

PLANTATION

DATA AND ANALYSES

DATA AND ANALYSES

May 25, 1989

**CHANGES TO PLANTATION
COMPREHENSIVE PLAN
In Response to State
Department of Community Affairs Objections**

(Headings and numbers correspond to those in DCA's April 15, 1989 list of objections)

FUTURE LAND USE

1. Existing Land Use map was prepared prior to transmittal; another copy is included.
2. Two wetland locations south of Broward Boulevard have been verified. A copy of the U.S. Department of Interior Wetlands map for the area north of the Boulevard is not available from County or State sources; it has been ordered from Washington but will not arrive until after the DCA due date. A Wetland map (Figure 1.5) will be added at that time.
3. See addition to Soils paragraph on page 1.10.
4. Since there is almost no vacant land in eastern Plantation, as noted on page 1.10, the vacant land analysis deals only with the western part of the City; see clarification on page 1.11.
5. See addition to Objective 1.1.
6. Clarification note added to Objective 1.3.
7. See new statement of non-applicability.
8. See addition to Policy 1.1.2.
9. See addition to Policy 1.3.1; Policy 1.3.2 also deals with this subject.
10. See addition to Policy 1.1.4.
11. Policy 1.6.2 specifically cites on-site traffic flow.
12. Policy 1.4.1 revised to clarify.
13. See clarification of soil/septic tank analysis on page 1.10.
14. The two identified wetlands will be included on a new map in the Future Land Use map series along with the data to be received from Washington.

TRAFFIC CIRCULATION

1. Figure 3.1 now shows the DOT Functional Classification as distinguished from City classification.

2. a. See new Tables 3.1 and 3.2.
b. See new Tables 3.4 and 3.5.
3. See revised Policy 1.1.3 and revisions to page 3.10.
4. Figure 7 redrafted to show FDOT functional classification plus City system of collectors.

PORTS, AVIATION AND RELATED

1. This Element has been added to Volumes I and II.

HOUSING

1. Table 5.12 revised to reflect realities of City housing market; see also clarification at bottom of page 5.19.
2. Paragraph on page 5.22 revised.
3. Paragraph on page 5.22 revised.
4. Paragraph added to page 5.22.
5. See addition for measurability, Objective 1.3.
6. See addition for measurability, Objective 1.2.
7. See revised Policy 1.5.2 and Objective 1.5.
8. See addition to Policy 1.2.1.
9. See addition to Policy 1.3.1.

INFRASTRUCTURE

Sanitary Sewers

1. See addition to second paragraph on page 6.5.
2. Same as above.
3. See addition to first paragraph on page 6.5.
4. Objective 1.1 is corrected.
5. Additions made to Volume II.
6. No. The following policies address priorities for sewage deficiencies and needs: 2.1.1, 2.1.2, 2.3.1 and 2.3.2.

Solid Waste

- 1-4. See new second paragraph on page 6.8 plus new table and Conclusion on page 6.9.
5. See correction.
6. See addition to Volume II.
7. See Policy 2.2.8 as revised; the City itself has no solid waste "facilities."

Drainage

1. See additions to last paragraph on page 6.10 and next to last paragraph on 6.11.
- 2-4. See new second paragraph on 6.10.
- 5-6. These are not applicable in Plantation as explained in the third sentence on page 6.10.
7. Corrected.
8. See additions to Volume II.
9. No. Policies 2.1.8 and 2.1.9 are the City's priorities for deficiencies/needs.
10. See clarification in top paragraph, page 6.10.

Potable Water

1. Corrected.
2. No. See policies 2.1.3-2.1.6 and 2.2.1-2.2.5 which reflect priorities for deficiencies/needs.

Aquifer Recharge

1. There are no natural drainage features i.e. not applicable; see additional paragraph (4th) on page 6.16 relative to public wellfields.
2. See new Goal 3.
3. See addition to Objective 3.1.
4. See new Policy 3.1.2.

CONSERVATION

1. See addition to second paragraph on page 7.2 and last paragraph on page 7.5.
2. See addition to Wildlife section on page 7.11.

3. See explanation on bottom of page 7.13.
4. See additions to Objective 1.3; 0 percent loss is specific, measurable and intermediate.
5. See #4 above.
6. See Policies 1.3.1 and 1.3.2 (with addition) as well as 1.3.3.
7. See additions to Policies 1.3.5 and 1.3.6.
8. New Policy 1.3.7 addresses soils, Policies 1.3.1-1.3.6 all address wildlife habitats, Policies 1.3.3 and 1.3.6 address ponds/lakes, and Policy 1.3.2 wetlands. Policy 1.4.1 addresses floodplains although almost the entire City is in the floodplain.
9. See non-applicability statement in Note.
10. See addition to Policy 1.3.2.
11. See addition to Policy 1.2.6.

RECREATION

1. See addition to Objective 1.6.
2. No. Objective 1.2 specifically mentions public and private recreation facilities.
3. Policy 1.4.4 revised.

INTERGOVERNMENTAL COORDINATION

1. No. See Policy 1.1.1.
2. Same as #1 above.
3. See new Policy 1.2.3.

CAPITAL IMPROVEMENTS

1. See addition at bottom of page 10.7.
2. No. The costs are included on pages 10.3 and 10.4 as noted on page 10.7, second section.
3. No. The four points in the second section on page 10.7 outline "the use of timing and location" to support the future land use element. FDOT is mentioned.
4. No. See Objective 1.4.

5. (a) See 1.1.3 b as revised.
(b) See new 1.1.3 d.
(c) See new 1.1.3 c.
(d) See new 1.1.3 c and original f.
(e) See new 1.1.3 d.
(f) See 1.1.3 f.
6. No, it has been "included"; see Policy 1.1.2.
7. See changes to Volume II.
8. No, it is "included"; see Policy 1.4.3.
9. See new Policy 1.3.4.
10. See Policy 1.1.4 (with revision) in tandem with 1.1.3 as revised.
11. This has been corrected.

STATE COMPREHENSIVE PLAN

1. See additions to matrix on Page 11.2 that reflect the 9 items cited in the objection.

REGIONAL POLICY PLAN

1. a. See revised LOS.
b. Numerous policies have 1990 implementation dates.
c. Policy 1.3.1 revised and strengthened.

CORRECTION SHEET

Element	Page	Change
Future Land Use	2	Delete Objective 1.5. Should be listed as a note on page 11 of the element.
Future Land Use	4	Replace policy 1.7.7 with the following and renumber existing 1.7.7 to 1.7.8. Establish a reserve unit pool, consisting of 2% of the total number of dwelling units permitted within a flexibility zone by the Broward County Land Use Plan Map, as a means to increase residential density where desirable and subject to the provisions of the Implementation Requirements section.
Future Land Use	12	In the last paragraph replace "Washington" with "The Department of The Interior".
Future Land Use	13	Add Implementation Regulations section from Volume II. The section name should be changed to "Implementation Requirements".
Neighborhood Design Element	21	Policy 1.1.3 delete "and rigorously use".
Recreation and Open Space	47	Policy 1.2.3 delete "through data provided in the".
Recreation and Open Space	49	Objective 1.6 add "and recreation sites" after "public water bodies".

COMPREHENSIVE PLAN
City of Plantation, Florida

Volume II
INVENTORY AND ANALYSIS

May 25, 1989

COMPREHENSIVE PLAN

City of Plantation, Florida

Volume II INVENTORY AND ANALYSIS

May 25, 1989

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INTRODUCTION

This 1989 Comprehensive Plan for Plantation constitutes an update of the 1981 Plan. The 1990 plan is prepared to conform with the new State statute and administrative code (9J-5) requirements.

This Comprehensive Plan has been prepared in two volumes. Volume I constitutes the goals, objectives, policies and maps which the City Council must adopt by ordinance in a two step process during late 1988 and early 1989. Volume II provides the data inventory and analysis that formed the basis for the plan.

The Broward County Planning Council, the South Florida Regional Planning Council and the Florida Department of Community Affairs will all play a major role in reviewing this Plan.

After Plan adoption, the next phases in the process mandated by Florida's Growth Management Act will be 1) a review and revision of the Land Development Code during 1989 and 2) the initiation of a formal five-year capital improvement programming process beginning during 1989-1990 budget preparation.

In addition to the development code and capital program requirements, the principal change from the prior plan is the new State mandate for measurable objectives and very specific implementation policies.

FUTURE LAND USE

**Existing Land Use
Population Projections
Analysis**

EXISTING LAND USE

Figure 1.1 shows the pattern of existing land use and Table 1.1 shows the acreage figures. As noted thereon, there are no "conservation" uses. "Public buildings and grounds" are shown as "community facilities" to distinguish them from churches (which are marked CH on the map) and utilities (U).

There are no beaches, wetlands, historic resources or mineral extraction sites. No areas of critical State concern are within Plantation. Figure 1.2 shows floodplains. A wetlands map will be added when the balance of the data is received from Washington.

The existing land use of land in adjacent cities is also shown on the Existing Land Use Map.

Table 1.1
Existing Land Use 1987
City of Plantation

	Sub-Totals In Acres	Gross Acres	Percent- All Land	Percent- Dev. Land
Residential (1)		6,789	49.8%	68.2%
Single Family	5,156		37.8	51.8
Multifamily	1,633		12.0	16.4
Commercial		1,072	7.9	10.8
Retail Sales/Service	629		4.6	6.3
Heavy	443		3.3	4.5
Industrial		190	1.4	1.9
Recreational		1,336	9.8	13.4
Private	977		7.2	10.0
Public	359		2.6	3.4
Public Buildings & Grounds		563	4.1	5.7
Utilities	92		0.7	1.1
Other Community Facilities	471		3.4	4.6
Total Developed		9,951		100.0
Agricultural		1,007	7.4	
Vacant		2,688	19.6	
Total Land		13,646	100.0	

(1) Single-family or low residential densities range up to 5.8 units per acre and multifamily or medium and high up to 50. A breakdown of acreage for each density category is also available.

Source: City of Plantation Planning Department field survey, 1987.

POPULATION PROJECTIONS

Background

This Plan is based in large part on projections of the future population of the City. As width, length and height are the scales of architecture, population is the scale for community planning.

There are many different methodologies for projections, each based on differing assumptions. The 1981 Plan used a direct ratio to Broward County population. The resulting 53,980 projected for 1980 was only 11 percent short of the 48,501 population counted in the United States Census. The same method based on 1980 U.S. Census data (which was not available in 1981) produces the projection of population shown in Table 1.2.

Table 1.2
City Population Increase as Constant Percentage
of County Population Increase

Year	Broward County Population	City of Plantation Population⁽¹⁾	Increase
1970	620,100	23,523	--
1980	1,018,257	48,523	24,978
1985	1,156,353	57,132	8,631
1990	1,281,555	64,957	7,825
1995	1,387,266	71,564	6,607
2000	1,475,248	77,062	5,499
2005	1,546,745	81,530	4,469
2010	1,606,013	85,234	3,704
2015	1,656,706	88,402	3,168
2020	1,699,564	91,080	2,679

(1) Not official City projection; see Table 1.6.

Note: City population increase is a constant .0625 percent of County population as projected.

Sources: 1970 and 1980 U.S. Census of Population - County and City Totals.
"Broward County Population 1980 through 2020 by Age, Race and Sex," Broward
County Office of Planning, June 1987.

Methods such as direct ratio or ratio and apportionment do not always accurately gauge the growth of the community. Growth in the County in the eight years since the 1980 U.S. Census probably has been greater than any prior period. But growth rates among the 28 cities and unincorporated County area have varied widely. Hence this method is not recommended.

Methodology For Official Projection; Extrapolation

Given an "ultimate" buildout population adjusted for normal vacancy rates, the rate of growth toward that buildout can be calibrated based on variable (high, medium, low) rates of development as determined by building permit activity over the past nine years, corroborated by residential utility connections. Land use requirements as well as facility requirements can be based on population increments (e.g. acres per 1,000 population or units). Overall forecasts can be adjusted annually based on trends visible in current growth rates.

The extrapolation methodology used is as follows:

1. All residential areas shown on the Land Use Plan shown as *Gross Plan Area* were multiplied times the maximum density of units per acre indicated to produce "Ultimate Buildout Dwelling Units."
2. "Ultimate" buildout dwelling units were multiplied times assumed persons per dwelling unit in various density classes used in the Broward County Land Use Plan and Land Development Code to produce an "Ultimate Buildout Population" of 137,205, coincidentally almost the same as the "optimum" buildout population of the 1981 Plan.

This high projection for buildout assumes that the maximum gross densities shown on the plan will be transferred to the net acre (i.e. less major rights-of-way, canals, lakes) of plats and site plans. This is, in fact, not the case in Plantation. The actual maximum number of units which may be permitted under Plantation zoning is derived from net acres multiplied times the indicated maximum "gross" density of the zoning ordinance which is the same as or less than that shown on the Land Use Plan Map. In view of this, in the next step:

3. Gross acres in the plan were converted to "Net Plan Acres" through a detailed measurement of sample areas in various parts of the City and in all density classes.
4. "Net Plan Acres" were multiplied times the maximum allowable dwelling units per acre shown on the plan to derive "Practical Buildout Dwelling Units."
5. "Practical Buildout Dwelling Units" were multiplied times estimated persons per dwelling unit by density class as indicated in 2. above to produce the "Practical Buildout Population" of 98,800.

The next step was to determine projected population for the two planning target years, 1993 and 2010. To do this, two sets of symptomatic data were used: residential building permit activity since April 1978; and, water utility connections since 1985 when the City acquired Gulfstream Utilities.

6. Residential building permits issued for single-family and multifamily units for each year by Flexibility Zone were tabulated for the City as a whole. The total of these units added to existing units of April 1, 1978 resulted in a total number of dwelling units as of April 1, 1987 of 23,807: this times the 1980 Census of Housing average persons per dwelling unit of 2.71 resulted in an estimated total population of 64,517 on April 1, 1987.

The current estimated full-time resident population (April 1987) is approximately 60,095 according to the Bureau of Business and Economic Research.

7. The average residential permit activity during the last 3 years was approximately 1,300 units per year. This was used as the high forecast. The average residential permit activity from April 1, 1978 to April 1, 1987 was approximately 950 units per year. This figure (including the low years of 1982, 1983 and 1984) is the medium forecast and assumed to be the most likely over a similar 10-year period.

The low forecast assumes a fall-off in building activity similar to the 1982-1984 period when the average number of residential permits per year was approximately 330.

Projected Permanent Population

Future housing unit projections for the City of Plantation based on the above methodology results in permanent or year-round housing unit totals as shown in Table 1.3 i.e. does not include the seasonal population.

Table 1.3
Permanent Housing Unit Projection

Year	High	Medium	Low
1993	31,607	<u>29,507</u>	<u>25,787</u>
2010	41,380 (1)	<u>41,380</u> (1)	<u>31,397</u>

(1) Buildout

Source: City of Plantation Planning Department, 1987.

Unless plan densities are radically increased over the years, or the low development rate prevails, the practical buildout population will be reached before 2010.

Based on the foregoing rates, buildout will be achieved by 2000 at the high rate, by 2010 at the medium rate, and only at 2040 if the low rate prevails.

The population projected for 1993 and 2010 is based on the foregoing dwelling unit projection rates and 2.38 persons/dwelling unit, the assumed City average. The permanent population is projected to be the following:

Table 1.4
Permanent Population Projection

Year	High	Medium	Low
1993	75,225	<u>70,227</u>	<u>61,373</u>
2010	98,484 ⁽¹⁾	<u>98,484⁽¹⁾</u>	<u>74,724</u>

(1) Buildout

Source: City of Plantation Planning Department, 1987.

Methodology for Estimation of Seasonal Population 1988

The seasonal population is comprised largely of persons who reside in the City for a maximum period of six months annually. They occupy housing which is described as "transient." Transient dwelling units include: hotel and motel rooms, rooming houses, transient apartments, some mobile homes, and seasonal and occasional units. The number of hotel and motel units, rooming houses and transient apartments was obtained through an inventory of the Master File Statistics of the Florida Department of Business Regulation. It was assumed that the occupancy rate of each hotel/motel room was 1.5 persons per unit. This was based on the conclusion that business travelers and families each occupied 50 percent of the available City-wide hotel units. The number of mobile homes, and seasonal and occasional units were reported in the 1980 United States Census of Population and Housing.

It was assumed that one quarter of all mobile homes in the City were inhabited by seasonal residents who occupied homes elsewhere for most of the year. An occupancy rate of 1.5 persons per unit was allocated to mobile home and seasonal units based on the demographic makeup of their occupants i.e. residents of mobile homes and seasonal units are most likely to be retirement age persons. One person households are prevalent among this group. Day trip estimates were based on a ratio of 1 visitor per 1,000 feet of commercial space at any given daytime hour.

Table 1.5
Seasonal Population Estimate
City of Plantation, 1988

Type	Seasonal Population	Reported Units	Persons Per Unit	Percent Seasonal
Transient Lodging Units				
Hotels and Motels	690	460	1.5	100.0
Rooming Houses and Transient Apartments	258	215	1.2	100.0
Mobile Homes	173	460	1.5	25.0
R.V. Parks and Campgrounds	0	0	--	--
Seasonal and Occasional Units	657	346	1.9	100.0
Day Trips and Visits	3,278 1,500			
Estimated Peak Seasonal Population	3,278			

Sources: Florida Department of Business Regulation, Division of Hotels and
 Restaurants, "Master File Statistics," April 1987.
 U.S. Department of Commerce, Bureau of the Census, Census of Housing,
 "General Housing Characteristics," Table H-1, 1980.
 Robert K. Swarthout, Incorporated, 1988.

Table 1.6
Total Population 1988, 1993 and 2010
City of Plantation

Type	1988	1993	2010
Permanent Population	60,095	70,227	98,484
Seasonal Population	3,278	3,831	5,372
Total	63,373	74,058	103,856

Sources: University of Florida Bureau of Economic and Business Research.
Florida Department of Business Regulation, Division of Hotels and
Restaurants "Master File Statistics, 1987."
United States Census Bureau Census of Population and Housing, "General
Housing Characteristics," Table H-1, 1980.
City of Plantation Planning Department
Robert K. Swarthout, Incorporated.

Methodology Notes:

Middle Range Population was selected to be used as a basis for the
Comprehensive Plan.

Seasonal Population was projected as a constant 5.4 percent of the permanent
population.

The 2010 figure is a buildout population.

ANALYSIS

Availability of Facilities and Services

Traffic: The traffic circulation analysis revealed a number of streets now functioning at Level of Service "E" or "F." Fortunately, some of these are programmed for near term improvement (e.g. Pine Island Road) or are now under construction (Broward Boulevard west of University Drive). Others such as Sunrise Boulevard between the Turnpike and State Road 7 are not programmed or funded. The Traffic Circulation Element recommends 16 specific improvement projects to deal with existing and projected problems.

Sanitary Sewer: The present treatment plant is only a year old and its 10,000,000 gallon per day capacity can adequately serve the existing development pattern. The collection lines and pump stations are adequate.

Solid Waste: Disposal is handled at the County level with a private hauler under contract to provide collection service within the City. This service is now adequately meeting the existing land uses.

Drainage: The principal problem here is in Plantation Acres where the lack of north-south secondary canals causes localized flooding after heavy rains. A current east-west canal dredging project in this western part of the City will help solve other flooding problems. Otherwise, the City's drainage system is functioning well.

Potable Water: This is another infrastructure system which requires some improvements to adequately meet the existing development pattern. There are four kinds of problems:

1. quality: the current treatment process at the East and Central plants does not meet the 1986 Safe Drinking Water Standards; the East plant treatment will be modified and the Central plant will be replaced with a new facility by 1991.
2. distribution lines: galvanized iron pipes are gradually being replaced with PVC and dead-ends in the western district are being eliminated.
3. pressure: the new Central plant will result in higher pressure for the downtown and the Western district residential areas, both problems now.
4. wells: some western housing is still on wells; gradually developer extensions are getting lines into this area.

Quantity is not a problem now and will be increased to meet the needs of the growing western part of the City.

Aquifer Recharge: There are no significant problems with the aquifer in Plantation. Various water bodies supplement the vast Conservation Area (to the west of the City) in recharging the aquifer. Various County and City regulations protect the immediate wellfield areas.

Vacant Land Analysis

Amount: Some 3,700 acres of land is either vacant or in interim agricultural use pending development. Virtually all of it is located to the west of Pine Island Road. See Existing Land Use Map.

Soils: Most of the vacant land has fine sand soil types; Hallandale, Margate or Pompano are the principal varieties. See Figure 1.4. These soils are acceptable for construction and but not septic tanks; no new development will be allowed to use septic tanks except on an interim basis where sewer extension is now infeasible. Even in these cases, rigorous County standards must be met including replacement of the problem soil with more permeable soil.

Topography: The level terrain of Western Plantation is indicated by the fact that the elevation above sea level varies from six to nine feet.

Natural Resources: As outlined in the Conservation Element, there are no natural features of major significance in the western half of Plantation. However, there are some naturally wooded areas in Plantation Acres that are worthy of preservation as part of the large-lot residential development occurring there.

Historic Resources: There are none in western Plantation where the vacant land is located.

Land Needed to Accommodate Projected Population

As outlined earlier in this Element, the projected 2010 population for the City is based upon the Land Use Plan capacity i.e. a build-out population. The methodology used to make this projection is contained in the population section.

Table 1.7
Dwelling Unit and Population Capacity
By Residential Density Category
City of Plantation

Residential Density Category In Units Per Acre	Gross Vacant Acres, 1987	Total Acres on Land Use Plan i.e. Buildout Acreage	Number of Dwelling Units at Buildout	Population At Buildout
Single Family:				
1	818	1,753	1,626	4,878
3	398	3,727	8,867	26,601
5	122	1,618	3,471	10,333
5.8	6	7	32	96
Multiple Family:				
9		23	180	450
10	206	861	6,334	15,836
11.5	25	49	490	1,225
15	202	369	4,747	9,494
16	118	819	7,864	15,728
17.3		34	529	1,058
18		11	175	350
20	18	18	312	562
25	97	369	6,753	12,155
Total	2,010	9,658	41,380	98,766

Source: City of Plantation Planning Department, 1987.

Table 1.7 shows the various residential density categories together with vacant land and ultimate buildout capacity in housing units and population; this data is also available broken down by Flexibility Zone.

The significant conclusion from this analysis is that there is vacant residentially designated land in a variety of density categories, both single family and multifamily. This is analyzed in more detail in the Housing Element.

Redevelopment

As indicated in the neighborhood analysis section of the Housing Element, there are no areas of the City in need of traditional public or private redevelopment nor are there blatant cases of incompatible land use relationships. Instead, there are two primary examples of needed minor improvements; both in Flexibility Zone (FZ) 73 to the east of the Turnpike.

1. **Housing Conditions:** some concentrated code enforcement and related neighborhood "confidence building" efforts are needed to arrest deteriorated housing conditions and related poor care of premises.
2. **State Road 7 Corridor:** The Gateway 7 Safe Neighborhoods Plan in combination of the new zoning overlay district can improve the inter-relationship of the commercial, medical, apartment and single-family uses in the corridor. Again, the incompatibility problems are not serious but will benefit from the revitalization expected to result from the Gateway 7 District improvement plan.

To a lesser extent, a portion of the industrial area at the bend in Sunrise Boulevard would benefit from private redevelopment activities.

Flood Prone Areas

As shown on Figure 1.3, virtually all of the City is within the 100-year flood plain. This underscores the importance of enforcing the flood plain provisions of Chapter 3 of the City Code, and related FEMA regulations and Regional Planning Council policies.

Land Use Plan Changes: Commercial

This includes areas designated Commercial plus the limited commercial category of Office Park.

Concern in the City of Plantation began in 1985 when a site plan was submitted for a parcel of land which had been designated Commercial in the 1977 and 1981 Land Use Plans. Since the original designation of this site, conditions had changed. New commercial centers had come into being changing the character and size of the primary market area. Also, the area adjacent to the site in question had become fully built out with community facilities and single-family houses. Furthermore, there was now community opposition. This and the potential for other similar developments on long-designated but vacant sites prompted the City Council to direct the Comprehensive Planning Board to review all vacant Commercial sites, particularly those which would be for neighborhood or community shopping as opposed to the downtown regional center.

It was determined that there were 17.9 commercially used acres (exclusive of Office Park) per 1,000 existing population, representing almost 11 percent of the developed gross acres in the City. If designated but still vacant acres were included, there were 23.6 acres per 1,000 population. Population growth to buildout would result in a Commercial buildout of 14.3 acres per 1,000 population, still excessive according to both planning and industry standards. For example, Broward County currently 11.8 acres of existing commercial uses per 1,000 population (9.4 if seasonal residents are included); Dade County has 5.5 and San Diego County 4.2.

In an attempt to determine the amount of Commercial space, primarily shopping area, necessary to serve the residents of Plantation area plus the normal daytime population or employees, a special tabulation of existing neighborhood and community oriented Commercial land use was made. See Table 1.8.

Table 1.8
Neighborhood and Community-Serving Commercial Acreage on Current Plan
City of Plantation

Type of Commercial	Developed	Vacant	Total Acres	Developed Acres/ 1,000 Population	
				1987	Build-Out
Neighborhood	53.0	68.3	121.3	.9	1.2
Community	258.7	82.4	341.1	4.3	3.4
Total	311.7	150.7	462.4	5.2	4.6

Source: City of Plantation Planning Department, 1987.

If regional and metropolitan Commercial (exclusive of Office Park) are added to the above build-out totals, 903 acres or just over 9 acres per 1,000 population results.

However, of necessity the 1989 Land Use Plan proposes only relatively minor changes in commercial acreage. The reasons are that the older commercial areas are well established. State Road 7, where some changes might be considered, is in the process of revitalization which will be furthered through the use of the Safe Neighborhoods Act. Other areas are vested or "effectively vested."

The recommended changes include: 1) land now designated Commercial near Sunrise Boulevard which is proposed for designation as Industrial, and 2) land near the intersection of Sunrise Boulevard and Flamingo Road are proposed for conversion to Estate-1 Residential. The resulting build-out acreage for neighborhood and community-serving commercial would then be as shown on Table 1.9.

Table 1.9
Proposed Land Use Plan Neighborhood and Community-Serving Commercial
City of Plantation

	Acres	Acres Per 1,000 Population at Buildout
Neighborhood Commercial	121.3	1.2
Community Commercial	306.8	3.1
Total	428.1	4.3

Source: City of Plantation Planning Department, 1988.

No changes were made in the regional or metropolitan commercial center acreage. A realistic estimate of the amount of land needed for these centers cannot be made without a regional marketability analysis, preferably covering the entirety of the South Florida Regional Planning Council's jurisdiction. Plantation's regional and metropolitan centers such as Broward Mall and Fashion Mall serve all of Broward County plus portions of adjacent counties. However, it has been assumed, therefore that what is already designated, developed and vacant, is more than sufficient.

Broward County Requirements

As an appendix to this Volume are the more detailed analyses required by the Planning Council. This includes details on each proposed change and the implications for each Flexibility Zone.

Figure 1.1
Existing Land Use

To be inserted later

Figure 1.2
FLOODPLAINS

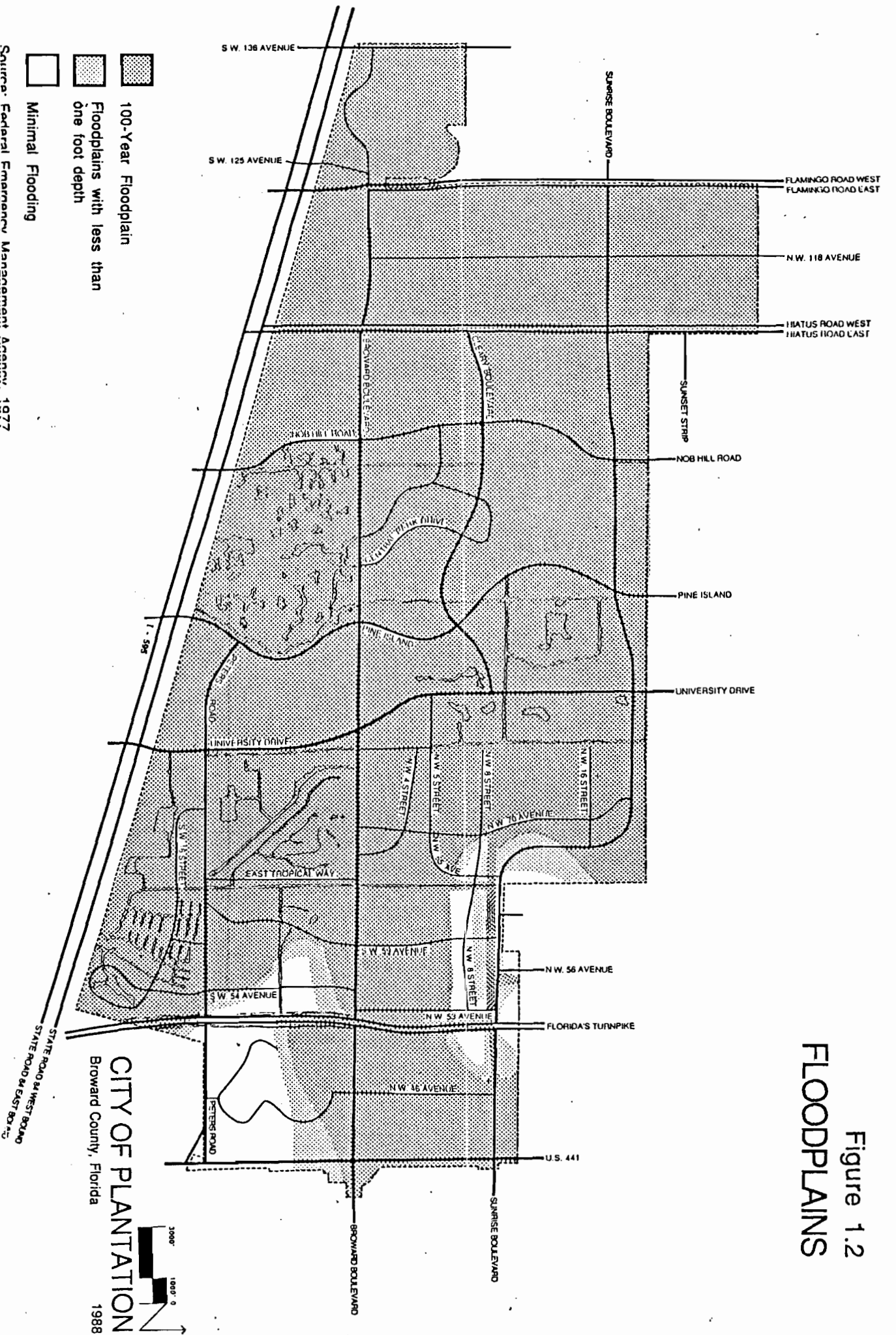
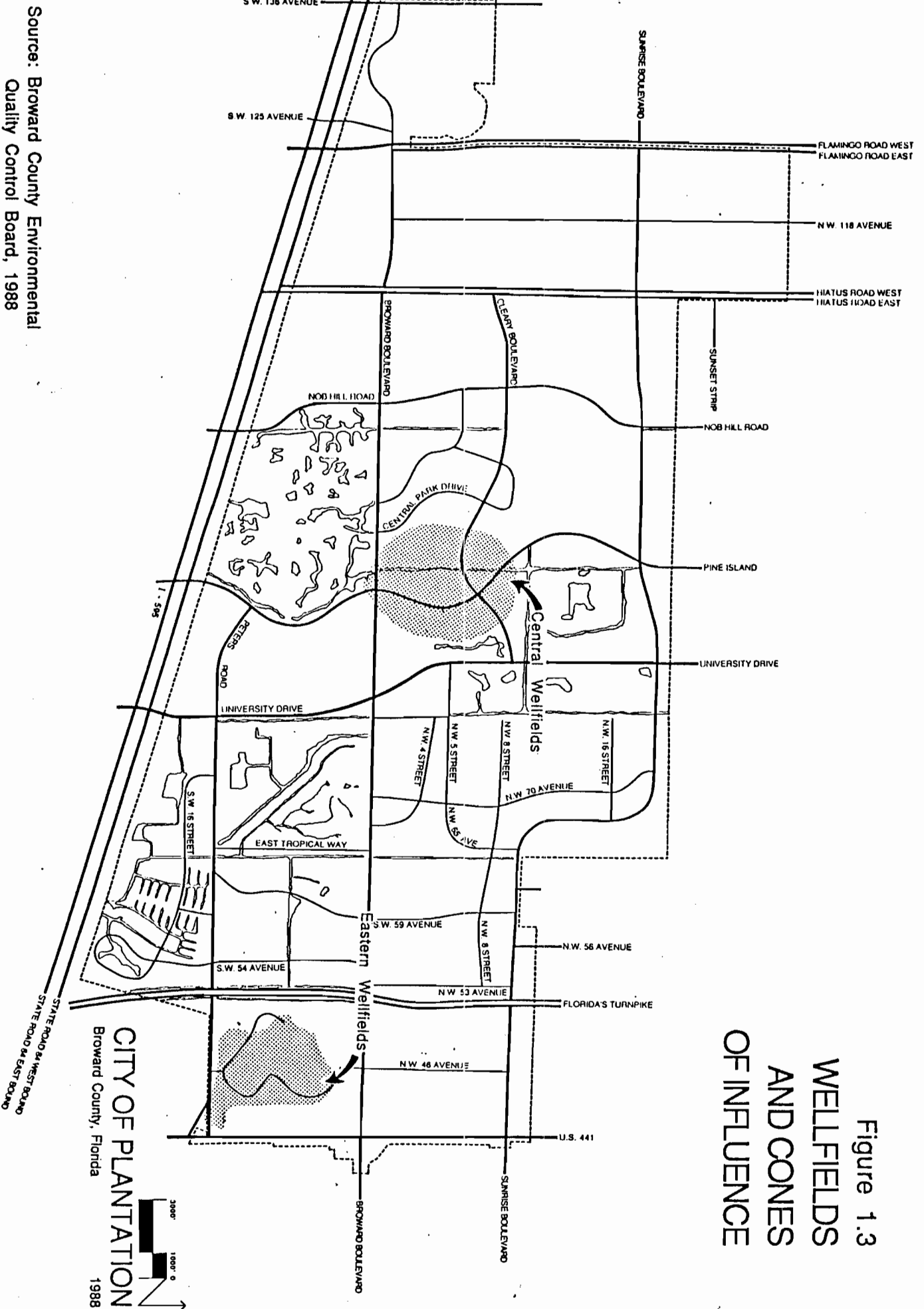
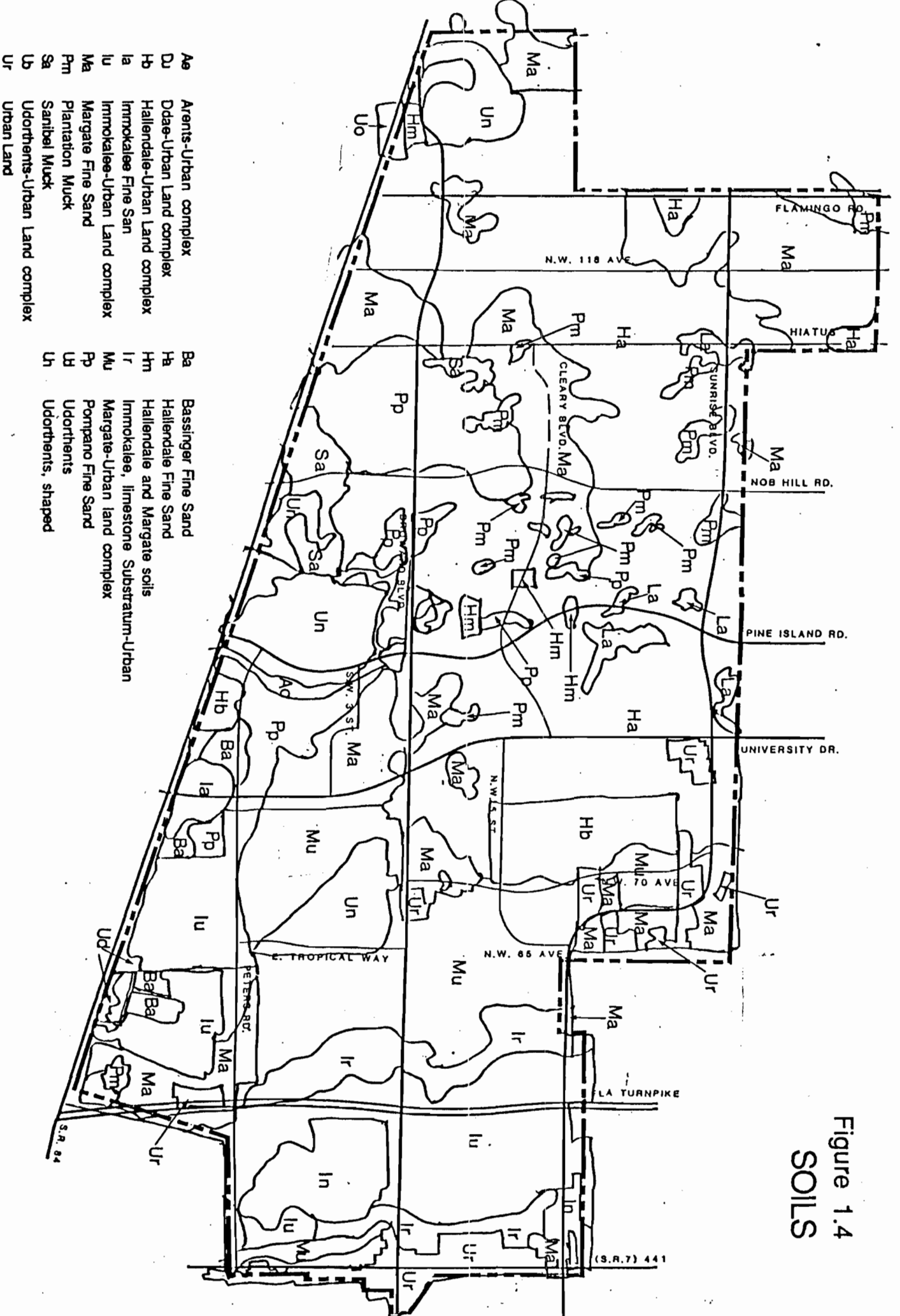


Figure 1.3
WELLFIELDS
AND CONES
OF INFLUENCE



Source: Broward County Environmental
Quality Control Board, 1988

Figure 1.4
SOILS



Source: USDA, Soil Conservation Service, 1984

**NEIGHBORHOOD DESIGN
ELEMENT**

Plantation Acres
Area East of Turnpike
Plantation Drive Area
Jacaranda
Peters Road Area
Central Plantation

INTRODUCTION

The following constitutes an urban design analysis of Plantation's neighborhoods. The five "Flexibility Zones" as designated in the City's Future Land Use Plan were used as the neighborhood areas for analysis. Downtown was pulled out of "Flex Zone" 75 for separate analysis and recommendations. It is recognized that most of these "flex zones" are made up of several neighborhoods in the traditional sense of that concept.

