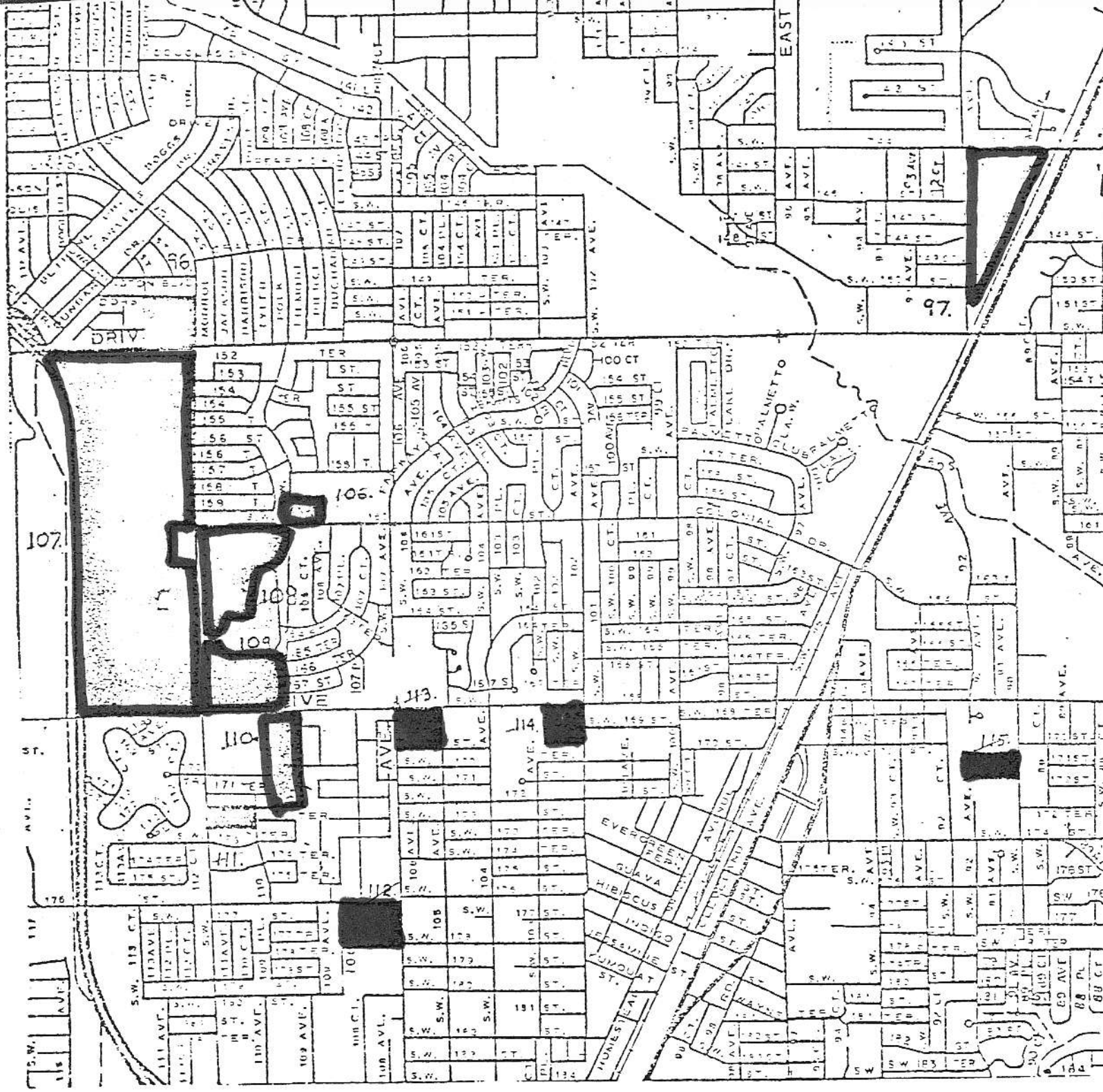


MAP 20

SECTION 22 23 24 TOWNSHIP 55 RANGE 39

27 26 25

34 35 36

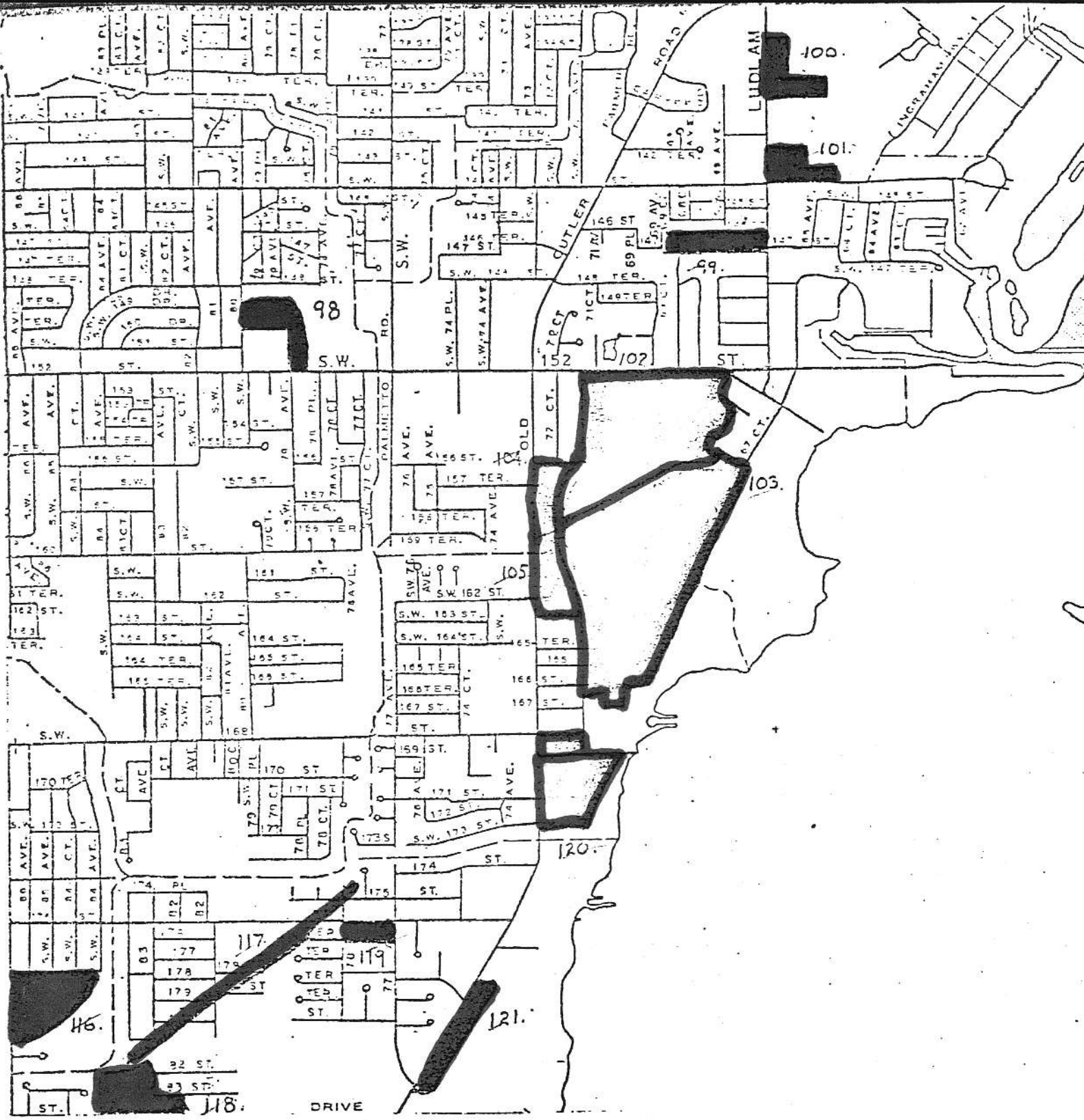


MAP 21

SECTION 19 20 21 TOWNSHIP 55 RANGE 40

30 29 28

31 32 33

