



FPL

**Lauderdale
Repowering
Project**

**Site
Certification
Application**

Chapter 2

**Site And Vicinity
Characterization**

Chapter 2

2.0 SITE AND VICINITY CHARACTERIZATION

2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

2.1.1 Site Location

The site for the Lauderdale Repowering Project is the existing Lauderdale Plant site, which is currently located in unincorporated eastern Broward County (Figures 2.1-1 and 2.1-2). A portion of the site is in the process of being annexed into the City of Hollywood (see Section 2.2.1.1). The plant site lies about 1 mile east of the Florida Turnpike and 1 mile west of Interstate 95 (I-95). The Fort Lauderdale-Hollywood International Airport is immediately east of I-95. State Road 84 and I-595, which is under construction, are north of the plant site. Griffin Road is about one-half of a mile south of the site.

2.1.2 Existing Site Uses

Electric generating units have been operating at this site since the 1920s. The two original generating units and a third unit placed in service in 1941 have been retired. Currently, the FPL Lauderdale Plant consists of two fossil-fuel-fired steam units and 24 gas turbine (GT) units with a total plant net summer capability of 1,126 MW and a total plant net winter capability of 1,248 MW. The fossil-fuel-fired steam units, Units 4 and 5, have a combined net summer generating capability of 274 MW and a net winter capability of 276 MW. These units are designed to burn natural gas and/or oil. Units 4 and 5 have been operational since 1957 and 1958, respectively.

The Lauderdale Plant site occupies 392 acres south of the South New River Canal and north of the Dania Cut-Off Canal (Figures 2.1-3 and 2.1-4). Approximately one-half of this site is occupied by a cooling canal/pond system which discharges to the South Fork New River near the northeast corner of the site. The existing intakes for the fossil-fuel-fired steam electric generating units are located on the Dania Cut-Off Canal. Transmission linkage is via 69-, 138-, and 230-kilvolt (kV) connections. Plant access is through Griffin Road and SW 42nd Avenue. Construction access is by Edgewater Road (i.e., SW 42nd Street).