The intent of this optional element is to use these analyses (and related policies in Volume I as a basis for:

- reviewing zoning and land use change requests
- developing City capital improvements
- discussions with neighborhood groups
- policy formation by City officials

The analysis is urban design in orientation and based upon data contained in other elements.

**FLEX ZONE 68
PLANTATION ACRES**

Analysis: Problems and Opportunities

1. *The 118th Avenue Corridor:*

This area is unique in its large lot, rural residential character. Horse ownership is prevalent. Some pressure for change may result from the adjacent planned regional shopping center and related traffic. The Special Public Interest zoning overlay district recognizes the unique nature of the area and its need for special protection.

Public water line and drainage improvements are needed in portions of the neighborhood but cost of assessment implications have delayed implementation.

2. *Lago Mar Area:*

This southwestern part of the zone is unique in its full range of housing types including a mobile home park, three-story, multifamily structures and up-scale single family detached houses. However, the land use change pressure may be particularly acute here due to the Flamingo Road - Broward Boulevard - I-595 intersection complex in this zone. At a minimum, the traffic volume increases will be significant.

Housing quality is excellent here and in the northern neighborhood.

FLEX ZONE 73
NEIGHBORHOOD EAST OF TURNPIKE

Analysis: Problems and Opportunities

1. *North of Broward Boulevard:*

Among the problems noted are:

- the northern entrance (from Sunrise Boulevard) is weak and confusing
- there are early signs of housing deterioration and related blighting conditions such as poorly maintained vehicles parked on lawns. See table and map of housing conditions in Housing Element. If unchecked, more serious blight is likely to occur.

A moderate problem with potential opportunities is the hospital/medical office/apartment complex along the eastern edge of the neighborhood. The problem is the obscure, confusing, and uncoordinated circulation system serving the area.

2. *South of Broward Boulevard:*

The prime asset and focal point of this neighborhood is the golf course. The liability is the chain link fence and barren strip between fence and the collector street - Country Club Circle.

3. *State Road 7:*

Although some streetscape improvements and the zoning overlay district have helped, the vacant buildings and land use mix suggest that this strip commercial corridor warrants further revitalization efforts as evidenced by its selection as the Gateway 7 Improvement District under the Safe Neighborhood Act program.

**FLEX ZONE 74
THE NORTHWEST 70TH AVENUE -
PLANTATION DRIVE AREA**

Analysis: Problems and Opportunities:

1. The Northwest 70th Avenue Corridor:

Although this collector street is the north-south "spine" of this neighborhood and links several parks and schools, it is lacking in streetscape continuity, particularly trees and a pedestrian path.

2. The Northwest 4th Street or "town center" sub-area:

There are really four elements to this sub-area:

- The office/governmental center belt along Northwest 5th Street.
- The condominium concentration in the vicinity of Northwest 4th Street and Cypress Road.
- The two retail shopping centers largely oriented toward Broward Boulevard.
- A strategically located vacant area (over 40 acres) to the south of City Hall. The land is zoned for housing and offices.

The problem is that the sub-elements do not seem to have a clear identity or focal point. There is little to convey that this is the "town center" of Plantation. More fundamentally, there is no mechanism for safe and pleasant pedestrian circulation among these sub-elements.

3. The Southeastern Area:

The area south of the linear park and east of Holly Lane is unique in its older housing, large lots, tree canopy and varying architecture plus the Botanical Park with its library and museum. Additionally, North Fig Tree and Royal Palm Avenues provide unusually dramatic entryways from Broward Boulevard.

4. The Industrial Parks:

The area along the eastern side of Sunrise Boulevard (Gould and other light industries) provides an important tax and job base for Plantation. Nearby is the Motorola plant, just to the west of this flex zone.

**FLEX ZONE 75
JACARANDA**

Note: The downtown portion of this zone is analyzed separately.

Analysis: Problems and Opportunities

As a new, still developing master-planned community, this zone does not lend itself to the same kind of analysis as the others.

Each of the six developed sections follows a similar design scheme with a lake, park, golf course, or canal system forming the central focal point for surrounding single family detached houses. The multifamily housing and some commercial is then located at the edges of each neighborhood.

Housing conditions are excellent. The only problems appear to be inadequate pedestrian circulation between various residential, park and commercial areas. Some of the neighborhoods could benefit from an urban design focal point.

FLEX ZONE 76
PETERS ROAD NEIGHBORHOOD

Analysis: Problems and Opportunities

This zone has four district quadrants. All four are characterized by well maintained housing almost all of which is single family detached.

1. *Northwest:*

The Plantation Country Club forms the focal point for one-half of the neighborhood and two lakes perform the same role for the other two subsections.

El Dorado Parkway (from Broward Boulevard) and Southwest 69th Avenue (from Peters Road) constitute strong landscaped entry points.

2. *Southwest:*

Again, a lake forms the centerpiece of this subarea. There are strong landscaped entrances from Peters Road into Southwest 67th Terrace, Southwest 71st Avenue, and Southwest 75th Avenue.

3. *Southeast:*

Southwest 59th Avenue provides the strong tree-lined boulevard spine of this Plantation Isles subarea. The Southwest 54th Avenue entrance to the high school area is weaker.

The canal system provides the identity and character of this subarea.

4. *Northeast:*

A lake and adjacent City park form the focal point for this sub-area. Fig Tree Lane (Southwest 59th Avenue) provides a strong collector function.

5. *Parks:*

The County's Heritage Park is at the center of this zone, touching all four quadrants. Although well designed internally, it does not relate well to the residential quadrants, instead looking and functioning more like a fenced island.

The proposed linear park along the North New River Canal should serve to complement these two southern sub-areas.

CENTRAL PLANTATION

A Portion of Flex Zone 75

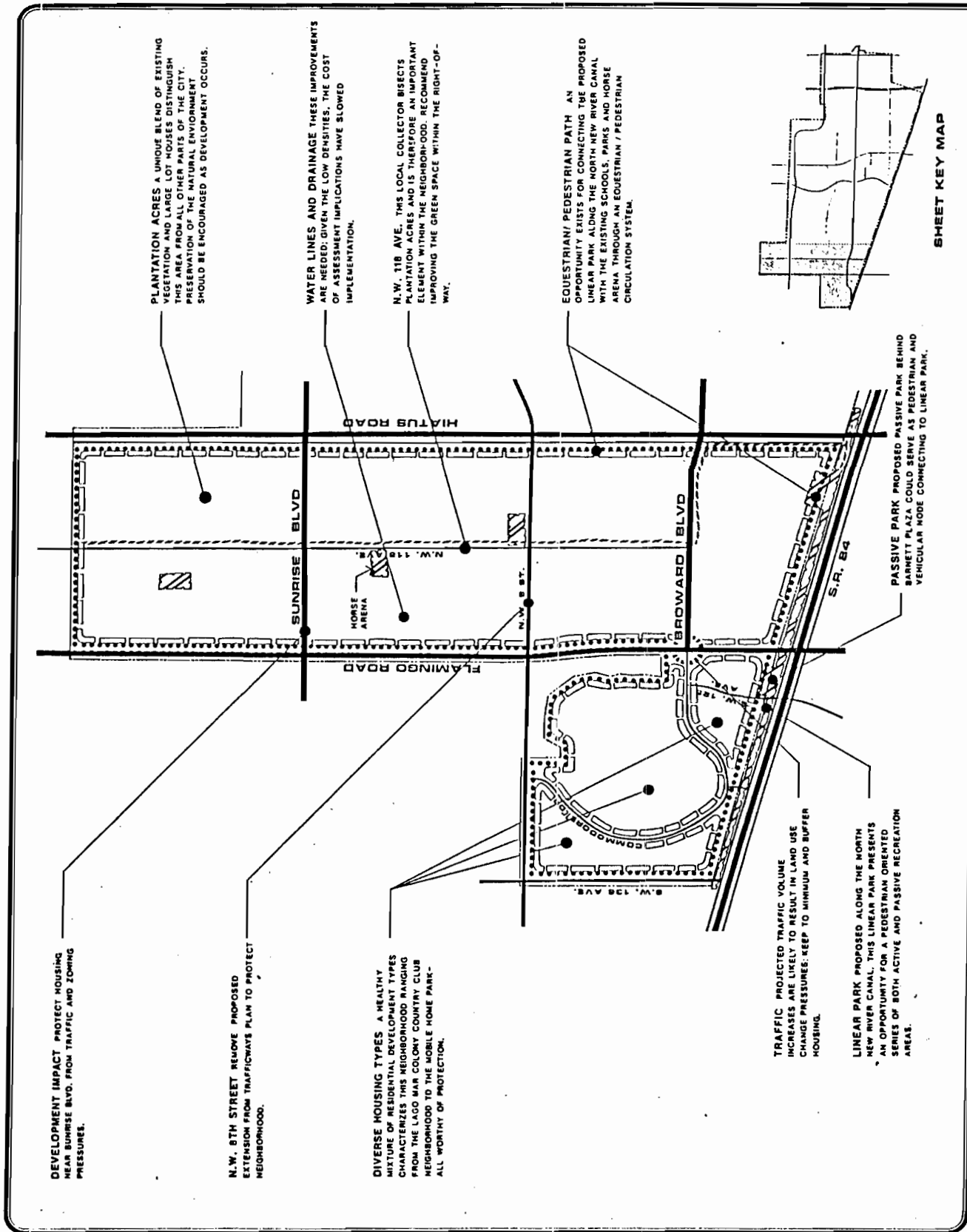
Analysis: Problems and Opportunities

Given the current buildings and the approved development plans, this area will soon have a central business district character. The urban design challenge is to achieve a circulation, parking, and building configuration that permits people to move easily throughout the area once they leave their car (or their bus stop) as one does in most traditional downtowns i.e., without the need to use the car. The other challenge is to make these links visually attractive. A prototype is provided by the downtown in Las Colinas, a new planned community in suburban Dallas, Texas.

The term "challenge," is used because current trends are not in this direction. For example:

- most of the buildings are surrounded by large parking lots, thereby making travel from one building to another difficult other than by car.
- within the next 15 years, over 100,000 vehicles per day will be attempting to move through the Broward-University intersection i.e., acute congestion making auto traffic across Broward boulevard difficult during most of the day.
- there is no clear collector boulevard through the downtown to provide an attractive "main street" or to give clear continuous circulation to visitors or buses.

In short, there is a need to develop a more detailed long-term, market-based urban design and circulation plan for this area.



1987

FIGURE
2.2

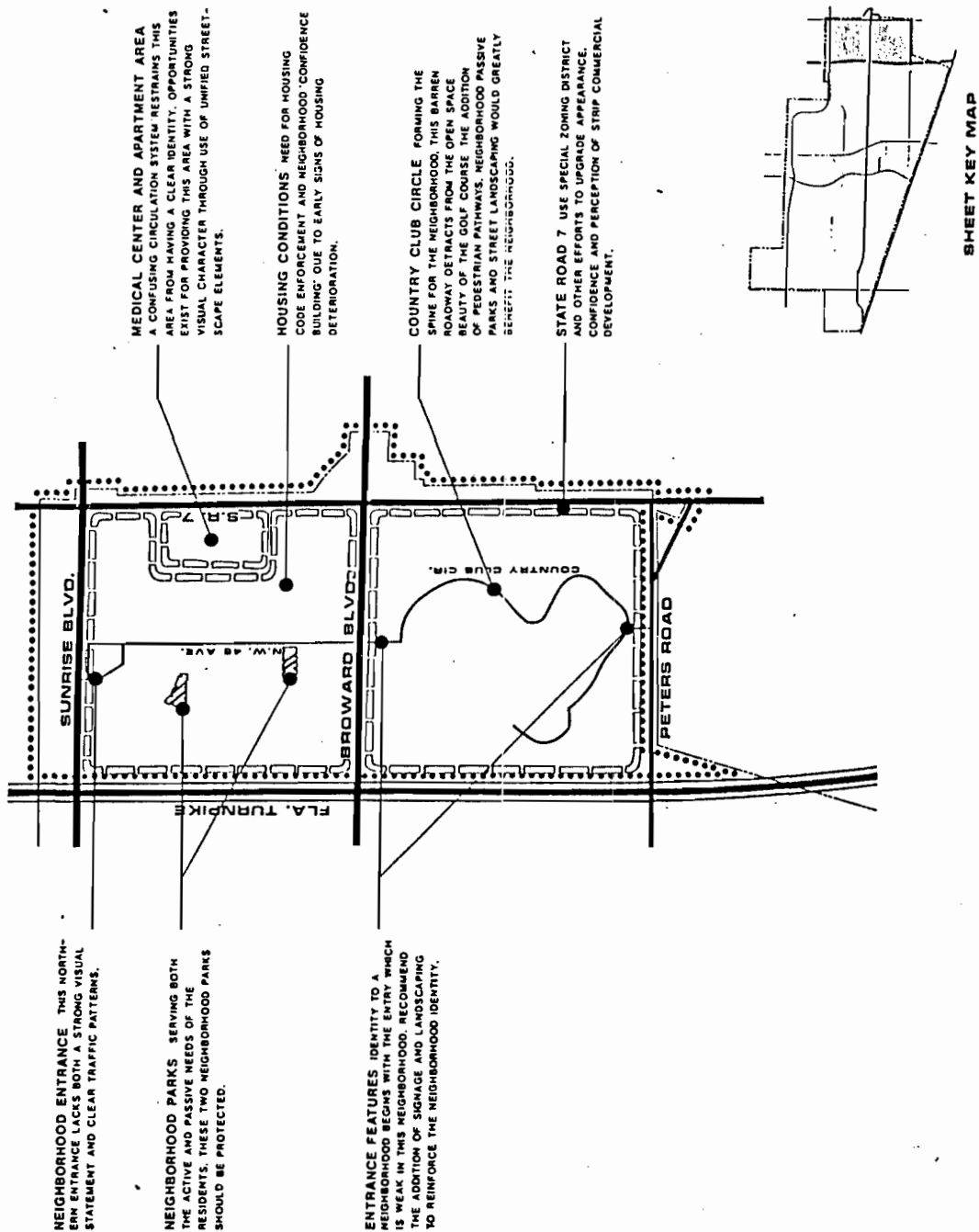


SCALE:
1"=1000'

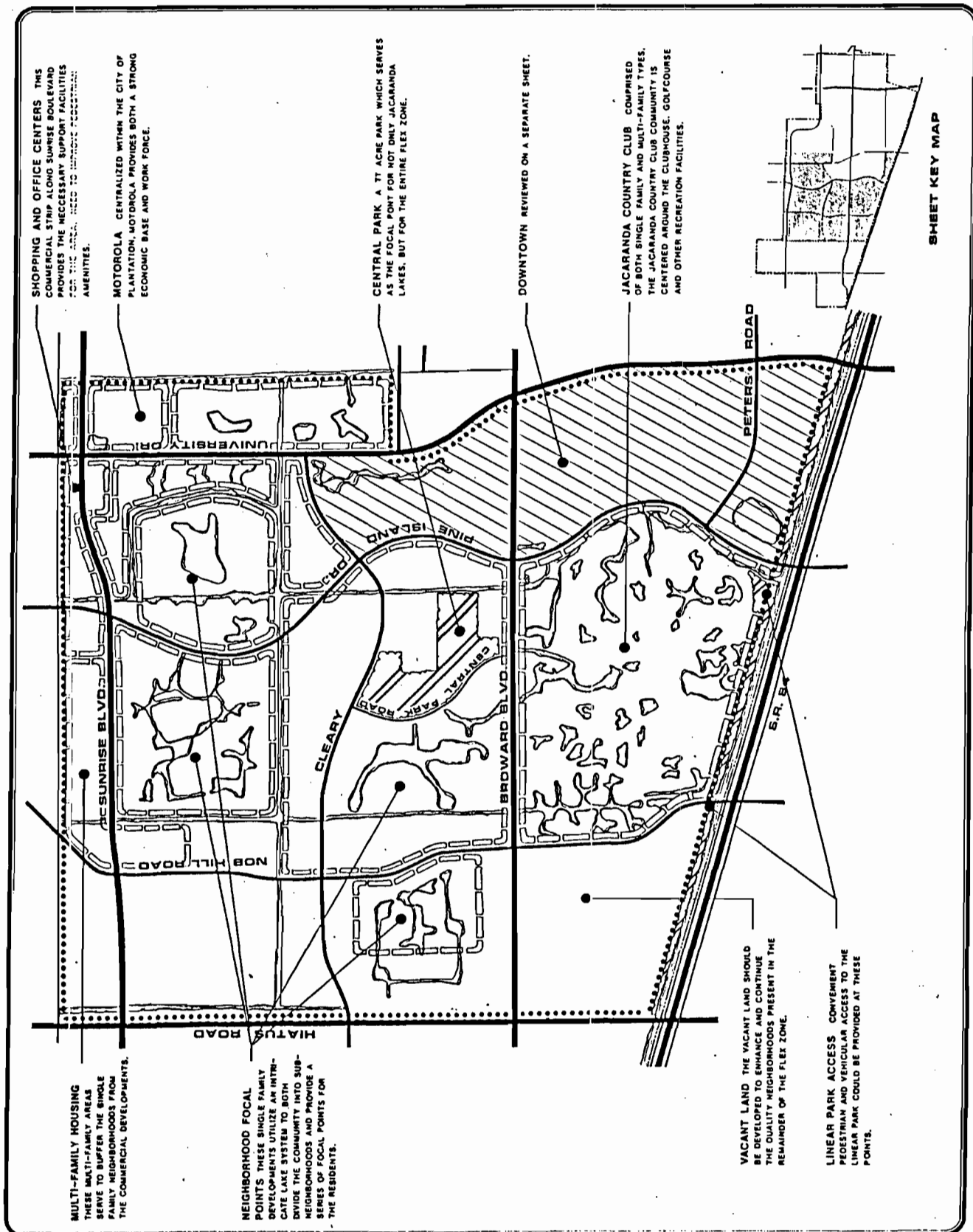


Keith and Schnars, P.A.
ENGINEERS - PLANNERS - DESIGNERS

NEIGHBORHOOD ANALYSIS
FLEX ZONE 73
CITY OF
PLANTATION, FLORIDA



SHEET KEY MAP



19E17

FIGURE
2.4



SCALE:
1"=1000'



Keith and Schnars, P.A.
ENGINEERS PLANNERS SURVEYORS

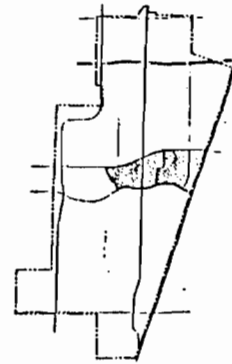
NEIGHBORHOOD ANALYSIS
FLEX ZONE 75
CITY OF
PLANTATION, FLORIDA

MULTI-FAMILY DISTRICT THIS MULTI-FAMILY DISTRICT IS THE ONLY PARCEL OF VACANT RESIDENTIAL LAND REMAINING IN THE DOWNTOWN. DUE TO THIS CHARACTERISTIC, ITS DEVELOPMENT MUST BE SENSITIVE TO THE NEEDS OF DOWNTOWN ENCOURAGING PEDESTRIAN TRAFFIC TO AND FROM THE OFFICE AND SHOPPING AREAS.

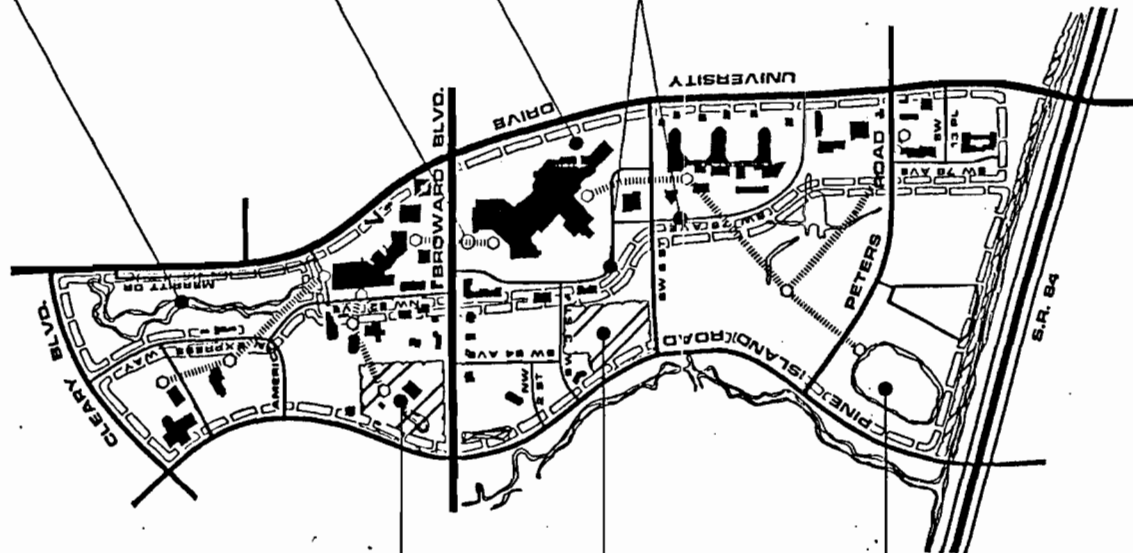
PEOPLE MOVER PRIMARY FOCUS OF THE PEOPLE MOVER SHOULD BE TO CONNECT THE MAJOR RETAIL AND OFFICE CENTERS SO AS TO DISCOURAGE AUTO TRANSPORTATION WITHIN DOWNTOWN, AND TO INCREASE USE OF SHOPPING CENTERS BY OFFICE WORKERS.

SHOPPING DISTRICT FRONTING ALONG UNIVERSITY DRIVE. THE SHOPPING DISTRICT WILL SOON CONSIST OF THREE MAJOR SHOPPING CENTERS--FASHION MALL, BROWARD MALL AND THE FOUNTAINS.

CIRCULATION IMPLEMENTATION OF AN ATTRACTIVE "MAIN STREET" IS CRUCIAL FOR DOWNTOWN SUCCESS. POSSIBILITY OF EXTENDING THE BROWARD MALL ACCESS ROAD SOUTH TO PETERS ROAD EXISTS UPON THE DEVELOPMENT OF THE JACARANDA 840 PARCEL. THE COLLECTOR STREET SYSTEM NORTH OF BROWARD BLVD. ALSO WARRANTS IMPROVEMENT.



SHEET KEY MAP



LIBRARY OPEN SPACE IN FRONT COULD BE DEVELOPED TO INCLUDE SPACE FOR USE BY OFFICE WORKERS. SUCH SPACE COULD BE USED FOR LUNCH PROVIDING LUNCH TIME ENTERTAINMENT

ATHLETIC FIELD CONSIDER REPLACING WITH A COMBINATION OF PLAYING COURTS/RUNNING TRACK FOR OFFICE WORKERS PLUS COMPATIBLE PRIVATE DEVELOPMENT. PLAYFIELDS CAN BE LOCATED ELSEWHERE IN CENTRAL PLANTATION.

VACANT LAND DEVELOPMENT PLANS FOR THIS PARCEL SHOULD INCLUDE OPEN SPACE RELATING TO A LINEAR PARK PROVIDING A PEDESTRIAN CONNECTION THROUGHOUT THE OFFICE DISTRICT.

1988
FIGURE
2.6



SCALE:
1" = 750'



Keith and Schnars, P.A.
ENGINEERS - PLANNERS - ARCHITECTS

NEIGHBORHOOD ANALYSIS

CENTRAL AREA CITY OF PLANTATION, FLORIDA

TRAFFIC CIRCULATION ELEMENT

**Inventory
Analysis**

INVENTORY

An Overview of the Basic Network

The major transportation routes within and adjacent to the City of Plantation have existed for many years. They are shown on Figures 1.1 and 3.1.

North and South Arterials:

- U.S. 441 (State Road 7)
- Florida's Turnpike (State Road 91)
- University Drive (State Road 817)

U.S. 441 and Florida's Turnpike extend from north to south Florida. The Turnpike is used by both residents and visitors through the City of Plantation with interchanges provided at Sunrise Boulevard and I-595/State Road 84. University Drive connects Dade County to Broward County and will extend into Palm Beach County in the future.

East-West Arterials:

- Sunrise Boulevard (State Road 838)
- Broward Boulevard (State Road 842)
- I-595/State Road 84

I-595/State Road 84 is presently under construction and will become the most significant east-west arterial in south Florida. This facility begins at Port Everglades, continues westerly past Fort Lauderdale/Hollywood International Airport and then westerly into Broward County. Just west of the City of Plantation, the roadway will connect to I-75 and the Sawgrass Expressway. I-75 separates at the interchange and goes south into Dade County and continues west across the state to the west coast then north through the United States. The Sawgrass Expressway goes north from the interchange then swings easterly in north Broward County and connects to I-95 via Southwest 10th Street.

Sunrise and Broward Boulevards (portions of which are State and County roads) provide east-west access from Plantation easterly to I-95 and the City of Fort Lauderdale. Sunrise and Broward Boulevards are being widened in western Plantation, since the western portion of Plantation is presently experiencing accelerated residential growth adjacent to these major facilities.

Broward Boulevard Study: Because of the significance of Broward Boulevard, Broward County funded the Broward Boulevard Corridor Multi-Modal Study from State Road 84 in Plantation east to the Atlantic Ocean. The study analyzes existing conditions and alternative transportation system improvements. The final short-range and long-range recommendations will include transportation systems management for vehicular traffic including transit and pedestrian considerations.

Bicycle-Pedestrian System: Bicycle and pedestrian ways are discontinuous in the easterly portions of the City but are included in the approvals of new developments in the rapidly growing western areas. Additional facilities are to be developed in existing developed areas as an on-going improvement program. The new residential areas are being required to connect the parks, schools, and shopping areas with sidewalks and/or bike paths.

Functional Classification and Number of Lanes

This inventory of the existing traffic circulation system was prepared as a basis for examining the existing roadway deficiencies and projected roadway needs of the City's traffic circulation system. Roads located within the City include those which are the responsibility of the Florida Department of Transportation (FDOT), and Broward County and the City itself; all roads not privately owned, are included in these three categories.

The City's roadways are identified as per the FDOT Roadway Functional Classification System on Figure 3.1. The number of lanes for each roadway type is shown on Figure 3.2 and is utilized later in the capacity analysis for determining the existing levels of service.

Level of Service

The concept of "levels of service" is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience and safety.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from "A" to "F", with level of service "A" representing the best operating conditions and level of service "F", the worst.

Level of Service: In general, the various levels of service are defined as follows for uninterrupted flow facilities:

- Level of Service "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist is excellent.
- Level of Service "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS "A". The level of comfort and convenience provided is somewhat less than at LOS "A", because the presence of others in the traffic stream begins to affect individual behavior.

- Level of Service "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.
- Level of Service "D" represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
- Level of Service "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor.
- Level of Service "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Level of Service "F" is used to describe the operating conditions within the queue, as well as the point of the breakdown.

The 1985 Highway Capacity Manual bases the levels of service for roadways on the speeds and maximum service flow (MSF). The analysis for signalized intersections is based on "stopped delay" per vehicle and unsignalized based on "critical gap" between vehicles to accept vehicles crossing or merging with the major street flow.

The existing levels of service on the roadway links was prepared by using the following methodology: The average daily traffic (ADT) volumes were collected from available sources including FDOT, Broward County and other reports or studies conducted within the area. The generalized ADT capacities and volume to capacity ratios are those adopted by Broward County Planning Council and shown in Table 3.1.

The existing (19897) capacity analysis to determine the levels of service and the roadway links was ~~based upon the FDOT table shown as Figure 3.1, calculated by dividing the existing ADT volume by the ADT capacity based on the number of roadway lanes, type of facility and number of traffic signals per mile. This resulted in the "volume to capacity ratio" (V/C) which then resulted in levels of service (LOS) indicated in Table 3.1.~~ The results of the analysis are provided in Table 3.2 for roadway links where counts were available using FDOT capacities for State roads and Broward County capacities for the remaining roadways.

The analysis procedure is outlined below:

1. Table 3.1 provides the ADT for vehicles on the various typical roadway types, number of lanes and number of traffic signals per mile;

2. The ADT capacity volumes are those that are used by the FDOT ~~and the Broward Planning Council~~ as of 1989~~7~~ or as may be revised;
3. The 1986 ADT volumes were divided by the link capacity to obtain the V/C ratio for the roadway segment;
4. The existing LOS for the segment was then obtained by comparing the calculated V/C ratio to the V/C ranges indicated above;
5. Levels of Service (LOS) are indicated "C" or above, "D", "E", or "F".

Table 3.1
Generalized Daily Level of Service Minimum Volumes

TWO-WAY ARTERIALS

Group A (0.0 to 0.75 signalized intersections per mile)

Lanes/ Divided	Level of Service				
	A	B	C	D	E
2 Undiv.	13,700	15,000	15,600	16,500	17,400
4 Div.	29,800	31,900	33,000	34,900	36,700
6 Div.	45,400	48,100	49,700	52,400	55,200

Group B (0.76 to 1.5 signalized intersections per mile)

Lanes/ Divided	Level of Service				
	A	B	C	D	E
2 Undiv.	9,000	13,700	14,500	15,300	16,100
4 Div.	20,000	29,700	31,000	32,500	34,000
6 Div.	30,600	45,100	48,700	49,900	51,200

Group C (1.6 to 2.5 signalized intersections per mile)

Lanes/ Divided	Level of Service				
	A ⁺	B	C	D	E
2 Undiv.	—	10,200	13,500	14,800	15,700
4 Div.	—	22,800	29,500	31,700	33,400
6 Div.	—	35,100	45,000	47,900	50,300

Group D (2.6 to 3.5 signalized intersections per mile)

Lanes/ Divided	Level of Service				
	A ⁺	B ⁺	C	D	E
2 Undiv.	—	—	9,200	13,700	15,400
4 Div.	—	—	20,100	30,200	33,200
6 Div.	—	—	30,700	46,300	50,200

Group E (3.6 to 4.5 signalized intersections per mile)

Lanes/ Divided	Level of Service				
	A ⁺	B ⁺	C	D	E
2 Undiv.	—	—	—	12,300	14,600
4 Div.	—	—	—	28,300	32,100
6 Div.	—	—	—	39,500	48,800

Group F (more than 4.5 signalized intersections per mile and not within primary city central business district of urbanized area over 500,000)

Lanes/ Divided	Level of Service				
	A ⁺	B ⁺	C	D	E
2 Undiv.	—	—	—	10,300	14,600
4 Div.	—	—	—	22,600	32,100
6 Div.	—	—	—	34,900	49,000

Group G (more than 4.5 signalized intersections per mile and within primary city central business district of urbanized area over 500,000)

Lanes/ Divided	Level of Service				
	A ⁺	B ⁺	C	D	E
2 Undiv.	—	—	—	13,100	15,400
4 Div.	—	—	—	29,300	33,700
6 Div.	—	—	—	45,200	51,200

DIVIDED/UNDIVIDED ADJUSTMENTS

(after corresponding two-way arterial volume indicated percent)

Lanes	Median	Left Turn Bays	Adjustment Factor
2	Divided	Yes	+ 5%
2	Undivided	No	- 15%
Multi	Undivided	Yes	- 5%
Multi	Undivided	No	- 20%

FREEWAYS

Group 1 (within urbanized area over 500,000 and leading to or within 5 miles of primary city central business district)

Lanes	Level of Service				
	A	B	C	D	E
4	27,800	42,800	61,100	73,800	79,300
6	41,700	64,300	91,600	110,700	119,000
8	55,500	85,700	122,200	147,600	158,700
10	69,400	107,100	152,700	184,500	198,400

Group 2 (within urbanized area over 50,000 and not in Group 1)

Lanes	Level of Service				
	A	B	C	D	E
4	21,400	33,000	47,100	56,900	61,100
6	32,100	48,500	70,600	85,300	91,700
8	42,800	66,000	94,200	113,700	122,300
10	53,500	82,500	117,700	142,200	152,900

Group 3 (within non-urbanized areas)

Lanes	Level of Service				
	A	B	C	D	E
4	17,100	26,300	37,600	45,400	48,800
6	25,600	39,500	56,300	68,000	73,200
8	34,100	52,700	75,100	90,700	97,500

ONE-WAY ARTERIALS

Group D (less than 3.6 signalized intersections per mile)

Lanes	Level of Service				
	A ⁺	B	C	D	E
2	—	9,800	14,800	16,900	18,000
3	—	14,900	22,700	25,600	27,200
4	—	19,900	30,600	34,300	36,300

Group E (3.6 to 4.5 signalized intersections per mile)

Lanes	Level of Service				
	A ⁺	B ⁺	C	D	E
2	—	—	13,300	18,200	17,600
3	—	—	20,300	24,600	26,600
4	—	—	27,100	33,300	35,600

Group F (more than 4.5 signalized intersections per mile and not within primary city central business district of urbanized area over 500,000)

Lanes	Level of Service				
	A ⁺	B ⁺	C	D	E
2	—	—	10,900	15,600	17,700
3	—	—	16,600	23,900	26,800
4	—	—	22,400	32,400	35,900

Group G (more than 4.5 signalized intersections per mile and within primary city central business district of urbanized area over 500,000)

Lanes	Level of Service				
	A ⁺	B ⁺	C	D	E
2	—	—	13,300	17,200	18,300
3	—	—	20,400	26,200	27,700
4	—	—	27,600	35,200	37,100

TWO-WAY COLLECTORS AND LOCAL STREETS

(signalized intersection analysis)

Lanes	Level of Service				
	A ⁺	B ⁺	C	D	E
2	—	—	7,700	11,600	12,900
4	—	—	16,200	24,300	26,400
6	—	—	24,900	37,200	40,100

* The table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Values shown are average daily traffic maximum volumes (based on peak hour volumes) for levels of service and are based on the 1965 Highway Capacity Manual and Florida traffic data. Roadways with more than the number of lanes shown should be treated on a case by case basis. The table's input value assumptions and level of service criteria appear on the back.

— Cannot be achieved.