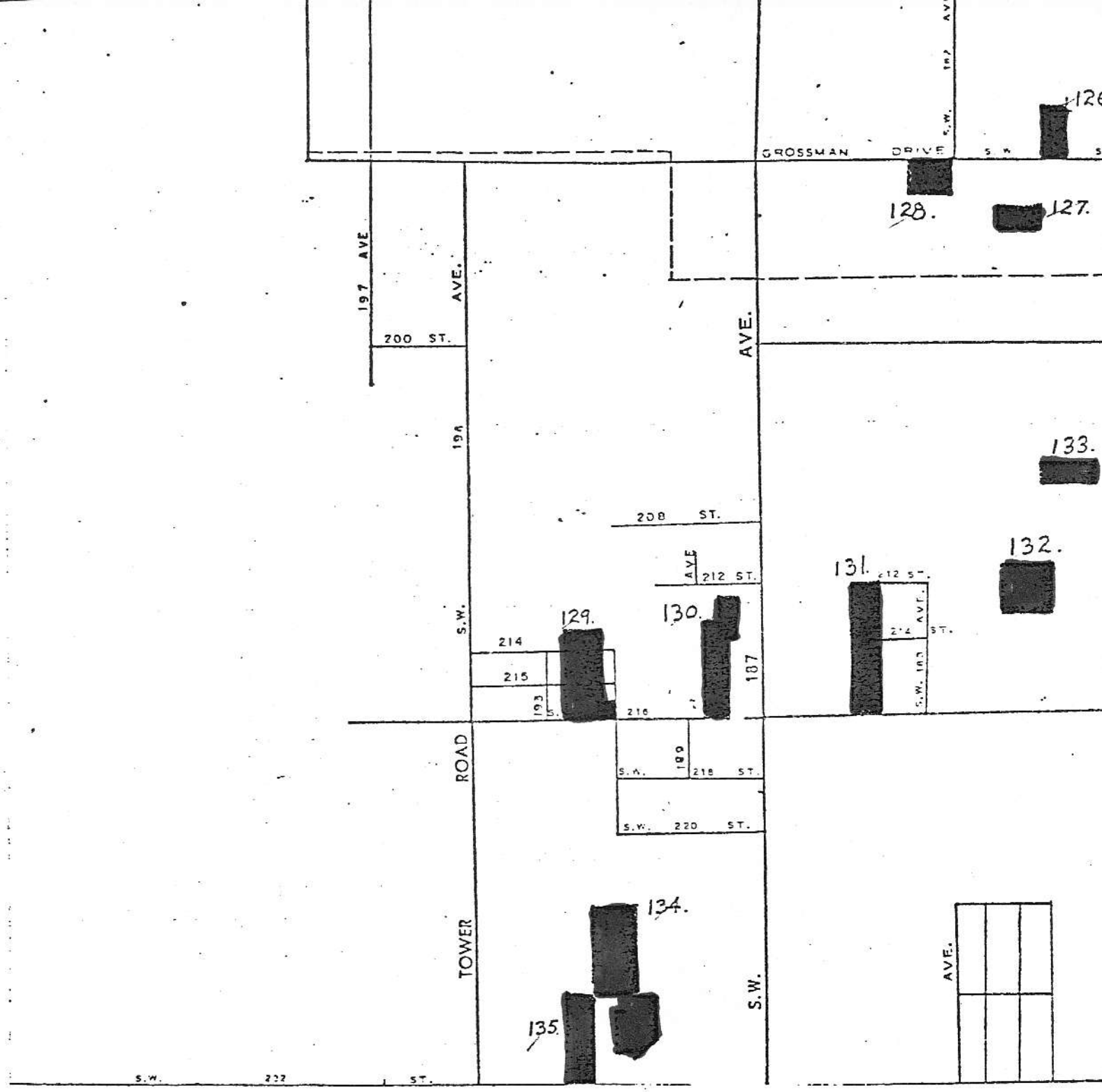


MAP 22

SECTION 22 23 24 TOWNSHIP 55 RANGE 40

27 26 25

34 35

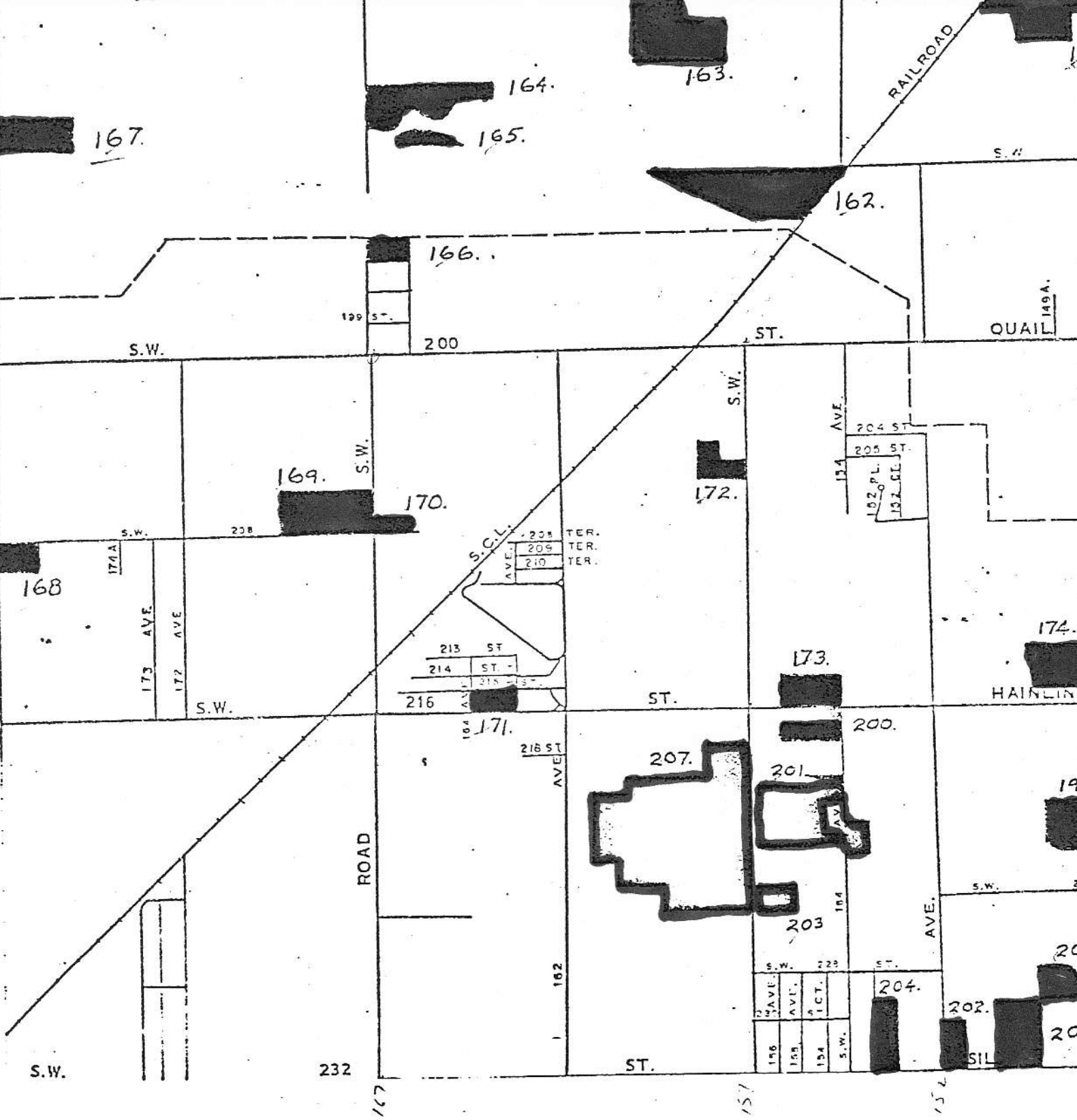


MAP 23

SECTION ~~22 23 24~~ TOWNSHIP 56 RANGE 38

~~27 26 25~~

~~34 35 36~~

