

# Conrock Utility Co.

Main Office:  
25451 Mundon Mill Road  
Brooksville, Fla. 34601  
(904) 796-2338

Branch Office:  
701 N. Florida Ave.  
Lakeland, Fla. 33801  
(813) 687-3435

*Sutcliffe's Ex 1*  
July 19, 1989

RECEIVED

AUG 15 1989

DEPOSIT RECEIVED DATE

Thomas C. Walden, Chief  
Bureau of Certification  
Public Service Commission  
Fletcher Building  
101 E. Gaines Street  
Tallahassee, FL 32399-0866

Fla. Public Service Commission  
Division of Water and Sewer

890459-~~125~~  
WL

Re: Application for Original Water Certificate  
for Conrock Utility Co., Inc.

Dear Mr. Walden:

Enclosed are one original and fifteen (15) copies of the application for Original Water Certificate. I have enclosed the filing fee in the amount of \$1,500. made payable to the Public Service Commission, State of Florida, and one original of the map of the geographic area to be serviced by Conrock Utility Co., Inc.

As indicated by the application, Conrock will be leasing the real property containing the wells from a trust controlled by two of the principal shareholders of Conrock, Mr. and Mrs. Sumner Williams. Although the lease terms have not been finalized, it is anticipated that the lease will be a renewable, long-term lease with rental payments designed to insure that the business operations of Conrock will generate a net profit. In other words, the lease payments will be established at a reasonable fair market rental based upon the amount that would be charged by an unrelated lessor and payable by an unrelated lessee.

Because the company was only recently incorporated, the financial statements for the corporation are not included in the application. However, the application will rely upon the financial statements of Mr. and Mrs. Sumner Williams and the undersigned enclosed as Exhibit "F" of the application.

Finally, as indicated in Exhibit "E" of the application, three objections to the granting of the water certificate were received by Conrock. These objections were received from the following individuals/entities by letters dated as indicated:

DOCUMENT NUMBER-DATE

08146 AUG 14 1989

FPSC-RECORDS/REPORTING

Application for Original Water  
Certificate for Conrock Utility Co., Inc.

July 19, 1989

1. Hernando County, Florida on March 31, 1989.
2. William B. Eppley, Esquire on behalf of the City of Brooksville, Florida by letter dated March 28, 1989.
3. Mr. Ghale C. Thomas, Sr., President, Rolling Acres Enterprises on March 27, 1989.

Hernando County's objection is based upon two principle grounds. First, that the proposed service area may violate the comprehensive plan of Hernando County. Second, that the establishment of a water utility will be in competition with, or a duplication of, the existing system of Hernando County Water and Sewer District and systems operated by the City of Brooksville.

In response to the first ground, at this time the Hernando County comprehensive plan does not contain any information or plan regarding the proposed service area. Any objection based upon a proposed or anticipated comprehensive plan is groundless.

Because neither Hernando County nor the City of Brooksville currently services the geographic area subject to this application, the second objection raised by Hernando County is also inappropriate and should be overruled. There can be no competition if the area is not served.

The City of Brooksville also objects to the issuance of a water certificate to Conrock Utility Co., Inc. The basis of the City's objection is that the issuance of a water certificate will deprive the City of an opportunity to exploit this area. As mentioned previously, no existing water system serves the geographic area which is subject to this application. Furthermore, the objection raised by the City that the granting of the certificate will promote urban sprawl is without basis. The City's recourse to prevent "urban sprawl" is by way of a comprehensive development plan designating the density limitations on development. By making this application for a water certificate, Conrock is merely attempting to provide water utility in an area where there are already existing wells and to which development of residential homes is spreading.

Neither the objection raised by Hernando County nor the objection raised by Brooksville addresses their ability to serve the needs of the public. Neither party has the capacity to provide service to the proposed service area. Furthermore, not only does Conrock have a pure water source, it also has the financial backing to construct the means to deliver the water to the public.

Application for Original Water  
Certificate for Conrock Utility Co., Inc.

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The final objection was filed by Mr. Thomas as president of Rolling Acres Enterprises. The basis of the objection is a concern that the application will include Rolling Acres Enterprises service area. Because the service area subject to this application does not cover any of the service area of Rolling Acres Enterprises, it is anticipated that this objection will be withdrawn without any further action.

If you have any questions or require any additional information, please do not hesitate to contact me.

Very truly yours,

Mark S. Williams  
President

MSW:gg

Enclosures

890459-W4

APPLICATION FOR CERTIFICATE  
PURSUANT TO SECTION 367.041, FLORIDA STATUTES  
(ORIGINAL CERTIFICATE)

To: Director, Division of Records and Reporting  
Florida Public Service Commission  
101 East Gaines Street  
Tallahassee, Florida 32301-8153

The undersigned hereby makes application for a certificate to operate a  
(water) (sewer) utility in Hernando County, Florida and  
submits the following information.

PART I APPLICATION INFORMATION

1) The full name and mailing address of the applicant is:

CONROCK UTILITY COMPANY (813) 687-3435  
Name of utility company Phone No.  
701 North Florida Avenue  
Office street address  
Lakeland Florida 33801  
City State Zip Code  
Mailing address if different from street address

2) The name of the plant and/or system:

CONROCK UTILITY COMPANY

3) The name, address and telephone number of the person to  
contact concerning this application:

Mark Williams

Name 701 North Florida Avenue Phone No.  
(813) 687-3435  
Street address  
Lakeland Florida 33801  
City State Zip Code

4) The name, address and emergency telephone number of plant  
manager:

Charles DeLamater

(904) 796-2338

Name TO BE PROVIDED AT LATER DATE  
Street address  
23451 Munden Hill Road, Brooksville, Florida 34601  
City State Zip Code

5) The name, address and telephone number of the parent or  
affiliated corporation, if any, is:

S. A. Williams Corp.

(813) 687-3435

Name of corporation Phone No.  
701 North Florida Avenue  
Street address  
Lakeland Florida 33801  
City State Zip Code

6) Is the utility operating under a fictitious name?

Yes \_\_\_\_\_ No X

a) If Yes, what is the name(s)?

b) Has the fictitious name statute Section 865.09 Florida  
Statute been complied with? N/A In what  
County N/A on N/A (date)

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FLORIDA PUBLIC SERVICE COMMISSION  
MAIL ROOM  
AUG 14 1989  
10:55 AM



7) The organizational character of the applicant is: (circle one)

Corporation

~~286306880000X~~

~~XIndividualX~~

~~XProprietorshipX~~

Other\*

\*(specify)

8) If applicant is corporation:  
List names and addresses of corporate officers and directors.  
(Use additional sheet if required).