TABLE 3.2
Traffic Capacity Analysis of Existing Network
City of Plantation

SEGMENTS						
ROADWAY	FROM	TO	LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
FLA TURNPIKE	SUNRISE BLVD	SR 84	4LX	61,000	56,900	E
SR 84	NW 136 AVE	FLAMINGO RD	4LD	26,400	53,300	C
	FLAMINGO RD	HIATUS RD	4LD	36,400	53,300	C
	HIATUS RD	NOB HILL RD	4LD	37,000	53,300	C
	NOB HILL RD	PINE ISLAND RD	4LD	37,500	53,300	C
	PINE ISLAND RD	UNIVERSITY DR	4LD	38,500	53,300	C
	UNIVERSITY DR	FLA TURNPIKE	4LD	40,000	53,300	C
SUNRISE BLVD	FLAMINGO RD	HAITUS RD	4LD	14,000	32,500	A
	HIATUS RD	NOB HILL RD	4LD	16,000	32,500	A
	NOB HILL RD	PINE ISLAND RD	4LD	18,600	32,500	A
	PINE ISLAND RD	UNIVERSITY DR	6LD	26,400	48,900	A
	UNIVERSITY DR	FLA TURNPIKE	6LD	44,500	48,900	B
	FLA TURNPIKE	SR 7 (US 441)	6LD	48,900	48,900	D
BROWARD BLVD	FLAMINGO RD	HIATUS RD	2L	10,500	16,500	A
	HIATUS RD	NOB HILL RD	4LD	12,000	34,900	A
	NOB HILL RD	PINE ISLAND RD	4LD	15,600	34,900	A
	PINE ISLAND RD	UNIVERSITY DR	4LD	29,000	34,900	B
	UNIVERSITY DR	FLA TURNPIKE	6LD	40,100	48,900	B
	FLA TURNPIKE	SR 7 (US 441)	6LD	37,500	48,900	B
UNIVERSITY DR	NORTH	SUNRISE BLVD	6LD	54,900	48,900	F
	SUNRISE BLVD	CLEARY BLVD	6LD	48,000	48,900	D
	CLEARY BLVD	BROWARD BLVD	6LD	52,600	48,900	F
	BROWARD BLVD	PETERS RD	6LD	52,300	48,900	F
	PETERS RD	SR 84	6LD	54,600	48,900	F
SR 7 (US 441)	NORTH	SUNRISE BLVD	6LD	50,200	48,900	E
	SUNRISE BLVD	BROWARD BLVD	6LD	42,600	48,900	D
	BROWARD BLVD	PETERS RD	4LD	37,000	39,500	D
PETERS RD	PINE ISLAND RD	UNIVERSITY DR	2L	12,500	16,500	A
	UNIVERSITY DR	FLA TURNPIKE	4LD	23,300	34,900	A
	FLA TURNPIKE	SR 7 (US 441)	4LD	21,000	34,900	A

TABLE 3.2 (Continued)
Traffic Capacity Analysis of Existing Network
City of Plantation

ROADWAY	SEGMENTS		LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
	FROM	TO				
W 8 ST/CLEARY BLVD 124 AVE		HIATUS RD	2L	200	11,600	C
CLEARY BLVD WEST		NOB HILL RD	2L	200	16,500	A
NOB HILL RD		PINE ISLAND RD	4LD	200	34,900	A
PINE ISLAND RD		UNIVERSITY DR	4LD	500	34,900	A
W 5 ST/NW 65 AVE UNIVERSITY DR		SUNRISE BLVD	2L	11,000	11,600	D
BROWARD BLVD SR 84		FLAMINGO RD	2L	6,000	11,600	C
NW 136 AVE NW 8 ST		SR 84	6LD	22,900	52,400	A
COMMODORE DR NW 8 ST		SR 84	2L	6,500	11,600	C
FLAMINGO RD						
SUNRISE BLVD		CLEARY BLVD	2L	3,000	11,600	C
CLEARY BLVD		BROWARD BLVD	2L	3,000	11,600	C
BROWARD BLVD		SOUTH	2L	3,000	11,600	C
HIATUS RD						
NORTH		SUNRISE BLVD	2L	7,000	16,500	A
SUNRISE BLVD		CLEARY BLVD	2L	6,800	16,500	A
CLEARY BLVD		BROWARD BLVD	2L	4,700	14,800	B
BROWARD BLVD		SOUTH	2L	1,000	14,800	B
NOB HILL RD						
NORTH		SUNRISE BLVD	4LD	6,000	34,900	A
SUNRISE BLVD		CLEARY BLVD	4LD	2,000	34,900	A
CLEARY BLVD		BROWARD BLVD	4LD	1,000	34,900	A
BROWARD BLVD		SOUTH	4LD	1,500	34,900	A

TABLE 3.2 (Continued)
Traffic Capacity Analysis of Existing Network
City of Plantation

ROADWAY	SEGMENTS		LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
	FROM	TO				
PINE ISLAND RD						
	NORTH	SUNRISE BLVD	6LD	33,000	47,900	B
	SUNRISE BLVD	CLEARY BLVD	4LD	31,500	34,900	C
	CLEARY BLVD	BROWARD BLVD	4LD	30,800	34,900	C
	BROWARD BLVD	PETERS RD	4LD	33,100	34,900	D
	PETERS RD	SR 84	4LD	27,700	34,900	B
NW 70 AVE						
	SUNRISE BLVD	NW 5 ST	2L	11,000	11,600	D
	NW 5 ST	BROWARD BLVD	5L	15,500	24,300	C
NW 53 AVE						
	NW 8 ST	BROWARD BLVD	2L	9,000	11,600	C
NW 46 AVE						
	SUNRISE BLVD	BROWARD BLVD	2L	8,500	11,600	C
E. COUNTRY CLUB/SW 46 AVE						
	BROWARD BLVD	DAVIE BLVD	2L	8,000	11,600	C

ANALYSIS

Existing Deficiencies

Existing roadway deficiencies are evident from the capacity analysis of roadway segments illustrated in Table 3.2 and indicated as level of service (LOS) "E" or "F". This finding denotes existing system needs for which the City, County and State must plan necessary roadway improvements.

~~FDOT and the Broward County Metropolitan Planning Organization (MPO) have some differences as to the adopted capacities to be used on the State roadway system. Examples are indicated below including signal spacing and result in significant changes in level of service ratings for roadway links.~~

Roadway Type	Signalization	FDOT	Broward MPO
Four Lane Highway	Low	53,500	59,400
Four Lane Major Arterial	Low	34,900	39,400
Six Lane Major Arterial	Medium	42,100	53,500

~~The capacities indicated above represent a difference of between 4,500 and 8,600 vehicles per day depending on the type of roadway. Roadways under FDOT jurisdiction that are currently operating below LOS "D" based on FDOT capacity volumes are as follows:~~

Roadway	From	To
Sunrise Blvd.	University Drive	SR 7 (US 441)
University Drive	North City Limits	SR 84
SR 7	North City Limits	Peters Road/Davie Blvd.

Portions of some of these roadway links are also indicated as exceeding the Broward County LOS "D" capacity. No improvements are anticipated on these State-maintained roadways within the immediate future, but the necessary improvements are addressed in the analysis of projected needs.

All roadways under Broward County jurisdiction (based on Broward County adopted LOS "D" capacities) are presently operating at LOS "D" or better.

The 1988-1993 Broward County MPO five-year Transportation Improvement Program (TIP) implications for Plantation are shown in Table 3.3. This program includes State, County and developer commitments for the next five years.

Figure 6.3 indicates the ten highest accident locations in the City of Plantation. An analysis of these accidents (and a yearly update thereof) should result in specific intersection improvements that will reduce a particular type of accident. These improvements may be funded by FDOT, Broward County and/or the City of Plantation. Specific detailed intersection improvement recommendations are not included in this Traffic Circulation Element.

Table 3.3
1988-1993 Planned Improvements
Within the City of Plantation

TIP	Roadway	Improvement
15	Flamingo Road	South of Oakland Park Blvd. to SR 84 Construction underway for 6 lanes divided; new roadway.
22	Cypress Road	N.W. 74th Terrace to N.W. 70th Avenue Add 1 lane (to result in 3L) Construction 1989-90.
119	Peters Road	Pine Island Road to University Drive Add 2 lanes (4LD) Construction underway.
158	Central Park Place	Nob Hill Road to 0.6 miles east Construction underway for 4 lanes divided 1988-89; new roadway
172	Sunrise Boulevard	N.W. 136th Avenue to New Flamingo Road Add 2 lanes (6LD) 1988-89
239, 241, 246 266	I 595	I-75 to Florida's Turnpike Construction underway for 6 new lanes express- ways; Portions are completed and others under construction; new roadway
315	Broward Boulevard	Pine Island Road to University Drive Add 2 lanes (6LD) 1989-90
330	Broward Boulevard	S.W. 125th Avenue to Hiatus Road Add 2 lanes (4LD) construction underway
343	Nob Hill Road	Broward Boulevard to SR 84 Add 2 lanes (6LD) 1988-89.
354	Pine Island Road	Sunrise Boulevard to SR 84 Add 2 lanes (4LD) 1989-90
388	N.W. 108th Avenue	N.W. 5th Street to Broward Boulevard Construction underway for 2 lanes; new roadway
403	N.W. 4th Street	N.W. 76th Avenue to N.W. 73rd Avenue Add 2 lanes (4L) 1988-89

Table 3.3 (Continued)
1988-1993 Planned Improvements
Within the City of Plantation

406	N.W. 8th Street	N.W. 136th Avenue to Flamingo Road New roadway; 2 lanes 1988-89
460	N.W. 76th Avenue	N.W. 5th Street to Broward Blvd Add 2 lanes (4L) 1990-91
463, 478	Cleary Blvd.	Hiatus Road to West of Pine Island New Construction for 4 lanes divided and Add 2 lanes (4LD) 1988-90
470	N.W. 82nd Avenue	N.W. 3rd Street to Broward Blvd. Construction underway for 1 lane (3LD)
523	N.W. 84th Avenue	Broward Blvd. to Park Center Court New Construction underway for 4 lanes divided

Source: Broward County Metropolitan Planning Organization,
1988-1993 Transportation Improvement Program (TIP)

Analysis of Projected Needs

Projections of the future traffic circulation levels of service and system needs are based upon the future land uses shown on the Future Land Use map. These projections served as a basis for determining the need for new roadway facilities and expansions to support planned development and to maintain adopted LOS standards.

In order to project future traffic conditions, the Broward County MPO had the County Office of Planning prepare Year 1994 and 2010 Travel Demand Forecasts. Data was obtained for each of the County's Traffic Analysis Zones (TAZs). Included in the data collection were: 1) the study area and its analysis zones, 2) urban activities, 3) the transportation system and 4) trip-making characteristics. Specifically, data concerning housing, automobile ownership, population, school enrollment, employment and special generators were collected and projected to the Year 2010 and interpolated for 1994.

The number of trips were determined and assigned to the transportation network for each of the TAZs as "productions" or "attraction". The modal split (by car or public transportation) was included in the assignment process in order to forecast the assignments to the network.

The result of this computer modeling procedure was the Year 2010 Conceptual Highway Network, an updating the Year 2000 Financially Feasible Plan. This roadway network includes ADT volumes and number of roadway lanes.

The procedure used for analyzing the projected system needs was similar to that utilized for analyzing the existing roadway deficiencies, assuming a desired LOS for collector and arterial roadways within the City. This analysis entailed the calculations of V/C ratios for the roadway segments with forecasted traffic volumes for the Years 1994 and 2010 (see Tables 3.4 and 3.5).

Recommended Long Improvements

The analysis of projected needs are provided below based on the Year 2010 roadway network and traffic projections provided by Broward County. The recommended improvements to provide acceptable LOS are listed below; this overlaps the funded TIP schedule in Table 3.3:

Sunrise Boulevard:

- Flamingo Road to Pine Island Road - widen from four lanes divided to six lanes divided.
- Florida's Turnpike to State Road 7 - widen from six lanes divided to six lanes divided with frontage roads.

Broward Boulevard:

- I-595 to Flamingo Road - widen from existing two lanes to four lanes divided.
- Flamingo Road to Hiatus Road - widen from two and programmed improvements to six lanes divided.
- Hiatus Road to University Drive - widen from four lanes divided to six lanes divided.
- University Drive to State Road 7 - widen from six lanes divided to six lanes divided with frontage roads.

Flamingo Road:

- I-595 to north City limits - widen from existing two lanes to six lanes divided as currently programmed. Included in the improvement is completion of the interchange at I-595.

Pine Island Road:

- I-595 to Broward Boulevard - widen from existing four lanes divided to six lanes divided as programmed with controlled access similar to frontage roads.
- Broward Boulevard to north City limits - widen from existing four lanes divided to programmed six lanes divided.

University Drive:

- Widen from existing six lanes divided to six lanes divided with frontage roads including interchange at I-595 which is presently under construction.

State Road 7 (U.S. 441):

- Broward Boulevard to Peters Road - widen from existing four lanes divided (five lanes) to six lanes divided.
- Sunrise Boulevard to Broward Boulevard - widen from six lanes divided to six lanes divided with frontage roads.

Hiatus Road:

- Construct new four lanes divided from existing I-595.

Nob Hill Road:

- Widen from existing two lanes to four lanes divided from Broward Boulevard to I-595.

The roadway improvements indicated above are scheduled to be improved by either FDOT, Broward County or developers. The improvements necessary for desirable LOS that may require some City of Plantation funding are:

- Northwest 5th Street/Northwest 65th Avenue - widen from existing two and three lane sections to four lanes divided from University Drive to Sunrise Boulevard.
- Northwest 70th Avenue - widen from existing two lanes to four lanes divided from Sunrise Boulevard to Northwest 5th Street.

However, the City hopes to have these placed fully within the County system or otherwise receive County funding. The year 2010 Traffic Circulation Map for the City of Plantation is shown in Figure 5 of Volume I. This map is the result of the improvements indicated above and/or special considerations (Traffic Impact Zones) for areas where desired levels of service cannot be obtained.

TABLE 3.4
Traffic Capacity Analysis of 1994 Network
City of Plantation

SEGMENTS			LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
ROADWAY	FROM	TO				
FLA TURNPIKE						
	SUNRISE BLVD	SR 84	6LX	71,747	110,700	C
US-595 CORRIDOR						
	NW 136 AVE	FLAMINGO RD	6LX	56,500	119,700	C
	FLAMINGO RD	HIATUS RD	6LX	72,000	119,700	C
	HIATUS RD	NOB HILL RD	6LX	75,000	119,700	C
	NOB HILL RD	PINE ISLAND RD	6LX	99,700	119,700	C
	PINE ISLAND RD	UNIVERSITY DR	6LX	101,300	119,700	C
	UNIVERSITY DR	FLA TURNPIKE	6LX	115,000	119,700	D
SUNRISE BLVD						
	FLAMINGO RD	HIATUS RD	4LD	15,900	31,700	A
	HIATUS RD	NOB HILL RD	4LD	17,900	31,700	A
	NOB HILL RD	PINE ISLAND RD	4LD	22,000	31,700	A
	PINE ISLAND RD	UNIVERSITY DR	6LD	22,500	52,400	A
	UNIVERSITY DR	FLA TURNPIKE	6LD	41,300	48,900	B
	FLA TURNPIKE	SR 7 (US 441)	6LD	49,500	48,900	B
BROWARD BLVD						
	FLAMINGO RD	HIATUS RD	2L	17,400	16,500	C
	HIATUS RD	NOB HILL RD	4LD	19,500	34,900	A
	NOB HILL RD	PINE ISLAND RD	4LD	24,800	34,900	A
	PINE ISLAND RD	UNIVERSITY DR	4LD	33,600	34,900	D
	UNIVERSITY DR	FLA TURNPIKE	6LD	43,000	52,400	A
	FLA TURNPIKE	SR 7 (US 441)	6LD	41,900	52,400	A
UNIVERSITY DRIVE						
	NORTH	SUNRISE BLVD	6LD	57,900	46,300	F
	SUNRISE BLVD	CLEARY BLVD	6LD	47,100	46,300	E
	CLEARY BLVD	BROWARD BLVD	6LD	54,900	46,300	F
	BROWARD BLVD	PETERS RD	6LD	54,700	46,300	F
	PETERS RD	SR 84	6LD	61,600	46,300	F

TABLE 3.4 (Continued)
Traffic Capacity Analysis of 1994 Network
City of Plantation

SEGMENTS			LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
ROADWAY	FROM	TO				
SR 7 (US 441)						
	NORTH	SUNRISE BLVD	6LD	48,500	48,900	D
	SUNRISE BLVD	BROWARD BLVD	6LD	42,400	48,900	B
	BROWARD BLVD	PETERS RD	4LD	36,900	32,500	E
PETERS RD						
	PINE ISLAND RD	UNIVERSITY DR	4LD	13,900	34,900	A
	UNIVERSITY DR	FLA TURNPIKE	4LD	23,500	34,900	A
	FLA TURNPIKE	SR 7 (US 441)	4LD	21,200	34,900	A
NW 8 ST/CLEARY BLVD						
	124 AVE	HIATUS RD	2L	1,400	11,600	C
CLEARY BLVD						
	WEST	NOB HILL RD	4LD	1,200	34,900	A
	NOB HILL RD	PINE ISLAND RD	4LD	800	34,900	A
	PINE ISLAND RD	UNIVERSITY DR	4LD	6,300	34,900	A
NW 5 ST/NW 65 AVE						
	UNIVERSITY DR	SUNRISE BLVD	2L	11,500	11,600	D
BROWARD BLVD						
	NW 136 AVE	FLAMINGO RD	4LD	11,900	24,300	C
NW 136 AVE						
	NW 8 ST	SR 84	6LD	22,300	52,400	A
COMMODORE DR						
	BROWARD BLVD	SR 84	4LD	13,000	24,300	C
FLAMINGO RD						
	SUNRISE BLVD	CLEARY BLVD	6LD	15,200	37,200	C
	CLEARY BLVD	BROWARD BLVD	6LD	9,600	37,200	C
	BROWARD BLVD	SOUTH	6LD	21,100	37,200	C
HIATUS RD						
	NORTH	SUNRISE BLVD	4LD	7,100	34,900	A
	SUNRISE BLVD	CLEARY BLVD	2L	6,800	16,500	A
	CLEARY BLVD	BROWARD BLVD	2L	4,700	16,500	A
	BROWARD BLVD	SOUTH	2L	3,800	16,500	A

TABLE 3.4 (Continued)
Traffic Capacity Analysis of 1994 Network
City of Plantation

ROADWAY	SEGMENTS		LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
	FROM	TO				
JOB HILL RD						
NORTH		SUNRISE BLVD	4LD	9,700	34,900	A
SUNRISE BLVD		CLEARLY BLVD	4LD	8,400	34,900	A
CLEARLY BLVD		BROWARD BLVD	4LD	7,800	34,900	A
BROWARD BLVD		SOUTH	4LD	9,600	34,900	A
PINE ISLAND RD						
NORTH		SUNRISE BLVD	6LD	34,200	47,900	A
SUNRISE BLVD		CLEARLY BLVD	6LD	33,800	52,400	A
CLEARLY BLVD		BROWARD BLVD	6LD	38,400	52,400	B
BROWARD BLVD		PETERS RD	6LD	39,300	52,400	B
PETERS RD		SR 84	6LD	36,600	47,900	B
W 70 AVE						
SUNRISE BLVD		NW 5 ST	2L	11,500	11,600	D
NW 5 ST		BROWARD BLVD	5L	17,000	24,300	C

TABLE 3.5
Traffic Capacity Analysis of Year 2010 Network
City of Plantation

SEGMENTS			LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
ROADWAY	FROM	TO				
FLA TURNPIKE	SUNRISE BLVD	SR 84	6LX	96,100	110,700	C
I-595 CORRIDOR	NW 136 AVE	FLAMINGO RD	6LX/FR	48,300	119,700	C
	FLAMINGO RD	HIATUS RD	6LX/FR	61,700	119,700	C
	HIATUS RD	NOB HILL RD	6LX/FR	95,600	119,700	C
	NOB HILL RD	PINE ISLAND RD	6LX/FR	97,800	119,700	D
	PINE ISLAND RD	UNIVERSITY DR	6LX/FR	93,800	119,700	C
	UNIVERSITY DR	FLA TURNPIKE	6LX/FR	104,700	119,700	D
SUNRISE BLVD	FLAMINGO RD	HIATUS RD	6LD	20,200	52,400	A
	HIATUS RD	NOB HILL RD	6LD	22,400	52,400	A
	NOB HILL RD	PINE ISLAND RD	6LD	29,900	52,400	A
	PINE ISLAND RD	UNIVERSITY DR	6LD	13,600	52,400	A
	UNIVERSITY DR	FLA TURNPIKE	6LD	34,100	48,900	B
	FLA TURNPIKE	SR 7 (US 441)	6LD	51,000	48,900	E
BROWARD BLVD	FLAMINGO RD	HIATUS RD	6LD	33,100	52,400	A
	HIATUS RD	NOB HILL RD	6LD	36,500	52,400	A
	NOB HILL RD	PINE ISLAND RD	6LD	45,800	52,400	B
	PINE ISLAND RD	UNIVERSITY DR	6LD	44,100	52,400	A
	UNIVERSITY DR	FLA TURNPIKE	6LD	49,600	48,900	E
	FLA TURNPIKE	SR 7 (US 441)	6LD	57,800	48,900	E
UNIVERSITY DR	NORTH	SUNRISE BLVD	6LD	65,000	48,900	F
	SUNRISE BLVD	CLEARLY BLVD	6LD	44,900	48,900	B
	CLEARLY BLVD	BROWARD BLVD	6LD	60,200	48,900	F
	BROWARD BLVD	PETERS RD	6LD	60,300	48,900	F
	PETERS RD	SR 84	6LD	77,500	48,900	F
SR 7 (US 441)	NORTH	SUNRISE BLVD	6LD	44,500	48,900	B
	SUNRISE BLVD	BROWARD BLVD	6LD	42,000	48,900	B
	BROWARD BLVD	PETERS RD	6LD	36,700	48,900	B
NW 136 AVE	NW 8 ST	SR 84	6LD	21,000	52,400	A

TABLE 3.5 (Continued)
Traffic Capacity Analysis of Year 2010 Network
City of Plantation

SEGMENTS			LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
ROADWAY	FROM	TO				
COMMODORE DR	BROWARD BLVD	SR 84	4LD		24,300	
FLAMINGO RD						
	NORTH	SUNRISE BLVD	6LD	36,300	52,400	A
	SUNRISE BLVD	CLEARLY BLVD	6LD	43,200	52,400	A
	CLEARLY BLVD	BROWARD BLVD	6LD	24,700	52,400	A
	BROWARD BLVD	SR 84	6LD	61,300	52,400	F
PINE ISLAND RD						
	NORTH	SUNRISE BLVD	6LD	36,900	47,900	B
	SUNRISE BLVD	CLEARLY BLVD	6LD	39,100	47,900	B
	CLEARLY BLVD	BROWARD BLVD	6LD	55,800	47,900	F
	BROWARD BLVD	PETERS RD	6LD	53,500	47,900	F
	PETERS RD	SR 84	6LD	57,100	47,900	F
PETERS RD						
	PINE ISLAND RD	UNIVERSITY DR	4LD	17,100	34,900	A
	UNIVERSITY DR	FLA TURNPIKE	4LD	24,100	34,900	A
	FLA TURNPIKE	SR 7 (US 441)	4LD	21,500	34,900	A
CLEARLY BLVD/NW 8 ST						
	HIATUS RD	NOB HILL RD	4LD	3,400	34,900	A
	NOB HILL RD	PINE ISLAND RD	4LD	2,300	34,900	A
	PINE ISLAND RD	UNIVERSITY DR	4LD	19,700	34,900	A
NW 5 ST/NW 65 AVE						
	UNIVERSITY DR	SUNRISE BLVD	4LD	21,800	24,300	D
BROWARD BLVD						
	NW 136 AVE	FLAMINGO RD	4LD	31,300	34,900	B
HIATUS RD						
	NORTH	SUNRISE BLVD	4LD	7,200	34,900	A
	SUNRISE BLVD	CLEARLY BLVD	4LD	6,700	34,900	A
	CLEARLY BLVD	BROWARD BLVD	4LD	4,800	31,700	A
	BROWARD BLVD	SR 84	4LD	10,200	31,700	A

TABLE 3.5 (Continued)
 Traffic Capacity Analysis of Year 2010 Network
 City of Plantation

SEGMENTS			LANES TYPE	ADT VOLUME	ADT "D" CAPACITY	LOS
ROADWAY	FROM	TO				
NOB HILL RD						
NORTH		SUNRISE BLVD	4LD	18,100	34,900	A
SUNRISE BLVD		CLEARY BLVD	4LD	22,900	34,900	A
CLEARY BLVE		BROWARD BLVD	4LD	23,200	34,900	A
BROWARD BLVD		SR 84	4LD	28,000	34,900	A
NW 70 AVE						
SUNRISE BLVD		NW 5 ST	4LD	16,500	24,300	D
NW 5 ST		BROWARD BLVD	4LD	19,000	24,300	D

Right-of-Way Protection

With the escalating value of land and costs entailed in right-of-way acquisition, it is essential that the City protect proposed roadway corridors from building encroachment. Increased right-of-way costs reduce the funds available for actual construction. FDOT has indicated in their *1986 Florida Transportation Plan* that it will consider, as a part of its project priority analysis, the availability and protection of rights-of-way and will place a higher funding priority on projects where right-of-way preservation and protection measures have been implemented. Therefore, it would be advantageous for the City to utilize such techniques as setback requirements, zoning restrictions, right-of-way protection regulations and official Broward County Trafficway Maps to preserve and protect existing and future rights-of-way. The City may require rights-of-way greater than those indicated on the trafficways map should a greater need be proven.

Constrained Facilities

Directly related to right-of-way preservation and protection is the issue of "constrained facilities". This is a situation where roadway or intersection improvements cannot be implemented due to a lack of available rights-of-way. This problem may be attributed to existing development intensities, very high land values, or environmental concerns.

Several constrained collector and arterial facilities currently exist (and will continue to exist) within Plantation. For this reason, it may be necessary to propose lower LOS standards for the following roadway segments listed below and pursue a "special transportation area" designation for these.

- University Drive - LOS "E"
- Broward Boulevard - LOS "E"
- State Road 7 (U.S. 441) - LOS "E"

Public transportation proposals have been included in the Mass Transit Element as an appropriate alternative to mitigate the transportation impacts within Plantation (see Mass Transit Element). Several transit options are presently being analyzed as a part of the Broward Boulevard Multi-Modal Corridor Study.

Improvements to alternative roadways and other less costly improvements which relieve congestion on the constrained roadways should be pursued. Such improvements could include improved traffic signalization (including turning movements) and synchronization, channelization, and the adding of turn lanes. Such projects generally require the expenditures of less than \$25,000 per project and therefore, they may be included in the City's annual operating budget rather than the Capital Improvements Element.

A financial benefit is accrued by the lowering of LOS standards on constrained facilities. However, such a reduction trades-off the quality of life, and motorist convenience and safety.

Bikeways Plan - Non-Motorized Transportation System

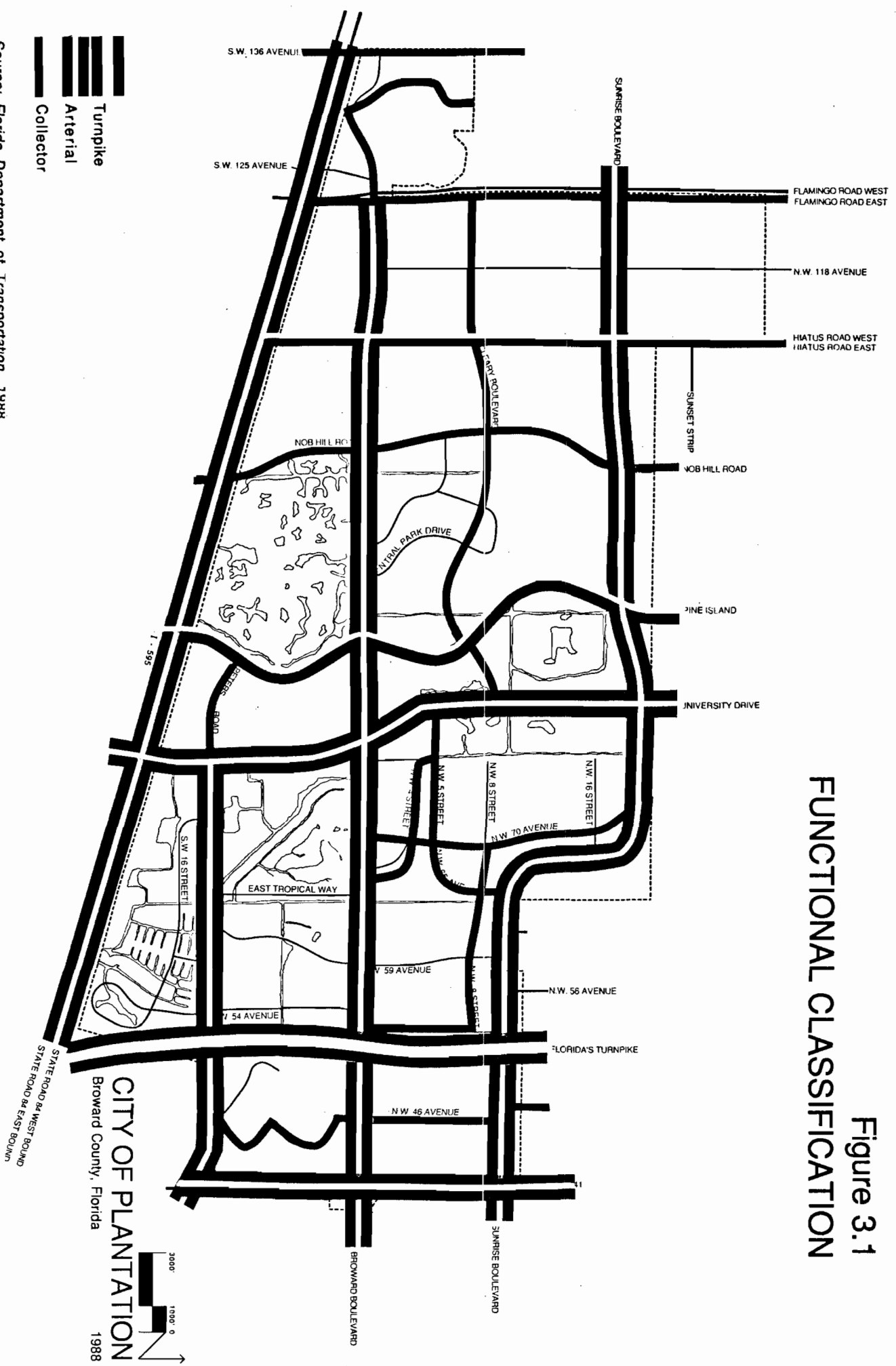
In an effort to coordinate plans with the State Transportation Plan, the Broward County Bicycling Advisory Committee (BAC) has recently completed a short range and long range Bicycle Facilities Plans. Figure 3.5 indicates the short range (10 year) plan as the minimum necessary to accommodate bicycle traffic in Plantation. It recommends that the bicycle facilities be developed as Class II or Class III bike routes.

The Class III design provides a minimum outside curb lane of 14 feet for one-way bicycle travel in the direction of the adjacent vehicular traffic flow. The proposed bikeway may be accomplished by a re-stripe of the two inside 12 foot lanes to provide for the widened curb lane.

The Class II design proposes a four foot bike lane adjacent to the roadway separated by the roadway edge line. Travel is also in the direction of the adjacent vehicular traffic. This bikeway is usually provided in areas where curb and gutters are not provided.

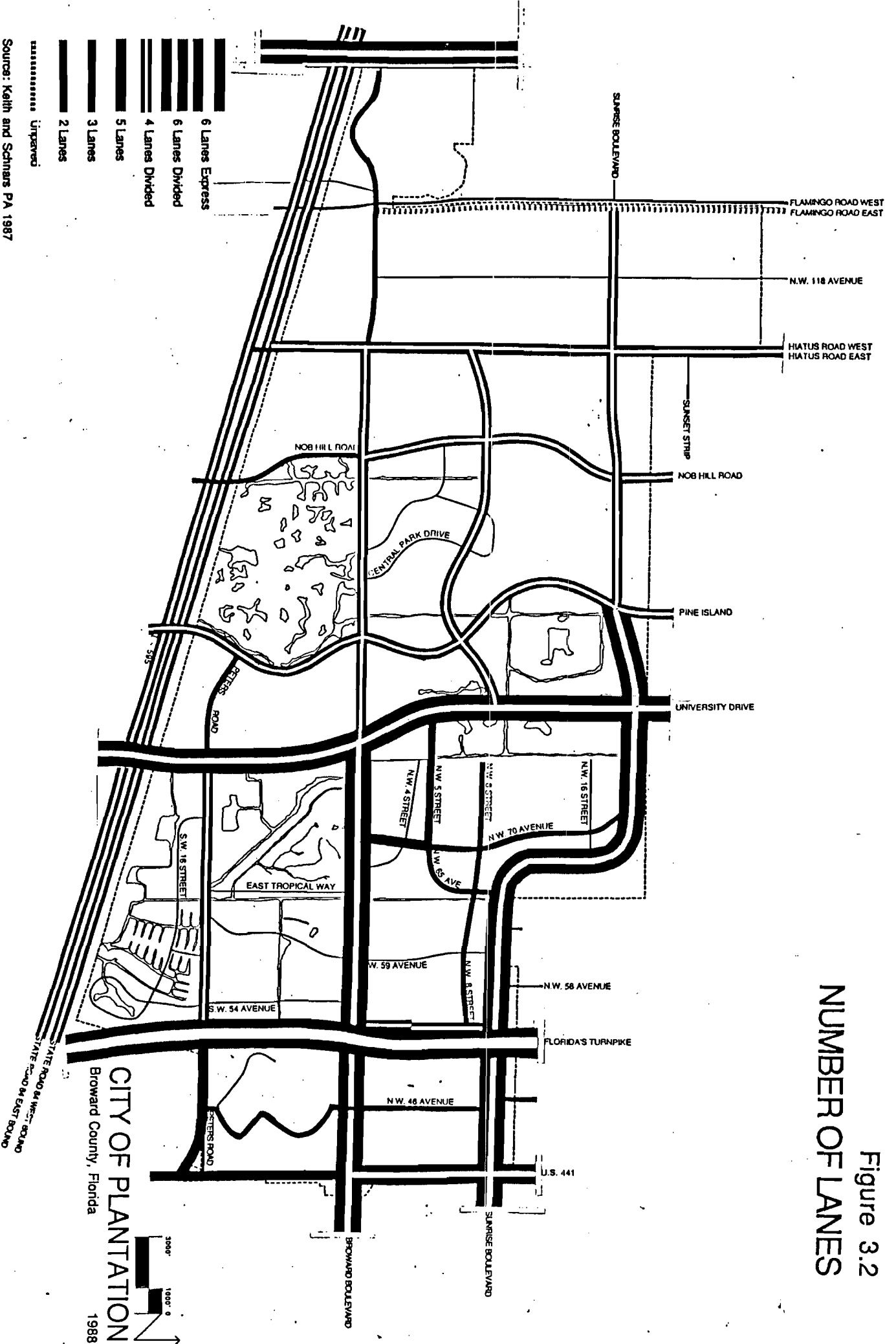
The City of Plantation is in the process of updating and detailing its own 1985 bikeway plan that will supplement the County Plan. The City's Plan will also designate criteria for the construction of the bike paths through the undeveloped areas and establish corridors through existing residential areas. See also Recreation Element.

Figure 3.1
FUNCTIONAL CLASSIFICATION



Source: Florida Department of Transportation, 1988

Figure 3.2
NUMBER OF LANES



Source: Keith and Schnars PA 1987

Figure 3.3
ACCIDENTS

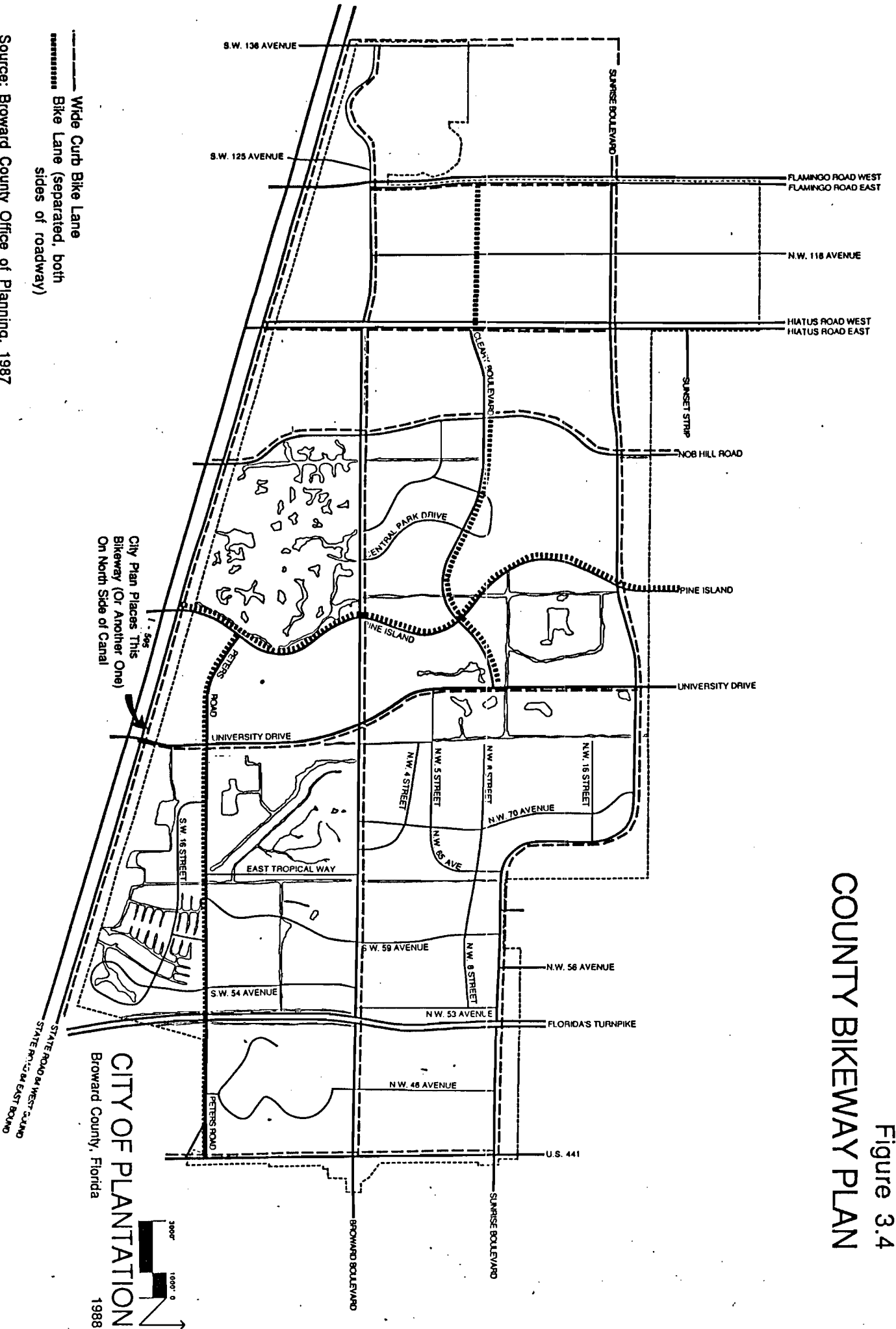
Source: City of Plantation 1984-1987 Data

Highest Accident Intersections

CITY OF PLANTATION
Broward County, Florida
1988

Source: City of Plantation 1984-1987 Data

Figure 3.4
COUNTY BIKEWAY PLAN



MASS TRANSIT ELEMENT

**Inventory
Analysis**

INTRODUCTION

The Role of the County

Currently, the Broward County government provides all of the mass transit service within the City of Plantation. The Division of Mass Transit is part of the Department of Public Services reporting to the County Manager and County Commission. This Division provides all of the regular bus service. The County School Board provides service to school children and the County Social Services Division provides specialized service for the elderly and handicapped.

Amtrak's New York-Miami trains provide rail service in the eastern part of the County, to the east of Plantation. The Tri-County Commuter rail service will use the same corridor. A high-speed rail line is in the planning stages but its corridor and pattern of stops remain to be determined.

Although the County Commissioners are ultimately responsible for bus service in Plantation, City officials do have input through their membership on both the Metropolitan Planning Organization (MPO) and the Transportation Coordinating Committee (TCC). As a condition of receiving Federal mass transit funds, these two entities must approve several important transportation planning and funding documents including the annual Transportation Improvement Program (TIP) and Unified Work Program. These together with the Mass Transit Element of the County Comprehensive Plan and the 1986-1990 County Transit Development Plan (TDP) provide the County-wide planning framework for transit.