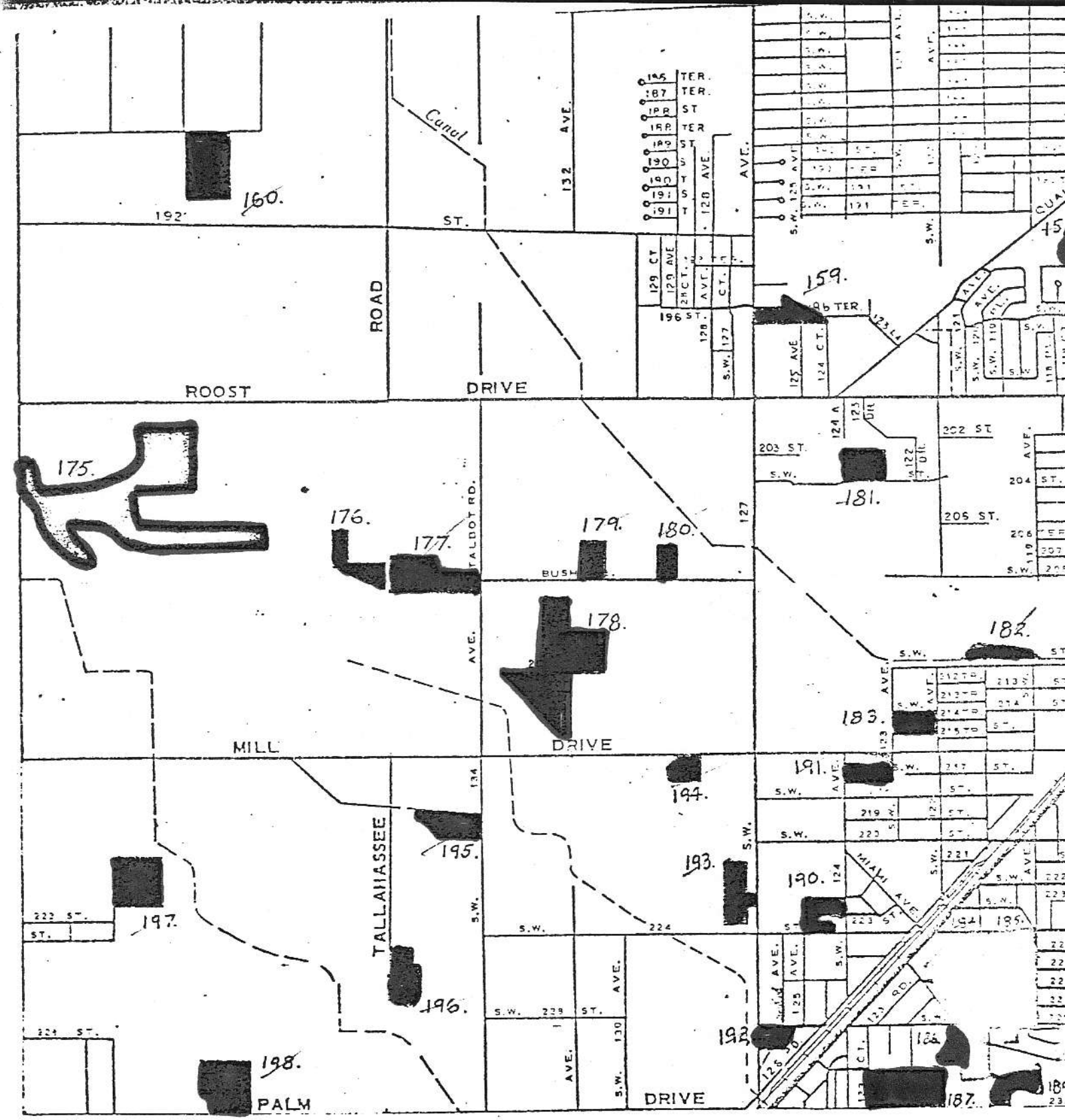


MAP 24

SECTION 6 5 4 TOWNSHIP 56 RANGE 39

7 8 9

18 17 16

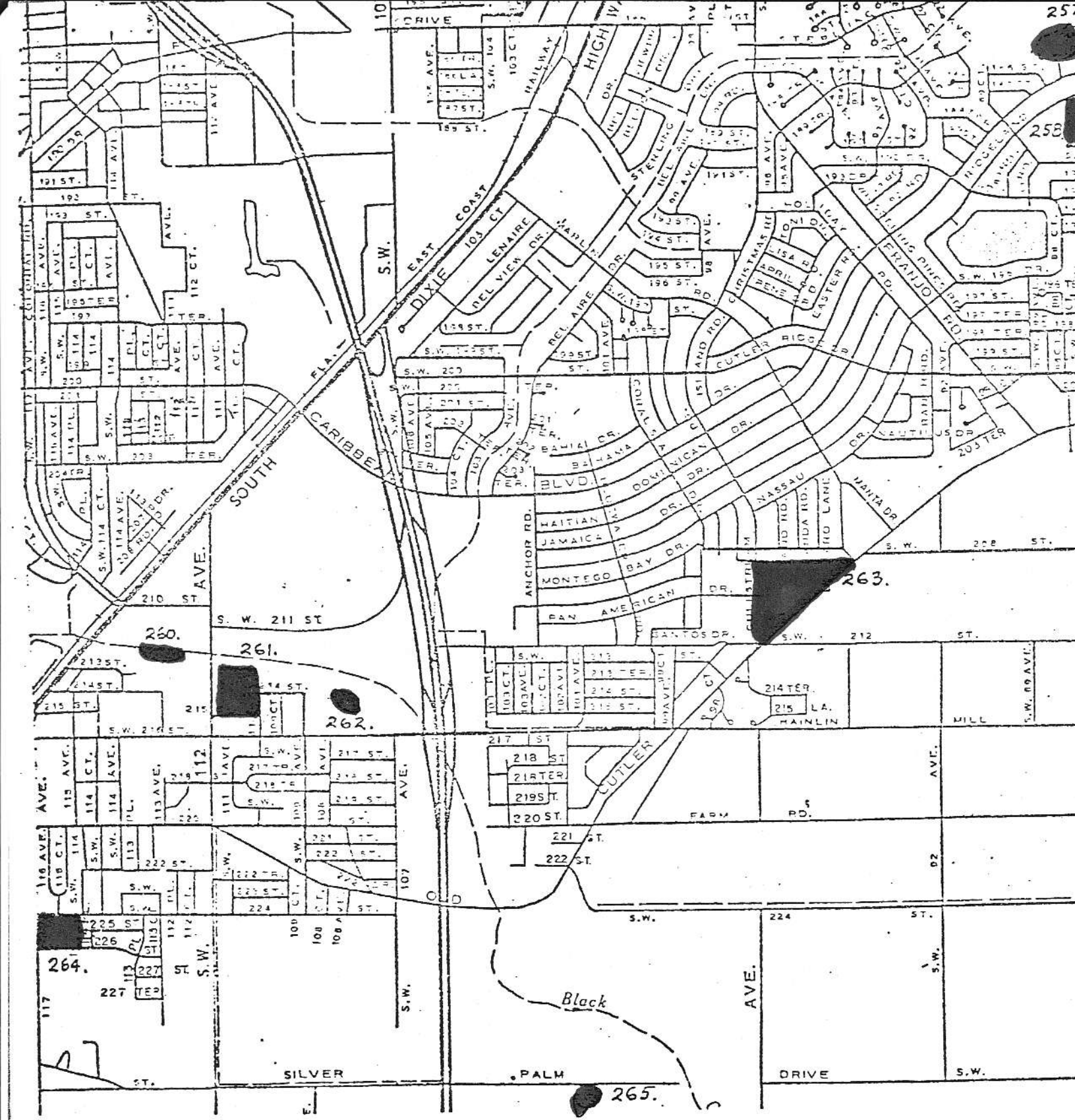


MAP 25

SECTION 3 2 1 TOWNSHIP 56 RANGE 39

10 11 12

15 14 13

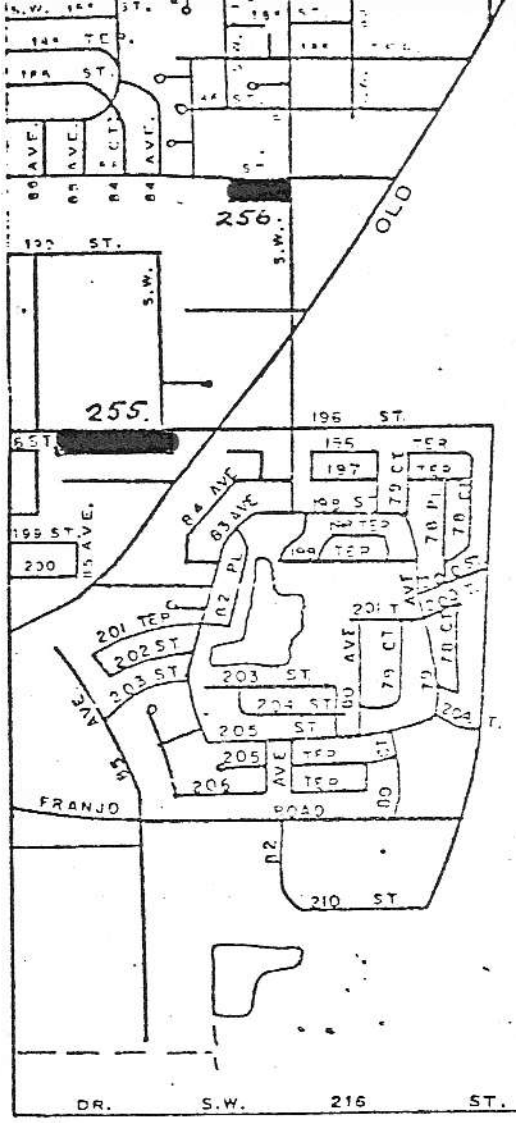