Summer A. Williams 426 Palmola Street, Lakeland, Fl 33803

Mark S. Williams 947 Clearview Avenue, Lakeland, Fl 33803

Jacquelyn S. Williams 426 Palmola Street, Lakeland, Fl 33803

9) If applicant is not a corporation:  
List names and addresses of all persons owning an interest  
in the organization. (Use additional sheet if required.)

N/A

10) If applicant is organization other than individual  
proprietorship (i.e., a corporation, partnership, etc.),  
list date organized.

N/A

11) List the names and locations of any other water and/or sewer  
utilities owned by the applicant:

NCNE

## PART II CERTIFICATION

### Territory Description

A) An accurate description of the territory sought for certification, described by sections, quarter sections and/or by metes and bounds, using section, township, range and county references is attached as Exhibit "A".

B) A description by recorded plat book and page and/or by a sub-division name is not an acceptable territory description.

C) A sample description is attached showing the outline to be followed in submitting same.

D) Evidence that the utility owns the land where the utility treatment facilities are located. Where the utility does not own the land, a copy of the agreement which provides for the long term continuous use of the land is attached as Exhibit Land held by Family Members, Lease to be completed.

### Territory Maps

A) An official county or city property tax map showing the territory to be served, including section, township and range is attached as Exhibit "B".

- B) The map shall show the new or existing territory sought to be served.
- C) The map shall be of a scale of 1" = 200' or 1" = 400'.
- D) The location of the treatment plant(s) shall be shown thereon.

System Maps

A) A detailed map showing existing lines and facilities and extensions thereof under construction and the territory served thereby, said map to be of sufficient scale and detail to enable correlation with a description of the territory professed to be served is attached as Exhibit "C" for water and Exhibit N/A for sewer.

System Information

Water

- A) Source of water supply Existing
- B) Number of wells 2 total capacity 3.3 MGD gallons per day
- C) Design capacity of plant 1.4 MGD gallons per day
- D) Average number of gallons pumped per day to distribution system (how measured?) by metering
- E) Type of treatment Chlorination
- F) Number of customers: (PROPOSED)
 

|                      |             |
|----------------------|-------------|
| Residential          | <u>5594</u> |
| Commercial           | <u>120</u>  |
| Other                | <u>N/A</u>  |
| Metered or unmetered | <u>N/A</u>  |
- G) Present plans for improving or increasing capacity of present facilities are as follows (included estimated completion date):

N/A

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H) Serial numbers and dates of DER approvals of treatment facilities are as follows:

N/A

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Sewer

A) Type and make of present treatment facilities N/A

B) Present method of sewage treatment N/A

C) Design capacity per day, of sewage treatment facilities existing N/A under construction N/A.

D) Average number of gallons of sewage treated per day (how measured?) N/A

E) Number of customers:

|             |            |
|-------------|------------|
| Residential | <u>N/A</u> |
| Commercial  | <u>N/A</u> |
| Other       | <u>N/A</u> |

F) Present plans for improving or increasing capacity of facilities are as follows (include estimated completion date): N/A

G) Permit numbers and dates issued for treatment facilities by the Department of Environmental Regulation are as follows: N/A

Notice of Intention

A) When a utility intends to apply for a certificate of authorization, the utility shall obtain from the Commission a list of water and sewer utilities entitled to receive notice pursuant to 367.041(a)(b) Florida Statutes.

B) An affidavit that the notice was given by certified mail or personal delivery to the governing body of the county in which the system is located, the governing body of any municipality within a four (4) mile radius of the system, any water or sewer utility within a four (4) mile radius of the territory to be served, area planning agency, the Public Counsel and the Public Service Commission, is attached as Exhibit "D".

C) An affidavit that the Notice of Intent was published once a week for three (3) consecutive weeks in a newspaper of general circulation in the territory involved. Copies of the advertisements shall accompany the affidavit.

D) Objections to Notice of Application (werc) (~~XXXXXX~~) received. (If objections were received, attach copy).

"Exhibit E"

Filing Fee

\*A) The following information is required to determine filing fee and proposed design capacity of the system(s) water and/or sewer:

|    |                                   |         |
|----|-----------------------------------|---------|
| 1) | Number of gallons per day         | 1.4 MGD |
| 2) | Population to be served           | 5594    |
| 3) | Equivalent residential connection | 1590    |

A fee of \$1,500.00 is enclosed with the application. (one for water & one for sewer)

To determine fee - Equate the design capacity of the system and/or plant constructed to persons as follows:

One equivalent residential service equates to 3.5 persons. One trailer space equates to 2.0 persons.

One hundred gallons per day, per person (100 gpd/p) is accepted design criteria in representing water consumed per day per person and/or representing sewage flow per day per person.

If the design capacity of a system or plant is known in gallons then divide this figure by 100 to find the number of persons that can be served.

|    |                        |             |
|----|------------------------|-------------|
| A) | 1 to 999 persons       | \$ 150.00   |
| B) | 1,000 to 4,999 persons | \$ 900.00   |
| C) | 5,000 to 9,999 persons | \$ 1,500.00 |
| D) | 10,000 or more persons | \$ 2,250.00 |

PART III FINANCIAL INFORMATION

1) A statement demonstrating the applicant's ability to render reasonably sufficient, adequate and efficient service to the territory the applicant desires to serve is hereinafter set forth Based on existing site location and on existing wells on subject

site, the applicant can provide adequate potable water needs for this area.

By centralizing this facility at the well site, serviceable is increased

20% from other existing supply facilities, therefore lending itself to

providing low cost, high efficiency to potential customers.

2) Detailed statement (balance sheet) of financial condition of the applicant showing all assets and liabilities of every kind and character, said statement prepared in accordance with Rule 25-30.035, is attached as Exhibit N/A.

3) Statement of profit and loss (operating statement) of applicant for the preceding calendar or fiscal year, if applicant has operated for such period, or any lesser period if applicant had not operated for a full year, is attached as Exhibit N/A.

4) Certified financial statements of the applicant shall be filed if they exist, as Exhibit N/A.