The County's Transit Strategy

The 1986 TDP outlines a basic service or route pattern whereby major east-west and north-south trunk lines are identified. They in turn are supplemented with feeder and express routes. The plan's goal is to devote special attention to:

- growth areas
- major generators
- high traffic congestion corridors

The plan then outlines standards for:

- headways
- hours of service
- service to medium and high density development areas

The TDP points out that although ridership continues to increase, particularly during peak hours, these fare box revenue increases are not adequate to offset operating cost increases, thereby requiring increased County general fund appropriations. The TDP also contains a capital budget recommendation to acquire 165 new buses (45 replacing existing vehicles) during the 1986-1990 period.

The new County Mass Transit Element emphasizes priority transit corridors i.e., corridors characterized by traffic congestion, future population increases and strong travel desire lines. Consideration is being given to exclusive bus lanes in these six corridors. The implications for Plantation are discussed later in this report.

Rather than repeat the County-wide details contained in the plans enumerated above, this element concentrates upon an analysis and recommendations for the City of Plantation but based upon the County-wide framework.

INVENTORY

Introduction

In April 1986, Broward County completed and adopted (through its Metropolitan Planning Organization), an updated Transit Development Plan (TDP) covering the years 1986-1990. This six volume study contains a wealth of data about the Broward County Division of Mass Transit system in general as well as specifics about Plantation. The following pages outline and analyze the most significant data from this TDP as it relates to service in Plantation; some additional data was compiled since the TDP.

Major Routes

Each of the eight routes serving the City are listed below with some analysis of each one. The two tables provide specific data on ridership and service levels. It should be noted that Routes 9 and 81 contain segments that briefly touch the eastern corners of Plantation but they are not included in this analysis since they provide little direct service to the City.

Note: There are no transit terminals or exclusive mass transit corridors or rights-of-way within Plantation.

Route 2

- Links Hollywood-Broward County Community College with Coral Springs via University Drive and the Broward Mall hub.
- Ridership (1.03 riders per mile) relatively low
- TDP calls for no significant changes in Plantation
- All buses are wheelchair-accessible
- Comment: particularly important given the present and projected traffic congestion on University Drive; also serves American Express.

Route 10

- Links Broward Mall with downtown Fort Lauderdale via Broward Boulevard; has north-south segment via Federal Highway to Deerfield Beach
- Ridership (1.94 riders per mile) is high
- Service level is typical of system
- TDP calls for extension west to Weston area (1988-89) and the splitting off of the Federal Highway segment into a separate route.
- Directly serves park and ride lot at Broward Mall.
- All buses are wheelchair-accessible.
- Comment: the importance of this route (and other related congestion issues) is indicated by the current Broward Boulevard corridor study which will have transit recommendations. Also serves Northwest 5th Street in Plantation.

Route 18

- Links Coconut Creek to north Dade County via State Route 7.
- Ridership (1.83 riders per mile) is moderately high
- Service level is typical of system
- TDP calls for no changes affecting Plantation
- Comment: only route serving entire State Route 7 commercial corridor.

Route 30

- Links Broward Mall with Downtown Fort Lauderdale via Peters Road-Davie Boulevard; has segment that goes north on Federal Highway to Commercial thence west to Tamarac.
- Ridership (1.11 riders per mile) is average.
- Service level is somewhat lower than system average, i.e. evening and Saturday frequency is less.
- TDP calls for splitting into two routes with the Davie Boulevard link to be extended west to Weston; western extension may be combined with Route 10
- Comment: only current east-west service through southeast Plantation.

Route 36

- Links Broward Mall/northcentral Plantation with the North Beach area via Sunrise Boulevard.
- Ridership (2.74 riders per mile) is the second highest in the system.
- Service level is typical of system
- TDP calls for no changes
- Comment: serves generators along Plantation's northern edge plus Sunrise Boulevard commercial corridor.

Route 56

- Links Broward mall with Lauderdale Lakes commercial center and western Sunrise via 70th Avenue and Sunrise Boulevard.
- Ridership (0.80 riders per mile) is one of the lowest in the system.
- Service level is somewhat lower than system average, i.e. morning start-up and evening frequency.
- TDP calls for no change
- Comment: serves 70th Avenue corridor and provides most direct access to the Motorola and Gould industrial areas (although boardings at both plants are now limited). Note: includes what was Route 71 prior to January, 1986.

Route 72

- Links Broward Mall with North Beach area via Pine Island Road and Oakland Park Boulevard.
- Ridership (2.18 riders per mile) is relatively high
- Service level is typical of the system
- TDP calls for no changes
- Comment: the special value is service to the Pine Island Road corridor and Florida Medical Center.

Route 75

- A City of Plantation loop linking the Mall with the northern Davie neighborhoods via Broward Boulevard, Route 84 and University Drive.
- Ridership (1.16 riders per mile) is slightly higher than system average.
- Service level is lower than the other routes, i.e. hourly headways and no evening or Sunday service.
- TDP calls for this route to be eliminated and incorporated into expanded Routes 10 and/or 30.
- Comment: retention and service level expansion of this service (via other routes) is vital as the only service to Plantation west of Pine Island Road.

Table 4.1
Transit Ridership
Routes Serving Plantation

1986 Total Data for Entire Route				Selected Monthly data (1)		
Route No.	Total Revenue	Total Riders	Revenue Miles	Riders Per Mile	Riders Per Mile June 1986	Riders Per Mile Feb. 1986
Broward Mall Hub						
2	\$168,743	537,910	523,520	1.03	.90	1.07
10	351,125	1,133,203	529,337	2.14	1.94	2.40
30	197,299	629,852	566,805	1.11	1.03	1.19
36	342,989	969,819	353,999	2.74	2.42	3.22
56	88,442	361,186	452,692	0.80	0.76	0.85
72	190,258	724,154	332,220	2.18	1.93	2.40
75	15,908	62,337	53,716	1.16	1.14	1.28
Route 7 Corridor						
18	342,751	1,052,166	575,544	1.83	1.72	1.76
TOTAL SYSTEM				1.57	1.43	1.79

(1) In general, February is the annual peak ridership and June the annual low.

Source: Broward County Office of Planning, 1987

Table 4.2
Service Frequency
Within the City of Plantation

	Hours of Operation ⁽¹⁾			Headway in Minutes		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
2	6:05-9:25	6:05-9:40	10:20-7:20	30	30	60
10	6:05-9:35	6:05-9:35	10:45-5:45	30	40	60
30	6:30-9:05	5:35-9:05	9:15-7:10	30/60 (2)	60	60
36	6:15-9:00	6:15-9:00	10:25-6:25	30	40	60
56	7:05-9:30	7:05-9:30	9:35-7:05	30/60 (2)	30/60	60
72	6:35-9:05	6:35-9:05	10:00-5:30	30	30	60
76	8:05-6:05	8:05-6:05	None	60	60	-
18	5:30-10:00	5:30-10:00	10:00-7:55	30	30	60

(1) Time of departure from Broward mall except Route 18 which is departure from Plantation Hospital.

(2) Evening frequency.

Source: Broward County Transit Division Time Tables, May 1987

ANALYSIS

Introduction

The previous inventory section includes the analysis of existing levels of service and service frequency plus proposed route changes/expansions. As noted at the beginning of this Element, the County is in the process of buying 165 new buses for a net gain of 120 vehicles. An in-depth analysis of the County bus system's revenues is not applicable to Plantation except (as previously noted) that revenue increases have not been covering cost increases requiring increased County General Fund subsidies (from 16 percent in 1983 to 24 percent in 1987). Although the farebox revenues have continued to average about 25 percent of total revenues, Federal assistance has dropped sharply (59 percent to 17 percent in five years).

Plantation's population characteristics do not result in significant concentrations of one-person households, low income or elderly individuals. More pertinent is the concentration of bus-dependent individuals which is analyzed elsewhere in this section.

The State Department of Transportation and Metropolitan Planning Organization do not have any specific transit plans directly impacting plantation.

The following pages provide an analysis of other key transit issues in Plantation.

Disadvantaged

The Social Service Transportation Division of the County Public Services Department operates both fixed schedule and "demand-response" service for qualified elderly and handicapped individuals within Plantation. Three Plantation census tracts have a percent of total population that exceeds the 3.5 County average of handicapped individuals; they seem to deserve consideration in planning regular routes with handicapped-accessible buses:

- 605.01 South of Sunrise, East of University
- 605.02 South of Sunrise, West of University
- 608 East of Turnpike

Other Transit-Dependent Users

County-wide, over 50 percent of regular bus service users do not own a car, i.e. are transit-dependent. In a number of Plantation's Traffic Analysis Zones, more than 5 percent of the single-family households and 10 percent of the apartment households have no car. Service to these Zones is particular important. They tend to be clustered along:

- University Drive
- Pine Island Road
- Broward Boulevard

Commuters

Over 37 percent of the County's bus risers (the largest category) are using the bus to reach their job. Thus service to Plantation's job concentrations is imperative.

Rider Surveys

On-board surveys on the prime routes serving Plantation resulted in three principal complaints:

- Routes 2 and 36 on University Drive
- Route 10 on Broward Boulevard
- Route 75 on both Broward Boulevard and Route 82

However, boardings on all other links are higher than the system's average.

Individual bus stop boarding rates are now highest at five points which average two or more passengers per run:

- Route 10: Broward Boulevard and State Road 7, eastbound
- Route 18: Broward Boulevard and State Road 7,
southbound, north side
northbound, north side
- Route 36: Sunrise Boulevard and Sunset Strip
- Route 56: Broward Mall Cinema
- Route 75: Route 84 and Pine Ridge Road (unincorporated)

Of course, the Broward Mall has one of the highest boarding and transfer rates in the system.

Modal Split

The current County-wide ratio shows that only .95 percent of all trips are now by bus as opposed to car. The Plantation ratio is probably similar to the County. However, system-wide ridership has been increasing by an average of 3.5 percent per year.

Projected Trip Generators and Attractors

One future non-residential trip attractor (the Land Use Plan's proposed commercial development along western Sunrise Boulevard) will be served by 1990. One other such attractor (the shopping center at Cleary Boulevard and Nob Hill Road) is not as yet slated for service.

Several areas planned for future medium-density residential development (10 units per acre or higher) are not now served - generally in Cleary Boulevard area cited above. See the Future Land Use Plan.

Traffic Congestion Alleviation

Ironically, several of the routes serving the streets with projected high congestion levels (see Traffic Element), now have low ridership and low Plantation boarding rates. Specifically:

- Route 2 on University Drive
- Route 75 on Broward Boulevard and University Drive

The County's proposals for express bus service to the Miami Airport and Joe Robbie Stadium would contribute to elimination of congestion.

Population Projection Implications

With a projected 17 percent population increase by 1993, increased ridership and route coverage seems realistic. The area between University Drive and Hiatus Road will increase from 13,432 in 1982 to 61,448 by 2010 thereby documenting the need for more service west of Pine Island Road.

Conclusions: Mass Transit Analysis

- **Level of Service Standards:**

Virtually all of the existing residentially developed areas (other than low density) now have bus service within one-quarter mile - the County and City standard. See discussion of Plan map for recommended corridors to meet future development.

Except for Route 75, Plantation's routes generally meet the service frequency standards of 30 minute headways and 6:00 a.m. to 9:30 p.m. (final run departure) standards.

- **Trip Generators, Existing**

All existing major trip generators are served by buses.

- **Auto Dependent Population**

The qualified elderly and handicapped now have both demand-response and fixed schedule service with no waiting list.

Regular routes do not serve several of the areas with high-handicapped populations. However, the areas with a high "no-car" households ratio are generally well served, in two cases with handicapped accessible buses.

IMPLICATIONS FOR FUTURE MASS TRANSIT PLAN

1. *Major Trip Generators:* Based upon the Future Land Use Plan, several additional attractors should be shown. In part, they form the basis for the next five recommendations.
2. *Weston-Bonaventure Extension:* The TDP calls for Routes 10/75/30 to be extended to Weston-Bonaventure in 1990-1991. This will enhance service to southwestern Plantation. The County Transit Element calls for "priority service" to the Weston area, using bus lanes or light rail by 2010.
3. *Hiatus - Sunrise New Route:* The TDP calls for this route to link the Coral Springs Mall with the large mall under construction just west of Plantation, in 1990-1991.
4. *Cleary Boulevard:* Although not in the TDP, Plantation's Future Land Use Plan and population projections plus the County's Transit Element indicate the need for route extensions into this area west of Pine Island Road by the 1994 target date of this City plan.
5. *Peters Road as Part of Central Plantation Loop:* The Future Land Use Plan suggests that by 1994, the central area bus loop should use Peters Road as its southern link due to both projected commercial development and the people-mover.
6. *The Central Plantation People Mover or Transit Facility:* The private property owners have recognized the need for further planning for this internal transportation system that would bisect downtown, linking the American Express Building through the Broward Mall to the projected development in the Peters Road area. See also the Neighborhood Design Element.

This is slated to be largely privately developed and has as its primary goal, the reduction of private auto trips within the downtown area (and adjacent, increasingly congested roadways). It would tie into the Broward Mall bus transfer point and the park and ride lots. An exclusive right-of-way would be used. Another benefit would be its accessibility to the handicapped and elderly improving their access to downtown.

7. *Broward Mall Transfer Point:* Due to its high number of boardings, it is imperative that this facility be made as attractive as possible to enhance usage.
8. *One-Half Mile Level of Service Corridors:* The existing and proposed service corridors should be used in assessing any Land Use Plan amendment requests and other planning activities.

Figure 4.1



PORTS AND AVIATION

**Inventory
Analysis**

The current population of Plantation is 63,373 and the City is therefore required to address the designation of ports, aviation and related facilities. As adequate facilities are available and accessible to Plantation residents, there are no existing or planned port or aviation facilities within the City. Plantation residents, as part of a larger metropolitan county, are served by facilities operated and maintained by other jurisdictions. Table 4A.1 lists all port and aviation facilities including the agency responsible for operations, maintenance and planning. Table 4A.2 lists all other agencies with legislative responsibilities for airport facilities.

INVENTORY

Figure 4A.1 shows all port and airport facilities which serve Broward County in relation to the City of Plantation. The following corridors provide Plantation residents with access to all listed facilities:

State Road 84
I-595
University Drive
Florida Turnpike

With the completion of I-595, Fort Lauderdale/Hollywood International Airport will be more accessible with an anticipated travel time of 12-15 minutes from Plantation.

There are four aviation facilities and one port facility which serve Broward County. The Fort Lauderdale/Hollywood International Airport is the primary commercial service facility. The airport is classified as a medium hub, and provides commercial, charter and general air service through 24 airlines and a helicopter service. The airport is located in the southeast portion of Broward County.

The Fort Lauderdale Executive Airport is a general aviation facility which is a designated reliever for Fort Lauderdale/Hollywood International Airport. The primary function of this airport is to serve corporate aircrafts. The airport is located in the northeast portion of Broward County.

North Perry Airport is a general aviation facility. The primary function of this airport is to relieve Fort Lauderdale/Hollywood International Airport of excess small private aircraft. The airport is located in the southwest portion of Broward County.

Pompano Airpark is a general aviation facility. The primary function of this airport is for recreational, instructional, and short range business flying. The airport is located in the northeast portion of the County.

Port Everglades is located at the adjoining City limits of Fort Lauderdale, Hollywood and Dania. The port facility consists of approximately 2,100 acres of which 910 acres are owned by the Port Authority. The port maintains warehousing and storage facilities, and has seven passenger terminals and another under construction. Foreign trade zone #25 is also located within the jurisdiction of the Port.

As there are no port, aviation and related facilities within the City of Plantation's jurisdiction, the specific data requirements listed in Rule 9J-5.009(1)(a) through 9J-5.009(1)(b)2 have been omitted in this element, yet are included in the Broward County, City of Fort Lauderdale, City of Pompano Beach and Port Everglades comprehensive plans.

ANALYSIS

Airport Facilities

Fort Lauderdale Executive Airport

The City of Fort Lauderdale has planning responsibility for the Fort Lauderdale Executive Airport. The specific data analysis requirements listed in Rule 9J-5.009(2)(a) through 9J-5.009(2)(b) are addressed within the City of Fort Lauderdale Comprehensive Plan in the Aviation Component of the Ports, Aviation and Related Facilities Element. Improvements to address projected deficiencies are part of a three-phase improvement program. The Fort Lauderdale Executive Airport Master Plan addresses these issues as well. Figure 4A.3 lists all programmed improvements.

Fort Lauderdale/Hollywood International Airport

Broward County Aviation Department has planning responsibility for the Fort Lauderdale/Hollywood International Airport. The specific data analysis requirements listed in Rule 9J-5.009(2)(a) through 9J-5.009(2)(b) are addressed in the Fort Lauderdale/Hollywood International Airport Element and the General Aviation Element of the Broward County Comprehensive Plan. As indicated in the element projected deficiencies will be corrected through a phased capital improvements program. The Fort Lauderdale/Hollywood International Airport Master Plan further addresses the projected deficiencies in the airport facility. Table 4A.4 lists all programmed improvements.

North Perry Airport

Broward County Aviation Department has planning responsibility for North Perry Airport. The specific data analysis requirements listed in Rule 9J-5.009(2)(a) through 9J-5.009(2)(b) are addressed within the General Aviation Element of the Broward County Comprehensive Plan. According to the element, projected deficiencies will be corrected by a two-stage capital improvement program. Table 4A.4 lists all programmed improvements.

Pompano Airpark

The City of Pompano Beach has planning responsibility for the Pompano Airpark. The specific data requirements in Rule 9J-5.009(2)(a) through 9J-5.009(2)(b) are addressed within the City of Pompano Beach Comprehensive Plan in the Port, Aviation and Related Facilities Element. Based on the analysis in the Pompano Beach Airport Master Plan, there are sufficient operations capacity to meet projected demands. The City of Pompano Beach has identified required improvements for the airpark in their Capital Improvement Program. Table 4A.5 lists all programmed improvements.

Port Facilities

Port Everglades

Port Everglades Commission has planning responsibility for Port Everglades. The Port Everglades Master Plan was adopted as part of the Broward County Comprehensive Plan. The specific data requirements in Rule 9J-5.009(2)(a) through 9J-5.009(2)(b) are addressed within the Port Everglades Master Plan. The plan provides for the expansion of port facilities to meet future demands and enhance the economy of Broward County. Table 4A.6 lists all programmed improvements.

Planned Facilities

Weston Airport Site

According to the General Aviation Element of the Broward County Comprehensive Plan, the Weston Airport site has been planned to accommodate general transport aircraft.

Parkland Airport Site

According to the General Aviation Element of the Broward County Comprehensive Plan, the Parkland Airport will be similar to North Perry Airport. The Parkland Airport will be planned with the potential to expand its services.

Table 4A.1
Port and Aviation Facilities within Broward County

Facility	Responsible Agency
Airports:	
Fort Lauderdale/Hollywood International Airport	Broward County Commission
North Perry Airport	Broward County Commission
Fort Lauderdale Executive Airport	City of Fort Lauderdale
Pompano Airpark	City of Pompano
Ports:	
Port Everglades	Port Everglades Commission

Source: City of Plantation Planning Department, March 1989.

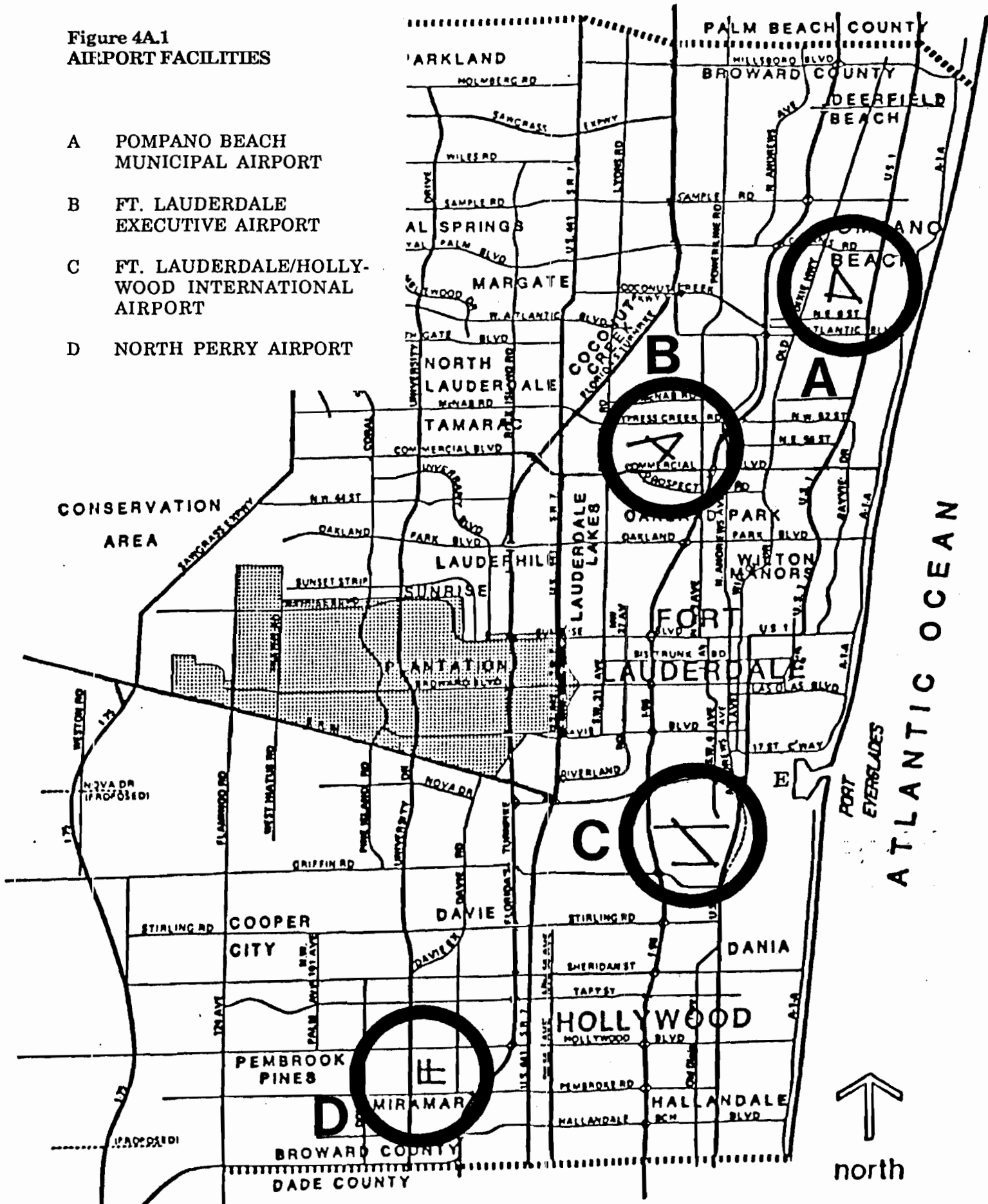
Table 4A.2**Airport Related Legislation and Responsible Public Agencies
Broward County, 1989**

Agency	Legislation	Responsibility
Broward County Aviation Department	Broward County Administrative Code Article VIII, Section 50.01.	Planning, construction, maintenance, repair and alteration of building, hangars, runways and other county-owned facilities located upon or used in connection with the airport.
Federal Aviation Administration		Regulate air commerce to promote its safety and development; achieving efficient use of the navigable airspace of the U.S.; promote, encourage, and develop and operate a common system of air traffic control and air navigation for both civilian and military aircraft; promote and develop a national system of airports.
Board of County Commission	Broward County Code, Article 2, Section 2-18(1).	Construct, acquire, establish, improve, extend, enlarge, recon- struct, equip, maintain, repair, and operate any airports and aviation facilities as defined either within or without territorial boundaries of the County.
Florida Department of Transportation Aviation; Division of Planning and Programming	Chapter 332 Florida Statutes	Plan airport systems in the state as well as assist, advise, cooperate and coordinate with the federal, state and local and private organizations in planning such a system.

Source: Broward County Comprehensive Plan Fort Lauderdale/Hollywood International
Airport Element, September 1988.

Figure 4A.1
AIRPORT FACILITIES

- A POMPANO BEACH
MUNICIPAL AIRPORT
- B FT. LAUDERDALE
EXECUTIVE AIRPORT
- C FT. LAUDERDALE/HOLLY-
WOOD INTERNATIONAL
AIRPORT
- D NORTH PERRY AIRPORT



Source: Plantation Planning Department 1989

Table 4A.3
Fort Lauderdale Executive Airport

Phase I Improvements	
1987-1991	Year
Security Project Fencing	1989
Runway 31 Runup Pad and Blast Fence Construction	1989
Entrance Road Construction	1990
New Administration Building Construction	1990
Taxiway Lima and Foxtrot Extension	1990
Airport and Industrial Airpark Infrastructure Improvements	1991
Air Traffic Control Tower and Parking Construction	1991
 Phase II Improvements	
1992-1996	Year
Airport and Industrial Airpark Infrastructure Improvements	1992
Construction of New Parallel Runway 8R/26L and Associated Taxiway and Runup Pads	1992
Runway 8R/26L Precision Approach Path Indicator	1992
Aircraft Parking Apron Construction	1992
Automated Weather Observation System	1993
Wind Shear Equipment	1993
FDEP Equipment	1993
12 foot Windcone and Segmented Circle	1993
Taxiway Echo Extension	1994
Strengthen Runway 8 Runup Area	1994
Strengthen All Taxiways	1995
Runway 8-26 Strengthen	1996
Localizer Modifications and New Terminal VOR	1996
New Maintenance Building and Parking	1996
 Phase III Improvements	
1997-2006	Year
Interior Access Roads	1997

Source: City of Fort Lauderdale Comprehensive Plan, 1988.

Table 4A.4
Aviation Projects
Broward County, 1989-1994

Fiscal Year	1989	1990	1991	1992	1993	1994
North Perry						
Taxiway Lighting	0	0	0	0	0	0
Avigation Easements	0	0	0	0	0	0
Admin/Maint Bldg	150,000	0	0	0	0	0
Taxiway P&D	0	0	0	0	0	0
Water main ext	275,000	0	0	0	0	0
Runway 9R ext	575,000	0	0	0	0	0
Taxiway T	35,000	315,000	0	0	0	0
Taxiway A	0	0	38,000	342,000	0	0
Taxiway E	0	32,000	293,000	0	0	0
Reserves	650,710	476,500	311,000	140,000	140,000	140,000
New Airports						
Land	17,263,770	0	0	0	0	20,000,000
Construction	0	32,000,000	0	0	0	0
Reserve	12,460	0	0	0	0	0
Ft Lauderdale						
Master plan imp	0	0	0	0	0	0
Airfield Improvement						
Design	1,813,000	0	0	0	0	0
Surface airfield 1	0	0	0	0	0	0
Surface airfield 2	10,500,000	0	0	0	0	0
Surface airfield 3	0	0	33,000,000	0	0	0
Elec airfield 1	0	0	0	0	0	0
Roadway Improvement						
Terminal drive	140,000	0	0	0	0	0
Roadway resurfacing	0	0	0	0	0	0
CRF bridge	705,200	0	0	0	0	0
Noise mitigation						
Employee parking	2,300,000	0	0	0	0	0
Land-Jansko	5,000,000	0	0	0	0	0
Greenbelt	4,000,000	0	0	0	0	0
Taxiways for 9L&27R	530,000	0	0	0	0	0
Expand Air Cargo Bldg	0	0	0	0	0	1,500,000
Pearl Prop relocation	0	0	0	0	0	0
Long term parkg rev control	0	0	0	0	0	0
Bus parking	0	0	0	0	0	0
CFR foam storage tank	0	0	0	0	0	0
Admin Building	675,000	0	0	0	0	0
Public parking garage	0	1,200,000	10,800,000	0	0	0
Renov airfield oper office	0	0	0	0	0	0
Renewal replacemt acct	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Reserves	0	0	0	95,000	170,810	170,810
Construction Fund						
Reserve	0	0	0	0	0	0
	2,702,750	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000
Total Appropriations	\$48,327,890	\$37,723,500	\$48,142,000	\$4,277,000	\$4,010,810	\$25,510,810

Source: Broward County Office of Budget and Management Policy, 1988.

Table 4A.5
Pompano Airpark Programmed Improvements

Construction Project Description	Start Date	Cost
Taxiway Runway 14	1987-88	\$144,000
Runway Lighting	1987-88	75,000
Airpark Fencing	1988-89	45,000
Taxiway "J"	1988-89	272,000
Airpark Sewer System	1988-90	100,000
Tower/Adm Bldg Parking Lot	1990-91	50,000
Aircraft Parking Ramp	1990-91	210,000
Extend Runway 10/28	1989-90	110,000
Extend Runway 5/23	1990-91	160,000

Source City of Pompano Beach Capital Improvement Program

Table 4A.6**Port Everglades; Major Planned Projects by the Year 2000**

Project	1989	1990	1991-95	1996-2000
Northport				
Convention Center			X	
Hotel/Market Place and Office Complex			X	
Convention Center Parking Garage			X	
Midport				
Third Gantry Crane of Lo/Lo Container Terminal				
Lo/Lo Terminal Improvements		X		
Cruise Terminal Parking Garage			X	
Cruise Terminal #25				X
Alternate I - Redevelopment of Midport Break-Bulk Terminal Expansion			X	
Alternate II - Redevelopment of Midport Ro/Ro Terminal			X	
Tug Operator Office/Maintenance Building	X			
Southport				
Phase I - Southport Terminal		X		
Phase II - Southport Terminal			X	
Intermodal Transfer Facility			X	
Southport Turning Notch	X			
Transportation Improvements				
Southeast 18th Avenue Widening	X			
Spangler/Eisenhower Interim		X		
McIntosh Road			X	
Eisenhower Connector to Eller Drive			X	
Eller Drive			X	
Eisenhower Viaduct				X

Source: Port Everglades Master Plan, 1988-2000.

HOUSING ELEMENT

**Inventory
Analysis**

INVENTORY

Age of Housing Stock

Table 5.1 shows when Plantation's housing stock was constructed, distinguishing rental units from owner-occupied. The latest available data with this kind of breakdown is 1980. Plantation had only very sparse development prior to 1960; each succeeding decade showed increases over the prior one in terms of total construction and owner occupied units. The only exception was a spurt of rental construction in the 1970-74 period.

As of 1980, only about one third (35.0 percent) of Plantation's housing stock was constructed before 1970 as compared to half (49.1 percent) of the County's stock.

Table 5.1
Number of Dwelling Units by Age,
City of Plantation, 1980

Year Structure Built	Number of Units⁽¹⁾
Year-round housing units	17,936
1979 to March 1980	1,310
1975 to 1978	4,344
1970 to 1974	6,007
1960 to 1969	4,819
1950 to 1959	1,368
1940 to 1949	75
1939 or earlier	13
Owner-occupied housing units	14,253
1979 to March 1980	940
1975 to 1978	3,531
1970 to 1974	4,435
1960 to 1969	4,018
1950 to 1959	1,260
1940 to 1949	64
1939 or earlier	5
Renter-occupied housing units	2,557
1979 to March 1980	78
1975 to 1978	461
1970 to 1974	1,281
1960 to 1969	650
1950 to 1959	72
1940 to 1949	7
1939 or earlier	8

(1) Number includes seasonal and vacant units.

Source: U.S. Bureau of the Census, 1980

Type of Dwelling Units

As Table 5.2 shows, prior to 1980, Plantation's housing was about two-thirds single family, mostly single family detached. Since 1980, the sizable number of apartment, condominium and other kinds of multifamily projects has reduced the ratio to almost a 50-50 ratio which would seem to be a positive trend in today's market. The number of mobile homes has stayed virtually constant.

Table 5.2
Type of Units
City of Plantation, 1980 and 1987

Type of Unit	1980	
	Number	Percent
Single-family, Detached	10,285	57.4%
Single-family Attached	1,408	7.8
Two-family	123	.1
Multifamily (3 + Families)	5,568	31.4
Mobile home (or trailer)	552	.3
Total	17,936	100.0%

	1987	
	Number	Percent
Single-family	11,295	52.1
Two or more families	11,358	47.7
Mobile homes	525	.2
Total	23,809	100.0%

Sources: U.S. Bureau of Census, 1980
Population and Housing Projections for Plantation, Carpenter-Craft, 1987

Owner-Renter Occupancy Patterns

As of 1980, the City's housing stock was almost 85 percent owner-occupied. Current estimates suggest there has been little change in this ratio. This is higher than the County ratio reflecting the predominant single-family detached owner-occupied pattern in Plantation.

Table 5.3 also shows the Black and Spanish origin occupancy patterns for the City as of 1980. The home-ownership rate of these two groups is strong.

The vacancy rate status shows 345 seasonal units in Plantation, a smaller percentage than the County and not really large enough to create special implications for planning. The vacancy rate for "sale only" housing was higher than the County figure and reflects the high turnover rate discussed later in this report. The abandoned or boarded up quantity is negligible.

Table 5.3
Tenure Characteristics of the Housing Stock
City of Plantation and Broward County, 1980

Tenure	Broward County	City of Plantation
Tenure by Race and Spanish- Origin of Householder		
Occupied housing units	417,517	17,202
Owner-occupied	299,706	14,560
Percent owner-occupied	71.8%	84.8%
White	282,579	14,058
Black	14,948	82
Spanish origin	7,996	364
Other	1,202	56
Renter-occupied	117,811	2,642
Percent renter-occupied	28%	14%
White	98,480	2,473
Black	17,724	59
Spanish origin	4,613	94
Other	789	16
Vacancy Status		
Vacant housing units	58,841	1,072
For sale only	5,996	288
Homeowner vacancy rate	10%	27%
For rent	9,298	156
Rental vacancy rate	16%	15%
Rented/sold, to be occupied	5,059	104
Held for occasional use	29,689	345
Other vacant	8,799	179
Boarded-up	251	1

Source: U.S. Bureau of the Census, 1980

The Cost of Housing

With a 1980 median value of \$96,100, it is apparent that the typical cost of owner occupied housing is relatively high. For example, the Broward County average was \$72,900. As of 1980, less than five percent of Plantation's units were valued at less than \$50,000. (See Table 5.4.)

Table 5.5 reflects these values in that the predominant range of 1980 monthly mortgage payments was of \$600 per month or more, with a median of \$530. The County-wide median was \$434.

The next table (Table 5.6) shows 1980 monthly gross rent for the City compared to the County. Again, the relatively high cost of housing is shown by the median rent figure of \$396 in the City as opposed to \$312 in the County. The predominant (50 percent of the units) rental range was over \$400 per month with a negligible number of units below \$200 per month. The County had only 26 percent of its units renting for over \$400.

A 1985 rental study by Reinhold P. Wolff⁽¹⁾ shows the following rental rates in Plantation-Sunrise as of that year:

Single-family house	\$759
Townhouse, villa, duplex, etc.	517
Condominium	531
Apartment	423

Table 5.4
Value of Owner-Occupied Housing
City of Plantation, 1980

Value		Dwelling Units	
		Number	Percent
Less than	\$ 30,000	31	.1
\$ 30,000 -	39,999	41	.1
40,000 -	49,999	284	3.2
50,000 -	59,999	525	6.1
60,000 -	79,999	1,877	21.4
80,000 -	99,999	2,005	22.9
100,000 -	149,999	2,903	33.2
150,000	and more	1,052	12.0
TOTAL		8,754	
Median Value		\$96,100	100.0%

Source: U.S. Bureau of the Census, 1980.

(1) Broward County Rental Housing Analysis, Reinhold P. Wolff Economic Research Inc., 1985.

Table 5.5
Monthly Owner Costs of
Owner-Occupied Housing Units
City of Plantation, 1980

Mortgage Status and Selected Monthly Owner Costs	City of Plantation
Owner-occupied housing units	8,607
With a mortgage	7,809
Less than \$100	6
\$100 to \$149	11
\$150 to \$199	220
\$200 to \$249	281
\$250 to \$299	438
\$300 to \$349	518
\$350 to \$399	591
\$400 to \$449	701
\$450 to \$499	721
\$500 to \$599	1,226
\$600 to \$749	1,474
\$750 or more	1,622
Median	530
Not mortgaged	798
Less than \$50	0
\$50 to \$74	9
\$75 to \$99	79
\$100 to \$149	275
\$150 to \$199	253
\$200 to \$249	88
\$250 or more	94
Median	84

Source: U.S. Bureau of the Census, 1980

Table 5.6
Monthly Gross Rent
City of Plantation and Broward County, 1980

Gross Rent	Plantation		Broward County	
	No./Units	Percent	No./Units	Percent
Below \$80	0	0	1,103	1.0
80-99	8	.3	898	.8
100-149	13	.5	4,189	3.6
150-199	28	1.2	9,076	7.8
200-249	53	2.1	15,545	13.3
250-299	236	9.3	20,434	17.5
300-349	345	13.6	18,545	16.0
350-399	567	22.4	16,147	13.9
400 and above	1,170	46.2	26,038	22.3
No. cash rent	111	4.4	4,381	3.8
Total units	2,531	100%	116,587	100%
Median monthly rent	\$396		\$312	

Source: 1980 U.S. Census

Table 5.7 shows the percentage of income devoted to rental housing costs in Plantation. Most of the households with incomes of less than \$10,000 per year were devoting more than one-third of their income for rent which is generally considered too high. Conversely most of those with incomes over \$20,000 per year were devoting less than 25 percent of their income for rent, a more acceptable level.

Table 5.7 belongs here

Condition of Housing Stock

Again, the 1980 U.S. Census provides the most recent data on internal housing conditions (see Table 5.8).

Table 5.8
Internal Housing Conditions
City of Plantation, 1980

Condition	Number of Dwelling Units
Lacking complete plumbing	30
Lacking complete kitchens	64
Lacking central heating	156
Overcrowded owner housing (1)	131
Overcrowded rental housing (1)	73

(1) More than one person per room

Source: 1980 U.S. Census

With total housing stock of some 18,000 units, these numbers are relatively small. And lack of central heating is not a serious problem in South Florida. Obviously one unit could have several of the listed problems.