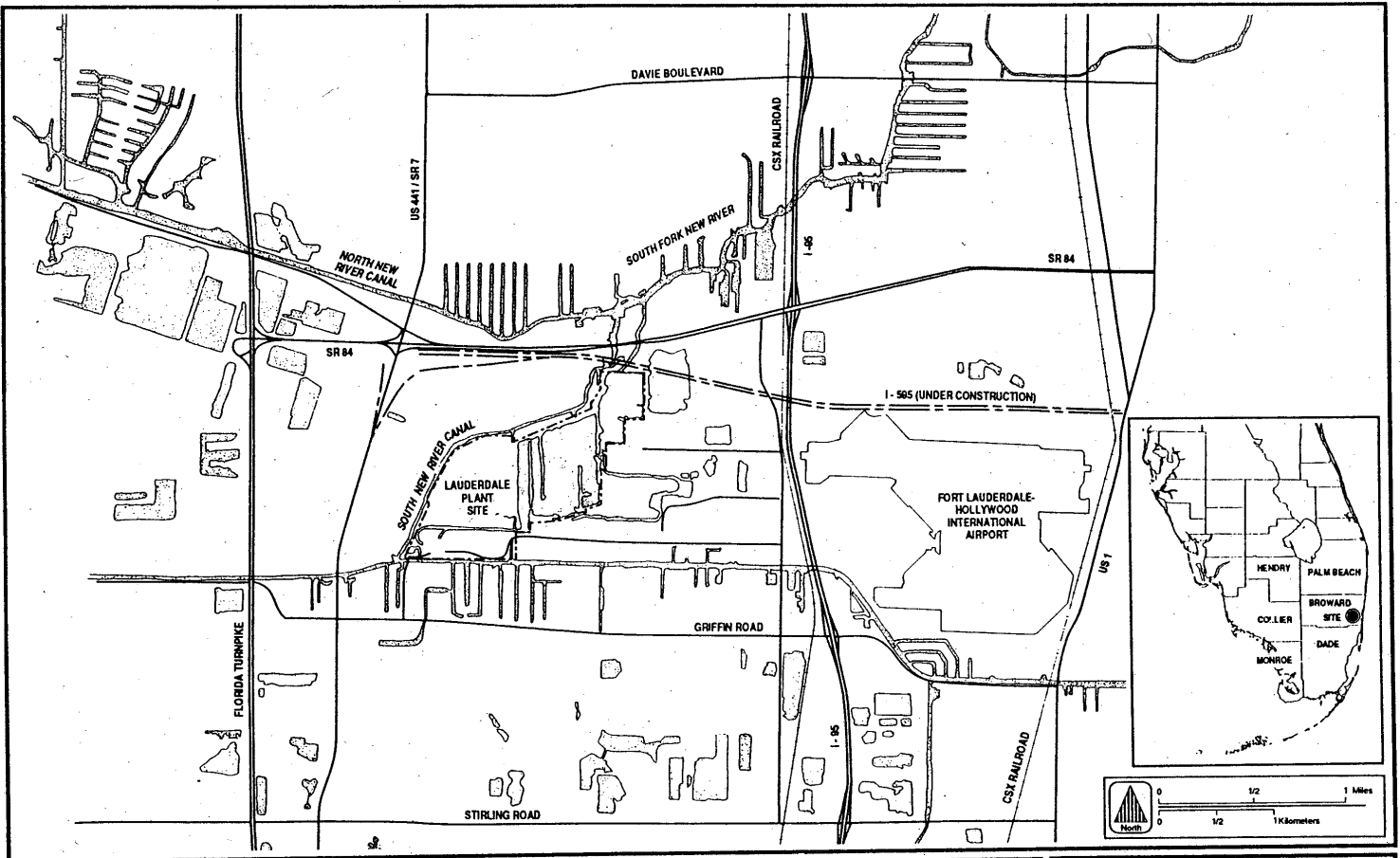


Figure 2.1-1 SITE LOCATION MAP



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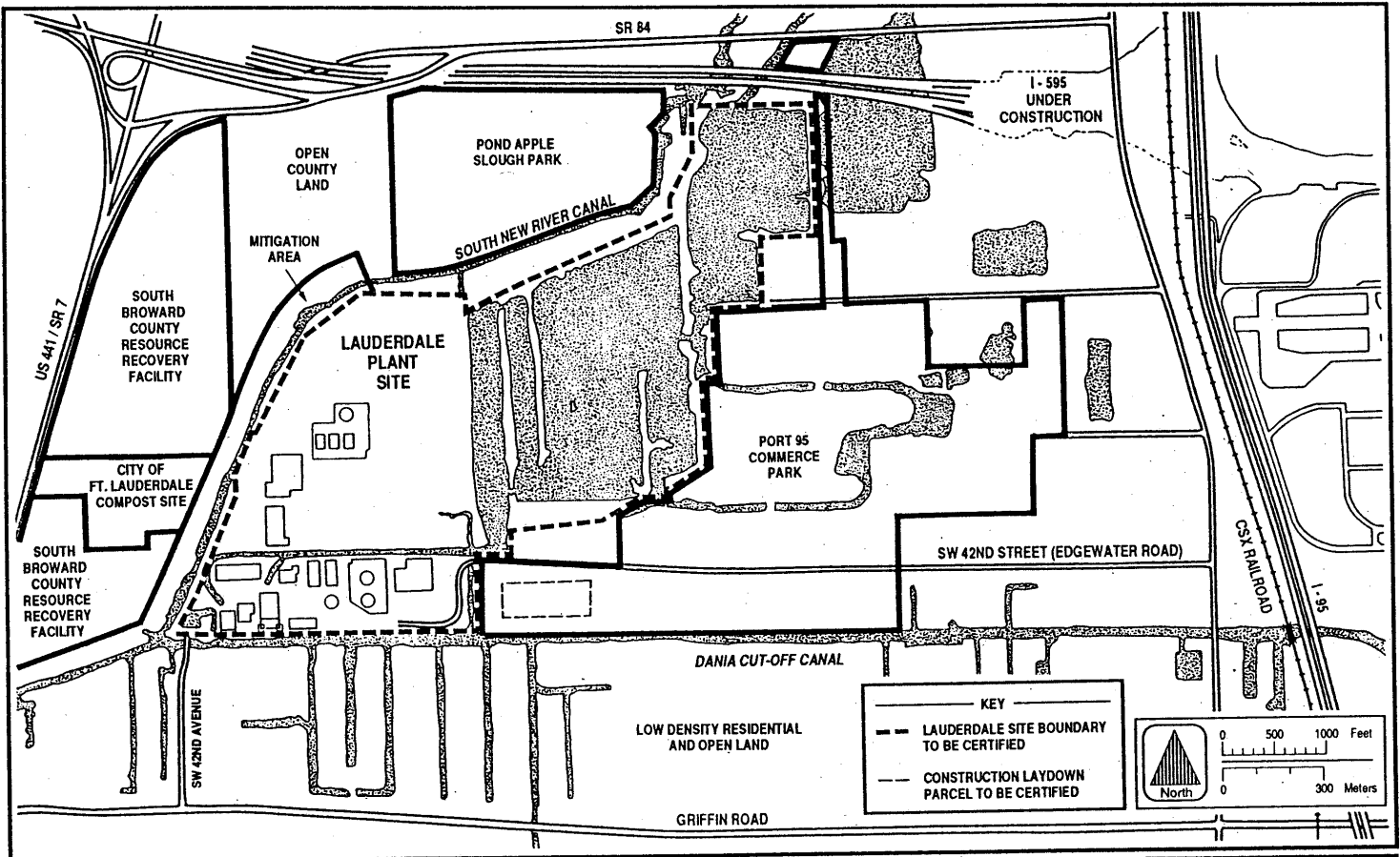
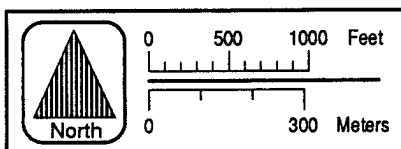
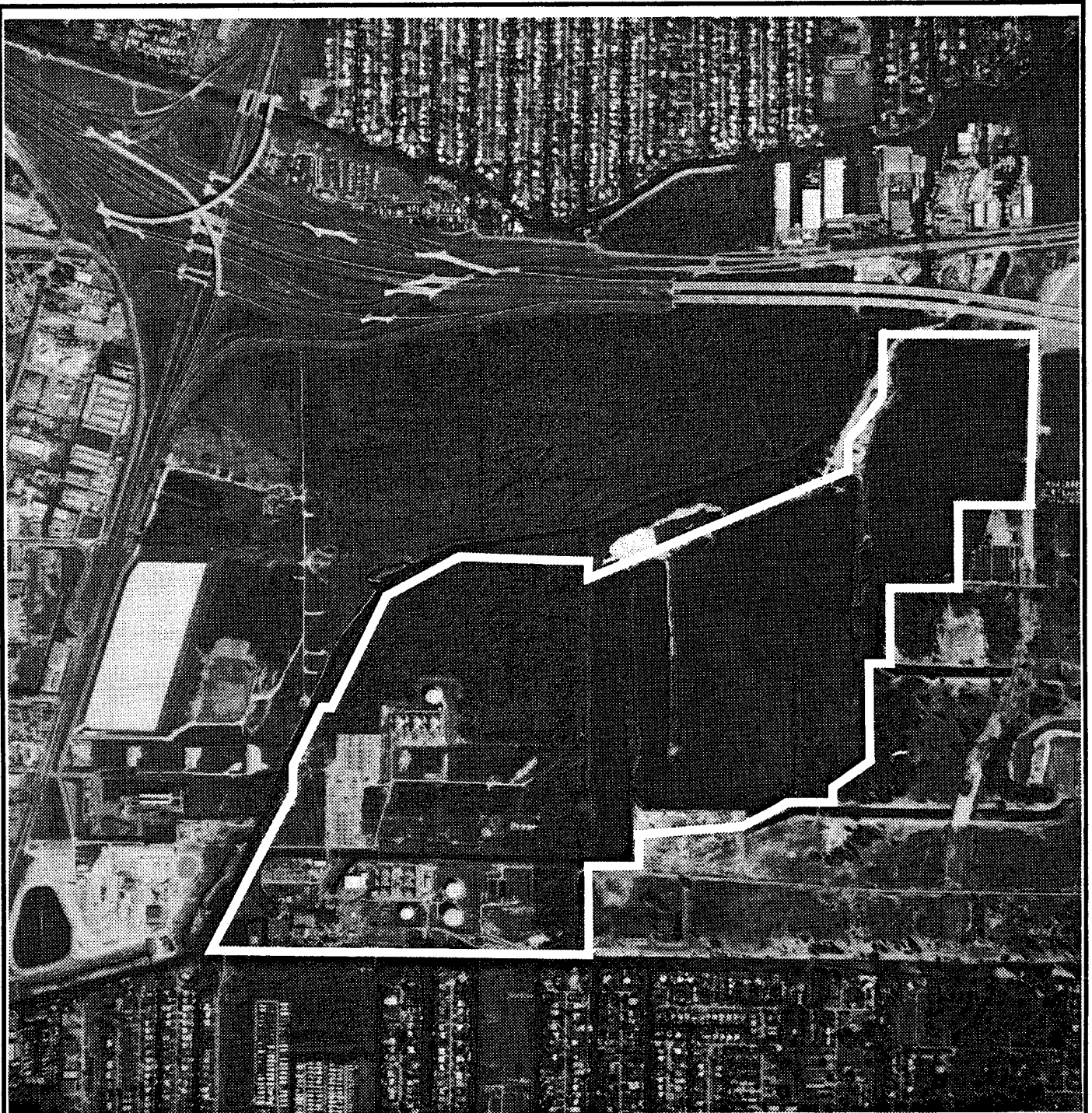


Figure 2.1-2 LAUDERDALE PLANT SITE, VICINITY AND ADJACENT PROPERTIES



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**Figure 2.1-4 AERIAL OF LAUDERDALE PLANT SITE
AND SURROUNDING VICINITY**



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The site is currently served by an existing natural gas pipeline and a light-oil pipeline from Port Everglades. When required, No. 6 oil is delivered by tank truck.