5) A statement listing those providing the principal funding to the utility, along with their financial statement and copies of any financial assessments, is attached as Exhibit "F".

6) A tariff showing all rates, classifications, charges for service and charges for service availability of every kind furnished or proposed to be furnished and all rules and regulations relating thereto, is attached as Exhibit To Be Submitted

PART IV AFFIDAVIT

Sub

I MARK S. Williams (applicant) do solemnly swear that the facts stated in the foregoing application and all exhibits attached thereto are true and correct and that said statements of fact thereto constitutes a complete statement of the matter to which it relates.

MARK S. WILLIAMS (Applicant)

BY:

Mark S. Williams, President  
Name and Title\*

Subscribed and sworn to before me this \_\_\_\_\_  
of June 28 1989.

James E. W. Robbins  
Notary Public, STATE OF TEXAS AT LARGE  
MY COMMISSION EXPIRES MARCH 19, 1993  
BONDED THRU AGENT'S NOTARY BROKERAGE

\*If applicant is a corporation, the affidavit must be made by the president or other officer authorized by the by-laws of the corporation to act for it. If applicant is a partnership or association, a member of the organization authorized to make such affidavit shall execute same.

**EXHIBIT "E"**  
**TO**  
**APPLICATION FOR WATER CERTIFICATE**  
**BY**  
**CONROCK UTILITIES, INC.**

Objections to the Notice of Intent to apply for an original water certificate were received from the following three persons:

1. Hernando County, Florida
2. City of Brooksville, Florida
3. Rolling Acres Enterprise

Copies of the written objections are attached hereto.

EXHIBIT "F"  
TO  
CONROCK UTILITIES, INC.  
APPLICATION FOR ORIGINAL WATER UTILITY CERTIFICATE

Financial Statement  
Mr. and Mrs. Sumner A. Williams  
As of June 1, 1989

|  |              |              |
|--|--------------|--------------|
| Cash and Cash Equivalents                        |              |              |
| Cash   | 253,311.50   |              |
| Life Insurance Policy<br>(Cash Surrender Value)  | 33,295.00    |              |
|  |              |              |
| Total Cash                                       |              | 286,606.50   |
| Investments                                      |              |              |
| Hamilton Township Bond                           | 32,000.00    |              |
| Atlantic County Bond                             | 18,000.00    |              |
| Mt. Laurel Munic. Bond                           | 16,000.00    |              |
| S. A. Williams Corporation<br>Stock (See Note 1) | 33,363.00    |              |
| S. A. Williams Family Trust *<br>(See Note 2)    | 3,069,907.00 |              |
|  |              |              |
| Total Investments                                |              | 3,169,270.00 |
| Real Estate                                      |              |              |
| Palmola Residence                                | 450,000.00   |              |
| Lake Hollingworth Property                       | 100,000.00   |              |
| Sarasota County Property                         | 150,000.00   |              |
| Casey Key Rental House                           | 200,000.00   |              |
| Brooksville Land                                 | 420,000.00   |              |
| Arapica Acreage                                  | 200,000.00   |              |
|  |              |              |
| Total Real Estate                                |              | 1,520,000.00 |
| Personal Property                                |              |              |
| Antique Furniture                                | 187,845.00   |              |
| Silver Collection                                | 260,330.00   |              |
| Antique Armor                                    | 285,000.00   |              |
| Automobiles                                      | 100,000.00   |              |
| Jewelry  | 50,000.00    |              |
|  |              |              |
| Total Personal Property                          |              | 883,175.00   |
| =====  |              |              |
| TOTAL ASSETS                                     |              | 5,859,051.50 |
| TOTAL LIABILITIES                                |              | 0.00         |
| =====  |              |              |
| NET WORTH  |              | 5,859,051.50 |

\* Mr. Williams has a limited beneficial interest in the trust for his life.

NOTE 1 to the Financial Statement of Mr. & Mrs. Sumner A. Williams.

S.A.WILLIAMS CORPORATION

Cash and Cash Equivalents

|   |               |
|---|---------------|
| Cash  | \$329,739     |
| Life Insurance Policy<br>(Cash Surrender Value) | <u>53,000</u> |

Total Cash \$382,739

Real Estate

|                          |               |
|--------------------------|---------------|
| Brooksville House & Land | \$250,000     |
| Lakeland Rental Property |               |
| -Commercial Building     | 35,000        |
| -House                   | <u>35,000</u> |

Total Real Estate \$320,000

Personal Property

|  |               |
|--|---------------|
| Brooksville Cattle                                   | \$150,000     |
| Brooksville Shop Tools,<br>Office and Farm Equipment | 149,000       |
| Game Route and Equipment                             | 250,000       |
| Lakeland Office Equipment<br>and Inventory           | 257,000       |
| Gold and Silver<br>(Coins/Bars)                      | <u>80,000</u> |

\$886,000

Total Liabilities -0-

Net Worth \$1,588,739



NOTE 2 to the Financial Statements of Mr. & Mrs. Sumner A. Williams.

SUMNER A. WILLIAMS FAMILY TRUST

|  |                  |                   |
|--|------------------|-------------------|
| Total Cash                               |                  | \$ 655,742        |
| Investments                              |                  |                   |
| Mt. Laurel Munic. Authority<br>Bonds     | \$ 70,000        |                   |
| S.A. Williams Corporate<br>Stock (90.9%) | <u>1,444,165</u> |                   |
| Total Investments                        |                  | \$1,514,165       |
| Real Estate                              |                  |                   |
| Brooksville Land                         | \$ 300,000       |                   |
| Sarasota County Rental House             | 350,000          |                   |
| Auburndale Property                      | <u>250,000</u>   |                   |
| Total Real Estate                        |                  | <u>\$ 900,000</u> |
| Total Assets                             |                  | \$3,069,907       |
| Total Liabilities                        |                  | -0-               |
| Net Worth                                |                  | \$3,069,907       |

EXHIBIT F TO CONROCK UTILITIES, INC.  
APPLICATION FOR ORIGINAL WATER UTILITY CERTIFICATE

FINANCIAL STATEMENT  
MARK WILLIAMS  
As of June 1, 1989

|  |                   |            |
|--|-------------------|------------|
| Cash and Cash Equivalents              |                   | \$13,800   |
| Investments                            |                   |            |
| 25% in Children's Trust<br>(\$500,000) | <u>\$125,000</u>  |            |
| Total Investments                      |                   | \$125,000  |
| Real Estate                            |                   |            |
| Residence                              | \$ 70,000         |            |
| Brooksville Land                       | <u>600,000</u>    |            |
| Total Real Estate                      |                   | \$670,000  |
| Personal Property                      |                   |            |
| Automobiles                            | <u>\$ 10,000</u>  |            |
| Total Personal Property                |                   | \$100,000  |
| Total Assets                           |                   | \$818,800  |
| Liabilities                            |                   |            |
| Mortgage on Residence                  | <u>\$(20,000)</u> |            |
| Total Liabilities                      |                   | \$(20,000) |
| Net Worth                              |                   | \$798,800  |

*Note.*—Repealed effective October 1, 1989, by s. 2, ch. 81-318, and scheduled for review pursuant to s. 11.61 in advance of that date.