MAP 26

SECTION 6 5 4 TOWNSHIP 56 RANGE 40

7 8 9

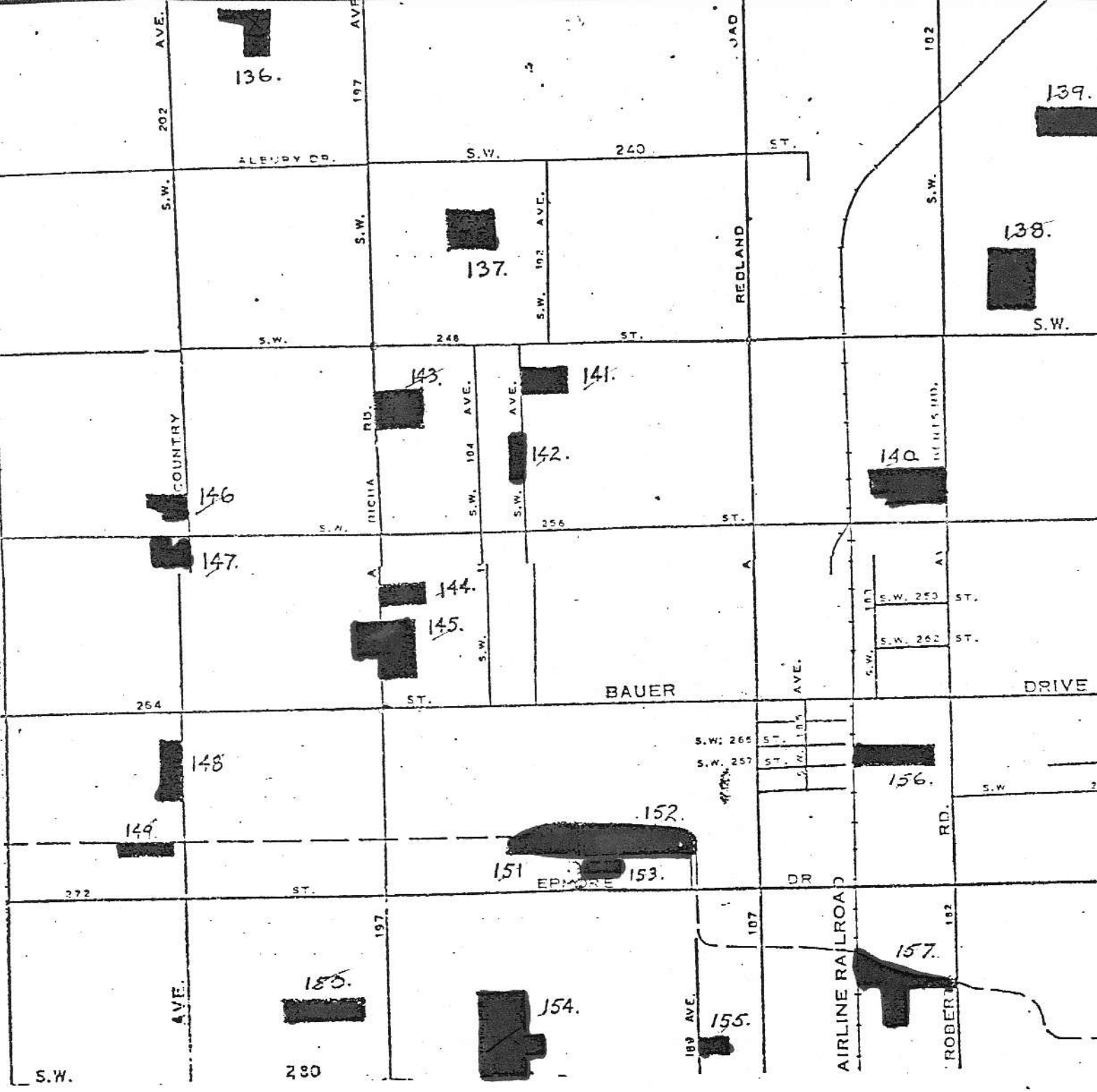
18 17 16



MAP 27

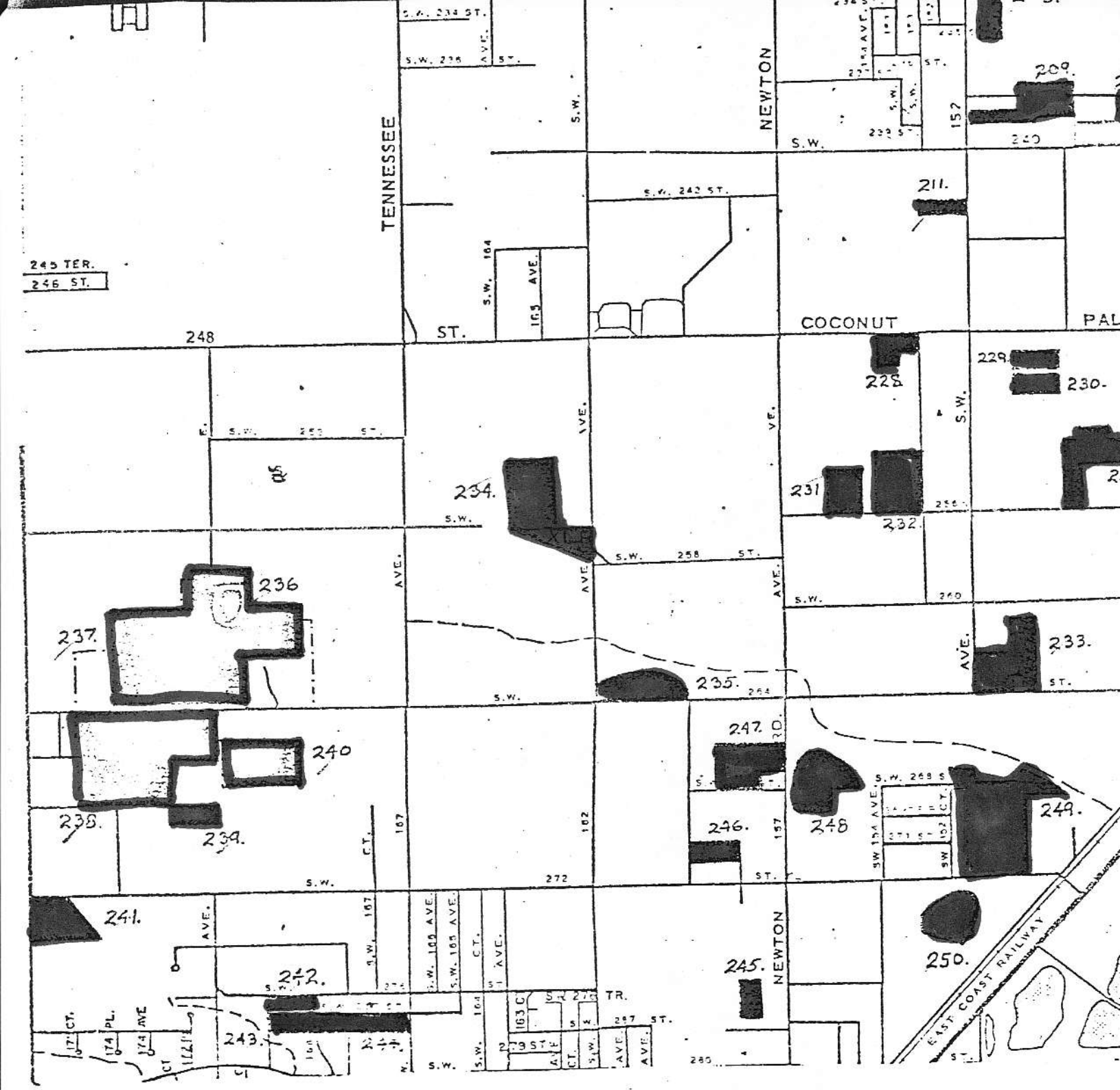
SECTION 3 TOWNSHIP 56 RANGE 40

10



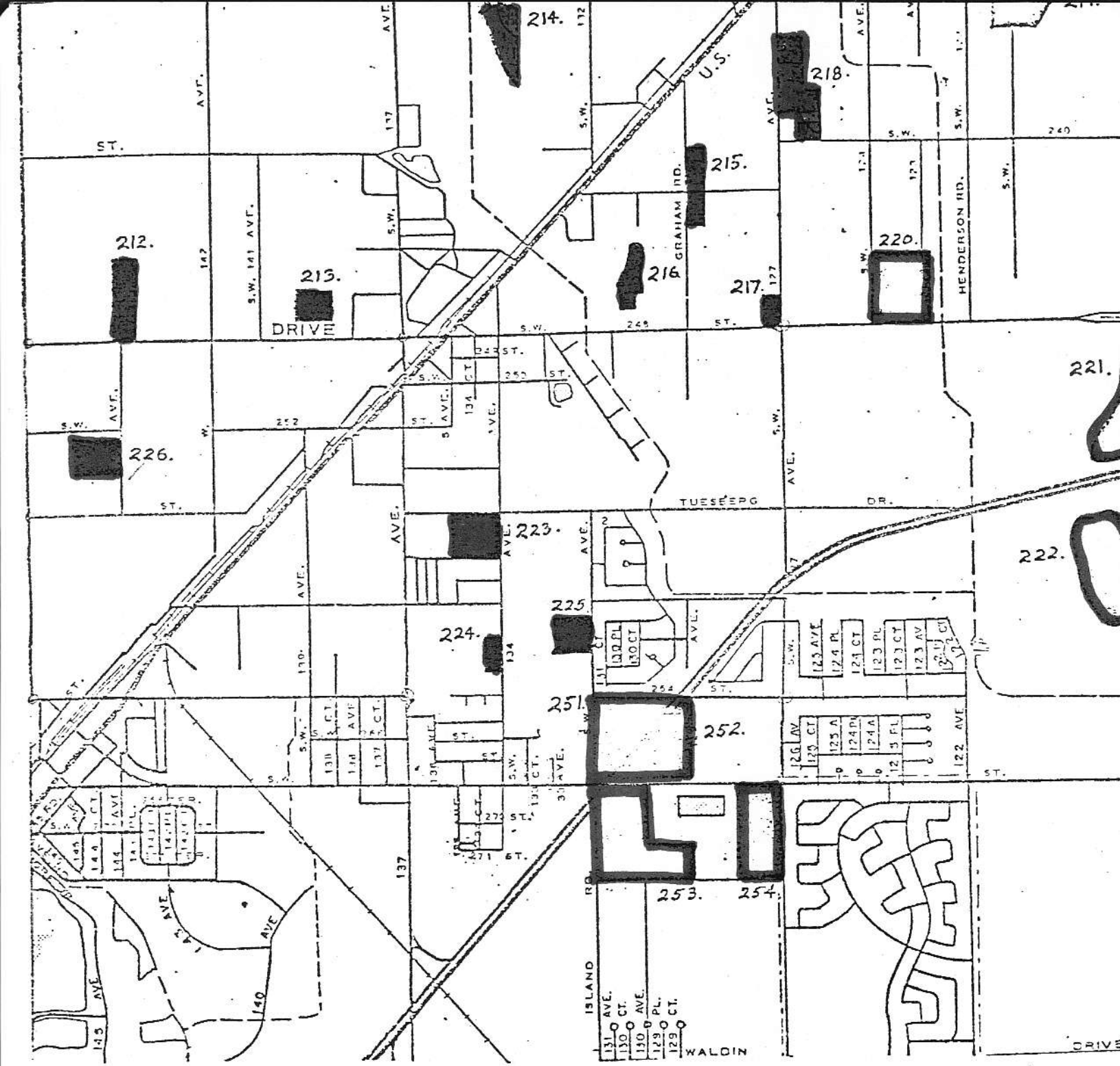
MAP 28