In addition to the area occupied by the cooling canal/pond system, existing facilities occupy about 25 acres as follows:

<u>Facility</u>	<u>Acres</u>
Units 4 and 5, associated facilities and offices	5.5
South GT area and shops	3.1
North GT area	4.5
69, 138, & 230 kV substation yards	3.2
Tank area	3.6
Parking	1.8
Solid Settling Basins (SSBs)/Evaporation Ponds (EPs)	2.5
Employee Recreation Pavilion/Field	0.7

The remaining portions of the property are open fields or undeveloped; the undeveloped areas are located in the eastern portions of the property and north of the northern GT area.

Operation of the Lauderdale Plant currently is authorized under various environmental permits issued by federal, state, regional, and local regulatory agencies. These permits are identified in Table 2.1-1.

In addition to these permits, the FPL has right-of-way permits granted by the South Florida Water Management District (SFWMD). These permits are listed in Table 2.1-2.

2.1.3 Adjacent Properties

Adjacent properties in the general area are a mixture of residential, commercial, and industrial uses (see Figure 2.1-2). Property located west and northwest of the site is owned by the City of Fort Lauderdale and Broward County. The City of Fort Lauderdale operates a compost facility, and the South Broward County Resource Recovery Project (SBCRRP) and its

Table 2.1-1. Existing Environmental Permits for the Lauderdale Plant

Facility	Permit Number	Issuing Agency	Type of Permit	Effective Date	Expiration Date
Plant	FL0001503	EPA	NPDES	05/01/87	04/30/92
Unit 4	AO-06-146594	FDER	Air Operating	05/31/88	05/15/93
Unit 5	AO-06-143213	FDER	Air Operating	05/09/88	02/15/93
Units GT 1-12	AO-06-148760	FDER	Air Operating	08/05/89	06/30/93
Units GT 13-24	AO-06-148761	FDER	Air Operating	08/05/89	06/30/93
Plant	IO-06-158722	FDER	Industrial Wastewater	01/30/89	01/30/94
Plant	06-00503-W	SFWMD	Consumptive use--off-site wells	09/07/83	12/15/93
Unit 4	AO-42503R-1	BCEQCB	Air operating	12/04/87	12/31/89
Unit 5	AO-42503R-2	BCEQCB	Air operating	12/04/87	12/31/89
Units GT 1-12	AO-42503R-3 thru 15	BCEQCB	Air operating	12/04/87	12/31/89
Units GT 13-24	AO-42503R-16 thru 28	BCEQCB	Air operating	12/04/87	12/31/89
Plant	IWH-102-89	BCEQCB	Industrial wastewater, hazardous materials	02/25/89	03/10/90
Plant	0534	FDNR	Terminal facility	01/02/88	12/31/89

Note: BCEQCB = Broward County Environmental Quality Control Board
EPA = U.S. Environmental Protection Agency
FDNR = Florida Department of Natural Resources
NPDES = National Pollutant Discharge Elimination System

Table 2.1-2. Summary of SFWMD Right-of-Way Occupancy Permits for FPL
Lauderdale Plant Site (Page 1 of 2)

The following is a chronological list of right-of-way occupancy permits issued by the South Florida Water Management District for various features of the FPL plant site, which enter or cross canals around the site. First is a list of permits along the Dania Cut-Off Canal, followed by a list of permits along the South New River Canal.