**367.031 Certificate.**—Prior to the issuance to a utility of a permit by the Department of Environmental Regulation for the construction of a new water or sewer facility, the utility shall obtain a certificate authorizing it to provide service. Each utility subject to the commission's jurisdiction shall possess a current certificate.

*History.*—s. 1, ch. 71-278, s. 3, ch. 76-168, s. 1, ch. 77-457, ss. 5, 25, 26, ch. 80-99, ss. 2, 3, ch. 81-318, s. 1, ch. 85-85.

*Note.*—Repealed effective October 1, 1989, by s. 2, ch. 81-318, and scheduled for review pursuant to s. 11.61 in advance of that date.

**367.041 Application.**—Each applicant for a certificate shall:

(1) Provide information required by rule or order of the commission, which may include a detailed inquiry into the ability of the applicant to provide service, the territory and facilities involved, the need for service in the territory involved, and the existence or nonexistence of service from other sources within geographical proximity to the territory applied for;

(2) File with the commission schedules showing all rates, classifications, and charges for service of every kind furnished by it and all rules, regulations, and contracts relating thereto;

(3) File the application fee required by s. 367.141, and

(4) Submit an affidavit that the applicant has caused notice of its intention to file an application to be given:

(a) By mail or personal delivery to the governing body of the county or city affected, to the public counsel, and to the commission; and

(b) To such other persons and in such other manner as may be prescribed by commission rule.

Notice shall be given no later than 30 days prior to the filing of the application.

*History.*—s. 1, ch. 71-278, s. 3, ch. 76-168, s. 1, ch. 77-457, ss. 6, 25, 26, ch. 80-99, ss. 2, 3, ch. 81-318.

*Note.*—Repealed effective October 1, 1989, by s. 2, ch. 81-318, and scheduled for review pursuant to s. 11.61 in advance of that date.

**367.051 Issuance of certificate.**—

(1) If, within 20 days following the official date of filing of the application, the commission does not receive written objection to the application, the commission may dispose of the application without hearing. If the applicant is dissatisfied with the disposition, he shall be entitled to a proceeding under s. 120.57.

(2) If, within 20 days following the official date of filing, the commission receives from the public counsel or a governmental agency, or from a utility or consumer who would be substantially affected by the requested certification, a written objection requesting a proceeding pursuant to s. 120.57, the commission shall order such proceeding conducted in or near the territory applied for, if feasible. Notwithstanding the ability to object on any other ground, a county or municipal government has standing to object on the ground that the issuance of the certificate will violate established local comprehensive plans developed pursuant to ss. 163.3161-163.3211. If any consumer, utility, or governmental agency or the public counsel requests a public hearing on the application, such hearing shall, if feasible, be held in or

near the territory applied for and the transcript of such hearing and any material submitted at or before the hearing shall be considered as part of the record of the application and any proceeding related thereto.

(3)(a) The commission may grant a certificate in whole or in part or with modifications in the public interest, but may in no event grant authority greater than that requested in the application or amendments thereto and noticed under s. 367.041, or it may deny a certificate. The commission shall not grant a certificate for a proposed system, or for the extension of an existing system, which will be in competition with, or a duplication of, any other system or portion of a system, unless it first determines that such other system or portion thereof is inadequate to meet the reasonable needs of the public or that the person operating the system is unable, refuses, or neglects to provide reasonably adequate service.

(b) When granting a certificate, the commission need not consider whether the issuance of the certificate is inconsistent with the local comprehensive plan of a county or municipality unless an objection to the certificate has been timely raised in an appropriate motion or application. If such an objection has been timely raised, the commission shall consider, but not be bound by the local comprehensive plan of the county or municipality.

(4) Revocation, suspension, transfer, or amendment of a certificate shall be subject to the provisions of this section and s. 367.041, except that the commission shall give notice as required in s. 367.041 when it initiates such action.

*History.*—s. 1, ch. 71-278, s. 3, ch. 76-168, s. 1, ch. 77-457, s. 23, ch. 78-95, ss. 7, 25, 26, ch. 80-99, ss. 2, 3, ch. 81-318, s. 1, ch. 84-130.

*Note.*—Repealed effective October 1, 1989, by s. 2, ch. 81-318, and scheduled for review pursuant to s. 11.61 in advance of that date.

**367.055 Application for deletion of territory.**—

(1) Each applicant for deletion of territory shall:

(a) Provide the information required by rule or order of the commission, which may include a detailed inquiry into the ability or lack of ability of the applicant to provide service, the need or lack of need for service in the territory sought to be deleted, and the existence or nonexistence of service from other sources within geographical proximity to the territory sought to be deleted;

(b) File the application fee required by s. 367.141;

(c) Submit an affidavit that the applicant has caused notice of its intention to file an application to be given:

1. By mail or personal delivery to the governing body of the county or municipality affected, to the public counsel, and to the commission; and

2. To such other persons and in such other manner as may be prescribed by commission rule.

(2) Notice shall be given no later than 30 days before the filing of the application.

(3) If the commission does not receive written objection to the application within 20 days following the official date of filing of the application, it may dispose of the application without hearing. If the applicant is dissatisfied with the disposition, the applicant shall be entitled to a proceeding under s. 120.57.

(4) If, within 20 days following the official date of filing, the commission receives from the public counsel or

(a) The notice shall be appropriately styled: Application for (Water) (Sewer) (Water and Sewer Certificate); Application for Transfer of (Water) (Sewer) (Water and Sewer) Certificate; Notice of Extension (or deletion) of (Water (Sewer) (Water and Sewer) Service.