SECTION	22	23	24	TOWNSHIP 56	RANGE 38
	27	26	25		
	34	35	36		



MAP 29

SECTION	19	20	21	TOWNSHIP 56	RANGE 39
	30	29	28		
	31	32	33		

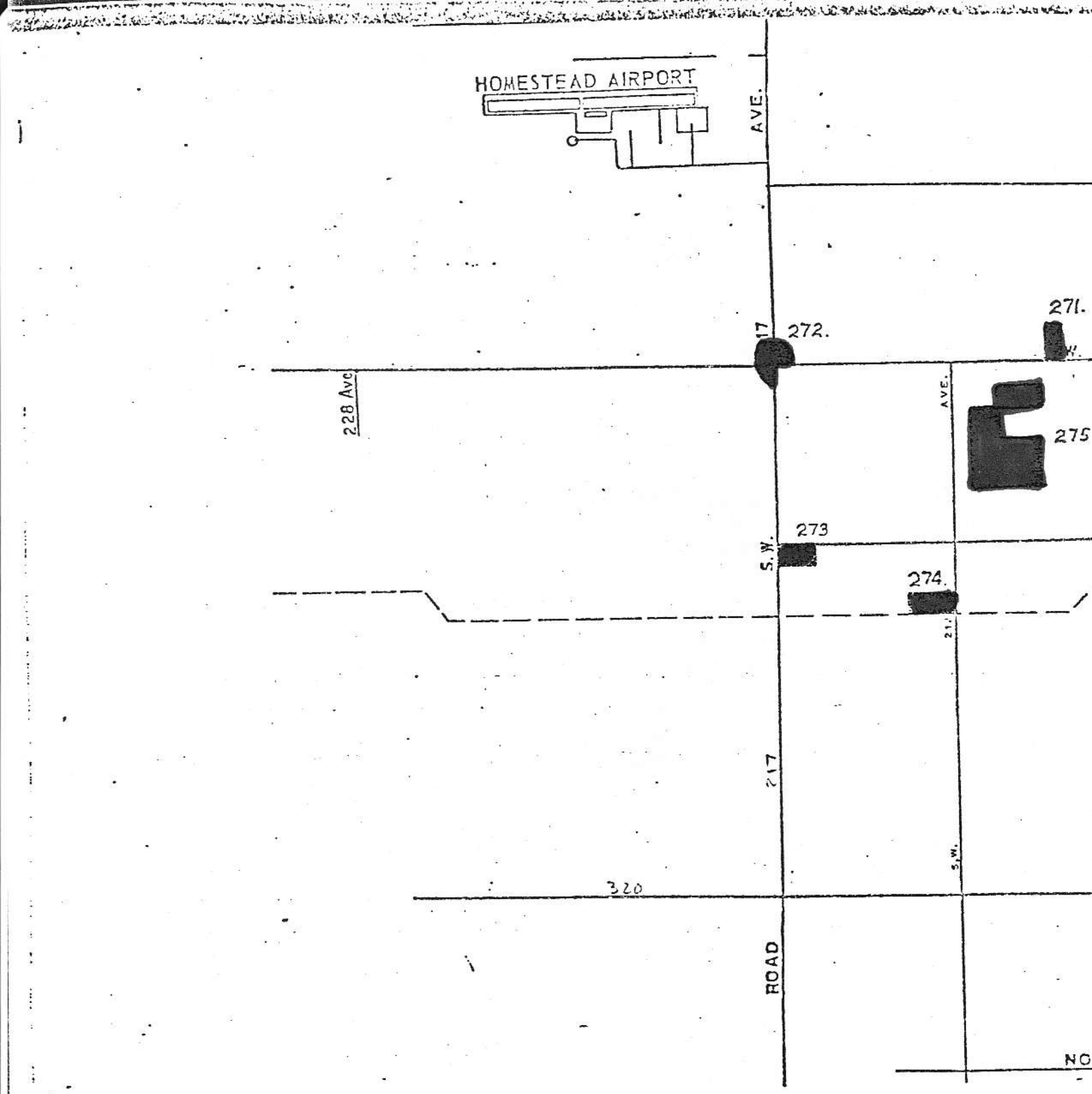


MAP 30

SECTION 22 23 24 TOWNSHIP 56 RANGE 39

27 26 25