I. Dania Cut-Off Canal

1. Permit No. 1927-15, issued July 12, 1927--Permit for construction and operation of a bridge across the Dania Cut-Off Canal.
2. Permit No. 1939-4, issued August 15, 1939--Permit for construction and operation of a tide gate (since removed and relocated) in the Dania Cut-Off Canal, and for construction and operation of an intake and discharge canal from and into the Dania Cut-Off Canal.
3. Permit No. 1941-21, dated January 28, 1941--Permit for operation of oil unloading dock and construction and operation of extension of that dock in the Dania Cut-Off Canal.
4. Permit No. 1941-22, dated January 21, 1941--Permit for construction and operation of a trash screen in the Dania Cut-Off Canal for the original intake; for an intake canal between the South New River Canal and an existing on-site pond connecting to the original intake canal; for a bridge and roadway over the newly excavated canal; and for construction of a trash screen at this newly excavated canal.
5. Permit No. 483, dated December 28, 1955--Permit for construction of concrete oil unloading docks and dolphins and a portion of a road on the north side of the Dania Cut-Off Canal.
6. Permit No. 502, issued February 15, 1956--Permit for construction and operation of tide gate in Dania Cut-Off Canal, upstream from intake canals for Units 4 and 5.
7. Permit No. 552, dated June 8, 1956, and modified March 9, 1989--Permit for original dredging, and later maintenance dredging, of intake canals for Units 4 and 5, along the Dania Cut-Off Canal.
8. Permit no. 6564, dated October 7, 1976--Permit for construction of seawall along north and south shore of Dania Cut-Off Canal around existing tide gate.
9. Permit No. 7055, dated July 12, 1979--Permit for aerial messenger and control cable over the Dania Cut-Off Canal.

Table 2.1-2. Summary of SFWMD Right-of-Way Occupancy Permits for FPL
Lauderdale Plant Site (Page 2 of 2)

II. South New River Canal

1. Permit No. 6720, dated August 11, 1977--Permit for replacement of wooden bridge with culvert for the canal connecting old intake pond to South New River Canal.
 2. Permit no. 83, dated May 1, 1953 (and subsequently modified)--Permit for three 138-kV transmission lines running north/south, across the South New River Canal.
 3. Permit No. 1943, dated June 11, 1962--Permit for five transmission lines crossing the South New River Canal, running east and west.
 4. Permit NO. 2269, issued November 1, 1963--Permit for single transmission line crossing South New River Canal, running east/west.
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Management Agency, 1987 and 1983; U.S. Department of Housing and Urban Development, 1978).

2.1.6 Property Delineation

Figure 2.1-6 presents a survey and legal description of the site. The east construction parking and laydown areas are on property owned by Alandco, the developer of the Port 95 Commerce Park. This land will be leased for the duration of the construction.

OVERSIZE
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United States. In 1979, Broward County's per-capita income was 23.4 percent higher than Florida's per-capita income and 17.7 percent higher than the United States' per-capita income; in 1986, the margin was 23.9 percent and 23.8 percent, respectively. These relationships (1979-1986) remain similar to the 1975-1979 comparisons. According to the U.S. Department of Commerce, Bureau of Economic Analysis, 1986 income in Broward County was derived as follows:

<u>Type of Income</u>	<u>Percent</u>
Wages and Salary	50.4
Dividends, Interest, and Rent	29.4
Place of Residence Adjustment	8.6
Transfer Payments	14.7
Social Security Payments	<u>-3.1</u>
	100.0

The Lauderdale Plant currently employs 157 persons with an associated labor cost of \$3.9 million (in 1988).

2.2.7.2 Area Public Services and Utilities

Public facilities within 5-miles of the Lauderdale Plant site are described below. These facilities include schools; transportation; hospitals; fire and police services; recreational facilities; and utilities (i.e., electricity and gas, wastewater, potable water, and solid waste utilities).

PUBLIC EDUCATION

Table 2.2-11 lists the public educational facilities located within 5 miles of the Lauderdale Plant site. No public educational facilities are located within 1 mile of the site. The closest facility is Hollywood Hills High School, located 1.5 miles south of the Lauderdale Plant site.

TRANSPORTATION

The highway transportation network near the Lauderdale Plant site in south-central Broward County consists of several major arterials and collectors. These facilities include I-95, the Florida Turnpike, State Road (SR) 84, SR 7 (US 441), Stirling Road, Griffin Road, and Ravenswood Road. I-95 is a six-lane limited-access freeway that traverses north-to-south through the

Table 2.2-11. Public Educational Facilities Within 5 Miles of the Lauderdale Plant Site

Elementary Schools	Middle Schools	High Schools
Bethune, Mary M.	Apollo	Cooper City
Boulevard Heights	Attucks	Dillard
Broward Estates	Driftwood	Hollywood Hills
Collins	New River	McArthur
Cooper City	Nova	Nova
Crossant Park	Olsen	South Broward
Dania	Parkway	South Plantation
Davie	Pioneer	Stranahan
Dillard	Rogers	
Driftwood	Seminole	
Edgewood		
Eisenhower, D.D.		
Foster, Stephen		
Harbordale		
Hollywood Hills		
Hollywood Park		
King, Martin Luther		
Larkdale		
Meadowbrook		
North Fork		
Nova Blanche Forman		
Oakridge		
Orangebrook		
Pasadena Lakes		
Pembroke Pines		
Peters		
Plantation		
Plantation Park		
Riverland		
Sheridan Hills		
Sheridan Park		
Sterling		
Sunland Park		
Tropical		
Walker		
West Hollywood		
Westwood Heights		