(b) The notice shall state the name and address of the applicant and a description of the territory to be served, deleted or transferred.

(c) The notice shall be given at least thirty and no more than one hundred eighty days prior to the filing of any application for a certificate change pursuant to either s. 367.041 or 367.071, F.S.

(d) The notice shall be given at least thirty and no more than one hundred eighty days prior to the commencement of any construction associated with any proposed extension pursuant to s. 367.061, F.S. In the event of a prima facie valid protest to the notice the one hundred eighty day time limitation does not apply.

(e) The notice shall be given by certified mail or personal delivery to the governing body of the county in which the system is located, the governing body of any municipality within a 4-mile radius of the system, any water or sewer utility, within a 4-mile radius of the territory proposed to be served, area planning agency designated by the Clean Water Act, 33 U.S.C. 1288(2) (Chapter 758, Title II, section 308 P.L. 92-500, P.L. 94-217), the public counsel, and the Commission.

(f) The notice shall be published once each week for three consecutive weeks in a newspaper of general circulation in the territory proposed to be served.

(g) In the case of a transfer, additional notice of intention shall be given by mail or personal delivery to the customers of the system being transferred.

Specific Authority: 367.121(1), 367.041(4), F.S.

Law Implemented: 367.041(4), 367.051(4), 367.061(3), F.S.

History: New 4/5/81, formerly 25-10.061, Transferred from 25-10.0061 and Amended 11/9/86.

#### 25-30.031 Written Objection.

A written objection for all applications for certificate changes, except an extension pursuant to Section 367.061, Florida Statutes, is timely made if it is within 20 days of the last day of the required notice, or within 20 days of the official date of filing, whichever is later.

A written objection to an extension pursuant to section 367.061, F.S., is timely made if it is within 30 days of the last day of the required notices.

Specific Authority: 367.121(1), 367.041(4), F.S.

Law Implemented: 367.041(4), 367.051(2)(4), 367.061(3), F.S.

History: New 11/9/86.

#### 25-30.035 Applications for Certificates.

(1) Each utility subject to regulation by the Commission shall apply by completing an application form prescribed and supplied by the Commission, and submitting that completed application form and fifteen copies of it to the Director of Records and Reporting at 101 East Gaines Street, Tallahassee, Florida 32301-8153.

(2) The utility may file a combined application when the utility is seeking a certificate for a water and sewer system. However, the Commission will treat the combined application as if separate applications had been filed for the water system and for the sewer system, and the utility shall remit a separate application fee for each system.

(3) In addition to meeting the requirements of s. 367.041, F.S., the utility shall provide:

- (a) Its full, accurate name and address;
- (b) The character of its organization, i.e., corporation, partnership, individual proprietorship, association;
- (c) The name and addresses of any corporate officers and directors or the names and addresses of any persons owning an interest in the utility which is not a corporation;
- (d) The date the utility was established;
- (e) The number of its active connections by meter size and customer class and the related equivalent residential connections in operation on the date Chapter 367, F.S., became or will become applicable to the applicant;
- (f) Evidence that the utility owns the land where the utility treatment facilities are located or a copy of the agreement which provides for the continuous use of the land.
- (g) Consistent with a model tariff which the utility may obtain from the Director of the Division of Water and Sewer of the Commission, all rates, classifications, charges, rules and regulations for service furnished or to be furnished, and an explanation, if necessary, of any discrepancy or difference between rates to be charged and rates being charged on the date of the application. If the applicant has rates and charges in effect at the time of the application, a statement shall be submitted which indicates the date the rates were established, and by what authority they were established. If the applicant is a new utility seeking approval of initial rates, a cost study supporting the requested rates shall be submitted. A sample cost study and assistance in preparing the initial rates is available from the Division of Water and Sewer.
- (h) Territory proposed to be served, including:
  1. Detailed map showing existing lines and facilities and extensions thereof under construction and the territory served thereby, said map to be of sufficient scale and detail to enable correlation with a description of the territory professed to be served on the effective date of Chapter 367, Florida Statutes.
  2. Statement relating the capacity of existing lines and facilities and extensions thereof under construction.
- (i) Description of the territory to be served using metes and bounds with township, range and section references.
- (j) Serial number or numbers and respective date or dates of approval of engineering plans and specifications for any existing and/or proposed water or sewer system given by the Florida Department of Health and Rehabilitative Services, Division of Health. Permit number or numbers and respective date or dates of issuance of any permit for sewer systems issued by the Department of Environmental Regulation.
- (k) Detailed statement (balance sheet) of financial condition of the applicant showing all assets and liabilities of every kind and character, said statement prepared in accordance with Rule 25-30.115.
- (l) Statement of profit and loss (operating statement) of applicant for the preceding calendar or fiscal year, if applicant has operated for such period, or any lesser period if applicant has not operated for a full year.
- (m) Certified financial statements of the applicant shall be filed if they exist.
- (n) A statement listing those providing the principal funding to the utility, along with their financial statement and copies of any financial agreements.
- (o) A schedule showing the projected cost of the proposed system(s) by N.A.R.U.C. account numbers and the related capacity of each system in equivalent residential connections (ERCs) and gallons per day.

*Antennas Ex-4*

utility with the regulations of the DWSR or DER on a particular subject matter shall constitute compliance with such of these rules as relate to the same subject matter except as otherwise ordered by the Commission.

(6) The adoption of these rules shall not in any way relieve any utility from any of its duties under the laws of this State.

Specific Authority: 367.121, F.S.

Law Implemented: 367.121(1), F.S.

History: Amended 9/12/74, formerly 25-10.14, Transferred from 25-10.014 and Amended 11/9/86.

#### 25-30.020 Fees Required to be Paid by Water and Sewer Utilities.

(1) When a utility files any application for certification, extension, transfer, rate change, (except an index or pass-through), or authorization to collect or change service availability charges, the utility shall remit a fee.

(2) The amount of the fee to be filed pursuant to subsection (1) of this rule, shall be based upon the existing or proposed capacity of the system or extension as follows:

- (a) For systems or extensions serving from 1 to 999 persons, \$150;
- (b) For systems or extensions serving from 1,000 to 4,999 persons, \$900;
- (c) For systems or extensions serving from 5,000 to 9,999 persons, \$1,500;
- (d) For systems or extensions serving 10,000 or more persons, \$2,250.