34 35 36

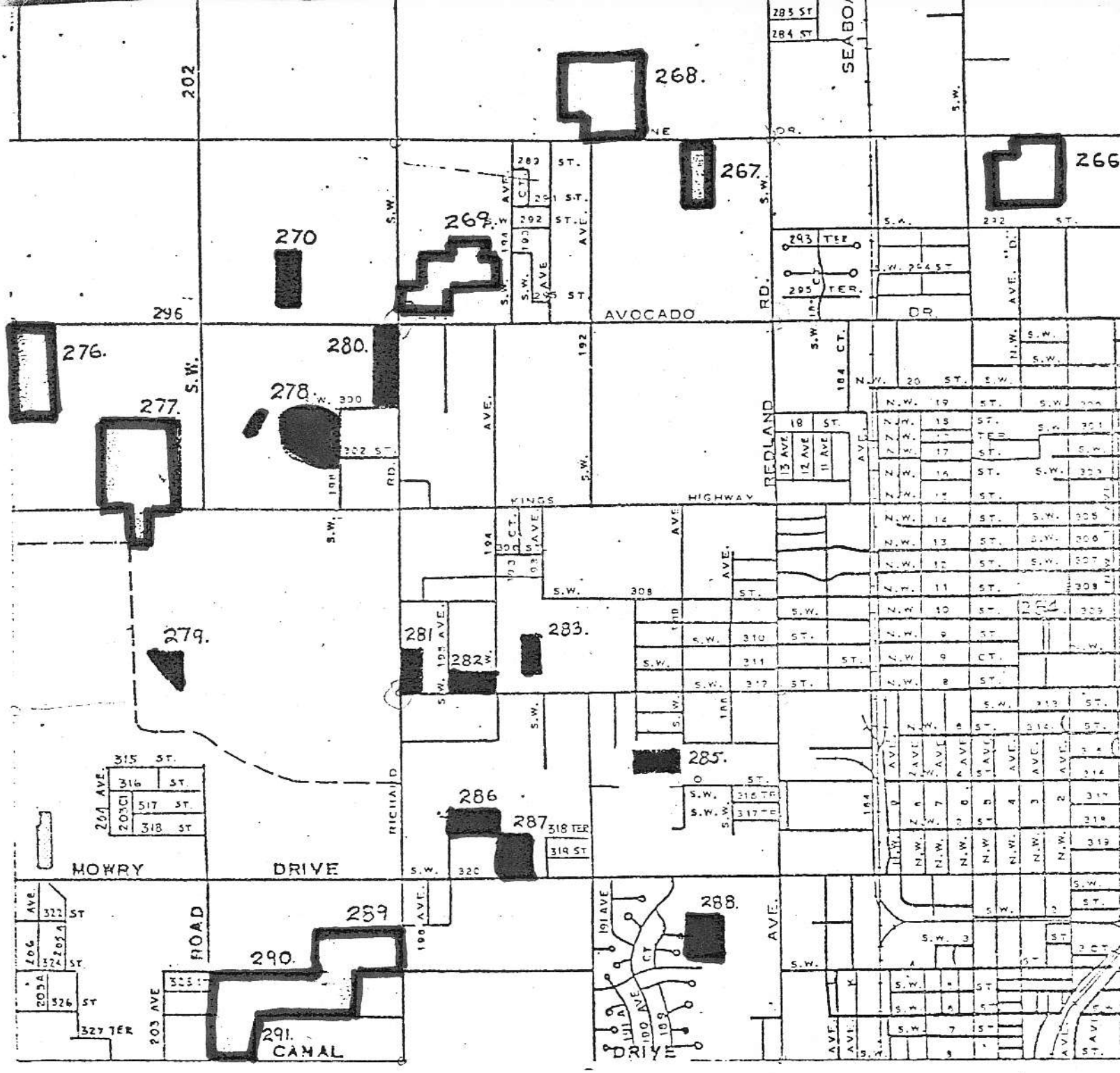


MAP 31

SECTION 5 4 TOWNSHIP 57 RANGE 38

8 9

17 16

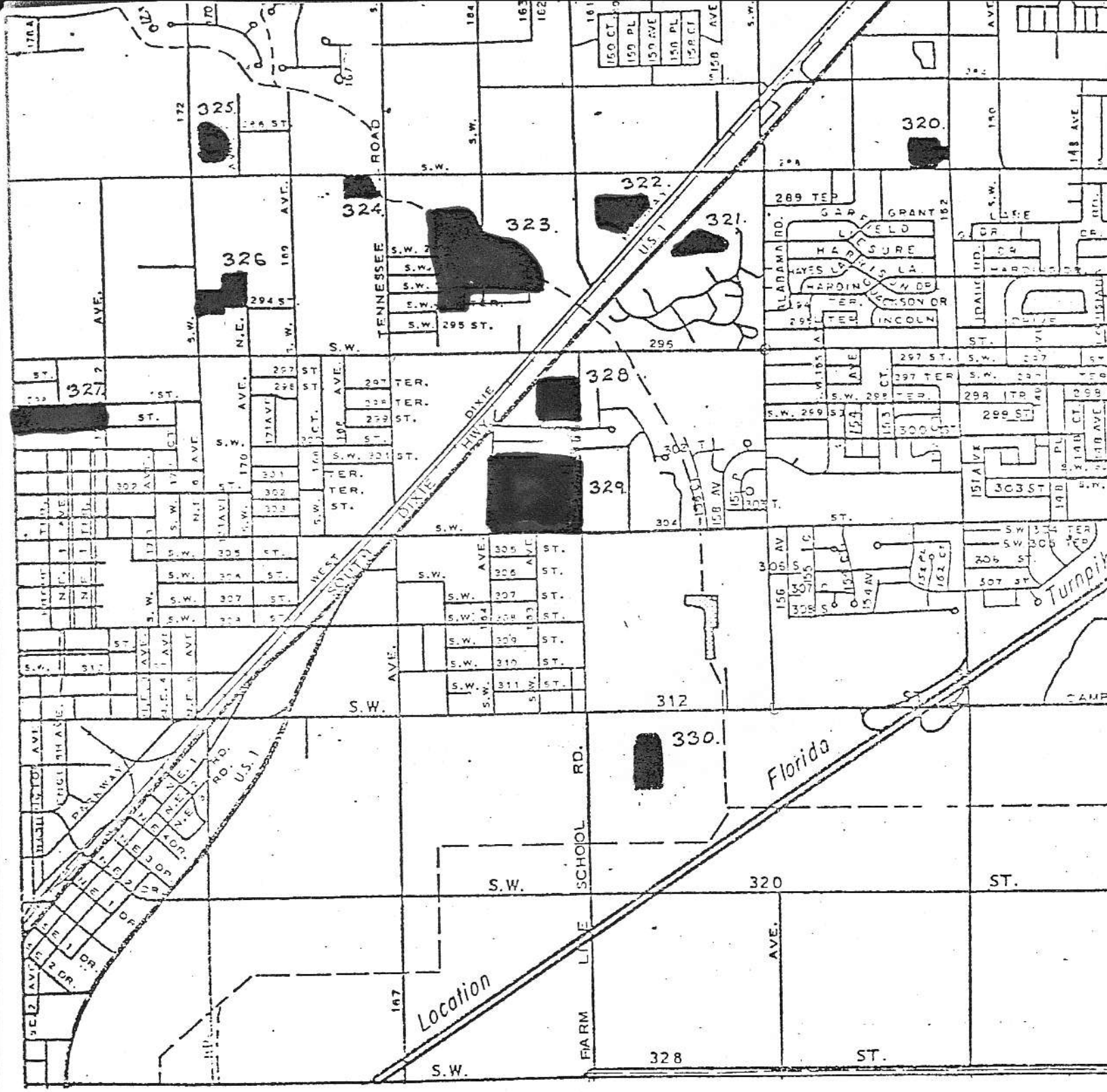


MAP 32

SECTION 3 2 1 TOWNSHIP 57 RANGE 38

10 11 12

15 14 13