Source: School Board of Broward County, 1988.

eastern portion of Broward County. The Florida Turnpike is a north-south four- to six-lane toll facility located west of the project site. All of the remaining roadways, except Ravenswood Road, are four- to six-lane principal arterials. Ravenswood Road is a two-lane collector that parallels I-95 from Stirling Road to SR 84 east of the site. In addition to existing facilities, the I-595 connector from I-75 to the Fort Lauderdale-Hollywood International Airport is currently under construction. I-595 will run parallel to SR 84 and is expected to divert a significant number of trips from SR 84 in future years. Griffin Road and Ravenswood Road provide primary access to the project site via SW 42nd Avenue and SW 42nd Street, respectively. These two access roads are two-lane local streets which serve several residential areas. The existing roadway facilities in the site vicinity are shown on Figure 2.2-7.

The normal day-to-day operations of the Lauderdale Plant contribute to the volume of traffic on the roadway network within the vicinity of the site. Using the Broward County home-base work (HBW) vehicle rate of 1.12 persons per vehicle, the current staff at the Lauderdale Plant (i.e., 157) generate a maximum of 140 round trips to the plant per day. Based on employee origin/destination data from the existing plant, approximately 60 percent of employees arrive from/depart to the north, 25 percent from the south, 10 percent from the west, and 5 percent from the east. This diverse distribution pattern indicates that many major roadways near the site, particularly Griffin Road and Ravenswood Road, are being used by existing plant employees to arrive/depart from the site. The main entrance to the plant off of Griffin Road and SW 42nd Avenue is used by a majority of the employees to access the site. Most of the traffic occurs during the daytime shift (7:30 a.m. to 4:00 p.m.); however, evening and night shifts also generate additional employee traffic.

In addition to plant employee traffic, a minimal amount of truck traffic is generated by the site each day. This truck traffic, which consists of maintenance, delivery, and contractors/vendors vehicles, arrives