Specific Authority: 367.141, F.S. as amended by Chapter 80-99, Laws of Florida.

Law Implemented: 367.141, F.S. as amended by Chapter 80-99, Laws of Florida.

History: New 10/29/80, formerly 25-10.11, Transferred from 25-10.011 and Amended 11/9/86.

#### 25-30.025 Official Date of Filing.

(1) The "Official date of filing" is the date on which a utility has filed completed sets of the minimum filing requirements for any application and paid the appropriate filing fee to the Director of Records and Reporting.

(2) The Director of the Division of Water and Sewer shall determine the official date of filing for any utility's application and, advise the Commission who will advise the applicant. The Commission shall resolve any dispute regarding the official date of filing.

Specific Authority: 367.121(1), 367.083, F.S.

Law Implemented: 367.083, F.S.

History: New 3/26/81, formerly 25-10.12, Transferred from 25-10.012 and Amended 11/9/86.

#### 25-30.030 Notice of Intention.

(1) When a utility intends to apply for a certificate of authorization, a transfer, a deletion, or an extension of service, the utility shall obtain from the Commission a list of water and sewer utilities entitled to receive notice. The request for the list shall include a legal description of the area to be covered in the application. A legal description is a description with township, range and land sections as specific references. It shall be easily plotted on an official county or city property tax map.

(2) Thereafter, the utility shall give notice of its intention in accordance with this subsection.

State of Florida



Commissioners:  
MICHAEL McK. WILSON, CHAIRMAN  
THOMAS M. BEARD  
BETTY EASLEY  
GERALD L. (JERRY) GUNTER  
JOHN T. HERNDON

WATER & SEWER DIRECTOR  
CHARLES H. HILL  
(904) 488-8482

## Public Service Commission

September 5, 1989

*Antevens's Ex 5*

Mr. Mark S. Williams  
President  
Conrock Utility Company  
701 North Florida Avenue  
Lakeland, Florida 33801

Re: Docket No. 890459-WU - Objection to notice of CONROCK UTILITY COMPANY of intent to apply for water certificate in Hernando County.

Dear Mr. Williams:

In reviewing the application filed in the above docket we find the following deficiencies:

1. The territory description (Exhibit A) was not included with the application.
2. Copies of the territory and system maps (Exhibits B and C) were not included with the application.
3. The affidavit that proper noticing was given in accordance with Rule 25-30.030, Florida Administrative Code, was not included with the application.
4. Evidence that the applicant owns the land where the utility treatment facilities will be located was not included with the application. According to your letter of July 19, 1989, the utility will be leasing the real property containing the wells from a trust controlled by two of the principal shareholders of Conrock. Please be advised that the Commission usually requires that such leases be long-term in nature, such as 99 years. A copy of the proposed lease should be provided as soon as possible for our review.

Letter to Mark S. Williams  
September 5, 1989  
Page 2

5. The application is in the name of Conrock Utility Company. However, according to the Secretary of State's office, the corporation is in the name of Conrock Utilities, Inc. Please explain this apparent discrepancy and advise whether the application should be in the name of Conrock Utilities, Inc.
6. The application lists three individuals as the corporate officers and directors. However, you did not include the titles of the officers. According to the Secretary of State's office, Mark Williams is listed as the director of the corporation and Michael J. Nolan is the registered agent. No other officers are listed. Please explain this apparent discrepancy.
7. The applicant includes Sumner A. Williams as one of the parties providing principal funding to the utility. However, according to the Secretary of State's office, Mr. Williams is not an officer of the corporation. Please provide a notarized affidavit from Mr. Williams stating that he is a principal shareholder of the utility and is willing to provide funding in its initial years of operation.
8. A tariff showing all proposed rates and charges of the utility as well as supporting documentation was not included with the application. According to the application this will be submitted later. Please advise when this information will be forthcoming. If the utility desires the Commission to grant a water certificate prior to the establishment of rates and charges, this request should be made in writing along with an explanation of the reason the request is made and a date certain by which the information necessary to establish rates will be provided.

Please provide the above information as soon as possible so that the processing of the application can be continued. If you have any questions, please feel free to contact this office.

Sincerely,



JoAnn Chase  
Regulatory Analyst

/jc(0510w)

cc: Conrock Utility Company  
23451 Mundon Hill Road  
Brooksville, Florida 34601

P. Michael Ruff, Hearing Officer  
Division of Administrative Hearings  
1230 Apalachee Parkway  
Tallahassee, Florida 32399-1550

Division of Legal Services (Schwartz)  
Division of Records and Reporting



# Conrock Utility Co.

Main Office:  
23451 Mundon Hill Road  
Brooksville, Fla. 34601  
(904) 796-2338

September 11, 1989

Branch Office:  
701 N. Florida Ave.  
Lakeland, Fla. 33801  
(813) 687-3435

Mr. Ghale C. Thomas, Sr.  
Rolling Acres Enterprises, Inc.

*Pat's Eye-1*  
~~\_\_\_\_\_~~

Dear Sir:

In regard to your concerns of future expansion of Conrock Utility Company into the section that you currently provide water utilities to, please be advised that we at Conrock, at this time nor in the near future, have any interest in expanding into ~~your franchised territory~~

*YOUR DESIGNATED AREA (BY THE PUBLIC SERVICE COMMISSION) WA*

I hope that this eliminates any concerns you may have towards our franchise. If I may be of any assistance to you in the future, please do not hesitate to contact me.

Sincerely yours,



Mark S. Williams  
President

8. Provide information on energy conservation through active media campaigns.

9. Promote the use and development of renewable energy resources.

10. Develop and maintain energy preparedness plans that will be both practical and effective under circumstances of disrupted energy supplies or unexpected price surges.

(13) HAZARDOUS AND NONHAZARDOUS MATERIALS AND WASTE.—

(a) *Goal.*—All solid waste, including hazardous waste, wastewater, and all hazardous materials, shall be properly managed, and the use of landfills shall be eventually eliminated.

(b) *Policies.*—

1. By 1995, reduce the volume of nonhazardous solid waste disposed of in landfills to 55 percent of the 1985 volume.

2. Encourage and expedite the development of environmentally safe hazardous waste treatment, storage, and disposal facilities.