Other indicators of the City's quality housing stock include the fact that 98.9 percent of the units have air conditioning and over 90 percent are on public sewer.

A 1987 survey of external conditions is summarized in Table 5.9 and shown on Figure 5.1. Other than the Flex Zone east of the Turnpike, substandard housing is not a significant problem in Plantation. The Neighborhood Analysis discusses this growing problem in Zone 73 although there are still only 18 units (out of the 1,903 total in this neighborhood) that are in need of major repair. The 294 in need of minor repair shows the deferred maintenance trend.

Table 5.9
External Housing Conditions
City of Plantation, 1987

Flex Zone	In Need of Minor Repair		In Need of Major Repair		Total Substandard	
	No.	Percent	No.	Percent	No.	Percent
68	39	3.8	3	.3	42	4.1
73	294	15.4	18	1.0	312	16.4
74	101	4.4	1	0	102	4.4
75	16	.6	0	0	16	.6
76	106	2.9	0	0	106	2.9
Total	556	4.7%	22	.2%	578	4.9%

Source: City of Plantation Planning Department, 1987

Low and Moderate Income Housing

Although the Federal Government has significantly reduced its program of housing subsidies for low and moderate income households, several remain.

The Broward County Housing Authority operates a program whereby households can receive a rent subsidy certificate to use in a private market unit. Currently, no Plantation households are using the HUD "Section 8 Existing Housing Assistance Program."

The Broward County Community Development Division makes low interest rate housing rehabilitation loans, funded through HUD's Community Development Block Grant program. Currently no Plantation households are participating in the program. The value of the housing and household incomes appear to be the constraints.

The Broward County Housing Finance Authority has funded four apartment projects in Plantation:

Southern Point	292 units
Jacaranda Village	296 units
Los Padres	444 units
Harbor Town	280 units

The State Housing Finance Authority has also financed several apartment developments in Plantation.

These bond financing programs require that 20 percent of the units be set aside for low and moderate income housing which is defined as incomes of less than \$25,000 per year. This means that 260 households with incomes below the City median are living in relatively new apartment units as a result of the County program.

There are no subsidized housing developments in Plantation.

Group Homes

There are currently four licensed adult congregate facilities (ACLF's) in Plantation.

Convenant Village	Broward Blvd.	540 units
Golden Age Retirement Home	Southwest 40th Ave.	28 units
Home Away From Home	Southwest 44th Ave.	8 units
Plantation Community Home	Northwest 8th St.	9 units

Although the zoning code provides for them, there are not other kinds of group homes in Plantation. Group homes are permitted in multifamily residential districts with site plan approval by the City Council.

Mobile Home Parks

There is one mobile home park located near the western terminus of Broward Boulevard. There are currently 525 units in this park.

Historically Significant Housing

As noted at the outset of this Element, only 13 houses were constructed prior to 1939. Most of these houses are located in the area just west of the Turnpike and north of Broward Boulevard. Even though not on the State's Master File nor a candidate for National Register Historic District status, the area deserves careful monitoring to assure preservation of these houses.

Housing Construction Activity

Table 5.9 shows the kind of housing construction that has occurred since the 1980 U.S. Census. During this period, more than twice as many multiple family units were constructed compared to single family.

The number of mobile homes units decreased by only 27. Demolitions and conversions were too small in number to be significant.

Table 5.10
Housing Unit Construction
City of Plantation, 1980-1987

Housing Units	Single Family	Multiple Family	Total
1980	489	600	1,089
1981	308	785	1,093
1982	208	443	651
1983	99	110	209
1984	169	525	694
1985	180	1,125	1,305
1986	216	1,018	1,234
1987	405	1,029	1,434
Total	2,074	5,635	7,709

Source: City of Plantation, 1987

ANALYSIS

Household Projections

Table 5.11 shows the projections of the number of households by size for the target years 1993 and 2010. This is based upon the population projections elsewhere in the Comprehensive Plan and assumes an average of 2.38 persons per housing unit and assumes no shift in the basic ratio of characteristics based upon the advice of demographers that there is no statistical basis to do so. Table 5.12 shows the same projections broken down by income.

The realities of the central Broward County real estate market and lack of deep subsidy programs means that Plantation's lower income population will not increase as much as its higher income brackets.

Table 5.11
Household Projections
City of Plantation, 1987-2010

Household Size	1987	1993	2010
One Person	3,062	4,066	5,323
Two Person	8,103	10,758	14,084
Three Person	4,035	5,357	7,013
Four Persons	4,366	5,797	7,589
Five or More	2,836	3,765	4,930
TOTAL	22,402	29,742	38,939

Source: Population and Housing Projections for Plantation, Carpenter-Craft, 1987

Table 5.12
Household Projections By Income
City of Plantation, 1987-2010

Income		1987	1993	2010
\$5,000	or less	997	1,224 997	1,733 997
5,000	- 7,499	1,055	1,401 1,055	1,834 1,055
7,500	- 9,999	1,232	1,636 1,232	2,142 1,232
10,000	- 14,999	2,422	3,215	4,209
15,000	- 19,999	2,724	3,617	4,735
20,000	- 24,999	2,637	3,501	4,583
25,000	- 34,999	4,617	6,130 6,347	8,025 8,761
35,000	- 49,999	3,873	5,420 5,766	6,733 7,512
50,000	- or more	2,847	3,780 4,184	4,040 5,859
Total		22,404	3,780 29,745	4,040 38,943

Source: Population and Housing Projections for Plantation, Carpenter-Craft, 1987
Robert K. Swarthout, Incorporated, 1989

Projected Housing Needs

Based Upon Extrapolation of Current Population: Table 5.13 shows the number of additional housing units needed in Plantation (by tenure and housing type) for the target years. In other words, based upon extrapolation of the City's current population, this is what is "needed" to accommodate the previously cited projected population. The "cost" need appears to be primarily in the \$100,000 - 200,000 range for single-family houses and \$350 - 650 per month for rental of multifamily units.

Table 5.13
Housing Needs: Additional Units
City of Plantation, 1987-2010

Tenure	Housing Type		
	Single Family	Multifamily	Total
1987-1993			
Owner	3,456	3,153	6,609
Renter	621	568	1,189
Total	4,077	3,721	7,798
1993-2010			
Owner	4,331	3,951	8,282
Renter	780	711	1,491
Total	5,111	4,662	9,773

Source: Population and Housing Projections for Plantation, Carpenter-Craft, 1987

Based Upon Area Housing Market Dynamics: However, recent market experience, and the Wolff study suggest the Table 5.13 even split between single family and multifamily, and a roughly six to one ratio of owner to rental units are not reflective of more recent needs as evidenced by the private market. (See Table 5.10). See Table 5.14 for the Wolff study implications for Plantation-Sunrise.

Table 5.14
Rental Housing Needs
Plantation-Sunrise Area

	Rental Units
Estimated demand 1985-1990	6,552
Units under construction or planned - 1985	6,073
Unserved demand as of 1990	479
Average annual construction rate 1980-1985	772
Average annual demand 1991-1995	1,275
Average annual demand 1996-2005	1,564

Source: Broward County Rental Housing Analysis, Reinhold Wolff, 1985

This Wolff analysis indicates the the rental units planned for the Jacaranda area will, to a large extent, continue to meet the rental unit demand at least until 1990. And, assuming no major shift in the developer's land use plan and marketing schedule, this will continue to the 1993 target date. In short, this is one of the strongest rental construction activity areas in the County; about 40 percent of all such units constructed in the County during the 1976-1984 period were in this Plantation-Sunrise area. The large new Amerifirst residential area in Sunrise to the west of Plantation will presumably also help meet this demand in the future.

The concepts of "need", "land availability", "projected population" and "private market delivery" become intertwined in Plantation's case. This is discussed further after the following Land Requirements section.

Farm worker housing is not a need given Plantation's urban-suburban setting. No significant housing displacement is anticipated. Finally, the City has consistently maintained an adequate vacancy rate and there is no reason this should not continue.

Land Requirements

Plantation has about 2,000 acres of vacant residentially zoned land. Under current zoning, this land can accommodate about 17,500 additional housing units. The projection of housing needs in Table 5.13 indicates about 17,500 additional units as the need, thereby indicating there is sufficient land for the need.

An analysis of this vacant land by land use/zoning category indicates the ability to accommodate the mix of housing types. Specifically, a large number of single family detached houses in Plantation Acres and a mix of single and multifamily units in Jacaranda. At the time of buildout in 2010, the mix of housing types is likely to be as follows, based upon the Land Use Plan and analysis of the existing development/vacant land pattern.

	Units	Percent
Single family	12,414	30.0%
Multifamily	28,966	70.0%

In other words, if the ratio of multifamily units constructed continues to exceed the single family quantity, the Land Use Plan and vacant land pattern can accommodate most of the projected need.

The Private Sector and Housing Need; a Synthesis

Realistically, Plantation must be considered as part of the larger west-central Broward County housing market as was done in the Wolff report. Therefore, a Plantation "need" becomes very difficult to pinpoint.

The projection of Plantation's past housing mix is one indicator (Table 5.13) i.e., the kind of households and housing units attracted to the City in the past.

But Gulfstream has an approved Development of Regional Impact (DRI) plan for Jacaranda which responds to their perception of need. This suggests that the future mix of housing types will (as in the recent past) be increasingly multifamily which is obviously meeting a "need" given their marketing success. This is likely to be the pattern until buildout in 2010.

But it is recognized that some of the central Broward "need" ~~generated by Plantation's present population~~ may have problems finding affordable units within the City, e.g., a young newly-married couple with entry level jobs. However, within a three mile radius of Plantation, households in this category can find a wider range of choice in terms of housing costs.

In conclusion, the private market is expected to accommodate all most of the Plantation "need", i.e., a healthy mix of owner-rental units and housing types ranging from single-family detached to high rise units including bond-funded apartment development. But given the practical cost constraints of Plantation's real estate market, adjacent cities will continue to meet some of the area's "need" for modestly priced housing rental units costing less than \$350 per month (\$10,000 income or less).

This entire subject should be re-analyzed in depth when the results of the 1990 U.S. Census become available.

The Housing Delivery System

Land: There are some 2,000 acres of vacant residentially designated land remaining in Plantation. This includes land designated for the full range of residential densities and housing types, and in several sections of the City. However, by far the largest quantity of vacant residentially zoned land is in the lower density categories (three dwelling units per acre or less) and located in the western third of the City. Because of this constricted geographic area where most of the vacant land is located, land costs have an increasing impact on affordable housing; typical single family detached land costs today are \$55,000 per acre.

Services: All of the major vacant land areas are easily accessible by water, sewer and the existing street system. In short, this is not a factor in the delivery of housing.

Regulation: The Zoning Code does not appear to pose any obstacles to housing delivery. Given the City's goal of achieving good site planning and landscaping, the review and approval process can be lengthy. Individual manufactured housing units are permitted as a matter of right; mobile homes in mobile home districts. The only local impact fee is a modest one for parks.

Governmental Responsiveness

There is not much that governmental entities can do to deal with the housing market delivery constraints noted above. In fact, it might be argued that governmental services and facilities have made Plantation such an attractive place to live (compared to many other cities in the County) that it is pricing housing out of the reach of many young households.

The one area (and this is not unusual) where City officials need to monitor their performance is the speed with which various kinds of housing permits or applications are processed. For example, four boards must approve some development plans. Major delays add to the cost of housing.

Financing and the Private Real Estate Market

The following shows the typical 1987 cost of housing in Plantation:

Type	Cost Range		Typical
	Low	High	
Single-family detached	\$75,000	\$1,000,000	\$200,000
Condo, town or patio home	40,000	200,000	125,000

This indicates that although the typical suburban Broward County range of housing costs are available, the predominant unit cost is on the high side, as also indicated by the 1980 U.S. Census data.

Discussions with local real estate and mortgage loan officer representatives indicates the following points about the dynamics of the market:

- Plantation realtors find that most of their customers are looking for houses within the City limits but it also looking elsewhere, it tends to be Coral Springs. However, given commuting patterns, Plantation is part of a County-wide housing market.
- The vacancy or turnover rate is typical except that condominium units (as opposed to townhome or villa units) seem to have higher vacancy rates/slower turnover.
- Based upon consumer views, the following kinds of units are in greatest demand:
 - a. single family detached houses in the \$100,000 - \$125,000 range
 - b. well-designed townhomes and villas or zero lot line houses
 - c. apartments
 - d. condominium units in high rise structures.
- Financing does not seem to cause significant problems given the kind of units on the market.
- The typical 1987 monthly rental rates in newer units are:

1 bedroom apartment	\$550
2 bedroom apartment	650
House	1,000

However, as noted earlier, some of the apartment projects were financed with County and State bond fund programs mandating that 20 percent of the units be for low-moderate income households, i.e. lower than the figures cited above.

Also, five privately financed but somewhat older developments have rents averaging \$325 for one bedroom units and \$365 for two bedroom units. Together these five developments provide over 1,000 units in this moderate income rental range.

Special Housing Needs

Meeting Projected Housing Needs:

This should not be a problem, given current zoning, infrastructure plans and land availability. However, land/housing costs will pose a problem for low and moderate income households unless HUD Section 8 certificates are used and housing finance agency bond-funded apartment projects continue to be constructed.

Substandard Housing:

This is a noticeable, if still geographically limited problem. A housing code enforcement program supplemented by : a) County CDBG housing rehabilitation funds and b) a civic association neighborhood "confidence building" program (such as Neighborhood Housing Services) is needed in eastern Plantation.

Low and Moderate Income Housing:

In addition to the comments above, it should be noted that over 600 acres of there is vacant land zoned for multifamily housing higher densities that can potentially provide sites for affordable housing that meet the needs of such households in the \$10,000-\$25,000 income bracket if the subsidy programs are in place (through Section 8 certificates and bond funded project "set-asides") to offset the land costs. There is a "mobile home" park in western Plantation and nothing to preclude "manufactured" housing from locating in the City.

Group Homes:

The housing stock and land availability ~~should do~~ not preclude sites for group home and foster care facility locations within the City. ~~However, a~~ A site plan approval by the City Council is required under the Zoning Ordinance and such facilities are now permitted only in multifamily districts but 600 acres of such land is now available. Consideration should be given to single-family districts as well.

Housing Conservation:

As noted in the Neighborhood Analysis, the neighborhood just west of the Turnpike and north of Broward Boulevard is worthy of special efforts to preserve the range of housing types in this older, tree-canopied area.

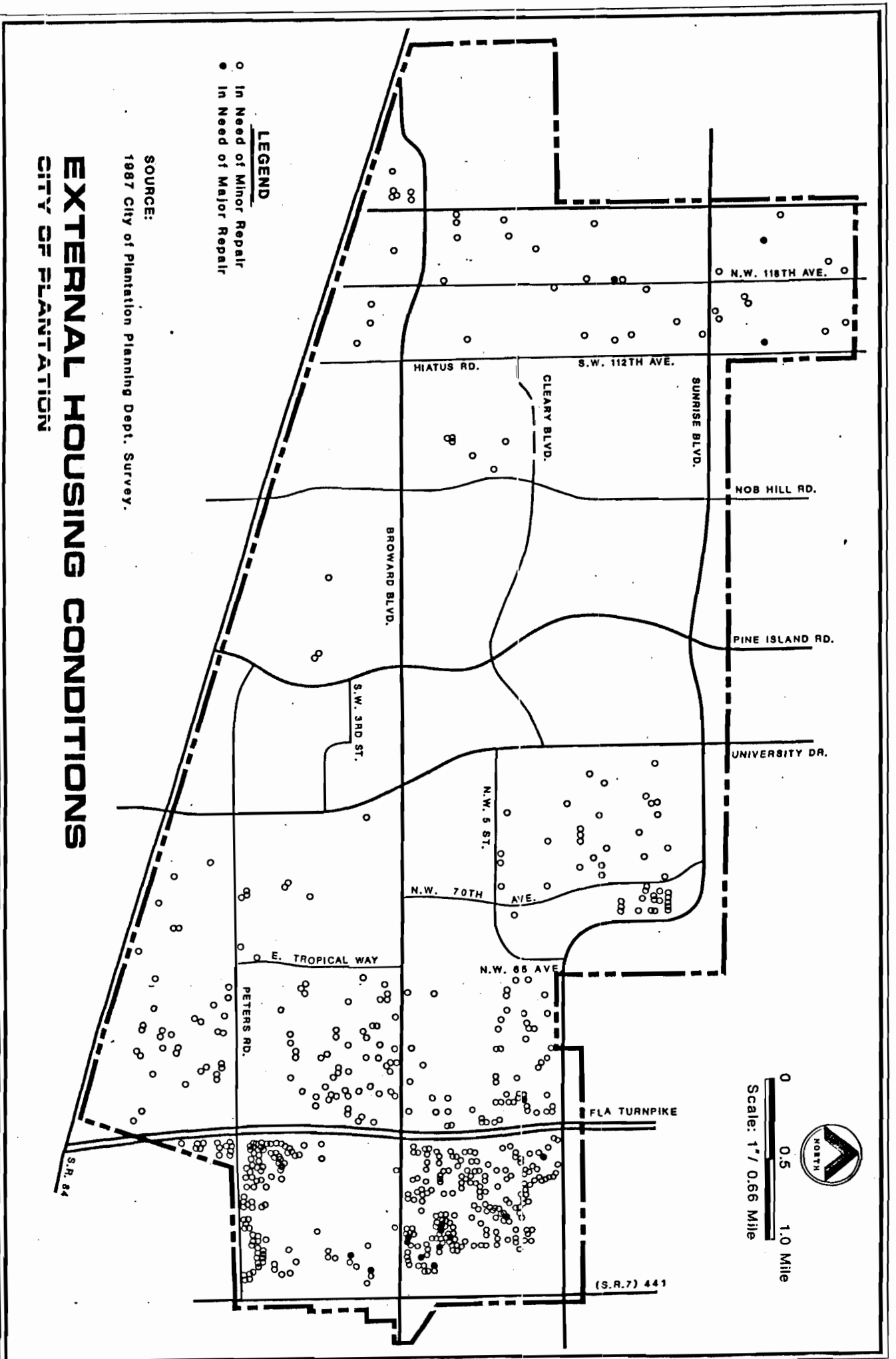
Relocation:

The City does not anticipate any municipal public action that would require relocation.

Historic Housing:

Again, there is no historically "significant" housing designated by City, State or Federal agencies. However, the City's oldest houses (northwest of the Turnpike-Broward Boulevard crossing) deserve special attention at the time of permit reviews based upon a suggested inventory of design features.

Figure 5.1



INFRASTRUCTURE ELEMENT

Sanitary Sewers
Solid Waste
Drainage
Potable Water
Groundwater/Aquifer Recharge

INTRODUCTION

This element addresses the basic utilities services of the City of Plantation. The collection and transmission of sewage is provided exclusively by the City of Plantation. The treatment of that sewage is done primarily by the City of Plantation, but a small amount of the flow is treated by the City of Sunrise. The extraction of raw water, its treatment and the distribution of potable water are provided primarily by the City of Plantation, but the water supply for the West District of the City is provided by purchase of treated water from the City of Sunrise. The City's solid waste collection and disposal are handled under a franchise agreement with Waste Management, Inc. of Florida, a private garbage collection company. The City's drainage area is composed of three drainage areas, each controlled by a different agency. The area of the City east of the Florida Turnpike and an area west of Flamingo Road is handled by the City of Plantation. The Old Plantation Water Control District (OPWCD) provides drainage for the central majority of the City and the Plantation Acres Improvement District (PAID) for the newer, relatively undeveloped western portion of the city. All three districts are under the overall control of the South Florida Water Management District (SFWMD).

All information pertaining to the water, sewer, and drainage systems were quoted or summarized from the following documents:

1. Water Master Plan for the City of Plantation, Florida (May, 1985) by Camp Dresser & McKee, Inc.
2. Annual Engineering Report Water and Wastewater Systems (December, 1987) by Camp Dresser & McKee, Inc.
3. Comprehensive Plan for the City of Plantation (June, 1981) by the State of Florida, Department of Community Affairs.
4. Evaluation of Wastewater Treatment and Disposal Alternatives for the City of Plantation (June, 1983) by Camp Dresser & McKee, Inc.
5. Procedures Manual for Plantation Acres Improvement District.
6. City Code of Ordinances for the City of Plantation.
7. Water and Wastewater Master Plan for the City of Plantation (January, 1978) by Ross, Saarinen, Bolton & Wilder.
8. Franchise Agreement for Collection and Disposal of Solid Wastes with Waste Management, Inc. of Florida (May, 1982).
9. An Interlocal Agreement with Broward County for Solid Waste Disposal Service (1987).
10. Regional Wastewater Treatment Plant Design Report (September, 1983) by Camp Dresser & McKee, Inc.

11. **The Study of Water Supply and The Selection of Future Wellfield Sites in Broward County, Florida (1986) by James M. Montgomery, Consulting Engineers, Inc.**
12. **Broward County 201 Facilities Plan Update (1984) by Russell & Axon and PRC Harris, Engineers.**
13. **Letter from Old Plantation Water Control District (1988) by Leslie E. Bitting, Sr., Superintendent.**
14. **Report from Plantation Acres Improvement District (Capital Improvements Analysis), 1988.**

SANITARY SEWERS

Service Areas:

The City of Plantation currently provides all of the sewage collection and most of the treatment for the incorporated area. The service area is divided into three distinct areas; the east area, the central area, and the west area. Sewage treatment for the west area is provided by the City of Sunrise. Plantation uses only 0.3 percent of the Sunrise facility capacity. Sewers are provided for all residents in the east area except for some homes in the Fort Lauderdale Country Club area, in Westgate Lake Manor, in Old Plantation, and some development along Tropical Way. At the present time, there are no plans to sewer these areas. Septic tanks are being allowed in some portions of the West district. The commercial developments in that area are being sewerred and City water is being provided.

Septic Tanks:

The soils located in the areas served by septic tanks are of the types as classified by the United States Department of Agriculture along with an evaluation of the suitability of these soils for septic tank drain fields as shown in Table 6.1.

Table 6.1
Soil Types and their Suitability
for Septic Tank Drain Fields

Soil Type	Name	Suitability for Septic Tank Drain Fields
HA	Hallandale Fine Sand	poor
Hb	Hallandale-Urban Land Complex	poor
Iu	Immokalee-Urban Land Complex	poor
Ma	Margate Fine Sands	poor
Mu	Margate-Urban Land Complex	poor
pp	Pompano Fine Sand	poor

Source: USDA Soil Conservation Service Broward County
Soil Survey, 1984

Areas that are served by septic tanks in the City are shown in Figure 6.1. None of the soil types in the City of Plantation are suited for septic tank drain fields. For this reason, septic tank drain fields are constructed by removing the existing soils and placing more permeable soils in the drain fields prior to placement of the septic tank. Because the soils in the City of Plantation are not suitable for septic tank drain fields, no more septic tanks should be allowed within the city limits of Plantation, except on an interim basis where extension of sewer lines is not financially feasible. In these cases, the County Health Department rules will continue to be followed i.e. soil replacement and at least 75 feet from any well. Where economically feasible and technically acceptable, existing septic tanks should be removed and the facilities that they serve connected to the City sewer system.

Sewage Treatment Plants

A new 10,000,000 gallons per day (10 mgd) wastewater treatment plant was constructed by the City and came partially on line in September, 1987. It is adequately meeting the current or 1988 average daily demand of 6,500,000 gallons and current level of service (100 gallons per person per day). This new facility is located at the site of the old North wastewater treatment plant north of Sunrise Boulevard and west of the Holloway Canal and is shown in Figure 6.2. The old wastewater treatment plants were taken out of service and all of the flow to these plants is currently diverted to the new plant. The old plants will be razed and the sites used for other purposes or sold.

The new wastewater treatment plant is operational with the effluent discharged to a 24-inch deep well for injection to the boulder zone 3,500 feet below the ground. The design for phase II of this wastewater treatment facility is currently under way. Phase II will be a 5.0 mgd expansion of the new treatment plant and may include a second 24-inch diameter deep well for effluent disposal.

Collection System

There are approximately 103 miles of gravity sewer lines in the City ranging from 4 to 15 inches in diameter. These sewers are constructed of vitrified clay pipe (VCP), polyvinyl chloride (PVC) and some cast iron (CIP) pipe. There are approximately 45 miles of force mains in the City ranging in size from 4 to 30 inches. Approximately 75 percent of these force mains are constructed of gray cast iron (CIP) with the remainder constructed of ductile iron pipe (DIP). There are 114 sewage pump stations in the City. These stations range in size from 42 to 6,000 gallons per minute (gpm) and have both submersible pumps and above ground suction lifts. The daily pumping time for these stations varies from 1 to 18 hours, but averages approximately 4 hours.

Projections

The present and projected flows of sewage to the new 10 mgd plant as derived from the Regional Wastewater Treatment Plant Report (with some modifications) are shown in Table 6.2.

Table 6.2
Existing and Future Sewage Flow Projections

Year	Population Served (1)	Average Daily Flow (mgd) (2)
1988	63,373	6.5
1990	--	8.0
1993	74,058	8.8
1995	--	9.4
2000	103,856	10.9
2005	103,856	10.9
2010	103,856	10.9

Sources: (1) City of Plantation Department, 1987 and Robert K. Swarthout, Incorporated. 1988; includes seasonal population and assumes buildout between 2000 and 2010.

(2) Plantation Regional Wastewater Plant Design Report, Camp Dresser and McKee, 1983.

The average day sewage flow for the City of Plantation is approximately 100 gallons per person per day. This is considerably lower than the average for Broward County which is 139 gallons per person per day. The ratio between the average daily sewage flow and maximum or peak month is approximately 1.1 to 1.2. Treatment systems should be designed for the peak month sewage flow which would correspond to a flow rate of approximately 13.1 mgd for the buildout population.

The nearly new sewage treatment plant should require no significant changes and the design for the 5 mgd addition to this plant is already underway. The final plant capacity of 15 mgd is considered to be adequate to handle the "buildout population". The collection system and pumping systems are maintained on a continuing contract and radio telemetry equipment was added to the lift stations between 1985 and 1988.

Analysis and Conclusion

The full existing land use pattern is served by the public sewer system except the two residential areas shown in Figure 6.1. The collection and treatment system is currently providing a level of service of 100 gallons per person per day. As indicated, upon completion of the treatment plant addition, the expected life of the facilities will extend to buildout population in 2010. See summary Table 6.4 in the appendix to this Element.

Because of soil limitations, a better mechanism for inspection of on-site disposal systems is needed. This is the only concern about impact upon natural resources. The deep well injection process used by the sewage treatment plant poses no problem.

SOLID WASTE

Collection and Level of Service:

The City-wide solid waste collection and disposal is handled under a franchise agreement with Waste Management, Inc of Florida. The solid waste collected must be transported to and disposed of in an approved Broward County landfill or other approved appropriate disposal facility. The solid waste collected in the City weighed approximately 5,051 tons per month for the year 1988. This represents approximately 0.82 tons per person per year or an existing level of service of 4.5 pounds per person per day. The solid waste generated in the City is expected to increase at the same rate as the population. No programs are currently underway to reduce or modify the amounts generated. However, the City is aware of the new State law relative to reducing solid waste quantities by one-third by 1994 through recycling; planning will soon be initiated for this. Broward County is actively working on plans to better accommodate, treat, and dispose of solid wastes. Currently the City uses 3.2 percent of the County's disposal demand.

The current and projected level of service will require ^a collection ~~X~~ system to meet the following peak season daily average poundage:

<u>1993</u>	<u>333,261</u>
<u>2010</u>	<u>467,352</u>

The 2010 figure reflects buildout and thus the development authorized by the Gulfstream DRI.

County Disposal System

The current capacity of the Broward County disposal system (34,000,000 cubic yards) will be used up by 2010 assuming some resource recovery and minimal recycling. This is based upon an annual demand and capacity projections shown in Table 6.2. However, it will be adequate for the 10 year planning period assuming some construction and expansion reflected in the table and discussed below, of 1,000,000 tons in 1988, 2,300,000 in 1993 and 2,800,000 in 1998.

~~Broward County is embarking on an effort to resolve the long term solid waste disposal problem for the whole County.~~ After years of study and discussion with all of the cities in Broward County, the County Commission determined that the solution to the solid waste problem would be the use of two mass burn resource recovery plants; one located near the intersection of U.S. 441 and S.R. 84 (adjacent to Plantation) the other located at the Waste Management, Inc. landfill on Powerline Road in Pompano Beach. The County has requested all municipalities to enter into an agreement with the County to endorse and commit to use the plan. Plantation signed the agreement in March, 1987.

Both resource recovery plants will be built and operated by private enterprise backed by a County-issued industrial development bond. The validation of the bond has been challenged in the court at the time of preparation of this element. If the challenge is successful, the project will lose its tax exempt status and the cost of the project will be increased significantly.

Broward County plans to phase out all of its traditional landfill operations and those that remain will accept only non-biodegradable trash and incineration ash from the resource recovery plants.

The City is aware of the new State recycling requirement and is beginning to plan accordingly.

(New Table)

Table 6.2
Solid Waste Facilities Capacity Surplus/Deficiency
Broward County, 1985-2000

Year	Estimated Population	Total Waste	In Thousands		Ash Landfill Capacity (total tons)
			Resource Recovery Capacity (tons per year)	Sanitary Landfill Capacity (total tons)	
1985	1,208,000	1,499	0	4,745	0
1986	1,232,000	1,552	0	3,246	0
1987	1,256,000	1,598	0	1,694	0
1988	1,280,000	1,645	0	4,796	0
1989	1,304,000	1,692	0	4,831	0
1990	1,328,000	2,076	1,340	3,139	2,653
1991	1,349,000	2,121	1,340	2,738	2,318
1992	1,369,000	2,166	1,340	2,292	1,983
1993	1,390,000	2,212	1,340	6,175	1,648
1994	1,411,000	2,260	1,340	5,638	1,313
1995	1,431,000	2,307	1,340	5,053	978
1996	1,450,000	2,411	1,572	4,421	1,643
1997	1,469,000	2,458	1,572	3,976	1,250
1998	1,487,000	2,504	1,572	3,483	857
1999	1,506,000	2,552	1,572	2,944	3,439
2000	1,524,000	2,600	1,572	2,357	3,046

Conclusion

The private collection system and County disposal system both have adequate capacity to meet the City's level of service, particularly with the introduction of recycling. As noted, the County must act to provide new capacity by 2010. County monitoring of the Pompano Beach disposal facility assures no adverse impact of the leachate upon the groundwater or other natural resources.

DRAINAGE

Facilities and Level of Service:

Plantation, like all other municipalities in South Florida, is developed on an area with very little relief and land elevations only slightly above sea level. The average elevation in the City is in the range of 10 feet above mean sea level with virtually no slope from one location in the City to another. There are no natural drainage features in Plantation. All drainage has to be collected and discharged to man-made drainage facilities such as storm sewers and then to canals. Storm water in the City is collected through a series of catch basins and street swales to storm sewers, which, in turn, empty into secondary canals in the City. The street storm water facilities must be designed so that these facilities remove all excess storm water collecting within any street right-of-way within 72 hours from the storm estimated to occur once in three (3) years, and 72 hours for swales (Level of Service #1). The minimum road crown elevations have been established to be 6 feet above mean sea level (MSL) for all construction south of Broward Boulevard and 7 feet for all construction north of Broward Boulevard. The water from a 10 year, one day storm must be retained on any development site (Level of Service #2.) Road swales must drain within 72 hours after a storm (Level of Service #3).

Both OPWCD and PAID have met the level of services adopted in Policy 1.1.1 of the Infrastructure Element of this plan. The existing drainage facilities of both drainage districts were designed to pump a maximum flow rate of 71 cubic feet per second (cfs) per square mile. These facilities are capable of handling the design flow for both planning periods.

Service Areas

The drainage in Plantation is handled administratively by the City and two drainage districts. The eastern portion of the City is handled by the City, which includes approximately 1,500 acres east of the Florida's Turnpike (mostly residential with some commercial). The western-most portion of the City, west of Flamingo Road, which includes approximately 590 acres of residential and vacant land, is also handled by the City. The central portion of the City is handled by the Old Plantation Water Control District (OPWCD) which includes approximately 10,000 acres east of the SFWMD C-42 canal (residential, commercial and industrial). The western portion of the City from the SFWMD C-42 canal to Flamingo Road is handled by the Plantation Acres Improvement District (PAID) which includes approximately 2,065 acres of residential and vacant land. These drainage districts are shown in Figure 6.3.

East Service Area: The drainage area handled by the City east of the Florida's Turnpike is drained only by the storm drains located on Broward Boulevard and those drains on S.R. 7 from just south of Broward Boulevard to Sunrise Avenue. This storm sewer empties by gravity into the SFWMD canal C-12 just east of S.R. 7. No other storm sewers or drainage canals exist in this area. All storm water in this area is collected into local swales and percolates directly into the Biscayne Aquifer.

Central Area: The OPWCD contains 30 miles of major lateral canals and four pumping stations draining 10,000 acres. Three of the pumping stations discharge to the New River Canal and each station has four pumps with a capacity of 45,000 gpm. The other pump station has three pumps, each rated at 45,000 gpm with its discharge to the C-12 canal. None of the canals in the OPWCD are interconnected with the other drainage districts that are in Plantation, except through the pumping stations that discharge to the SFWMD canals. The design capacity of the OPWCD system is 1,100 cubic feet per second (cfs). The existing demand is approximately 30 percent of this design capacity.

The OPWCD drainage system is completed and almost all of the work of this district is maintenance. The OPWCD has obtained a permit from the SFWMD to install culverts from the C-42 canal into the OPWCD canal system to supply recharge water during dry periods; the construction will be completed in the near future. The expected life of the existing pumping equipment for OPWCD is 10 to 15 years, so no major expenditures are expected within the next 10 years.

Plantation Acres: The PAID drainage system presently consists of six major east-west laterals, each approximately one mile long and located approximately one half mile apart. This system drains 2,065 acres. Each canal has a pump station located within the right-of-way of the C-42 canal and discharging into the SFWMD canal. There are also two minor north and south canals in the district. Each of the six pumps in the district are designed to discharge at 20,000 gpm. The system is designed and permitted for the 25 year-3 day design storm, the finished floor elevations are set above the 100 year-3 day-zero discharge elevation and the road crown elevations are above the 10 year-1 day design storm. The existing demand on the facility is approximately 20 percent of the design demand. The design capacity is 230 cfs.

The east-west canal system for the PAID area is complete, but major canal clearing and dredging projects are expected in the near future. The district is spending \$125,000 in 1988 to dredge and clear two of the canals with the other canals to follow thereafter. The secondary north-south canals and swales are not in place, which causes localized flooding following heavy rainfall.

POTABLE WATER

Service Areas

The City of Plantation harvests, treats and distributes all of the water in the incorporated area except for a small area in the West District of the City.

West District: Treated water is purchased from the City of Sunrise, distributed to the residents of the West district through the City of Plantation pipes and resold to the residents of that area. The central portion of the West district is for the most part on individual wells. However, developers are constantly extending water mains and eventually all of the West district will be on City water.

East and Central Districts Most water is harvested and treated at the East water treatment plant which is located half way between Broward Boulevard and Sunrise Boulevard, just west of the Holloway Canal, although 2.5 mgd is treated at the Central water treatment plant. Central district peak demands utilize water from the Central water treatment plant located just east of the Central Park, north of the intersection of Broward Boulevard and Central Park Drive. The location of these plants and areas are shown in Figure 6.4.

Wellfields

The East district wellfield contains 10 wells with a total usable capacity of 12.3 mgd and the Central district has 8 wells with a total usable capacity of 8.0 mgd. Construction was completed in March 1988 on these 8 new wells in the Central Park area to replace four old wells, which will be abandoned; the casings will be pulled and the holes filled with concrete. This replacement was required to comply with the County wellfield protection ordinance. Piping from the new wellfield to the Central treatment plant was also completed in 1988. Salt water intrusion into the Biscayne aquifer in the area of Plantation is not considered to be a problem now or in the foreseeable future.

Treatment Plants

East District Plant: This was constructed in 1955 and the last major addition occurred in 1977, bringing the treatment capacity to a 13.0 mgd nominal capacity. This is a lime softening plant.

Central District Plant: It consists of a 3.0 mgd lime softening plant which was constructed in 1970, purchased by the City in 1985 with the last major addition to the plant occurring in 1984. Neither the East plant nor the Central plant currently produce water that meets the 1986 Safe Drinking Water Standards and unit processes such as ozonation and/or activated carbon absorption may have to be added to these plants to make it possible for them to produce acceptable water. The Central district water treatment plant will be replaced with a new 12 mgd membrane softening plant which will have the capability of complying with the 1986 Clean Drinking Water Act. This plant is currently under design and should be completed during 1991-1992.

West District Plant: This area is served by the water treatment plant located at S.R. 84 and 128th Avenue, and owned by the City of Sunrise. It has a nominal capacity of 2.0 mgd and is expected to serve that area until 1998 after which time the City of Plantation will serve that area due to phase #2 (expansion) of the new Central plant. Currently Plantation uses 0.3 percent of the Sunrise facility capacity. At the present time, water pressure is low in some of the areas of the West District. One condominium project does not have high pressure pumps to supply the top floors and a pressure of less than 20 psi has been reported on the top floors. The low pressure problems in the West District may prompt the City to feed water to the West District upon the 1991-1992 completion of its 12 mgd Central plant rather than purchase that water from the City of Sunrise until the 1998 phase #2 is completed.

Water Projections and Existing Level of Service

The population and water demand projections for the future were taken from the 1985 Camp Dresser and McKee Water Master Plan. The present and projected population and water demand are shown in Table 6.3:

Table 6.3
Existing and Future Population and
Water Demand Projections

Year	Population Served	Average Daily Water Demand (MGD)
1985	53,206	8.25
1990	63,401	9.83
1993	69,518	10.77
1995	73,597	11.41
2000	91,574 (1)	14.19
2005	103,856 (2)	15.82
2010	103,856 (2)	15.82

(1) Assumes the City of Plantation will supply the demand for the West district.