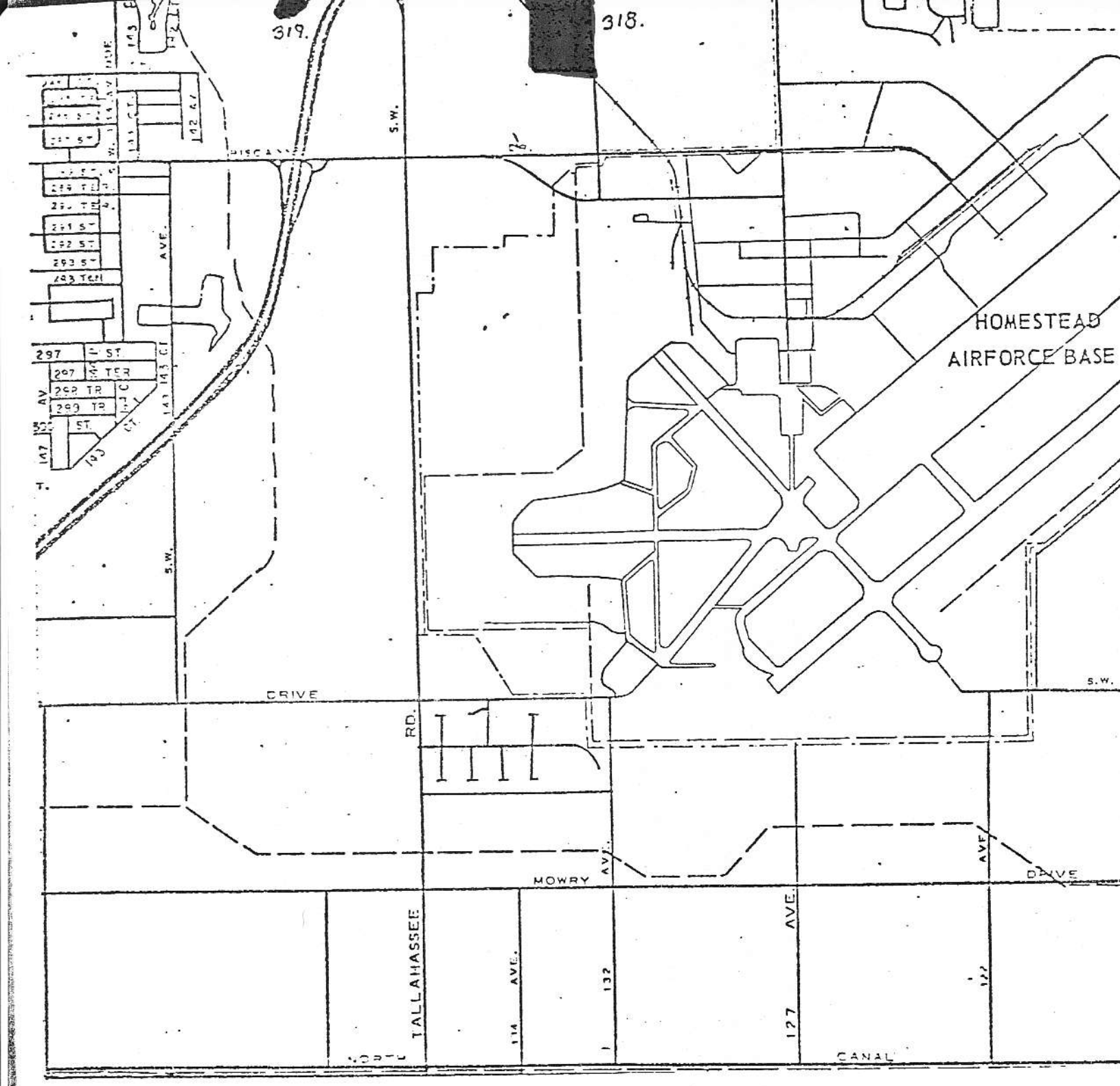


MAP 33

SECTION 6 5 4 TOWNSHIP 57 RANGE 39

7 8 9

18 17 16

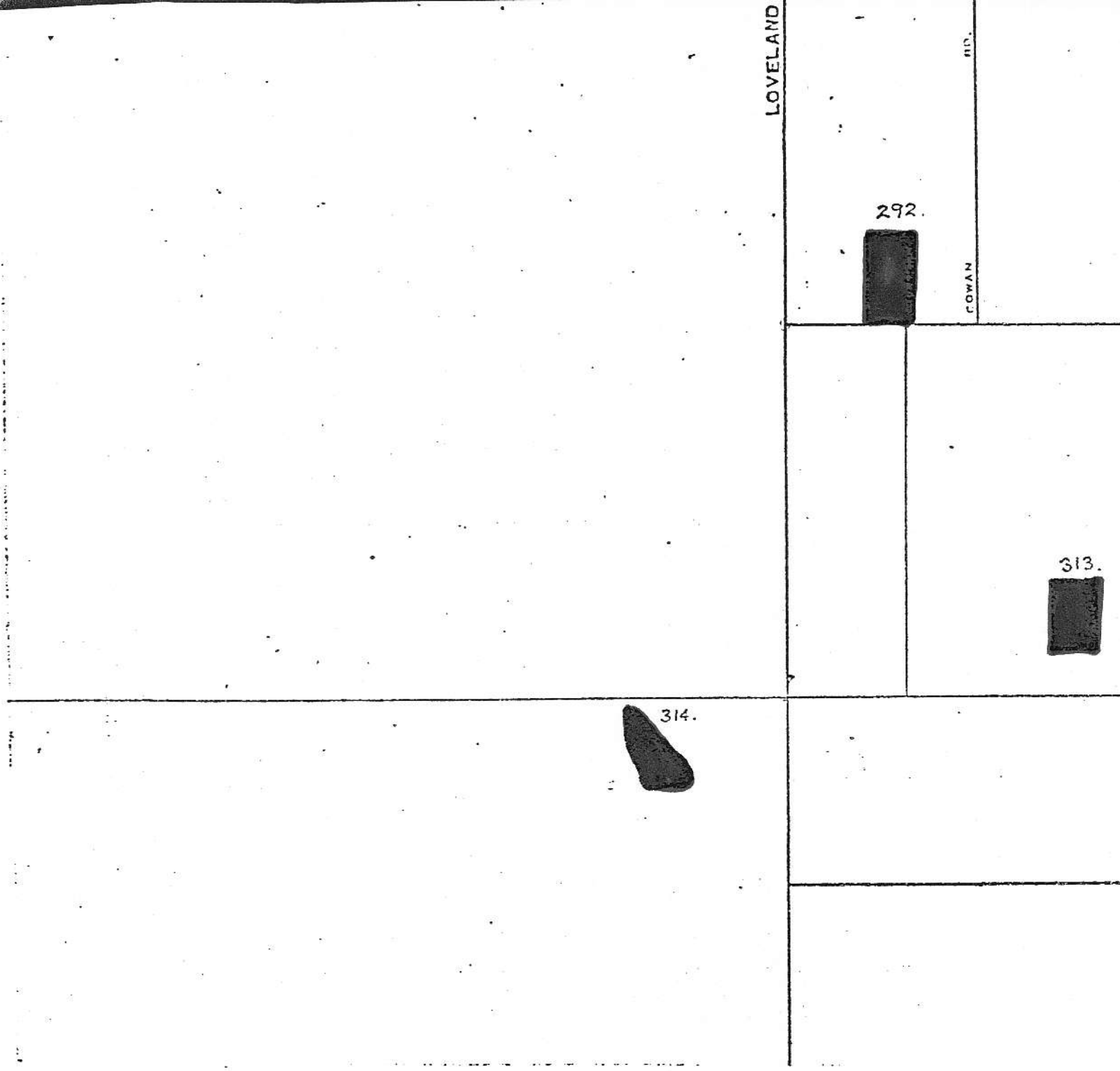


MAP 34

SECTION 3 2 1 TOWNSHIP 57 RANGE 39

10 11 12

15 14 13

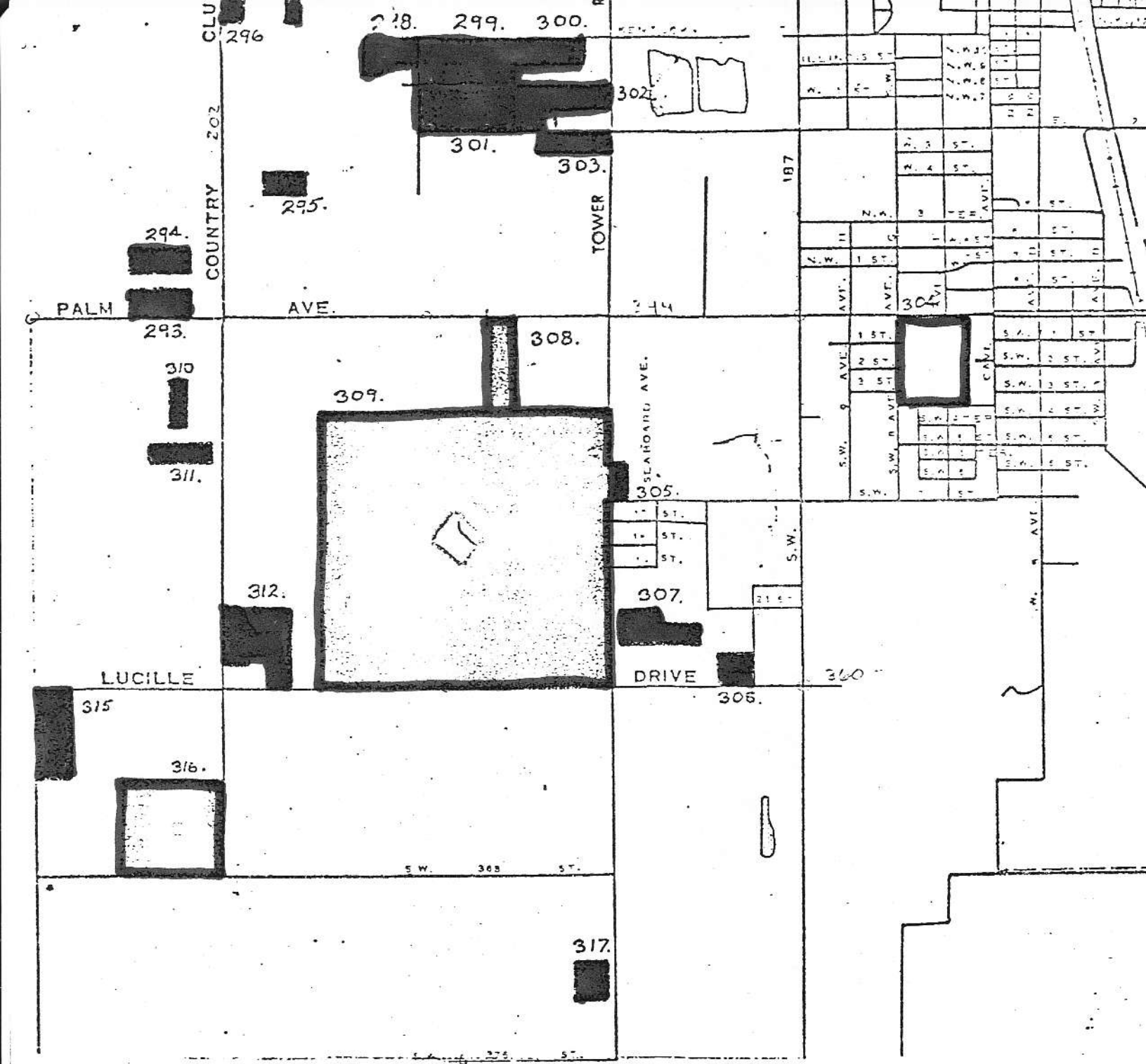