3. Identify and clean up hazardous waste sites.

4. Enforce and strengthen regulation of the generation, storage, treatment, disposal, and transportation of hazardous waste.

5. Establish a system for identifying the location, type, and quantity of hazardous materials.

6. Require all hazardous waste generators to properly manage their own wastes.

7. Encourage the research, development, and implementation of recycling, resource recovery, energy recovery, and other methods of using garbage, trash, sewage, slime, sludge, hazardous waste, and other waste.

8. Encourage coordination of intergovernmental and interstate waste management efforts.

9. Identify, develop, and encourage environmentally sound wastewater treatment and disposal methods.

10. Develop a permanent system for households, small business, and other low-volume generators of hazardous waste to safely dispose of these materials in a convenient manner.

11. Encourage strict enforcement of hazardous waste laws and swift prosecution of violators.

(14) MINING.—

(a) *Goal.*—Florida shall protect its air, land, and water resources from the adverse effects of resource extraction and ensure that the disturbed areas are reclaimed or restored to beneficial use as soon as reasonably possible.

(b) *Policies.*—

1. Develop a comprehensive approach to the regulation of resource extraction.

2. Require mining operations to provide evidence of financial responsibility to ensure the reclamation of mined lands.

3. Require that disturbed areas, except those selected to be reclaimed by nature, be reclaimed to productive and beneficial use within a period determined by the state to be reasonable and practical.

4. Require state reclamation standards to be simple and well-coordinated and to be consistent with the protection of the public interest and conservation of natural resources.

5. Prohibit resource extraction which will result in an adverse effect on environmentally sensitive areas of the state which cannot be restored.

6. Minimize the effects of resource extraction upon ground and surface waters.

7. Protect human health from radiological or other adverse impacts associated with resource extraction.

8. Reduce the adverse impacts of waste disposal associated with resource extraction.

9. Require that mining and reclamation regulation recognizes the geological constraints and inherent differences in the types and locations of resources to be mined.

(15) PROPERTY RIGHTS.—

(a) *Goal.*—Florida shall protect private property rights and recognize the existence of legitimate and often competing public and private interests in land use regulations and other government action.

(b) *Policies.*—

1. Provide compensation, or other appropriate relief as provided by law, to a landowner for any governmental action that is determined to be an unreasonable exercise of the state's police power so as to constitute a taking.

2. Determine compensation or other relief by judicial proceeding rather than by administrative proceeding.

3. Encourage acquisition of lands by state or local government in cases where regulation will severely limit practical use of real property.

(16) LAND USE.—

(a) *Goal.*—In recognition of the importance of preserving the natural resources and enhancing the quality of life of the state, development shall be directed to those areas which have in place, or have agreements to provide, the land and water resources, fiscal abilities, and service capacity to accommodate growth in an environmentally acceptable manner.

(b) *Policies.*—

1. Promote state programs, investments, and development and redevelopment activities which encourage efficient development and occur in areas which will have the capacity to service new population and commerce.

2. Develop a system of incentives and disincentives which encourages a separation of urban and rural land uses while protecting water supplies, resource development, and fish and wildlife habitats.

3. Enhance the liveability and character of urban areas through the encouragement of an attractive and functional mix of living, working, shopping, and recreational activities.

4. Develop a system of intergovernmental negotiation for siting locally unpopular public and private land uses which considers the area of population served, the impact on land development patterns or important natural resources, and the cost-effectiveness of service delivery.

5. Encourage and assist local governments in establishing comprehensive impact-review procedures to evaluate the effects of significant development activities in their jurisdictions.

8. Provide information on energy conservation through active media campaigns.

9. Promote the use and development of renewable energy resources.

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2. Require mining operations to provide evidence of financial responsibility to ensure the reclamation of mined lands.

3. Require that disturbed areas, except those selected to be reclaimed by nature, be reclaimed to productive and beneficial use within a period determined by the state to be reasonable and practical.

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1. Provide compensation, or other appropriate relief as provided by law, to a landowner for any governmental action that is determined to be an unreasonable exercise of the state's police power so as to constitute a taking.

2. Determine compensation or other relief by judicial proceeding rather than by administrative proceeding.

3. Encourage acquisition of lands by state or local government in cases where regulation will severely limit practical use of real property.

**(16) LAND USE.—**

(a) *Goal.*—In recognition of the importance of preserving the natural resources and enhancing the quality of life of the state, development shall be directed to those areas which have in place, or have agreements to provide, the land and water resources, fiscal abilities, and service capacity to accommodate growth in an environmentally acceptable manner.

(b) *Policies.*—

1. Promote state programs, investments, and development and redevelopment activities which encourage efficient development and occur in areas which will have the capacity to service new population and commerce.

2. Develop a system of incentives and disincentives which encourages a separation of urban and rural land uses while protecting water supplies, resource development, and fish and wildlife habitats.

3. Enhance the liveability and character of urban areas through the encouragement of an attractive and functional mix of living, working, shopping, and recreational activities.

4. Develop a system of intergovernmental negotiation for siting locally unpopular public and private land uses which considers the area of population served, the impact on land development patterns or important natural resources, and the cost-effectiveness of service delivery.

5. Encourage and assist local governments in establishing comprehensive impact-review procedures to evaluate the effects of significant development activities in their jurisdictions.

6 Consider, in land use planning and regulation, the impact of land use on water quality and quantity; the availability of land, water, and other natural resources to meet demands; and the potential for flooding.

7 Provide educational programs and research to meet state, regional, and local planning and growth-management needs.

#### (17) DOWNTOWN REVITALIZATION.—

(a) *Goal.*—In recognition of the importance of Florida's developing and redeveloping downtowns to the state's ability to use existing infrastructure and to accommodate growth in an orderly, efficient, and environmentally acceptable manner, Florida shall encourage the centralization of commercial, governmental, retail, residential, and cultural activities within downtown areas.

##### (b) *Policies.*—

1 Provide incentives to encourage private sector investment in the preservation and enhancement of downtown areas.

2 Assist local governments in the planning, financing, and implementation of development efforts aimed at revitalizing distressed downtown areas.

3 Promote state programs and investments which encourage redevelopment of downtown areas.

#### (18) PUBLIC FACILITIES.—

(a) *Goal.*—Florida shall protect the substantial investments in public facilities that already exist and shall plan for and finance new facilities to serve residents in a timely, orderly, and efficient manner.