(2) Buildout population including seasonal.

Sources: Water Master Plan, Camp Dresser and McKee, 1985
Robert K. Swarthout, Incorporated

The City consumes water at the rate of approximately 155 gallons per person per day which is slightly lower than the County-wide average of 164 gallons per person per day for all uses. It is estimated that 16 percent of the water delivered to the mains is used for irrigation and an additional 12 percent of the water is lost through leaks, testing and construction and fire suppression. The water required for the peak day is approximately 1.5 times the average day. This means that the treatment plants should be sized for 1.5 times the values shown in Table 5.3. This would mean that the treatment plants should be sized for approximately 24 mgd at the time of the "ultimate buildout" which will occur sometime between the year 2000 and 2040. With the 1998 expansion of the Central plant, the total water treatment capacity of the City will be 25 mgd which will meet the "ultimate buildout population" demand.

Distribution System

The City owns and maintains more than 100 miles of water mains with a size of 4 to 30 inches. These pipes are predominantly cast iron or ductile iron with some asbestos cement and PVC. The smaller mains (4-inch and smaller) are predominantly galvanized iron, but are being replaced with PVC pipes as leaks develop. There is adequate pressure in the entire distribution system with the exception of the West portion of the system as mentioned in the analysis of treatment plants. The pressure problems for the West portion of the City will be resolved in 1991 when the new water treatment plant is completed, a new high service pumping station is installed thereby enabling service from the City of Sunrise to be discontinued in that sector. The goal is to achieve 80 pounds per square inch as the water leaves the treatment plant.

The City currently has finished water storage capacity of 6,360,000. An additional 3,000,000 of storage will be added by 1991 with the construction of the new water treatment plant. Storage requirements are the sum of the storage required to meet the maximum day demand for domestic consumption plus the storage required for fire flow. Storage to meet the domestic requirements for the years 1993 and 2010 must be at least 4,100,000 and 5,900,000 gallons respectively. The fire flow requirements for the City were established by City Ordinance 861 in July, 1979. This ordinance requires a maximum of 2,500 gpm for residential fires and 2,000 gpm for commercial/industrial fires. The commercial/industrial fire flow is probably not adequate for those facilities such as the Broward Mall where the National Board of Fire Underwriters (NBFU) requirements of 3,500 gpm for three hours should be used. This means an additional fire flow storage requirement of 630,000 gallons. This results in a total minimum storage requirement for the years 1993 and 2010 should be 4,800,000 and 6,600,000 respectively. The present storage capacity is adequate for the year 1993 and the planned storage capacity will be adequate for the year 2010.

High service pump capacity at the East plant totals 31 mgd and high service capacity at the Central plant totals 10 mgd for a total capacity of 41 mgd or 28,500 gpm. More high service pumps will be added with the addition of the new Central plant in 1991. The maximum high service pumping capacities required to accommodate both domestic and fire flow for the maximum hour of the maximum day for the years 1993 and 2010 are 14,742 gpm and 20,542 gpm respectively. This means adequate high service pumping capacity already exists for the year 2010.

The distribution system is considered to be in good condition, but programs for the elimination of dead ends in the distribution system and expansion to serve the west district are ongoing. Water mains in the developing western portion of the City are being added by developers under the supervision of the City staff.

NATURAL GROUNDWATER AQUIFER RECHARGE

Biscayne Aquifer

South Florida's source of water supply is the groundwater in the Biscayne Aquifer, which is the only source of drinking water for the area. In 1979, the U.S. Environmental Protection Agency (EPA) designated the Biscayne Aquifer as the "sole source" of drinking water for Broward County. The Biscayne Aquifer is recharged by two primary methods within the City: 1) rainfall and 2) water in the drainage/recharge canals. The rainfall that falls on the ground either percolates into the soil and then into the Biscayne Aquifer, or it runs off the surface of the ground and into the drainage canals. The drainage canals flow eventually to the ocean, but on the way, some of this water infiltrates into the Biscayne Aquifer. During periods of little precipitation, water from the Water Conservation Areas is released into the canals and this water infiltrates into the ground and into the Biscayne Aquifer. The excess water from irrigation projects also is effective in providing recharge for the Biscayne Aquifer. The SFWMD requires that all development projects provide at least 13 percent of the area devoted to lakes, or other recharge features.

County, Regional and State Protection Mechanisms

Recognizing the importance of the Biscayne Aquifer, Broward County proceeded with several avenues to protect this sole source of drinking water. The efforts by the County to protect the water supply wells and their recharge area will result in stable and reliable water supply for the City.

The Broward County Environmental Quality Control Board (EQCB) passed the Storage Tank Regulation (84-3) in May, 1984. The purpose is to prevent hazardous discharge to ground and surface water by requiring storage tank facilities designed to recover spilled hazardous substances. For example, underground storage tanks within the wellfield protection zones must have a containment barrier, recovery system and monitoring wells.

In August, 1984, the County passed the Wellfield Protection Ordinance (84-60). The purpose is to safeguard the public health by preventing contamination of potable water supply wells by restricting the use and storage of specific hazardous substances within the zones of influence or recharge of potable water supply wells.

Standards for septic tank systems as set forth in Chapter 10D-6 of the Rules of Florida Department of Health and Rehabilitative Services (DHRS) require that septic tank systems shall not be located within 200 feet of a public potable water system well. Similarly, the South Florida Water Management District (SFWMD) (Chapter 40E-3) requires that well sites be at least 200 feet from any septic tank system. An examination of the City's septic tank map and the City's wellfield area indicates that this rule is not violated. The County Health Department requires replacement of soil for new septic tanks.

The County regulations for wellfield and aquifer protection have been in effect for approximately three years. County Broward has established itself as a leader in the nation in groundwater protection. Most of the deficiencies created by these regulation have been corrected by Plantation or are currently being corrected. The City Public Works Department experienced a leak in the piping system to two old fuel storage tanks near one of the wells in the Central Park area; the leaking piping system and tanks have been removed. The clean up is underway, and the new fuel storage facility is being constructed during 1988. The existing wells will be abandoned and the new wells will come on line by the end of 1988.

Pollution

The problem of non-point source pollution of the aquifer (such as that originating from lawn fertilizers or street and parking lot run off) has not been addressed. There are no programs currently administered by any of the regulatory agencies which address the City's non-point source pollution.

Conservation

The City's water conservation program is related to the rate structure for water consumption and the distribution of educational materials related to conservation of water. Effective January 1, 1984, the City Council enacted City Ordinance No. 1186 which altered the method used to charge for sewerage services. Sewerage charges are now based on the metered water used rather than the number of bathrooms, as was the case.

Figure 6.1

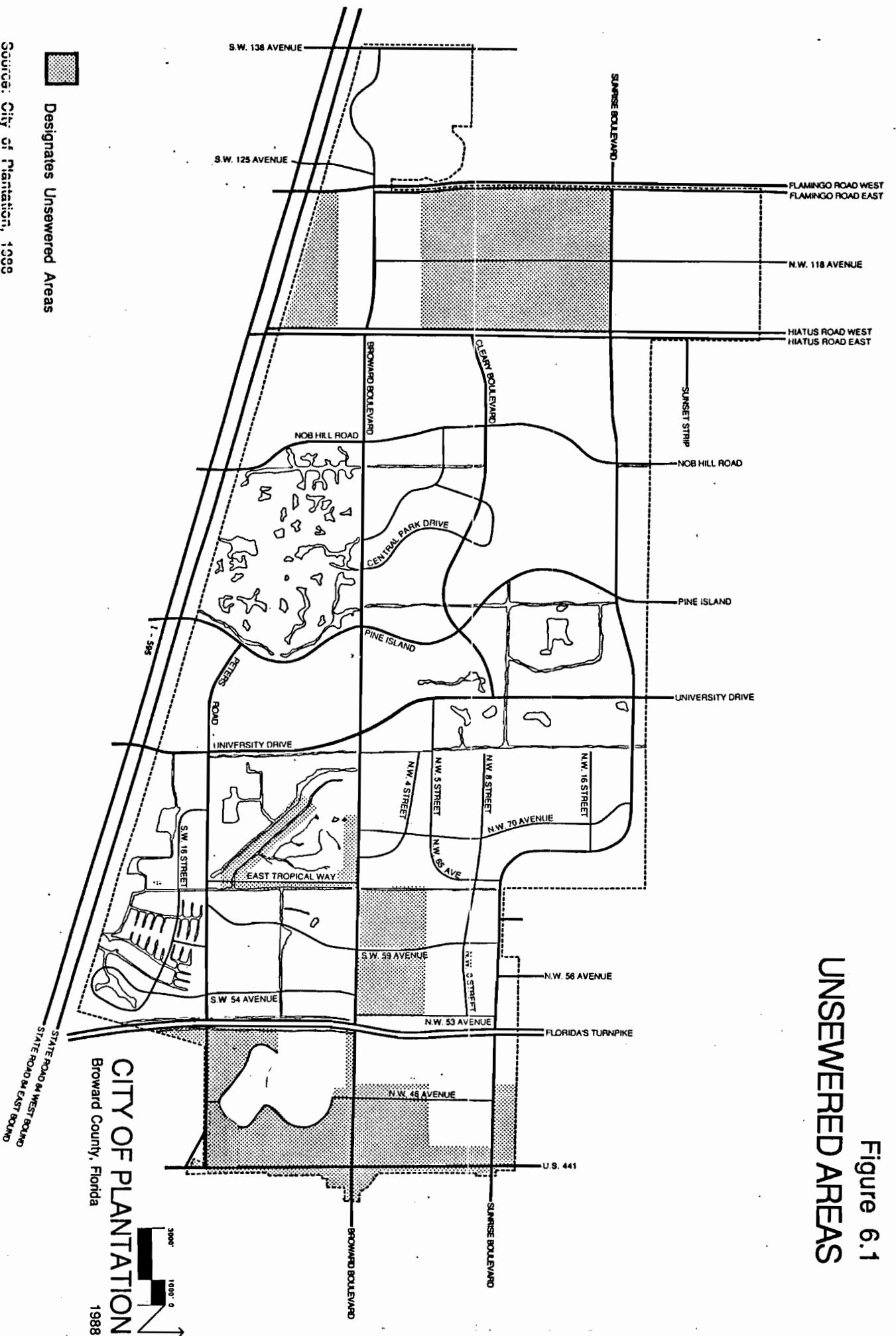


Figure 6.2

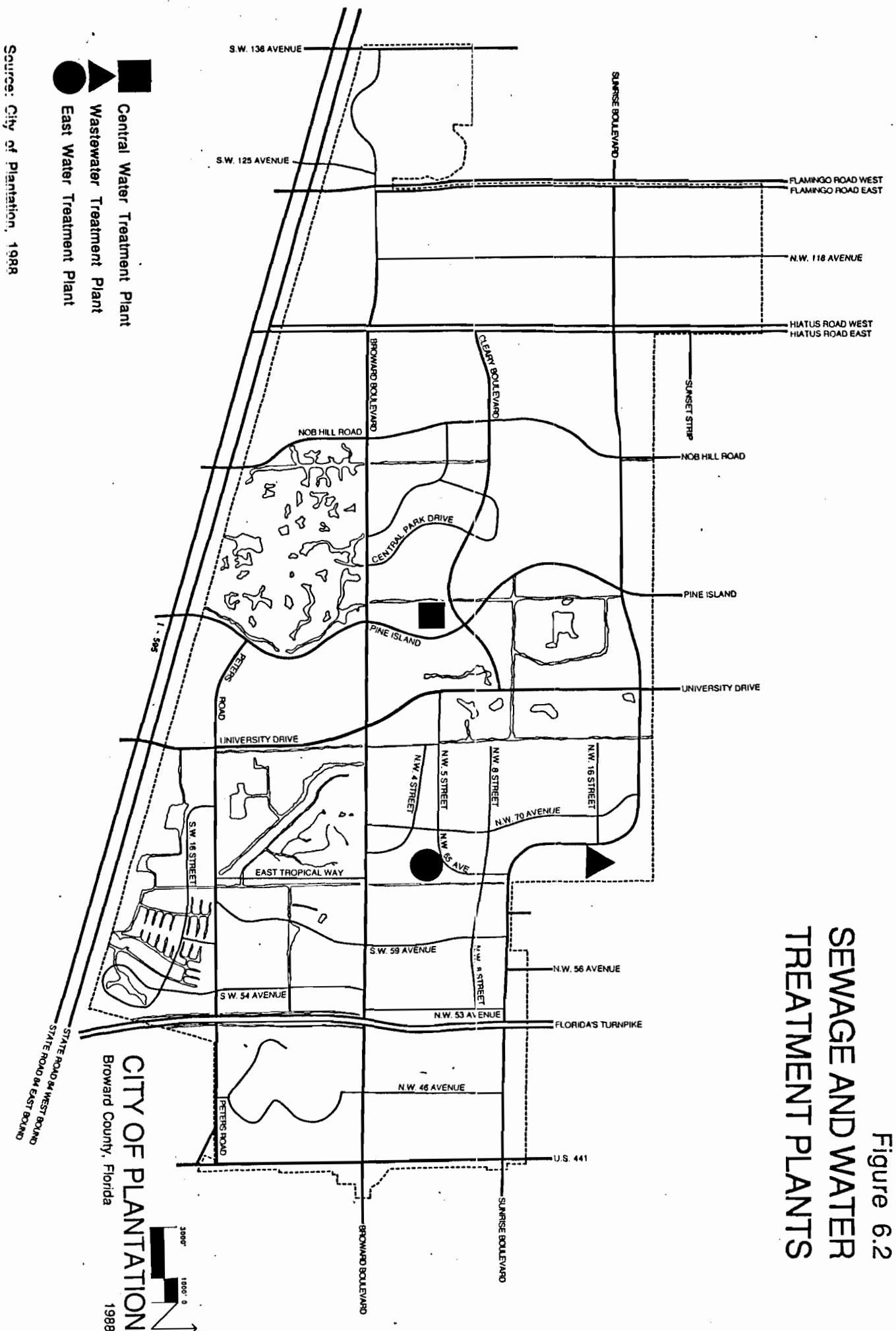


Figure 6.3



Table 6.4
Existing and Planned Infrastructure Facilities

				Ultimate Design Capacity	Current Demand	Level of Service
Facility	Operational Responsibility	Service Area				
Sewage						
Collection Treatment	City City	City-wide City-wide		15 mgd 15 mgd	7.4 mgd 7.4 mgd	100 gpcd 100 gpcd
Solid Waste						
Collection	City	City-wide		As required	5,051 tons per month	4.5 lb/cap/d
Disposal	Broward County	County-wide		N/A	N/A	N/A
Drainage						
	City	City-wide for Roads & Development		N/A	N/A	• 3 yr., 1 day storm in ROW Min. crown elev=6' S.. of Broward Min. crown elev=7' N. of Broward • 10 yr., 1 day storm on site • 72 hrs. to drain road swales
	OPWCD	W. of Fla. T.P. & E. of C-42		<u>1,100 cfs</u>	<u>30%</u>	25 year storm for canals only

Table 6.4
Existing and Planned Infrastructure Facilities (Continued)

Facility	Operational Responsibility	Service Area	Ultimate Design Capacity	Current Demand	Level of Service
	PAID	W. of C-42 & E. of Flamingo Rd.	230 cfs	20%	25 year storm
	SFWMD	Southeastern	N/A	N/A	10 year storm for canals only
Potable Water					
Distribution	City	City-wide	24 mgd	9.2 mgd	140 gpcd
Treatment	City	City-wide	24 mgd	9.2 mgd	140 gpcd
Storage	City	City-wide	6.6 mg	3.6 mg	N/A
Pumping	City	City-wide	20,542 gpm	12,500 gpm	N/A
Pressure	City				80 psi at the plant trunk line
Ground Water					
Recharge	SFWMD	City-wide	N/A	N/A	13% of development for recharge

Source: Chen & Associates, 1988

CONSERVATION ELEMENT

**Data
Analysis**

INTRODUCTION

The purpose of this plan element is to outline a strategy for conserving and using the City's natural resources.

DATA AND ANALYSIS

WATER BODIES

Inventory:

The south fork of the New River Canal forms the southern boundary of the City. The canal is a major drainage water body of the South Florida Water Management system. Water depths of the canal range between four and ten feet. There are no natural surface water resources in the City. Numerous lakes and ponds have been created to serve residential development. Smaller drainage canals are located throughout the City. Most of these connect in some fashion to the New River Canal. The south fork of the New River Canal merges with the north fork in Fort Lauderdale to form the New River. The New River drains into the Intracoastal Waterway at a point just south of Las Olas Boulevard. See Existing Land Use map for water body locations.

~~There are no significant wetlands and as a non-coastal community, no bays or estuaries. At the time of plan preparation, the available sources showed two wetland areas, both near western Broward Boulevard.~~

Existing Use:

Recreational fishing and boating plus lawn irrigation are the most significant uses of the surface water bodies. A number of golf courses and City parks are located along these water bodies.

Pollution:

Typically, the principal surface water pollution source used to be wastewater effluent; this is not currently true in Plantation. The City currently disposes of wastewater effluent into an injection well with disposal into the Holloway Canal during emergencies. The City has plans to construct another injection well to be used when the wastewater plant is expanded to treat 15 million gallons per day (mgd). The canals in the City were once used for the dumping of wastewater effluent. This stopped when the Environmental Protection Agency ruled that sewage dumping was causing the Biscayne aquifer to become contaminated. Limited infiltration of sewage from the City's wastewater transmission system occurs while the intensity is hard to determine, the impact on surface water is considered negligible.

Stormwater runoff directly affects the quality of the water for recreational uses. Recreation and the promulgation of fish and wildlife is the sole use of canals and waterways in Plantation. Urban and agricultural runoff and, to a lesser extent, wastewater pipe leakage constitute the major sources of surface water pollution.

In order to monitor surface water quality in the County, 44 stations were established where water samples are analyzed on a quarterly basis. Many water quality parameters are analyzed at each station. Among the tests conducted are ones for water temperature; turbidity; PH; specific conductance; salinity; dissolved oxygen; biochemical oxygen demand, organic carbon, organic nitrogen, total phosphorous and fecal coliform. Station 22 is located within Plantation on the North New River Canal at the 125th Avenue bridge (see Figure 7.1). Station 23 is on the same water course but located to the west of the City near U.S. 27.

Dissolved Oxygen: The proper amount of oxygen is an important requirement for fish and aquatic organisms. The concentration of dissolved oxygen in the water is the result of photosynthetic activity, decomposition of organic matter, meteorological conditions and other factors. The flushing time of a canal or water body also has a major influence on the oxygen level. The canals in Plantation have small surface areas relative to their depths and many are sheltered from wind-induced mixing. Aeration through mixing at the surface does not work well on waterways that are narrow.

The Broward County Environmental Quality Control Board (EQCB) has set a minimum standard of 5 milligrams of dissolved oxygen per liter of water. Aquatic animals are not able to inhabit water with less than that amount for extended periods of time. Plantation waterways contain low levels of oxygen although Station 22 has 43 percent more dissolved oxygen than Station 23. This would indicate that runoff from the City is adding to the oxygen levels of the water, a positive thing. Table 7.1 also shows that this measure of water quality improved during the six-year period.

Table 7.1
Dissolved Oxygen, New River Canal, 1981 and 1987

Station Number	1981 Average	1987 Average	In Milligrams Per Liter of Water	
			1987 One Day Maximum	1987 One Day Minimum
22 (U.S. 27)	1.6	2.3	3.2	1.0
23 (N.W. 125th Avenue)	2.7	3.3	5.1	1.2

Source: The Broward County Environmental Quality Control Board.

Phosphate: Phosphorous or phosphate stimulates the growth of algae and rooted aquatic plants. Water which receives sewage, agricultural or industrial wastewater drainage is characteristically high in phosphate concentrations. These increased phosphate concentrations and resultant growths or "blooms" are often associated with what is termed eutrophication. When occurring naturally, eutrophication is a biologically positive activity. However, eutrophication caused by man-made action usually leads to unacceptable changes in water quality including reduction in aesthetic quality (and thus recreational use), the presence of unpleasant taste and odor, and in severe cases, toxic by-products. This can also result in difficulties farther along the food chain. The present EQCB water quality standard for phosphorous is a maximum of 0.2 mg per liter of water. Based on the data received from the EQCB and shown in Table 2, a minimal amount of phosphorous is to be found in the Plantation segment of the Canal, well below the County's maximum allowable standard.

Table 7.2
Dissolved Phosphorous, New River Canal, 1981 and 1987

Station Number	1981 Average	1987 Average	In Milligrams Per Liter of Water	
			1987 One Day Maximum	1987 One Day Minimum
22 (U.S. 27)	.03	.039	.07	.02
23 (N.W. 125th Avenue)	.03	.038	.082	.02

Source: The Broward County Environmental Quality Control Board.

Fecal Coliform Group: The source of this pollutant is typically leaking sewer lines and lawn runoff with pet waste. At present, EQCB daily maximum limits for the fecal coliform group in Class III waters is 800 colonies per 100 milliliters of a sample of water (col./100ml) daily maximum. Several runoff-related episodes have significantly increased the amount of fecal coliform in the New River Canal for short periods of time, as shown in Table 7.3.

Table 7.3
Fecal Coliform, New River, 1981 and 1987

Station Number	1981 Average	1987 Average	In Colonies Per 100 Milliliters of Water	
			1987 One Day Maximum	1987 One Day Minimum
22 (U.S. 27)	96	25	70	15
23 (N.W. 125th Avenue)	107	158	12,000	10

Source: The Broward County Environmental Quality Control Board.

Nitrogen: This exists in surface water in several forms. High levels of ammonia-nitrogen often indicate sewage, runoff from agricultural lands or lawn fertilizer. Nitrogen in the form of nitrites is an intermediate stage in the nitrogen cycle and occurs in surface waters as a result of decomposition of plant materials. Trace amounts of nitrite can also indicate certain industrial discharges. High concentrations stimulate growth of algae and rooted aquatic plants. Although the effects of some nitrogen is positive for plant growth, excessive amounts can result in the reduction use of the water body as it becomes a marsh. The Broward County EQCB standard for total nitrogen is a maximum of 1.5 mg per liter of water. Plantation surface waters contain higher levels of nitrogen than the County minimum standard. Lawn fertilizer is probably the primary cause of this nitrogen pollution in Plantation although some upstream agricultural uses may impact the New River Canal.

Table 7.4
Total Nitrogen, New River Canal, 1981 and 1987

Station Number	1981 Average	1987 Average	In Milligrams Per Liter of Water	
			1987 One Day Maximum	1987 One Day Minimum
22 (U.S. 27)	1.88	1.93	2.1	1.7
23 (N.W. 125th Avenue)	1.91	1.92	2.1	1.6

Source: The Broward County Environmental Quality Control Board.

Future Conservation, Use or Protection

In addition to the canal problems, some detention ponds have been ruled unsafe for fishing due to pollution. The principal implication of this analysis of water body pollution is that efforts should be made to educate the residents about the need to use lawn fertilizer sparingly. It also suggests the importance of periodic sewer line checks to minimize leakage.

The principal use of these water bodies will continue to be fishing, boating and storm runoff storage or control. A linear park is proposed for the Plantation side of the New River Canal. The two wetland areas should be preserved (in whole or in part with mitigation) when development occurs on these tracts.

AIR QUALITY

Inventory and Pollution:

Air quality is generally good in Broward County. The lack of valleys or other restrictive relief features and the subtropical marine climate encourage almost constant air movement, preventing lasting air inversions and other weather patterns which exacerbate pollution concentrations. As a result, locally produced pollutants are quickly dispersed and replaced by cleaner ocean breezes. The high amounts of annual rainfall also remove particulate matter via scrubbing action. Emission from automobiles is the major air pollution source in the City. Temperature inversions during the morning rush hour tend to elevate pollutant levels, especially ozone. Winds blowing from other urban areas also contribute to the air quality both positively and negatively. Large scale events like major fires in the Everglades can create significant short term air pollution problems.

Ambient air is that part of the outdoor atmosphere to which humans are exposed. The Broward County Environmental Quality Control Board monitors ambient air at 20 sites throughout the County. One site is in Plantation and one site is just to the north of the City in Lauderdale Lakes. The monitoring site within Plantation is located at Mirror Lake Elementary School on 72nd Avenue and monitors only the amount of suspended particles (TSP) in the air. See Map 7.1.

Total Suspended Particles (TSP): Sources of particulate vary from natural ones such as pollen, sea salt or blowing dust to man-made vehicle emissions, industrial smoke, dust from roads or construction sites, crushed stone processing or lawn mowing in large parks or golf courses. As shown in Table 7.5, amounts of TSP monitored in Plantation are generally in the good to moderate quality range. Amounts are greatest during the summer months when the hot humid conditions raise the likelihood of an air inversion. Conversely, particle amounts are lowest during October through December.

Table 7.5
Total Suspended Particles
Plantation Monitoring Site, 1987

	In Micrograms Per Cubic Meter of Air				High
	October December	January March	April June	July September	
TSP	30.2	35.1	31.7	38.3	103.6

Source: Broward County Environmental Quality Control Board.

TSP Standards

0-50	good
51-100	moderate
101-199	unhealthy
200-299	very unhealthy
300 and above	hazardous

Source: United States Environmental Protection Agency.

A County regional monitoring station is located on State Road 7 in Lauderdale Lakes. Results from 1987 monitoring for TSP are shown in Table 7.6 and parallel the findings at the Plantation Station.

Table 7.6
Total Suspended Particles
Lauderdale Lakes Station, 1987

	In Micrograms Per Cubic Meter of Air				High
	October December	January March	April June	July September	
TSP	30.8	42.7	37.8	44.6	100.1

Source: Broward County Environmental Quality Control Board.

Carbon Monoxide: This is a poisonous gas with no color or taste. Low concentrations occur naturally from plants, forest fires and other sources. CO is also produced from the burning of organic fuels such as coals, gasoline or wood. The largest cause of CO in the Plantation area is emissions from motor vehicles and to a lesser extent, power plants, airplanes and trains. Concentrations of emitted CO are much higher when engines are idling or traffic is moving slowly. The maximum allowable one hour concentration standard for CO is 10.0 parts per million (PPM). Table 7.7 details monitored levels of CO for 1987. The amount of carbon monoxide in the Plantation area is well below the minimum acceptable level. The City has implemented an ambitious road landscape program which reduces carbon monoxide impacts along roadways.

Table 7.7
Carbon Monoxide in Air
Lauderdale Lakes Station, 1987

	In Parts Per Million				
	October December	January March	April June	July September	High
CO	3.06	3.2	2.06	2.5	4.75

Source: Broward County Environmental Quality Control Board.

Lead: This heavy metal is toxic to humans. Most lead in ambient air is produced from automobiles. Concentrations are heaviest when high volumes are traveling at low speeds. Reductions in the amount of lead in gasoline has proven to be effective in reducing the amount of lead pollution. There were no exceedances of the EPA lead standard in Broward County in 1987. The highest recorded level was 90 times lower than the lead standard.

Analysis:

The monitoring program results demonstrate that the County meets all air quality regulatory standards. In comparison to the other metropolitan areas throughout the nation, Broward County ranks near the top e.g. third best for ozone and fourth for particulate. This is a result of the climate coupled with effective pollution control regulations.

However, a Federal mandate to improve air quality still applies. This requirement comes as a result of the Federal Environmental Pollution Agency classification of the southeastern airshed, which is composed of Broward, Dade and Palm Beach Counties. The airshed concept dictates that air quality standard violations which occur anywhere in the airshed must be addressed by all members. Since Dade County is presently in violation of ozone pollution standards, Broward and Palm Beach must also reduce emissions. Motor vehicles are the principal cause of ozone pollution in South Florida. Ozone is not emitted directly by cars and trucks but is the result of a series of atmospheric reactions in sunlight between nitrogen oxides and hydrocarbons primarily emitted from vehicle exhaust. Ozone in the natural environment appears as a haze on the skyline. Air pollution from cars and trucks accounts for over 90 percent of the ozone in the air.

For this reason, the City is concerned about incinerator proposals. One recent industrial request was denied. The County is proposing one just east of Plantation. The benefits are recognized relative to landfill need reduction.

Several actions are possible to implement an air quality improvement program. The imposition by the State of a vehicle inspection program would offer an effective solution. The County currently participates in the Regional Planning Council review of the air quality implications of traffic generated by major development projects which are subject to Development of Regional Impact analysis.

However, from the standpoint of Plantation, this analysis underscores the importance of the downtown people mover and other mass transit proposals to be found in the Mass Transit Element, plus landscaping that helps clean the air.

FLOODPLAINS

Inventory:

Although almost the entire City is located within the 100-year flood plains, no areas of Plantation are projected to experience significant flooding events. Limited flooding might occur because of overflow from the New River Canal or other storm drainage canals. However, the canal's upstream dam and levee system was constructed primarily for flood control. In the event of a worst case scenario flood, damage would probably be limited to the landscape and wet floors. Figure 1.2 in the Land Use Element illustrates and identifies the Federally designated flood zones in Plantation.

Existing Commercial, Recreational and Conservation Uses:

Most of Plantation's development is within the 100-year flood plain. The only exception is the southeastern neighborhood.

Pollution:

Not applicable.

Future Conservation, Use or Protection:

The City's land development code should continue to place flood damage prevention restrictions on all new development to minimize potential damage.

SOIL EROSION

Inventory:

No land in Plantation is currently subject to significant erosion. The general topography of the City is flat and the soils are sandy. Erosion occurs in places that either have significant relief, experience severe meteorological or tidal events, or contain soils that are silty and thus subject to runoff. As Plantation contains none of these major contributors to erosion, land is not expected to experience significant erodal events.

Existing Commercial, Recreational and Conservation Use:

Not applicable.

Pollution:

Not applicable.

Future Conservation, Use or Protection:

Not applicable.

COMMERCIALLY VALUABLE MINERALS

Inventory:

Based on information obtained in a 1982 survey conducted by the Florida Department of Environmental Regulation, the only commercially valuable mineral mined in Broward County was limestone. Although one mining corporation was identified as having an office in Plantation, no active mines within City boundaries were reported.

WILDLIFE AND VEGETATIVE COMMUNITIES

Inventory:

Natural Vegetation: The City is three quarters developed and most of the remaining vacant land has been in agricultural use so there are no large areas of natural vegetation including none designated by the Broward County Environmental Coalition. Their closest designated site is just east of the City in unincorporated Broward near Peters Road. See Figure 7.1.

There are several small sites that retain their natural character. A small cypress strand lies to the north of the Deicke Auditorium. Another strand lies in the rear of an automobile dealership on State Road 7. Park and other public sites have retained as much of the native vegetation as is possible. For example, the City library tract has extensive native plant material.

Plantation Acres contains some wooded areas that (with removal of exotic trees) is worthy of retention around the low density residential construction. The existing tree and landscape ordinances are not able to prevent native tree removal in this neighborhood.

Landscape Program: The City has long been recognized for its successful urban landscape program as evidenced by the recent designation as a Tree City USA by the National Arbor Day Association. This designation is given to cities which spend at least \$1.00 per capita for tree planting or similar activities. The cornerstone of the Plantation landscape effort is the street tree program. Under this program, interested parties contact the City about the planting of trees adjacent to streets. The City purchases and plants the trees, and bills the requesting owners for 50 percent of the cost. In the last six months alone, over 430 trees have been planted under this program.

The City has also adopted a strong landscape ordinance which requires a 30 percent minimum impervious surface ratio for all building projects. The City also requires commercial and multifamily developers to plant street trees if their properties are located on major roadways. Developers are also required to landscape medians that abut their property. The City requires the use of native plant materials in meeting landscape requirements.

Wildlife: Although the City does not contain any extensive natural areas untouched by man, certain forms of wildlife thrive in this urban environment. Rabbits, squirrels and other rodents are prevalent in the City golf courses and landscaped areas. The City is home to several endangered or threatened species at certain times of the year. Animals (and plants) that are threatened or endangered are listed in the appendix. Also listed there are the bird species found in the Plantation area.

Policing of boat speeds in the canals is important to the preservation of manatees and alligators. The emphasis upon preserving native vegetation in the parks and Plantation acres is prompted by the need for habitats for the Osprey, Kestrel, Peregrine Falcon and other wildlife.

Fisheries and Marine Habitats: With no ocean or estuary frontage and no other extensive water bodies, these are not applicable.

Existing Commercial, Recreational or Conservation Use:

Recreational Use: The extensive public and private open space system in Plantation provides the principal use and conservation of plants and thus wildlife.

The largest example is 667 acre Markham Park located just west of Plantation. It includes 82 camp sites, an observatory, a boat ramp, hiking trails and canoe rentals. Within Plantation, Heritage Park is a 90 acre County facility which includes extensive natural areas with picnic facilities. One interesting feature of the park is an agricultural learning center. The area contains a working garden with space for outdoor classrooms and demonstrations. A portion of the garden is available for children to grow their own plants. Four golf courses are located in the City. They are 1) the Jacaranda Country Club on Broward Boulevard, 2) the Lago Mar golf course located on Southwest 127th Avenue, 3) the Fort Lauderdale Country Club on Country Club Road and 4) the Plantation Country Club on West Broward Boulevard. Each of these courses contains extensive trees, lakes and natural vegetation.

Managed Major Natural Area: The Everglades Conservation Area Number 2 is managed by the Florida Fresh Water Fish and Game Commission and is located just west of the City. The major purpose of the area is to provide flood control and water conservation. The wildlife and plant management responsibilities are retained by the Freshwater Fish and Game Commission while the South Florida Water Management District manages the quantity and quality of water resources. Water Conservation Area 2 encompasses 2,500 acres of wetland, sawgrass, Cypress domes, slew and tree islands. The area is part of the geologic region known as the Everglades and supports extensive plant and wildlife communities as well as its aquifer recharge function.

Pollution Problems:

None of the vegetation areas cited are threatened by pollution.

Future Conservation, Use or Protection:

Since most of the City's significant vegetation and wildlife habitat areas are in public ownership or required to remain in private open space, only vigilance of maintenance programs is relevant. However, Plantation Acres deserves special attention as does the development code in general, as it relates to landscaping and pond design.

WATER SOURCES AND NEEDS

Groundwater Sources

The Biscayne Aquifer is the prime groundwater resource for all areas of south Florida. The Federal Environmental Protection Agency has designated the Biscayne Aquifer as sole drinking water source for the Dade, Broward and Palm Beach Counties.

The Biscayne Aquifer is a permeable sediment body of varied thickness, ranging from approximately 200 feet in depth near the coast to less than 80 feet in the western conservation areas. Since the aquifer is unconfined, water is withdrawn via the pump method rather than rising naturally as would happen under artesian conditions. The aquifer is recharged by a combination of local rainfall and surface water released from Lake Okeechobee through the regional water management canal system. In spite of the high rate of recharge, the Biscayne Aquifer is constantly under stress caused by a variety of natural and man-made factors. The combined impact of heavy withdrawal, salt water intrusion and chemical contamination have placed a heavy burden on this water source.

A study for the County by consulting engineer James Montgomery assumed a County buildout population of 2.2 million persons and projected the impacts of a worst case drought condition scenario, 210 days without rain. The study concluded that there would still be an adequate supply of water available to meet the needs of the population. However, due to potential salt water intrusion and contamination problems, the study recommended the establishment of a new single regional wellfield system to serve the entire County. A site in western Broward County is proposed in order to minimize the potential impacts of urban land use.

The South Florida Water Management District (SFWMD) has prepared a water shortage plan to be used in times of drought emergencies. The plan is designed to produce an immediate but temporary overall reduction in pumpage from the aquifer. The plan also raises the awareness of water resources and emphasizes the importance of water conservation. The City is required to conform to a County ordinance based upon the SFWMD plan.

Groundwater Pollution

In 1980, the Broward County Environmental Quality Control Board (EQCB), in cooperation with the U.S. Geological Survey (USGS), initiated groundwater quality monitoring program for Broward County. The system consists of 61 monitoring wells in 31 locations with most locations containing a cluster of two wells. The locations were selected to monitor the quality of water flowing to wellfields as well as within wellfields. In most locations, one deep well and one shallow well were constructed. No identification of site-specific contamination was intended to be identified.

The two monitoring stations within Plantation are 1) along the Panama Canal to the west of Pine Island Road, and 2) at the City park near Northwest 72nd Avenue and 11th Place. See Figure 7.1. Based on the data from these monitoring wells, the groundwater quality has been consistently good. Evaluations from the Water Management District indicate that the groundwater quality in Plantation is better than most cities in the County because of its proximity to the Conservation Area.

Hazardous Waste

The private hauler under contract to the City inadvertently picks up some household hazardous waste when it is mixed with other garbage. To help counter this, Broward County organizes amnesty days on an annual basis whereby specially trained public sanitation workers set up disposal areas for potentially dangerous substances. The City does not have a large amount of land in industrial or heavy commercial use of a kind that generates hazardous waste.

The County's 1984 Storage Tank Regulations supplement the Wellfield Protection Ordinance. Both are aimed at controlling the use and storage of potentially hazardous waste in or near wellfields.

Potable Water Needs

The City currently has two wellfields, the eastern district wellfield contains 10 individual wells with a total drawing capacity of 12,300,000 gallons per day. See Figure 1.3. The City constructed eight new wells in the central area in March 1988 to replace the four existing wells which have been abandoned; this field provides a capacity of 8.0 mgd. Salt water intrusion into the Biscayne Aquifer within the City of Plantation is not considered to be a problem now or in the foreseeable future. Existing and future population and water demand is listed in Table 7.8. With a total well capacity of over 20,000,000 gallons per day, there is an adequate supply to meet the buildout or ultimate population of the City. There are no agricultural or unique industrial water needs, therefore the City does not keep data on the water use/demand separate from other non-residential uses.