MAP 35

SECTION 20 21 TOWNSHIP 57 RANGE 38

29 28

32 33

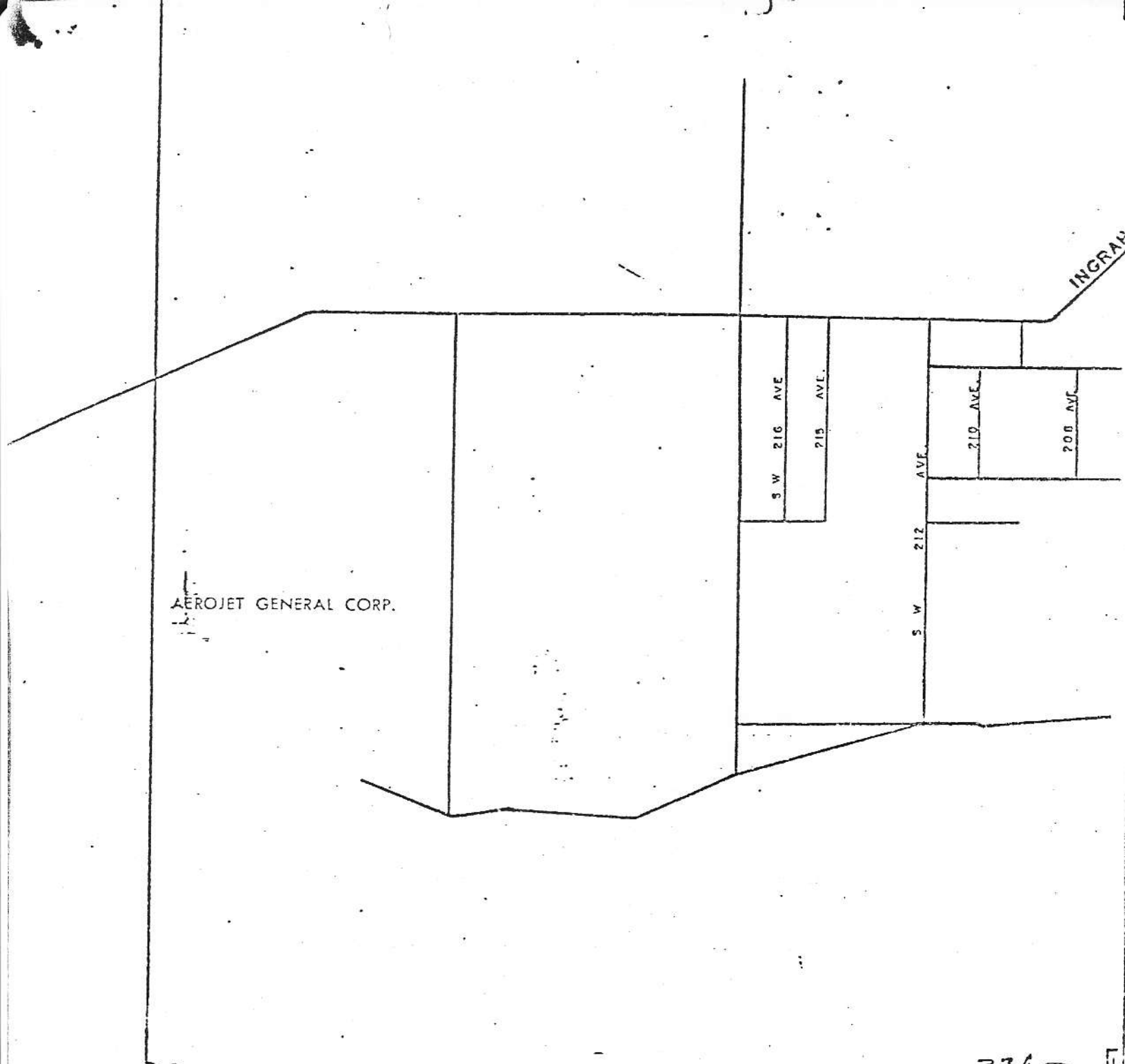


MAP 36

SECTION 22 23 24 TOWNSHIP 57 RANGE 38

27 26 25

34 35 36



336

335.

MAP 37

SECTION 6 5 4 TOWNSHIP 58 RANGE 38

7 8 9

18