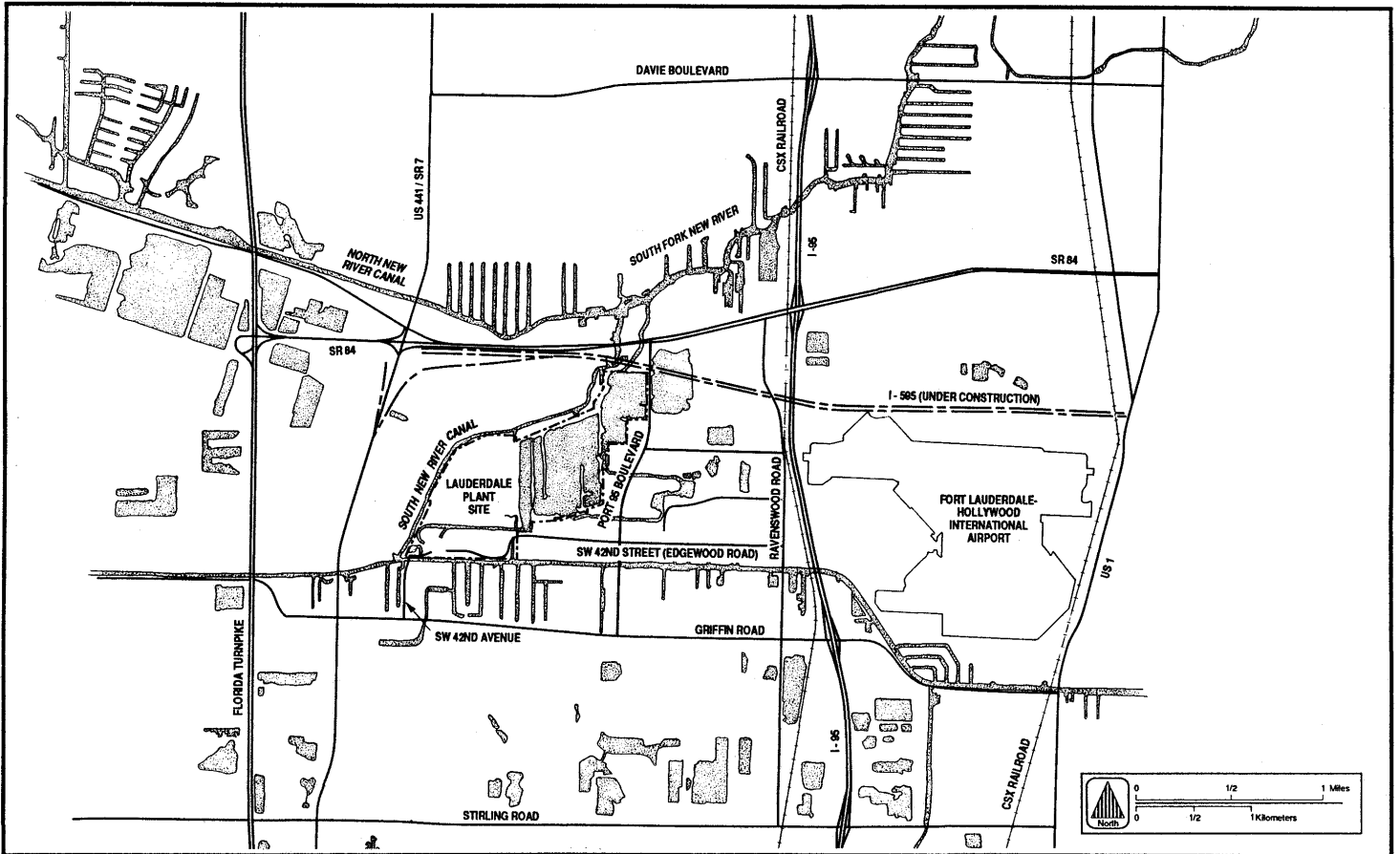


Figure 2.2-7 EXISTING ROADWAY FACILITIES IN THE VICINITY OF THE LAUDERDALE PLANT SITE



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infrequently and randomly throughout the day. Most of this traffic arrives from Ravenswood Road via SW 42nd Street.

Traffic count data were collected at several locations near the Lauderdale Plant site from three sources:

1. FDOT;
2. The Broward County Transportation Planning Department; and
3. A survey.

All traffic count data obtained from FDOT and Broward County were compiled as average annual daily traffic (AADT) volumes. Traffic data obtained by survey were collected from field studies and compiled as p.m. peak-hour volumes. The traffic count data obtained near the site include traffic from the existing plant. All traffic counts obtained prior to 1989 have been increased by a 4-percent annual growth factor to reflect 1989 existing conditions. Use of this growth factor was based on historic traffic growth patterns along the major roadways within the vicinity of the site.

In order to convert the 1989 AADT volumes to p.m. peak-hour volumes, a peak-hour-volume-to-daily-volume ratio (K factor) was applied to the AADT volumes. The K-factors were based on average regional rates which were accepted by the South Florida Regional Planning Council (1989) for converting daily traffic volumes to peak-hour volumes for roadways in the south Florida planning region. These rates are considered planning guidelines to be used to evaluate traffic impacts generated by developments. The appropriate K factors used were:

<u>Number of Lanes</u>	<u>K Factor (%)</u>
2	9.0
4	8.4
6+	8.0

In addition, a directional distribution (D factor) of 55 percent/45 percent was applied to the peak-hour volumes in order to estimate directional

volumes. The D factor used in this analysis was verified through the collection of current traffic data. The appropriate direction of the peak volumes was then determined based on historic traffic distribution patterns in the vicinity of the Lauderdale Plant site.

The p.m. peak-hour volumes obtained were compared to hourly level of service criteria in order to determine the p.m. peak-hour traffic conditions of each roadway. The p.m. peak-hour traffic conditions were analyzed because this peak period represented the worst-case traffic scenario for the project impact area. The level-of-service (LOS) criteria used for this analysis were based on FDOT (1989). Based on the functional classification and lineage of each roadway and the number of signalized intersections per mile along the roadway, an LOS category was assigned to each roadway link within the impact area. There are six LOS categories (A through F), with LOS A representing the best operating condition and LOS F representing the worst. Generally, LOS D is considered the minimum acceptable level of service along a roadway or intersection. Table 2.2-12 provides a general definition of LOS and a description of each LOS category. Based on the procedures outlined above, existing roadway conditions were analyzed within the impact area. Table 2.2-13 indicates the results of this analysis. As shown in Table 2.2-13, a majority of roadway links near the site are currently operating at LOS D or better. The only exceptions are SR 7 from Stirling Road to Griffin Road, I-95 from Stirling Road to SR 84, and SR 84 from I-95 to SR 7. These roadway links are operating at LOS F in at least one direction along each link.