Table 8
Projected Water Needs, 1985-2005
City of Plantation

Year	Population Served	Average Daily Water Demand in Millions of Gallons Per Day
1985	53,206	8.25
1990	63,401	9.83
1993	69,518	10.77
1995	73,597	11.41
2000	91,574 (1)	14.19
2005	103,856 (2)	15.82

(1) Assumes the City of Plantation will supply the demand for the entire western part of the City.

(2) Buildout population with seasonal component.

Source: Water Master Plan, Camp Dresser and Mckee, 1985

Water Conservation

The most effective water conservation program initiated by the City was related to the change in billing for water consumption. Effective 1984, the City began assessing sewer charges based on the metered water use rather than on the number of bathrooms, thereby further encouraging water conservation. The City Utility Department has also been distributing educational materials related to the conservation of water.

The City already has an emergency water conservation ordinance. Other water conservation measures should be considered such as xeriscape.

APPENDIX

Table I
Endangered and Threatened Plants and Animals
Broward County, 1987

Scientific Name	Common Name	Agency List		
		FGFWFC	FDA	USFWS
Plants				
Asimina reticulata	Pawpaw		E	UR1
Selaginella arenicola	Spikemoss		T	
Conradina grandiflora	Scrub Mint		T	
Asclepias curtissii	Curtiss Milkweed		T	
Lechea cernua	Nodding Pinweed			UR2
Chrysophyllus olivaeforme	Satinleaf		E	
Myrcianthes fragrans	Simpson's Stopper			UR2
Wildlife				
Gopherus polyphemus	Gopher Tortoise	SSC		UR2
Alligator mississippiensis	American alligator	SSC		T(S/A)
Trichechus manatus latirostris	West Indian Manatee	E		E
Rana areolata	Florida gopher frog	SSC		URZ
Drymarchon corals couperi	Eastern Indigo snake	T		T
Tantilla colitica	Miami Black-headed snake	T		UR2
Falco peregrinus	Peregrine Falcon	E		E
Pelecania occidentalis	Eastern Brown pelican	T		E
carolinensis				
Pandion halieotus	Osprey	SSC		
Falco sparverius paulus	Southeastern American kestrel	T		UR2
Haenatopus palliatus	American oystern catcher	SSC		
Sterna antillarum	Least tern	T		
Aphelocoma coerulescens	Florida Scrub jay	T		UR2
coerulescens				

Table I
Endangered and Threatened Plants and Animals
Broward County, 1987 (Continued)

FGFWFC - Florida Game and Fresh Water Fish Commission
 FDA - Florida Department of Agriculture
 USFWS - United States Fish and Wildlife Service

E - Endangered
 T - Threatened
 T(S/A) - Threatened Due to Similarity of Appearance
 SSC - Species of Special Concern
 UR1 - Under review for federal listing, with substantial evidence in existence indicating at least some degree of biological vulnerability and/or threat.
 UR2 - Under review for listing, but substantial evidence of biological vulnerability and/or threat is lacking.

Sources: Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida, Florida Game and Fresh Water Fish Commission, 1987. (Note the wildlife portion of this list was updated by the Broward County Parks and Recreation Division in 1988.)

Table II
Local Bird Species

Bird	Abundance	Classification
Pied Bill Grebe	U	w
American Anhinga	C	r
Great Blue Heron	C	r
Green Backed Heron	C	r
Little Blue Heron	C	r
Cattle Egret	C	r
Great Egret	C	r
Snowy Egret	C	r
Tri-color Heron	C	r
Yellow Crowned Night Heron	C	r
Blue-winged Teal	C	w
Ring Necked Duck	C	w
Red Tailed Hawk	U	r
Red Shouldered Hawk	C	r
Broad Winged Hawk	C	m
Osprey	C	r
Peregrine Falcon	U	w
Merlin	U	w
American Kestrel	C	w
Common Moorhen	C	r
American Coot	C	w
Killdeer	U	r
Spotted Sandpiper	C	w
Solitary Sandpiper	U	m
Greater Yellowlegs	C	w
Lesser Yellowlegs	C	w
Black-Necked Stilt	C	s
Ring-billed Gull	C	w
Laughing Gull	C	r
Forster's Tern	C	w
Little Tern	C	s
Black Skimmer	C	r
Rock Dove	C	r
Ground Dove	C	r
Red Fronted Amazon	R	r
Yellow-billed Cuckoo	C	s
Black-billed Cuckoo	U	m
Smooth-billed Ani	C	r
Common Screech Owl	C	r
Chuck-will's-widow	C	r
Whip-poor-will	C	w
Common Nighthawk	C	s
Chimney Swift	R	m
Ruby Throated Hummingbird	U	w
Belted Kingfisher	C	w
Common Flicker	C	r
Pileated Woodpecker	U	r
Red-bellied Woodpecker	C	r

Table II (Continued)
Local Bird Species

Bird	Abundance	Classification
Yellow-bellied Sapsucker	C	w
Downy Woodpecker	U	r
Eastern Kingbird	C	m
Western Kingbird	U	w
Eastern Phoebe	C	w
Great Crested Flycatcher	C	r
Eastern Pewee	U	m
Tree Swallow	C	w
Rough Winged Swallow	C	w
Barn Swallow	C	m
Purple Martin	C	m
Blue Jay	C	r
Fish Crow	C	r
House Wren	C	w
Carolina Wren	C	r
Northern Mockingbird	C	r
Gray Catbird	C	w
Brown Thrasher	U	r
American Robin	C	w
Wood Thrush	R	m
Hermit Thrush	U	w
Swainson's Thrush	U	m
Grey-cheeked Thrush	U	m
Veery	U	m
Blue-gray Gnatcatcher	C	w
Ruby-crowned Kinglet	U	w
Cedar Waxwing	C	w
European Starling	C	r
White-eyed Vireo	C	r
Yellow-throated Vireo	C	r
Solitary Vireo	C	r
Black-whiskered Vireo	C	s
Red-eyed Vireo	U	m
Black-and-white Warbler	C	w
Prothonotary Warbler	U	m
Swainson's Warbler	R	m
Worm-eating Warbler	U	m
Tennessee Warbler	R	m
Orange-crowned Warbler	U	w
Nashville Warbler	R	m
Northern Parula Warbler	C	w
Yellow Warbler	U	r
Magnolia Warbler	U	m
Cape May Warbler	C	m
Black-throated Blue Warbler	C	m
Yellow-rumped Warbler	C	w
Chestnut-sided Warbler	U	m
Bay-breasted Warbler	U	m

Table II (Continued)
Local Bird Species

Bird	Abundance	Classification
Blackpoll Warbler	C	m
Prairie Warbler	C	w
Palm Warbler	C	w
Ovenbird	C	w
Northern Waterthrush	U	w
Louisiana Waterthrush	U	w
Kentucky Warbler	U	m
Connecticut Warbler	R	m
Common Yellowthroat	C	r
Yellow-breasted Chat	U	w
Hooded Warbler	U	w
Wilson's Warbler	U	m
Canada Warbler	U	m
American Redstart	C	m
House Sparrow	C	r
Bobolink	C	m
Red-winged Blackbird	C	r
Spotted Oriole	C	r
Northern Oriole	C	r
Boat-tailed Grackle	C	r
Common Grackle	C	r
Stripe-headed Tanager	R	o
Western Tanager	R	o
Scarlet Tanager	R	o
Summer Tanager	R	o
Northern Cardinal	C	r
Rose-breasted Grosbeak	C	m
Blue Grosbeak	U	m
Indigo Bunting	C	w
Painted Bunting	C	w
American Goldfinch	C	w
Rufous-sided Towhee	U	r
Savannah Sparrow	C	w
Swamp Sparrow	C	r

NOTE:

C - Common; often seen or heard in appropriate habitat.

U - Uncommon; usually present, but not always heard or seen.

R - Rare; present only in small numbers-seldom seen or heard.

r - Resident; present all year-abundance may vary w/season.

s - Summer visitor (including spring and fall).

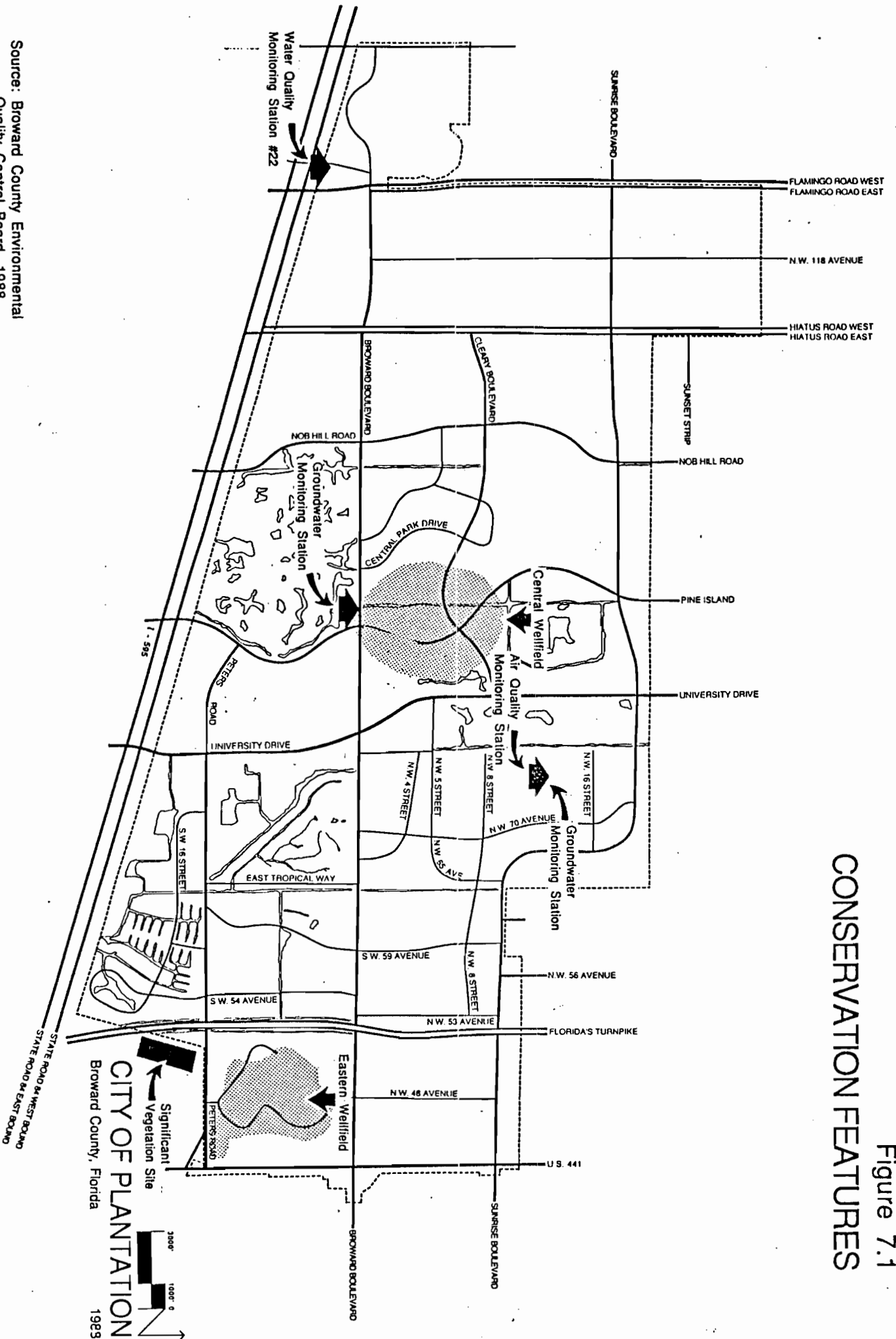
w - Winter visitor (including spring and fall).

m - Migrant; ordinarily present only during migration.

o - Occasional or casual visitor.

Source: Checklist of southern Florida Birds compiled by Dr. Ira Joel Abramson and Dr. Ascar T. Owre for the Florida Audubon Society.

Figure 7.1
CONSERVATION FEATURES



Source: Broward County Environmental
Quality Control Board, 1988

RECREATION AND OPEN SPACE ELEMENT

**Inventory
Analysis**

INVENTORY

Parks and Recreation Facilities Summary

Plantation's inventory of public and private park and recreation facilities comprises over 1240 acres. Table 8.1 provides a summary of these facilities and Table 8.5 (as an Appendix) is a detailed listing.

Table 8.1
Summary of Park and Open Space Facilities in Plantation

	Acreage
Parks Owned by the City	224.6
Facilities Owned by School Board and Leased to the City	13.2
Golf Courses Zoned/Deed- Restricted for Recreation	923.0
Publicly Owned Recreation Land to Which City Contributed Toward City Park Requirement (Part of 90 acre Heritage Park)	22.4
Proposed Park Sites (Pm)	47.0
Park Committed For Dedication By Developer (Hiatus Road corridor)	6.7
Private Recreation Land Deed-Restricted or Restricted by Condo Documents (1)	4.01
TOTAL	1,240.9

- (1) Lago Mar Parks 3.6 acres
Jacaranda Cove Parks .4 acres

Source: Plantation Parks and Recreation Department, 1987

Definitions

Park areas are frequently divided for analysis purposes into the categories of resource-based areas and activity or user-based areas. "Activity-based" provide space for one or more active sports activities. "Resource-based" areas are centered on a unique land, water or natural resource. Parks are also sometimes classified according to their development as predominantly "active" or "passive" in character.

Activity-Based Parks

Plantation's park areas are primarily "activity" or user-based, and recreational development is for both active and passive leisure time activities, often times combined for variety in the same facility. The following paragraphs highlight some of the major facilities. See Table 8.2 for a complete listing.

Central Park: The City has centered its recreation facility development on Central Park, located at approximately the geographic center of the City. It is intensively developed for playing fields and tennis courts as well as the central swimming complex and multi-purpose building. There is the potential to expand this park due to nearby vacant land.

Other Playfields: The City's Central Park is supported by other activity/user based facilities in the older parts of the City, both north and south of Broward Boulevard. Examples include The Pal Field complex adjacent to Plantation Junior High School (on Northwest 70th Avenue) and the Pop Travers Field adjoining Seminole Park at Southwest 62nd Avenue and S.W. 16th Street, less than a mile from South Plantation High School. A similar activity/user based facility on South Pine Island Road is developed primarily for soccer, the Pine Island Park. An additional large, predominantly activity/user based facility has recently been located on the south side of Cleary Boulevard west of Nob Hill Road, adjoining a planned County elementary school site.

Horse Arena: Plantation Acres, a unique area with rural or estate character, includes municipal horse facility.

Existing Linear Park: Early in the City's history a linear park was established extending from Northwest 65th Avenue (the original heart of Plantation) almost three-quarters of a mile to Bayberry Drive. Along its length are special recreation and cultural facilities: The Plantation Community Center and Kennedy Memorial Park, the Plantation Botanical Gardens, the Plantation Community Library, and Plantation Historical Society Museum. Plans are in preparation to connect the lengths of a now discontinuous walkway/bikeway to better define its character as a linear park and to interconnect the various facilities located along it.

Resource-Based Open Space

Resource-based open space is often classified into three categories: pastoral, utilitarian, and corridor. Plantation's open space of this kind is shown in Table 8.2 and outlined below

Pastoral Open Space: These areas are generally large areas used for resource-based and/or user-oriented recreation such as the four golf courses in Plantation.

Utilitarian Open Space: An other principal class of open space, utilitarian open space, includes the rights-of-way of major canals which are part of the South Florida Water Management District System (11.4 linear miles) and the narrower canals which are part of the Old Plantation Water Control District Drainage System.

Corridor Open Space: Consists principally of major transportation and utility corridors. Bikeways are a specialized corridor open space.

Bikeways: 1985 City bikeways plan proposes the development of Class A bikeways (separated from other vehicular traffic within the City) including a) bikeway along the North New River Canal and a bikeway extending north from this Canal along the east side of University Drive to just south of West Broward Boulevard. The plan also provides for a six foot sidewalk, primarily for pedestrians and less experienced bike riders, along all streets designated in the plan as "primary bikeways" and the provision for a 14 foot curb lane for recreational biking on new or widened street. It recommends six foot walkways where eight foot wide bikeways could not be constructed due to narrow rights-of-way. Some implementation of this plan has been initiated. In generally conforms to the County bikeways plan shown on Figure 3.4 in the Traffic Circulation Element.

Other Private Open Space: In addition to the above classes of open space, the City for a number of years has required as a part of its planned unit development zoning provisions that a minimum of 30 percent of each site be reserved as useable open space. A maximum of 40 percent of this requirement may be lake areas.

Though an important part of the landscape character of Plantation, these areas are not listed in the tables of recreation and open space, with the exception of those which have been specifically dedicated or designated (on approved site plans) in approved unified control documents. Guidelines have been used since 1985 to specify on-site active recreation to be provided by developers as a part of the 30 percent space; the standard is 137 square feet per person of estimated future population.

The result is, though offering the possibility through density designations up to 25 units per acre, has a low intensity, open space character which the City intends to preserve.

Table 8.2
Open Space: Public Or Deed Restricted

Pastoral Open Space	Acres	Linear Miles
Ft. Lauderdale Country Club (Private)	287	N/A
Plantation Golf Course & Country Club (Public)	203	N/A
Jacaranda Country Club (Private)	269	N/A
Lago Mar Country Club (Private)	164	N/a
	923	
Utilitarian Open Space		
South Waste Water Management District Canals	321.5	11.4
Old Plantation Water Control District Canals	333.4	30.0
	654.9	41.4
Corridor Open Space		
Florida's Turnpike (Sunshine Parkway)	98.5	2.7
University Drive	85.6	3.5
FP&L Rights-of-way	29.9	2.4
	214.0	8.6
Specialized Corridor Open Space		
Class A Bikeways	N/A	7.7
Total:	1,791.9	57.7

Source: City of Plantation Parks and Recreation Department, 1987

ANALYSIS

County and City Standards

As previously discussed, there are two overall park and recreation standards which affect the City of Plantation: the County's requirement for three acres per thousand population to satisfy the requirements of the Broward County Land Use Plan; and, the City's requirement of four acres per thousand population to satisfy its adopted standards.

County: Based on density reductions accomplished in site plan approvals, the County's system of crediting a portion of the pastoral open space areas for the golf courses toward the park and open space requirement and allowances for City participation in the acquisition of County parks, the City exceeds the County park requirement for buildout by 69.8 acres as indicated on Table 8.3.

Table 8.3
County Park Standard Conformance For Buildout Population
City of Plantation

	Acres
Park Requirement	296.4
Requirement Less Golf Course Allowance (15%)	251.9
Allowable Credits Due to Existing Parks	321.7
Surplus/(Deficiency)	69.8

Source: Plantation Parks and Recreation Department, 1987

The excess, considering County requirements, would provide for an additional 23,000 population which even with some error of estimate is not expected to occur at buildout in Plantation.

City: Based on the City's park requirement of four acres per 1,000 population, a total of 395.4 acres will be required. With allowance for golf course acreage and other allowable credits, the City will be deficient by only 14.3 acres in meeting its overall buildout requirement. The proposed linear park along the North New River Canal is expected to be developed (under a lease agreement with South Florida Water Management District) by buildout; this alone would exceed 14 acres. In addition, several park site acquisitions are under consideration.

Within the overall requirement of four acres per 1,000 population, the Planning Department uses the standard of two acres of neighborhood park and recreation per thousand population, one acre of community park and recreation area (usually activity or user oriented) per 1,000 population and one acre of urban park per 1,000 population. The City's urban park is Central Park now 77.7 acres and expansion has been proposed.

Park Planning and Management

The City has an active recreation and park planning program which uses surveys, criteria and other mechanisms for setting priorities. It also is responsible for recommending financing refinements. There is the potential for improvements in both of these areas.

State and City Guidelines for User-Oriented Outdoor Recreation Facilities

Table 8.4 below indicates the standards used by the Florida Department of Natural Resources as a general guide for the development of activity based or user oriented outdoor recreation. It also shows the implications for Plantation upon the current inventory of facilities.

Table 8.4
Guidelines for User-Oriented Outdoor Recreation Activities

Resource/Facility	Population Per Facility			Existing	Suggested by Guideline
	Minimum	Maximum	Recommended or Median		
18-hole golf course	25,000	62,500	50,000	1	1
Tennis court	1,000	7,500	2,000	30	30
Baseball/softball	1,500	6,000	3,000	23	20
Football/soccer	4,000	15,000	6,000	11	10
Handball/racquetball court	1,000	10,000	6,000	2	10
Basketball court	1,000	5,000	5,000	5	12
Swimming pool	--	--	50,000	1	1
Shuffleboard court	--	--	10,000	6	6

Sources: Outdoor Recreation In Florida, State Department of National Resources, 1987
Plantation Parks and Recreation Department, 1988

The table shows that the City is generally meeting these guidelines, the two exceptions being handball and racquetball courts. This suggests that (assuming the demand has been expressed by usage) these facilities should be programmed into existing and proposed parks. It also suggests that given the projections for a one third increase in population before buildout, all facilities should be increased accordingly.

Appendix I

Table 8.5
Existing Recreation and Open Space Facilities
City of Plantation 1987

Park Name	Location	Acres	Type	Facilities
Flex Zone 68				
Horse Arena	N.W. 118 Ave. & N.W. 12th St.	5.0	A	horse ring
Plantation Acres (Middle)	N.W.. 8th St. & N.W. 118 Ave.	5.0	A	undeveloped
Plantation Acres (South)	N. New R. Canal & S.W. 116 Ave.	4.2	A	undeveloped
Plantation Acres (North)	N.W. 21 Ct.	5.0	A	undeveloped
Subtotal		19.2		
Flex Zone 73				
Plantation Point	Peters Rd. & S.W. 51 Ave.	.2	A	playground (bb)
Mini Park South	N.W. 3 Ct.	.3	A	tot lot
Mini Park North	N.W. 43rd Ave.	.3	A	undeveloped
Park East	N.W. 6 Ct. & N.W. 47 Terr.	3.0	A	playground (bb)
Plantation Elem. School	N.W. 46 Ave.	4.9	A	bb, tennis & playground
Mini Park	N.W. 43rd Ave.	.5	A	tot lot
Subtotal		9.1		

Table 8.5 (Continued)
Existing Recreation and Open Space Facilities
City of Plantation 1987

Park Name	Location	Acres	Type	Facilities
Flex Zone 74				
Mirror Lake	N.W. 72 Ave. & N.W. 11 Pl.	3.9	A	playfield
Liberty Tree	N.W. 5 St. & 74 Terr.	4.4	A	playground
Kennedy (and Comm. Ctr.)	Palm Tree Rd. & Fig Tree Ln.	12.3	A	tennis, handball, bocci, shuffleboard and playground
Botanical Garden	N. Fig Tree Ln.	3.7	R	garden and linear park (surround library and museum)
Hoffman (Deicke Auditorium)		3.4	A	playfield and tennis
PAL Field		11.2	A	playfield (4)
Subtotal		38.8		
Flex Zone 75				
Central Marciano Estates	Central Park Dr. & N. Broward Blvd. Marciano Blvd.	77.7 2.0	A A	tennis, swimming pool rec. center (gym) and playfields (11)
Cocoplum	S.W. 90 Ave.	1.6	A	undeveloped
Pine Island	S. Pine Island Rd.	20.3	A	5 soccer fields
Jacaranda Lakes	N.W. 94th Ave.	20.8	A	tennis, bb and open lake space
Veterans	Lauderdale W. Dr. & N.W. 17 St.	5.0	R	
Subtotal		127.3		

Table 8.5 (Continued)
Existing Recreation and Open Space Facilities
City of Plantation 1987

Park Name	Location	Acres	Type	Facilities
Flex Zone 76				
Plantation Isles	S.W. 13 St.	1.9	A	tot lot
Seminole & Pop.	S.W. 63 Ave. & S.W. 16 St.	17.6	A	tennis (2), playground, playfields (4) and picnic
Travers Field				
Fig Tree	Fig Tree Ln & S.W. 16 St.	6.8	A	playfields (3), lake and playground
City	S.W. 54 Ave.	.3		undeveloped
Willie Thruway	S. Bal Aire Dr.	1.3	R	passive park
Fumpston	S.W. 59 Ave.	1.3	R	passive park
Woody Woodbury	E. Tropical Way	.5		undeveloped
Subtotal		43.4		

County Park

Heritage	Flex Zone 76 (Peters Rd.)	90.0	A & R	picnic, playground, lake, volleyball, botanical garden, etc.
Plantation Golf Course	Flex Zone 16	203.0		public golf course
Total Existing Public Parks and Open Space		530.8		

Type: A = Activity-Based
R = Resource-Based
bb = basketball court

Source: City of Plantation Park and Recreation Department, 1988

APPENDIX II

Glossary For Recreation and Open Space Element

Active Facilities - A facility which caters to those involved in direct or specialized physical activities.

"Bicycle and Pedestrian Ways" - 9J-5.003(8)FAS - means any road, path or way which is open to bicycle travel and traffic a foot and from which motor vehicles are excluded.

Community - A cluster of two (2) or more neighborhoods which generally has a population of 10,000 or more.

"Community Park" - 9J-5.003(17)FAS - means a park located near major roadways, and designed to serve the needs of more than one neighborhood.

Mini-Park - A park or recreation area primarily for passive recreation use which is two (2) or fewer acres in size.

Neighborhood - A residential development which may comprise of one or several developments which has a population of 5,000 or more.

"Neighborhood Park" - 9J-5.003 (55)FAS - means a park which serves the population of a neighborhood and is generally accessible by bicycle or pedestrian ways.

Novelty Recreation - Develop those facilities which have not been traditionally created through public funds that would indicate only short-term popularity, but could be created through private funding.

"Open Spaces" - Undefined open leisure area. 9J-5.003 (59)FAS - means undeveloped lands suitable for passive recreation or conservation uses.

"Park" - 9J-5.003 (61)FAS - means a neighborhood, community, or regional park.

Passive Facility - A facility which caters to those involved in sitting, walking or nature study rather than active play.

"Playground" - 9J-5.003(62)FAS - means a recreation area with play apparatus.

"Private Recreation Sites" - 9J-5.003 (68)FAS - means sites owned by private, commercial or non-profit entities available to the public for purposes of recreational use.

"Public Buildings and Grounds" - 9J-5.003 (71)FAS - means structures or lands that are owned, leased, or operated by a government entity, such as civic and community centers, hospitals, libraries, police stations, fire stations, and government administration buildings.

Glossary For Recreation and Open Space Element (Continued)

"Public Facilities - 9J-5.003(72)FAS - means transportation systems or facilities, sewer systems or facilities, solid waste systems or facilities, drainage systems or facilities, potable water systems or facilities, educational systems or facilities, parks and recreation systems or facilities and public health systems or facilities.

Public Lands - That land which has been acquired for public use (i.e. school property, utility easements, public libraries, fire stations).

"Public Recreation Sites" - 9J-5.003 (69)FAS - means sites owned or leased on a long-term basis by a federal, state, regional or local government agency for purposes of recreational use.

"Recreation" - 9J-5.003 (73)FAS - means the pursuit of leisure time activities occurring in an indoor or outdoor setting.

"Recreation Facility" - 9J-5.003 (74)FAS - means a component of a recreation site used by the public such as a trail, court, athletic field or swimming pool.

"Recreational Uses" - 9J-5.003 (75)FAS - means activities within areas where recreation occurs.

Region - An area consisting of a number of cities and/or counties related to each other by economy, transportation, or other large-scale concerns.

"Regional Park" - 9J-5.003 (76)FAS - means a park which is designated to serve two or more communities.

Special Recreational Development - Those specialized facilities which are typically created through public funding to meet the demands of a majority of the residents' needs. (i.e. for Plantation Horse Arena, Amphitheater, Cultural Arts Center).

INTERGOVERNMENTAL ELEMENT

**Inventory
Analysis**

INTRODUCTION

This Element outlines and analyzes those issues that require intergovernmental cooperation to achieve plan implementation.

Note: The Analysis format follows the DCA Model Element and is the most helpful format to the City. However, if necessary, it can be reformatted to conform to more recent DCA interpretations of 9J5.

Table 1 provides a matrix showing all agencies with which Plantation is coordinating or likely to in the future. This matrix is followed by an analysis of the key intergovernmental issues raised in each element.

Table 1
Intergovernmental Coordination Matrix

Plan Element	Sunrise	Davie	Lauderhill
Land Use	• Border Land Use • Compatibility of Border Zoning	• Border Land Use • Compatibility of Border Zoning	• Border Land Use • Compatibility of Border Zoning
Housing			
Traffic			
Recreation	• New River Canal Linear Park and Bike Path	• Linear Park and Bike Path	
Infrastructure	• Provides water to western Plantation		
Conservation			

Source: Robert K. Swarthout, Incorporated, 1988.

Table 1 (Continued)
Intergovernmental Coordination Matrix

Plan Element	Broward County	Broward County School Board	Metropolitan Planning Organization
Land Use	• Consistency with Comp Plan (all elements) • Border Land Use • Compatibility of Border Zoning	• Major Land User	
Housing	• Housing Rehabilitation Loans • Code Enforcement		
Traffic	• Numerous Street Projects		• Traffic Plan Level of Service
Mass Transit	• Bus Service • Possible Light Rail		• Transit Planning
Recreation	• County Park Within City	• Provider of Recreation and Open Space	
Infrastructure	• Solid Waste Disposal at County Landfill		
Conservation	• Wellfield Protection Ordinance • Monitor Wellfield Groundwater		

Source: Robert K. Swarthout, Incorporated, 1988.

Table 1 (Continued)
Intergovernmental Coordination Matrix

Plan	Plantation Acres Improvement District	Old Plantation Water Control Dist.	State DER
Land Use			
Housing			
Traffic	• City and PAID Both Improve Streets		
Mass Transit			
Recreation			
Infrastructure	• City and PAID Both Improve Drainage	• Provide Drainage in Central Plantation	• Regulates Water Quality • Regulates Waste-water Plants • Sewage Plant Grants
Conservation			

Source: Robert K. Swarthout, Incorporated, 1988.

Table 1 (Continued)
Intergovernmental Coordination Matrix

Plan Element	State DNR	State DOT	State DCA	Utilities
Land Use			• 9J-5 Compliance and Land Use Plan Amend- ments	
Housing				
Traffic		• Responsible for 6 Major Streets		
Recreation	• Park Grants			
Infrastructure				• FPL • Southern Bell
Conservation				

Source: Robert K. Swarthout, Incorporated, 1988.

Table 1 (Continued)
Intergovernmental Coordination Matrix

Plan Element	S. Florida Regional Planning Council	S. Florida Water Manag. District	Federal
Land Use	• Consistency with Regional Goals and Objectives (all elements)		• Floodplain Regulations (FEMA)
Housing			
Traffic	• Level of Service on Regional Roadways		
Recreation		• Linear Park	
Infrastructure		• Regulates Water Use • Drainage Permits • Manage Canal	• Sewage Treatment Plant Monitoring (EPA)
Conservation	• Floodplain Standards		

Source: Robert K. Swarthout, Incorporated, 1988.

ANALYSIS

Future Land Use Element

1. Issue: Land Use Plan Amendments/DRIs/Zoning Changes

- a. **Description:** Major new developments such as the 1,200 acre Amerifirst project (just to the west of Plantation in Sunrise) have major implications for traffic and land use change pressures within Plantation. Smaller scale boundary zone changes also have potential impacts.
- b. **Coordination Mechanisms and Effectiveness:** In addition to direct contacts between planning directors, the Technical Advisory Committee provides a forum for the City and County planning directors to discuss issues of this nature. The Planning Council and other public hearings provide a more formal mechanism for coordination. In general, these mechanisms are working well.
- c. **Recommendations:** None except continue current pattern and add such agenda items as the New River linear park (Davie and Sunrise) and interlocal agreement (Lauderhill and Fort Lauderdale) for emergency water supply.

Traffic Circulation Element

1. Issue: Street Improvements:

- a. **Description:** Since 14 proposed roadway improvement projects listed in this Element are on the County or State system, the need for coordination with these two levels of government is apparent.
- b. **Coordination Mechanisms and Effectiveness:** Currently, the City planning staff is represented on the Technical Coordinating Committee to the MPO and an elected official sits on the MPO Board. This is the principal mechanism for preparing the five-year Transportation Improvement Program (TIP) and year 2010 major street plan as well as reviewing the State five-year plan. There do not appear to be any problems with this planning system.
- c. **Recommendation:** City officials must continue to be advocates for inclusion of these 14 projects in the TIP and year 2010 plans to assure funding, implementation and thus resolution of the current and projected congestion problems.

Mass Transit Element

1. Issue: Transit Service

- a. **Description:** Broward County's Division of Mass Transit is the sole provider of public bus service in Plantation and thus the key to improved service.

- b. **Coordination Mechanisms and Effectiveness:** Although the City Element was based upon the draft County Element, City planning officials must continue to be advocates for both high occupancy/high speed transit along the problem arterial corridors (University Drive and Broward Boulevard) and bus route extensions into western Plantation as well as adequate frequency of service. Although private funding is proposed for the downtown people mover, if public funding becomes necessary, this mechanism would be used. The TCC and MPO bodies provide such a forum and are functioning well.
- c. **Recommendation:** Continue to use the TCC and MPO as mechanism to advocate for improved transit service to the City.

Housing Element

1. Issue: Rehabilitation Loans

- a. **Description:** The neighborhood east of the Turnpike, particularly north of Broward Boulevard, is characterized by some deteriorated housing and care of premises problems.
- b. **Coordination Mechanisms and Effectiveness:** Although the City staff can provide the code enforcement side, the County Department of Community Development must provide any CDBG financed low interest rate rehabilitation loans to eligible homeowners. County staff may also be helpful in working with neighborhood leaders to rebuild resident confidence in the area. Although eligibility has apparently been a problem, the loan program participation rate has been very low.
- c. **Recommendation:** City planning and code enforcement staff should work directly with County staff to both meet with neighborhood leaders and refer potentially eligible homeowners to the County CDBG loan program.

2. Issue: Deterioration in the Neighborhoods East of State Road 7.

- a. **Description:** The two neighborhoods to the east of Plantation have varying degrees of housing deterioration that 1) impact the State Road 7 commercial corridor, and 2) tend to influence the Plantation neighborhoods discussed above. They are in unincorporated Broward County and code enforcement is the responsibility of the understaffed County Building and Zoning Department.
- b. **Coordination Mechanisms:** Currently, there are no coordination mechanisms.
- c. **Recommendation:** The City planning and code enforcement staff representatives should meet with County Building and Zoning representatives to discuss City concerns and evolve a more formal code enforcement program.

Infrastructure Element

1. Issue: Purchase of Water From Sunrise

- a. **Description:** The City now purchases water from Sunrise to serve portions of western Plantation.
- b. **Coordination Mechanism and Effectiveness:** Plantation has a inter-local agreement to purchase this water. However, the pressure and quantity are not great enough to serve this growing area. Therefore, the new Central Plantation plant may prove a better source.
- c. **Recommendation:** Secure State (DEF) and Water Management District (SFWMD) approvals to provide this service from the new Central water plant and then terminate contract with Sunrise.

2. Issue: Plantation Acres Improvement District (PAID)

- a. **Description:** This agency is responsible for streets and drainage facilities in this growing western end of Plantation. Because of resident complaints about conditions, the City recently had to make some paving and drainage improvements.
- b. **Coordination Mechanism:** Currently there are no contracts or related financial agreements between these two entities. The plan recommends that all sewer permitting in the PAID be a City responsibility and that the dredging of the north-south drainage canals be completed by PAID.
- c. **Recommendation:** The City Council and PAID Board should approve an inter-local agreement to effectuate the sewer permitting and clarify future responsibilities and funding.

Conservation Element

1. Issue: Wellfield Protection

- a. **Description:** The County wellfield protection ordinance and groundwater monitoring program are critical to the assurance of safe drinking water in Plantation.
- b. **Coordination Mechanism and Effectiveness:** The County Environmental Quality Control Board (EQCB) is responsible for protecting Plantation's wellfields. This does not require a formal agreement. However, cooperation via City land use policies, location of monitoring stations on City land and informal intergovernmental liaison (EQCB and City Public Utilities Department) are important. City development code provisions relative to hazardous waste would strengthen this system.
- c. **Recommendation:** As a part of the 1989 development code review process, the City Planning Department (in consultation EQCB) should include hazardous waste storage provisions. Otherwise, continue the current informal coordination process.

Recreation Element

1. Issue: Linear Park Along New River Canal

- a. **Description:** This proposed park would be within the SFWMD right-of-way but use City funding for improvements.
- b. **Coordination Mechanisms:** None now other than preliminary planning discussions.
- c. **Recommendation:** Enter into a contract whereby the City is able to make park improvements within the SFWMD right-of-way; potentially extend park east and west via similar contracts with Sunrise, Davie and the County.

2. Issue: School Playfields

- a. **Description:** Nine public schools are located within the City. They all contain playfields that compliment the City's park system.
- b. **Coordination Mechanisms:** Currently the City leases some playfields from the School Board
- c. **Recommendation:** The Recreation Director and City Attorney should work with the School Board staff to develop additional lease or joint-use agreements relative to those school playfields most needed to supplement City parks.

Other Agencies

1. Broward County Park Department:

- a. **Description:** County park within City.
- b. **Coordination Mechanism:** Informal communications between park agencies.
- c. **Recommendation:** none

2. Old Plantation Water Control District

- a. **Description:** Provides drainage in central Plantation.
- b. **Coordination Mechanism:** Informal verbal communication with City Engineer's Office plus joint review of drainage plans. Attends City's Development Review Committee meetings.
- c. **Recommendation:** None

3. State Department of Environmental Affairs (DER)

- a. **Description:** The principal direct contact between the City and DER has been relative to sewage treatment plant grants and the State's monitoring of utility plants.

- b. Coordination Mechanism: Grant agreements relative to plant funding and monthly reports to DER. Works satisfactorily.
- c. Recommendations: None

4. Other State Agencies

- a. Description: The Department of Natural Resources is a potential source of park grants. The DCA is a source of planning grants and reviews comprehensive plans and land use plan amendments.
- b. Coordination Mechanism and Effectiveness: Contract/grant agreements and plan/application reviews. Working satisfactorily. The City Utilities Department also submits monthly reports through the County Health Department to the State Department of Health and Rehabilitative Services.
- c. Recommendation: None

5. Regional Agencies

- a. Description: The South Florida Regional Planning Council plan provides a framework and review role for municipal comprehensive/land use plans. The South Florida Water Management District manages one canal in the City and issues water use permits.
- b. Coordination Mechanisms: SFRPC; very limited except specific submittals. SFWMD; monthly reports from City Utilities Department.
- c. Recommendation: None

6. Utilities

- a. Description: Telephone (Southern Bell) and electric (FPL) service provided.
- b. Coordination Mechanisms: Routine procedures with Public Works Department on new construction and service line extension. City requires a permit for any work within the right of way.
- c. Recommendations: None.

7. Federal Agencies

- a. Description: The Environmental Protection Agency monitors sewage treatment plants and the Federal flood insurance agency (FEMA) enforces flood insurance requirements.
- b. Coordination Mechanism: Monthly reports from City Utilities Department to EPA and written communications relative to Development Code provisions on floodplains.

COMPREHENSIVE PLANS

Cities

The cities of Sunrise, Lauderhill and Davie are still in the process of preparing their plans. As soon as drafts are available, they will be reviewed for compatibility with Plantation.

County

Drafts of portions of the Broward County plan were available by mid-1988. The mass transit, intergovernmental and portions of the land use element were available for background to the City's August DCA submittals.

Regional

The South Florida Regional Planning Commission's Policy Plan was reviewed as a background for the Plantation plan. The regional plan emphasizes six growth management concepts as follows:

1. compact urban development
2. concurrency
3. intergovernmental coordination
4. financial feasibility
5. implementation feasibility
6. internal consistency

The Plantation plan has attempted to include all six concepts as integral parts of this plan.

Among the more specific issues emphasized in both the regional policy plan and Plantation's plan are:

1. wellfield protection
2. moderate income housing near employment centers
3. phased growth
4. reduction of streets below LOS "D"
5. bikeways
6. mass transit policies to decrease traffic and serve activity centers
7. transit amenities
8. transit for disadvantage
9. coordinated transportation system
10. group homes policy
11. elimination of substandard housing
12. wastewater treatment improvements
13. air quality policies
14. floodplain development policies
15. ability to finance capital improvements

Although by no means exhaustive, this shows the basic conformance to the regional plan and does not suggest any need for special coordination.

Note: This is not an Area of Critical State Concern.

CAPITAL IMPROVEMENT ELEMENT

**Inventory
Analysis**

INTRODUCTION

The principal purpose of this element is to determine the cost of any major City public facility improvements recommended in the various elements for implementation during the five years following adoption of this plan (i.e. fiscal 1990-1994) and demonstrate the ability to fund those improvements. These projects are needed to either address existing "deficiencies" or future "needs".

A capital improvement is defined here as a non-recurring City-financed physical improvement project at least \$100,000 in magnitude.

Some projects slated for implementation after 1994 are also noted. The balance of cost estimates and funding source descriptions for these projects will be provided in future years as part of the annual updating of this Element.

INVENTORY

NEEDS FROM OTHER ELEMENTS

The following 1990-1999 capital project recommendations are based upon these deficiencies or needs as contained in the other elements; cost estimates are listed where available:

Traffic Circulation:

- City street resurfacing various streets.
Cost: \$700,000; Cost Estimate Source: City Public Works Department; Timing: before 1995. Need.
- Intersection improvements, various locations.
Cost: \$100,000; Source: City Public Works Department; Timing: before 1995. Need.

Note: All other street improvement projects plus most transit facility proposals are the responsibility of the State, County or developers/businesses. Although now partially a City responsibility, N.W. 70th Avenue and N.W. 5th/65th Avenues are expected to become fully County responsibilities by 1994.

Mass Transit:

- Bus shelters; not applicable since cost per shelter is less than \$10,000. Number, timing and location to be determined using criteria in Mass Transit Element.

Housing: Neighborhood Analysis

- Street trees and other streetscape improvements on N.W. 118th Avenue, Country Club Drive, N.W. 70th Avenue, and S.W. 54th Avenue.
Cost: To be determined in future updating of this Element; Timing: after 1994. Need.
- Streetscape/entrance improvements S.W. 50th Avenue, 47th Avenue, N.W. 4th Avenue, N.W. 5th Avenue.
Cost: not available at this time; Timing: after 1994. Need.
- City Hall plaza.
Cost: not available at this time; Timing: after 1994. Need.
- Equestrian path in Plantation Acres: 118th Avenue, 124th Avenue, New River Canal and N.W. 70th Avenue. Cost: not available at this time. Timing: after 1994. Need.

Infrastructure Element:

- Expand (or phase #2) wastewater treatment plant.
Cost: \$12,100,000; Source: Camp Dresser and McKee Engineers; Timing: before 1995. Need.
- New Central water treatment plant and storage facility.
Cost: \$10,450,000; Source: Malcom Pirnie Engineer; Timing: before 1995. Need/replacement.
- Modification to East water treatment plant.
Cost: not available; Timing: after 1994 but subject to engineering determination. Need.
- Remove deadends from water distribution system.
Cost: \$1,000,000; Source: City Utilities Department; Timing: before 1995. Deficiency.
- Extend trunk mains and lift station system into unserved new construction areas.
Cost: not available but partly a developer responsibility; Timing: after 1994. Need.
- Extend water lines in Plantation Acres.
Cost: not available but largely developer responsibility; Timing: as development occurs. Need.
- Note: the dredging of the north-south canals in Plantation Acres is a District rather than City responsibility.

Parks and Recreation:

- Addition to park system.
Cost: \$1,500,000; Source: Parks Department; Timing: before 1995. Need.
- Bike and pedestrian path system.
Cost: not available at this time; Timing: after 1994. Need.
Note: plan in preparation; may start before 1995 thereby requiring amendment of this Element.

Other:

- Phase #4 of Public Works Building complex.
Cost: \$750,000; Source: Wilson/Jenkins Architects; Timing: before 1995. Need.
- Construct Fire Station #6.
Cost: \$1,000,000; Source: cost of just completed Fire Station #3; Timing: before 1995. Need.

SCHOOL AND PUBLIC HEALTH FACILITIES

There is no public health facility in Plantation.

The following are the public schools located in the City and their service areas:

- **Peters Elementary**
Central Plantation i.e. between Broward Blvd. and Plantation Canal plus Plantation Acres.
- **Mirror Lake Elementary**
North of the Plantation Canal and east of University Drive.
- **Plantation Elementary**
East of the Turnpike and north of Broward Blvd.
- **Plantation Park Elementary**
West of Turnpike, south of Broward Blvd. to Holloway Canal.
- **Tropical Elementary**
West of Holloway Canal, south of Broward Blvd to Hiatus Road.
- **Seminole Middle**
West of Turnpike and generally south of Plantation Canal/Broward Blvd.
- **Plantation Middle**
Northeastern Plantation i.e. east of University Drive and north of Broward Blvd.
- **Plantation High**
North of Broward Blvd. including areas outside Plantation.
- **South Plantation High**
South of Broward Blvd. including areas outside Plantation.

REVENUE SOURCES

The following are the principal current and projected sources of revenue for capital projects undertaken by the City.

Designated Capital Project Fund:

This is the principal source and its origins are General Fund surpluses from prior years plus interest on said funds. The latter typically amounts to about \$250,000 per year. It constitutes 15 percent of the 1988 capital budget or \$2,050,000. Franchise fees and utility taxes, in turn, are the principal General Fund budget revenue stream—about 40 percent. Ad valorem taxes provide about 22 percent.

Utility Fund:

User and impact fees (plus bond proceeds and grants) are major sources going into this fund for water and sewer utilities. At \$10,311,000 in fiscal 1988, it constituted 78 percent of the capital budget; projections for 1988-1989 call for it to approach \$12,000,000.

Other or Smaller Project Funding Sources:

- **Gasoline Tax Fund:** gasoline tax revenues for roads; \$460,000 in the 1988 capital budget for street and sidewalk construction.
- **Debt Service Fund:** a portion of the electric franchise fees are used to retire debt.
- **Special Revenue Fund:** assessments for road and water projects in Plantation Acres.
- **Park Trust Fund:** park impact fees (sometimes supplemented by County and State grant funds) for park improvements. Amounts are obviously variable but (including interest) amounted to almost \$39,000 in 1987.

ANALYSIS

CURRENT PUBLIC FACILITY PLANNING PRACTICE

As indicated in the Infrastructure Element (and to a lesser extent in all other elements), the basic practice has been five-fold:

1. Correct current deficiencies.
2. Extend facilities in a logical westward pattern as development moves west.
3. Use developer funding of facilities to the maximum extent feasible.
4. Assure a high level of amenities in the established neighborhoods, particularly park, recreational and landscape improvements.
5. Keep bonding to a minimum; has been mainly for utilities in the past.

FISCAL, LOCATION AND TIMING IMPLICATIONS OF DEFICIENCIES AND NEEDS

The first section of this Element shows the proposed projects with cost estimates and general timing. In the context of the five-point framework outlined above and the Land Use Plan, the following locational and timing priorities result:

1. Highest priority will be given to correcting water and sewer deficiencies to serve growth in central Plantation and the Utility Fund provides the financial capacity to do this.
2. In response to the logical westward movement of the development pattern, the fire station and park addition west of Pine Island Road should receive priority.
3. Although a priority, street improvements to accommodate the increasing traffic volumes reflected in the Traffic Circulation Element are primarily a County, State and developer responsibility.
4. Finally, the neighborhood amenities are addressed, particularly new parks, landscape improvements and pedestrian paths.

The fiscal implications of addressing the deficiencies and needs in this manner are as follows:

1. Assure continued water and sewer user fee revenues sufficient to fund improvements and meet bond obligations.
2. Continue to strengthen the ad valorem tax base particularly by central Plantation office development in order to feed the Designated Capital Project Fund through the General Fund.

The principal State role is to implement its three street improvement projects as contained in the Broward County Transportation Improvement Program (TIP) to assure accommodation of the traffic generated by the downtown and office park developments contained in the Future Land Use Element, and even more so, through traffic being generated by such projects as the new shopping mall just west of the City in Sunrise. These three are: 1) I-595, 2) State Road 7, and 3) Broward Boulevard.

PUBLIC HEALTH AND EDUCATION PLANS

No facilities are planned for Plantation by public health agencies. The School Board is in the final planning stages for a new elementary school at the southwest corner of Cleary and Boulevard and Nob Hill Road; the infrastructure is in place to serve it.

ABILITY TO FINANCE; PROJECTIONS OF REVENUES, EXPENDITURES, TAX BASE, TAX RATE AND OPERATING COSTS

Ad Valorem Tax Base, Rate and Revenues

Table 10.1 shows a projection of the City's tax base. Although several major shopping center projects caused significant recent increases, this year it should return to the normal rate of 5-6 percent.

The same table shows the resulting projected tax collection based upon a modestly increasing tax rate.

Table 10.1
Ad Valorem Tax Base, Rate and Revenue Projections
City of Plantation

Fiscal Year	Gross Taxable Assessment	Percentage Increase	Millage Rate	Ad Valorem Collection
1988-89	\$2,495,084,155	5.3%	1.99	\$4,815,000
1989-90	2,645,000,000	6.0	2.15	5,515,000
1990-91	2,780,000,000	5.1	2.25	6,065,000
1991-92	2,920,000,000	5.0	2.45	6,940,000
1992-93	3,070,000,000	5.1	2.45	7,295,000
1993-94	3,225,000,000	5.0	2.55	7,975,000

Note: Collection rate is calculated at 97%.

Source: City of Plantation Finance Department, 1988

Table 10.2 shows a projection of revenues and expenditures by fund. This does not include major capital project funds (over \$100,000) which are projected in Table 9.3. The significance of the General Fund and related categories is that a surplus is shown as the annual bottom line, which in turn is available for the Designated Capital Project Fund shown in Table 9.3, and thus essential for financing certain major capital projects.

Other categories pertinent to this capital program are the Utility Fund, Special Revenue Fund (certain assessments for capital projects), the Debt Service Fund and the Expendable Trust Fund (includes park impact fees). Again, the balances available for capital projects show up in Table 10.3.

Table 10.3 shows projections of the various capital fund accounts for the period during which the capital project funding (shown in the CIP schedule) will take place. It indicates the cash flow ability to fund the seven projects listed at the end of this Element.

Table 10.2
Revenue and Expenditure Projections
City of Plantation

	1989	1990	1991	1992	1993	1994
GENERAL FUND						
Revenues						
Taxes	\$4,815,000	\$5,515,000	\$6,065,000	\$6,940,000	\$7,295,000	\$7,975,000
Permits/fees/services	4,235,000	4,660,000	5,125,000	5,635,000	6,200,000	6,820,000
Intergovernmental	1,020,000	1,120,000	1,230,000	1,355,000	1,490,000	1,640,000
Other revenue	1,100,000	1,210,000	1,330,000	1,465,000	1,610,000	1,770,000
Total revenues	11,170,000	12,505,000	13,750,000	15,395,000	16,595,000	18,205,000
Expenditures						
Current operating						
General government	3,180,000	3,525,000	3,845,000	4,200,000	4,580,000	5,000,000
Public safety	11,680,000	13,125,000	14,405,000	15,810,000	17,355,000	19,050,000
Physical environment	2,620,000	2,920,000	3,190,000	3,490,000	3,820,000	4,180,000
Transportation	-	-	-	-	-	-
Culture/recreation	4,130,000	4,615,000	5,055,000	5,535,000	6,065,000	6,640,000
Capital outlay (under \$100,000)	715,000	785,000	865,000	950,000	1,045,000	1,150,000
Total expenditures	22,325,000	24,970,000	27,360,000	29,985,000	32,865,000	36,020,000
Excess of revenues over (under) expenditures	(11,155,000)	(12,465,000)	(13,610,000)	(14,590,000)	(16,270,000)	(17,815,000)
SPECIAL REVENUE FUND						
Revenues						
Permits/fees/services	9,085,000	9,995,000	10,995,000	12,095,000	13,305,000	14,635,000
Intergovernmental	4,075,000	4,485,000	4,930,000	5,425,000	5,965,000	6,565,000
Other revenue	245,000	260,000	285,000	305,000	330,000	355,000
Total revenues	13,405,000	14,740,000	16,210,000	17,825,000	19,600,000	21,555,000

Table 10.2 (Continued)
Revenue and Expenditure Projections
City of Plantation

	1989	1990	1991	1992	1993	1994
Expenditures						
Current operating						
Transportation	685,000	740,000	800,000	865,000	935,000	1,005,000
Capital outlay (under \$100,000)	15,000	20,000	25,000	30,000	35,000	40,000
Total expenditures	700,000	760,000	825,000	895,000	970,000	1,045,000
Excess of revenues over (under) expenditures	12,705,000	13,980,000	15,385,000	16,930,000	18,630,000	20,510,000
First Two Funds: excess of revenues over (under) expenditures	\$1,550,000	\$1,515,000	\$1,775,000	\$2,340,000	\$2,360,000	\$2,695,000
DEBT SERVICE						
Revenues						
Other revenue	\$750,000	\$750,000	\$750,000	\$750,000	\$750,000	\$750,000
Total revenues	750,000	750,000	750,000	750,000	750,000	750,000
Expenditures						
Current Operating						
Debt service	1,145,000	1,125,000	1,100,000	1,100,000	1,100,000	1,100,000
Total expenditures	1,145,000	1,125,000	1,100,000	1,100,000	1,100,000	1,100,000
Excess of revenues under (under) expenditures	(395,000)	(375,000)	(350,000)	(350,000)	(350,000)	(350,000)

Table 10.2 (Continued)
Revenue and Expenditure Projections
City of Plantation

EXPENDABLE TRUST FUND		1989	1990	1991	1992	1993	1994
Revenues							
Permits/fees/services		45,000	50,000	50,000	50,000	50,000	50,000
Intergovernmental		100,000	-	-	-	-	-
Other revenue		285,000	300,000	315,000	330,000	345,000	365,000
Total revenues		430,000 ¹	350,000	365,000	380,000	395,000	415,000 ¹
Expenditures							
Current operating							
General government		-	-	-	-	-	-
Public safety		225,000	75,000	80,000	85,000	90,000	95,000
Culture/recreation		5,000	5,000	5,000	5,000	5,000	5,000
Capital outlay		200,000	5,000	5,000	5,000	5,000	5,000
Total expenditures		430,000	85,000	90,000	95,000	100,000	105,000
Excess of revenues over (under) expenditures		0	265,000	275,000	285,000	295,000	310,000
First four funds: excess revenues over (under) expenditures		\$1,155,000	\$1,405,000	\$1,700,000	\$2,275,000	\$2,305,000	\$2,655,000
UTILITIES FUND							
Revenues							
Water		\$2,310,000	\$2,380,000	\$2,455,000	\$2,525,000	\$2,600,000	\$2,680,000
Sewer		2,650,000	2,730,000	2,815,000	2,900,000	2,985,000	3,075,000
Debt service		7,015,000	7,365,000	7,735,000	8,120,000	8,525,000	8,950,000
Other revenue		460,000	470,000	485,000	500,000	515,000	530,000
Total revenues		12,435,000	12,945,000	13,490,000	14,045,000	14,625,000	15,235,000

**Table 10.2 (Continued)
Revenue and Expenditure Projections
City of Plantation**

	1989	1990	1991	1992	1993	1994
Expenditures						
Current operating	1,865,000	2,105,000	2,320,000	2,550,000	2,805,000	3,085,000
Payroll	4,180,000	4,515,000	4,875,000	5,265,000	5,685,000	6,140,000
Other						
Total operating expenses	6,045,000	6,620,000	7,195,000	7,815,000	8,490,000	9,225,000
Operating income before depreciation and amortization	6,390,000	6,325,000	6,295,000	6,230,000	6,135,000	6,010,000
Depreciation and amortization	3,100,000	3,200,000	3,300,000	3,400,000	3,500,000	3,600,000
Operating income	3,290,000	3,125,000	2,995,000	2,830,000	2,635,000	2,410,000
Other income (expense)						
Interest income	1,600,000	1,550,000	1,500,000	1,450,000	1,400,000	1,350,000
Interest expense	(3,850,000)	(3,825,000)	(3,800,000)	(3,775,000)	(3,750,000)	(3,700,000)
Other	150,000	150,000	150,000	150,000	150,000	150,000
Extraordinary item	-	-	-	-	-	-
Total other income (expense)	(2,100,000)	(2,125,000)	(2,150,000)	(2,175,000)	(2,200,000)	(2,200,000)
Net earnings - Utility Fund	\$1,190,00	\$1,000,000	\$845,000	\$655,000	\$435,000	\$210,000

Source: City of Plantation Finance Department, 1988

Table 10.3
Capital Funds Projections
City of Plantation

FUNDS	1988-1989	1989-1990	1990-1991	1991-1992	1992-1993
Designated Capital Improvements Fund					
Beginning balance	\$4,600,000	\$1,847,000	\$1,172,000	\$897,000	\$697,000
Transfers and other revenue	150,000	200,000	250,000	300,000	350,000
Interest income	220,000	125,000	75,000	50,000	33,000
Capital expenditures	(3,123,000)	(1,000,000)	(600,000)	(550,000)	(800,000)
Ending Balance	\$1,847,000	\$1,172,000	\$897,000	\$697,000	\$180,000
Utilities					
DER Fund					
Beginning balance	\$5,500,000	0	0	0	0
Grant reimbursement	1,000,000				
Transfers	(5,863,000)				
Interest income	200,000				
Capital expenditures	(837,000)				
Ending balance	0	0	0	0	0
Wastewater Capacity and Revenue Fund					
Beginning balance	\$5,600,000	\$1,830,000	\$20,000	\$20,000	\$20,000
Capacity	750,000	550,000	400,000	100,000	
Grant reimbursement	0	1,850,000	0	0	
Interest income	410,000	60,000	0		
Capital expenditures	(4,830,000)	(4,270,000)	(400,000)	(100,000)	
Ending balance	\$1,830,000	\$20,000	\$20,000	\$20,000	\$20,000

Table 10.3 (Continued)
Capital Funds Projections
City of Plantation

Funds	1988-1989	1989-1990	1990-1991	1991-1992	1992-1993
Water Capacity Fund					
Beginning balance	\$2,600,000	\$2,960,000	\$760,000	\$160,000	\$220,000
Capacity charges	550,000	360,000	240,000	200,000	160,000
Interest income	210,000	190,000	30,000	20,000	20,000
Capital expenditures	(400,000)	(2,750,000)	(870,000)	(150,000)	(200,000)
Ending balance	\$2,960,000	\$760,000	\$160,000	\$220,000	\$160,000
Operating and Maintenance Fund					
Beginning balance	\$6,150,000	\$13,398,000	\$13,373,000	\$9,736,000	\$5,936,000
Revenue excess	7,663,000	400,000	400,000	400,000	400,000
Capital expenditures	(415,000)	(425,000)	(4,037,000)	(4,200,000)	0
Ending balance	\$13,398,000	\$13,373,000	\$9,736,000	\$5,936,000	\$6,336,000
Gasoline Tax Fund					
Beginning balance	\$2,500,000	\$2,900,000	\$3,250,000	\$2,800,000	\$3,200,000
Revenue excess	400,000	400,000	400,000	400,000	400,000
Capital expenditures	0	(50,000)	(850,000)	0	0
Ending balance	\$2,900,000	\$3,250,000	\$2,800,000	\$3,200,000	\$3,600,000

Source: City of Plantation Finance Department, 1988

DEBT SERVICE PROJECTIONS

A pair of 1978 refunding bond issues is being retired by a combination of electric franchise fee payments and bond escrow account funds. The funds were used for a variety of public improvements. The retirement schedule is shown in Table 10.4.

Table 10.4
1978 Bond Issue Retirement Schedule
City of Plantation

Year Ending September 30,	Principal	Interest	Total
1988	\$125,000	\$329,273	\$454,273
1989	135,000	321,795	456,795
1990	140,000	313,750	453,750
1991	155,000	305,009	460,009
1992	160,000	295,598	455,598
1993-1997	970,000	1,311,436	2,281,436
1998-2002	1,315,000	949,698	2,264,698
2003-2007	1,795,000	447,688	2,242,688
2008	435,000	14,138	449,138
Total	\$5,230,000	\$4,288,385	\$9,518,385

Source: 1987 City of Plantation Financial Statements and Auditors Report.

A complex financing package was used to build the first phase of the new regional wastewater treatment plant during 1986-1988. State and Federal grants were involved in addition to bond funding. A 1985 acquisition of the Gulfstream Utility Company water and sewer system also required bond financing. As of the end of fiscal 1987, the balance owed on utility bonds was \$52,748,840. The retirement schedule for this bond package is shown in Table 10.5.

Table 10.5
Utility Bond Debt Retirement Schedule
City of Plantation

Fiscal Year Ending September 30,	1984 Capital Appreciation Bonds	Water and Sewer Improvement Revenue Bonds Series 1985B	Total
1988	\$4,260,123	\$789,628	\$5,049,751
1989	3,984,314	1,258,623	5,242,937
1990	--	5,813,319	5,813,319
1991	--	5,819,510	5,819,510
1992	--	5,820,000	5,820,000
1993-1997	--	29,060,000	29,060,000
1998-2002	--	28,920,000	28,920,000
2003-2007	--	26,020,000	26,020,000
Total	\$8,244,437	\$103,501,080	\$111,745,517

Source: 1987 City of Plantation Financial Statements and Auditors Report.

APPENDIX

CONSISTENCY WITH STATE PLAN BROWARD COUNTY PLANNING COUNCIL CHECKLIST IMPLEMENTATION REGULATIONS

**Consistency of the Plantation Comprehensive Plan
with the
State Comprehensive Plan**

State Goal	State Policy	City Element	City Policy #
Housing (5)	<u>1</u>	<u>Housing</u>	<u>1.3.1</u>
	2	Housing	1.4.1 and 1.4.2
	3	Housing	<u>1.2., 1.2.2., 1.3.1,</u> <u>1.3.2</u>
	4	Housing	1.1.3
Water Resources (8)	10	Consv.	1.2.1, 1.2.2, 1.2.4 and 1.2.5
	11	Infra.	2.5.1 and 2.5.2
	12	Consv.	1.2.4
Natural & Recreational (10)	1	Consv.	1.3.1
	2	Rec.	1.1.1
	3	<u>Consv.</u>	<u>1.3.1-1.3.6</u>
<u>Air Quality (11)</u>	<u>1</u>	<u>Consv.</u>	<u>1.1.1, 1.1.2</u>
Energy (12)	3	Traffic	1.1.2
Hazardous & Non-Hazardous Waste (13)	1 and 3	Infra.	2.2.8
	<u>6</u>	<u>Consv.</u>	<u>1.2.6</u>
Land Use (16)	3	Land Use	1.6.1
	5	Land Use	1.1.1
	6	Land Use	<u>1.1.2, 1.4.3, 1.6.1,</u> <u>1.6.2</u>
Public Facilities (187)	3	Capt. Imp.	1.3.3
	4	Capt. Imp.	1.4.1
Historical (198)	<u>5 and 6</u>	Housing	<u>1.5.2</u>
Transportation (2019)	2 and 8	Mass Transit	1.2.1 and 1.2.2
	3 and 13	Traffic	1.5.1

BROWARD COUNTY PLANNING COUNCIL
CHECKLIST FOR LOCAL GOVERNMENT CERTIFICATION

APPROVED
DECEMBER 1, 1988

BROWARD COUNTY PLANNING COUNCIL CHECKLIST FOR LOCAL GOVERNMENT CERTIFICATION

All local governments within Broward County must submit their land use plans to the Broward County Planning Council for certification review concurrent with their submission to the State Department of Community Affairs for compliance review. The following checklist has been prepared to facilitate the certification review process and is required to be completed and submitted with a request for certification. The checklist which is based upon the requirements contained within the proposed 1989 Broward County Land Use Plan identifies all items which must be submitted to the Planning Council for certification review. Two copies of each item are required to be submitted. Following each required item on the checklist, please indicate the applicable page or exhibit number of the item.

<u>REQUIRED ITEM</u>	<u>PAGE OR EXHIBIT #</u>
1. SUBMITTAL LETTER FROM CHIEF ELECTED OFFICIAL/CITY MANAGER	_____
2. COPY OF ORDINANCE ADOPTING THE LAND USE ELEMENT OR COMPREHENSIVE PLAN (Note: Local Land Use Elements should be adopted conditionally, to become effective upon their certification by the Broward County Planning Council.)	_____
3. FUTURE LAND USE PLAN MAP	Figure 1 (folded insert to Vol. I)
A. Minimum Scale of 1"=1000'	
B. North Arrow	
C. Legend identifying land use categories and permitted densities/intensities which are consistent with the 1989 Broward County Land Use Plan (Note: The 1989 Broward County Land Use Plan map identifies conservation areas which are natural reservations or mitigation areas within State and County owned lands or parks. These areas must be designated for conservation use on the local land use plan.)	
D. Flexibility Zone Boundaries and Numbers	
E. Depiction of all applicable Broward County trafficways on the Land Use Plan map. Alternately trafficways may be depicted on a separate map with a note on Land Use Plan map indicating conformity with the Broward County Trafficways Plan.	See Figure 5 Vol. I _____
F. The Land Use Plan map must reflect conceptually or at specific locations existing and proposed park and recreation facility sites of sufficient size and quantity to meet the community parks standard within the 1989 Broward County Land Use Plan which is 3 acres per thousand existing and projected population.	

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	<u>REQUIRED ITEM</u>	<u>PAGE OR EXHIBIT #</u>
4.	ANALYSIS OF ALL CHANGES TO THE INCLUSION PLAN PREVIOUSLY SUBMITTED TO THE PLANNING COUNCIL BY THE LOCAL GOVERNMENT. (Note: Map changes which are not within the Rules of Flexibility of the 1989 Broward County Land Use Plan will be processed as County Land Use Plan Amendments during 1989. These changes will not be certified until the amendment process has been completed.) A. Existing and Proposed Land Use Designations and Acreages B. Map of each site at a scale of 1"=300' C. Legal description of each site D. Rationale for each change E. Demonstration of consistency with appropriate Goals, Objectives and Policies of the 1989 Broward County Land Use Plan	_____
5.	TABLES FOR EACH FLEXIBILITY ZONE INDICATING PLANNED ACREAGE BY LAND USE CATEGORY AND NUMBER OF PERMITTED DWELLING UNITS.	_____
6.	A DETAILED LISTING OF PERMITTED LAND USES AND DENSITIES ALLOWED WITHIN EACH LOCAL LAND USE CLASSIFICATION CONSISTENT WITH SECTION IV.B. OF THE 1989 BROWARD COUNTY LAND USE PLAN.	<u>Pages 4-11*</u>
7.	DEMONSTRATION OF COMPLIANCE WITH THE COMMUNITY PARKS AND RECREATION STANDARD OF 3 ACRES PER THOUSAND POPULATION CONSISTENT WITH SECTION IV.C. OF THE 1989 BROWARD COUNTY LAND USE PLAN. THE FOLLOWING INFORMATION MUST BE PROVIDED TO DEMONSTRATE COMPLIANCE: A. Existing and projected buildout populations B. Current and projected community parks requirement utilizing the 3 acres per thousand population standard.	<u>Pages 8 and 46</u> <u>Page 1.9, Vol. II</u> <u>Page 8.6, Vol. II</u>

* Note: All citations are in Volume I unless otherwise noted.

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	<u>REQUIRED ITEM</u>	<u>PAGE OR EXHIBIT #</u>
		Appendix following page 8.9, Vol. II
C.	Inventory of all existing Park and Recreation acreage used to satisfy the above standard relative to current population.	
D.	Inventory of projected park acreage used to satisfy the above standard for the buildout population.	Page 8.6 and 8.7, Vol. II
8.	IMPLEMENTATION REGULATIONS AND PROCEDURES CONSISTENT WITH SECTION IV.D. OF THE 1989 BROWARD COUNTY LAND USE PLAN INCLUDING:	Policy 1.6.2
A.	Development Review Requirements consistent with the 1989 Broward County Land Use Plan (Section IV.D.1.)	<u>same as above</u>
B.	Platting Requirements consistent with the 1989 Broward County Land Use Plan (Section IV.D.2.)	<u>same as above</u>
C.	Local Land Development Regulations and Procedures consistent with the 1989 Broward County Land Use Plan (Sections IV.D.5.a. and IV.D.5.b.)	<u>same as above</u>
D.	Other Land Development Regulations and Procedures for Implementation of Local Land Use Plans consistent with the 1989 Broward County Land Use Plan (Section IV.D.3.e.)	<u>same as above</u>
9.	MONITORING AND ENFORCEMENT PROCEDURES CONSISTENT WITH SECTION IV.D.7.a. OF THE 1989 BROWARD COUNTY LAND USE PLAN.	Page 57
10.	DEFINITIONS CONSISTENT WITH SECTION IV.A. OF THE 1989 BROWARD COUNTY LAND USE PLAN. (Note: Local plans are not required to contain all those definitions included within the County Plan but local definitions must not conflict with the County Land Use Plan definitions.)	Intro. Vol. I and Vol. II Recr. Element

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II. GOALS, OBJECTIVES AND POLICIES CONSISTENT WITH SECTIONS II. AND IV.D.3.C.(1) OF THE 1989 BROWARD COUNTY LAND USE PLAN

Local governments are encouraged to review and address within their land use plans all goals, objectives and policies contained within the 1989 Broward County Land Use Plan. The plan's goals, objectives and policies will be a primary consideration in the Council's review of local certification and recertification requests and future County Land Use Plan amendment requests.

Local land use plans, however, are required to address those objectives and policies contained within the 1989 Broward County Land Use Plan identified below which establish specific requirements for local plans. Local objectives and policies do not have to contain the exact language of the Broward County Land Use Plan, but must provide the same general direction. Local objectives and policies may be more restrictive than the Broward County Land Use Plan. Please indicate where within the local land use plan the following objectives and policies (listed by the goal heading and reference number of the Broward County Land Use Plan), are addressed. If a specific objective and/or policy is not addressed within the local plan, the justification or rationale for such an omission must be provided.

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GOAL 01.00.00 - RESIDENTIAL USES

OBJECTIVE 01.04.00

Objective
1.6, page 2

POLICY 1.04.01

1.6.2, page 3

POLICY 1.04.02

1.6.2, page 3

OBJECTIVE 01.05.00

N/A

GOAL 02.00.00 - COMMERCIAL USES

POLICY 02.04.02

1.8.2 & 3, page 5
1.6.1, page 2
1.8.1 - 1.8.6, p.!

POLICY 02.04.03

OBECTIVE 02.05.00

1.3, page 29

POLICY 02.05.01

1.3.1, page 29

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GOAL 05.00.00 - RECREATION AND OPEN SPACE USES

OBJECTIVE 05.02.00	1.1, <u>page</u> 46
POLICY 05.02.01	1.1.1, <u>page</u> 46
POLICY 05.02.03	1.1.2, <u>page</u> 46
POLICY 05.02.04	1.2.2, <u>page</u> 47 1.4.1 & 1.4.2, p48
OBJECTIVE 05.04.00	1.4, <u>page</u> 48
POLICY 05.04.01	1.4.1, <u>page</u> 48 1.6.1, <u>page</u> 49

GOAL 06.00.00 - CONSERVATION USE

POLICY 06.01.01	<u>N/A</u>
POLICY 06.01.03	1.2.1, <u>page</u> 44
POLICY 06.01.04	1.3.6, <u>page</u> 45
POLICY 06.01.05	2.1.9, <u>page</u> 41
POLICY 06.01.08	1.3.2, <u>page</u> 45

GOAL 08.00.00 - PUBLIC FACILITIES AND PHASED GROWTH

POLICY 08.01.01	1.1.1, <u>page</u> 1
POLICY 08.01.02	1.6.2, <u>page</u> 3
POLICY 08.01.03	1.1.2, <u>page</u> 1 and 1.6.4, <u>page</u> 3
POLICY 08.01.12	2.2.8, <u>page</u> 42
POLICY 08.01.15	<u>N/A</u>
POLICY 08.01.18	1.1.1, <u>page</u> 39
POLICY 08.01.19	1.1.1, <u>page</u> 39
POLICY 08.02.01	1.6.2, <u>page</u> 3

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	<u>PAGE # OF LOCAL PLAN</u>
OBJECTIVE 08.03.00	1.5, page <u>2</u>
POLICY 08.03.01	2.1.1, page <u>41</u>
OBJECTIVE 08.06.00	1.1, page <u>1</u>
POLICY 08.06.01	1.1.1, page <u>1</u>
POLICY 08.06.02	1.1.1 page <u>1</u>
GOAL 09.00.00 - NATURAL AND HISTORIC RESOURCES	N/A but see
POLICY 09.01.07	1.4.3, page <u>2</u>
OBJECTIVE 09.02.00	2.6, page <u>43</u>
POLICY 09.02.03	1.2.1 and 1.2.2, page <u>44</u>
POLICY 09.02.05	1.2.1, page <u>40</u>
POLICY 09.02.06	2.1.1, page <u>41</u>
OBJECTIVE 09.03.00	1.2, page <u>44</u> N/A but see
POLICY 09.03.02	1.6.1, page <u>49</u>
POLICY 09.03.03	N/A
POLICY 09.03.04	N/A
POLICY 09.03.05	N/A
POLICY 09.03.06	N/A
POLICY 09.03.10	N/A
OBJECTIVE 09.04.00	1.2, page <u>44</u>
POLICY 09.04.03	1.3.6, page <u>45</u>
OBJECTIVE 09.05.00	1.3, page <u>45</u>
POLICY 09.05.03	1.3.6, page <u>45</u>

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OBJECTIVE 09.06.00	<u>N/A</u>
POLICY 09.06.02	<u>N/A</u>
OBJECTIVE 09.07.00	1.4, <u>page 45</u>
POLICY 09.07.02	1.6.2, <u>page 3</u>
POLICY 09.07.03	1.1.1, <u>page 39</u>
OBJECTIVE 09.08.00	1.4, <u>page 2</u>
POLICY 09.08.01	<u>N/A</u>
POLICY 09.08.02	1.4.2, <u>page 2</u>
POLICY 09.08.04	N/A but see 1.5.2, <u>page 37</u>
POLICY 09.08.05	1.5.1, <u>page 37</u>
GOAL 11.00.00 - LEVELS OF SERVICE	
OBJECTIVE 11.01.00	1.2, <u>page 53</u>
POLICY 11.01.01	1.2.1 - 1.2.6, <u>page 53</u>
POLICY 11.01.04	1.1.1, <u>page 1</u>
GOAL 12.00.00 - LAND USE AND TRANSPORTATION	
OBJECTIVE 12.01.00	1.5, <u>page 28</u>
POLICY 12.01.01	1.1.2, <u>page 27</u>
POLICY 12.01.02	1.1.2, <u>page 27</u>
POLICY 12.01.04	1.3.1, <u>page 29</u>
OBJECTIVE 12.02.00	1.2, <u>page 28</u>
POLICY 12.02.03	1.2.1 - 1.2.3, <u>page 28</u>
POLICY 12.02.05	1.2.2, <u>page 28</u>

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GOAL 13.00.00 - INTERGOVERNMENTAL COORDINATION

POLICY 13.01.06

obvious

GOAL 14.00.00 - REDEVELOPMENT AND INCOMPATIBLE USES

OBJECTIVE 14.01.00

1.2, page 1

OBJECTIVE 14.02.00

1.3, page 1

POLICY 14.02.01

1.3.2 &
1.6.1, page 2

GOAL 15.00.00 - PORT AND AIRPORT USES

POLICY 15.03.01

N/A

POLICY 15.03.02

N/A

POLICY 15.03.03

N/A

POLICY 15.03.05

N/A