An additional analysis was conducted at two significant intersections near the Lauderdale Plant site: Ravenswood Road at SW 42nd Street and Griffin Road at SW 42nd Avenue. Neither of these intersections has traffic control signals at present. Using the Highway Capacity Manual (HCM) computer software program (Institute of Transportation Engineers, 1985) for intersection analyses and 1989 turning movement volumes at both locations, the 1989 existing p.m. peak-hour operating conditions for these intersections were estimated. The 1989 turning movement volumes were based

Table 2.2-12. Roadway Level-of-Service Descriptions

General Definition of Level of Service: The ability of a maximum number of vehicles to pass over a given section of roadway or through an intersection during a specified time period, while maintaining a given operating condition.

<u>LOS Category</u>	<u>Description</u>
A	Highest level of service. 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, passenger, or pedestrian is excellent.
B	Within 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.
C	Within 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.
D	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.
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 or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high.
F	Represents 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. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable.

Source: Institute of Transportation Engineers, 1985.

Table 2.2-13. Existing Roadway Link Conditions--1989

Facility	Link	Direction/ Geometrics	LOS D p.m. Peak- Hour Service Volume ^a	Existing p.m. Peak- Hour Traffic Volume	Existing p.m. Peak-Hour LOS Category
Florida Turnpike (6-lane expressway)	Hollywood Boulevard to SR 84	Northbound/3L	5,570	2,430	B
		Southbound/3L	5,570	1,989	A
SR 7 (4/6 lane divided roadway)	Stirling Road to Griffin Road	Northbound/2L	1,720	1,989	F
		Southbound/2L	1,670	1,627	D
	Griffin Road to SR 84	Northbound/3L	2,600	1,849	B
		Southbound/3L	2,530	1,513	C
Ravenswood Road (2-lane undivided roadway)	Stirling Road to Griffin Road	Northbound/1L	880	504	A
		Southbound/1L	890	616	A
	Griffin Road to SW 42nd Street	Northbound/1L	890	415	A
		Southbound/1L	880	340	A
	SW 42nd Street to SR 84	Northbound/1L	890	367	A
		Southbound/1L	880	301	A
I-95 (6-lane freeway)	Stirling Road to Griffin Road	Northbound/3L	5,570	7,270	F
		Southbound/3L	5,570	5,949	E
	Griffin Road to SR 84	Northbound/3L	5,570	7,028	F
		Southbound/3L	5,570	5,750	E
Stirling Road (6-lane divided roadway)	I-95 to SR 7	Eastbound/3L	2,210	1,398	D
		Westbound/3L	2,510	1,708	D
Griffin Road (6-lane divided roadway)	I-95 to SW 42nd Avenue	Eastbound/3L	2,210	1,325	D
		Westbound/3L	2,510	1,619	C
	SW 42nd Avenue to SR 7	Eastbound/3L	2,210	1,181	D
		Westbound/3L	2,510	1,444	C
SR 84 (4-lane divided roadway)	I-95 to SR 7	Eastbound/2L	1,670	1,736	E
		Westbound/2L	1,720	2,122	F

^aBased on FDOT generalized peak-hour level of service maximum volumes tables, January 1989.

Source: FDOT, 1989.

on field counts. Based on this analysis, the Ravenswood Road/SW 42nd Street intersection is currently operating at LOS A, and the Griffin Road/SW 42nd Avenue intersection operates at LOS C. Results of this computer analysis are provided in Appendix 10.5.5.

Based on the current employee origin/destination data, employees living north of the site likely use the SW 42nd Street entrance and the employees living south, east, and west of the site likely use the SW 42nd Avenue entrance. The maximum traffic volumes generated at the plant would be (by accounting for shift scheduling) 48 vehicles at the Ravenswood Road/SW 42nd Avenue intersection and 32 vehicles at the Griffin Road/SW 42nd Avenue intersection. These traffic movement volumes are less than 13 and 3 percent of the existing peak-hour traffic volumes for Ravenswood Road and Griffin Road, respectively.

HOSPITALS

There are seven hospitals located within 5 miles of the Lauderdale Plant site:

- Broward General Medical Center
- Hollywood Pavilion Psychiatric Hospital
- Hollywood Memorial Hospital
- Hollywood Medical Center
- Outpatient Surgical Care of Fort Lauderdale
- Pembroke Pines General Hospital
- Plantation General Hospital

The closest full-service hospital to the site is the 737-bed Hollywood Memorial Hospital.

FIRE PROTECTION

Fire protection is currently provided by Broward County Fire and Rescue Station No. 5 located at 5301 SW 31st Avenue, approximately 1 mile southeast of the Lauderdale Plant site. This company has four full-time firefighters on staff with two engines, one 1,000-gallon-per-minute (gpm)