##### (b) *Policies.*—

1 Provide incentives for developing land in a way that maximizes the uses of existing public facilities.

2 Promote rehabilitation and reuse of existing facilities, structures, and buildings as an alternative to new construction.

3 Allocate the costs of new public facilities on the basis of the benefits received by existing and future residents.

4 Create a partnership among state government, local governments, and the private sector which would identify and build needed public facilities and allocate the costs of such facilities among the partners in proportion to the benefits accruing to each of them.

5 Encourage local government financial self-sufficiency in providing public facilities.

6 Identify and implement innovative but fiscally sound and cost-effective techniques for financing public facilities.

7 Encourage the development, use, and coordination of capital improvement plans by all levels of government.

8 Take into consideration, in the assessed value of property, increased property values directly related to infrastructure expenditures by government.

9 Identify and use stable revenue sources which are also responsive to growth for financing public facilities.

10 Encourage development of graywater systems to extend existing sewerage capacity.

#### (19) CULTURAL AND HISTORICAL RESOURCES —

(a) *Goal.*—By 1995, Florida shall increase access to its historical and cultural resources and programs and

encourage the development of cultural programs of national excellence.

##### (b) *Policies.*—

1 Promote and provide access throughout the state to performing arts, visual arts, and historic preservation and appreciation programs at a level commensurate with the state's economic development.

2 Develop a strategy for the construction of arts facilities based on an assessment which ranks regional and statewide capabilities and needs.

3 Ensure the identification, evaluation, and protection of archaeological folk heritage and historic resources properties of the state's diverse ethnic population.

4 Stimulate increased private-sector participation and support for historical and cultural programs.

5 Encourage the rehabilitation and sensitive, adaptive use of historic properties through technical assistance and economic incentive programs.

6 Ensure that historic resources are taken into consideration in the planning of all capital programs and projects at all levels of government and that such programs and projects are carried out in a manner which recognizes the preservation of historic resources.

#### (20) TRANSPORTATION.—

(a) *Goal.*—Florida shall direct future transportation improvements to aid in the management of growth and shall have a state transportation system that integrates highway, air, mass transit, and other transportation modes.

##### (b) *Policies.*—

1 By 1995, establish a high-speed rail system that links the Tampa Bay area, Orlando, and Miami.

2 Coordinate transportation investments in major travel corridors to enhance system efficiency and minimize adverse environmental impacts.

3 Promote a comprehensive transportation planning process which coordinates state, regional, and local transportation plans.

4 Allow flexibility in state and local participation in funding of public transit projects and encourage construction and use of toll facilities in order to meet transportation needs.

5 Ensure that existing port facilities and airports are being used to the maximum extent possible before encouraging the expansion or development of new port facilities and airports to support economic growth.

6 Promote timely resurfacing and repair of roads and bridges to minimize costly reconstruction and to enhance safety.

7 Develop a revenue base for transportation which is consistent with the goals and policies of this plan.

8 Encourage the construction and utilization of a public transit system, including, but not limited to, a high-speed rail system, in lieu of the expansion of the highway system, where appropriate.

9 Ensure that the transportation system provides Florida's citizens and visitors with timely and efficient access to services, jobs, markets, and attractions.

10 Promote ride sharing by public and private sector employees.

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for or acceptance of grants-in-aid from the United States Government.

(3) The department is authorized to adopt rules implementing the following grant programs, which rules shall be consistent with the laws, regulations, or guidelines governing the grant to the department:

(a) Criminal justice grant programs administered by the Bureau of Criminal Justice Assistance.

(b) Highway safety grant programs administered by the Bureau of Highway Safety.

(c) Grants under the federal programs known as the Coastal Energy Impact Program and the Outer Continental Shelf program administered by the Bureau of Land and Water Management.

(d) Federal housing assistance programs.

(e) Community Services Block Grant programs.

(f) Federal weatherization grant programs.

(g) The Jobs Impact Program of the federal Community Development Block Grant.

History.—s. 18, ch. 69-108, s. 1, ch. 70-121; s. 91, ch. 76-190; s. 9, ch. 81-147; s. 9, ch. 83-66; ss. 5, 49, ch. 83-334, s. 1, ch. 84-218; s. 4, ch. 84-241.

163.04 Energy devices based on renewable resources.—Notwithstanding any provision of this chapter or other provision of general or special law, the adoption of an ordinance by a governing body, as those terms are defined in this chapter, which prohibits or has the effect of prohibiting the installation of solar collectors, clotheslines, or other energy devices based on renewable resources is expressly prohibited. However, this provision shall not extend to building codes. No plat or subdivision plan shall be approved or renewed, nor shall the dedication of any street or other ground be accepted, if the deed restrictions, covenants, or similar binding agreements running with the land for the lots or parcels covered by the plat or subdivision prohibit or have the effect of prohibiting solar collectors, clotheslines, or other energy devices based on renewable resources from being installed on buildings erected on the lots or parcels covered by the plat or subdivision. In any litigation arising under the provisions of this section, the prevailing party shall be entitled to costs and reasonable attorney's fees. The legislative intent in enacting these provisions is to protect the public health, safety, and welfare by encouraging the development and use of renewable resources in order to conserve and protect the value of land, buildings, and resources by preventing the adoption of measures which will have the ultimate effect, however unintended, of driving the costs of owning and operating commercial or residential property beyond the capacity of private owners to maintain. This section shall not apply to patio railings in condominiums, cooperatives, or apartments.

History.—s. 8, ch. 80-163

## PART II

### COUNTY AND MUNICIPAL PLANNING AND LAND DEVELOPMENT REGULATION

163.3161 Short title; intent and purpose.

163.3164 Definitions.

163.3167 Scope of act.

163.3171 Areas of authority under this act.

163.3174 Local planning agency.

163.3177 Required and optional elements of comprehensive plan; studies and surveys.

163.3178 Coastal management.

163.3181 Public participation in the comprehensive planning process; intent.

163.3184 Process for adoption of comprehensive plan or amendment thereto.

163.3187 Amendment of adopted comprehensive plan.

163.3191 Evaluation and appraisal of comprehensive plan.

163.3194 Legal status of comprehensive plan.

163.3197 Legal status of prior comprehensive plan.

163.3201 Relationship of comprehensive plan to exercise of land development regulatory authority.

163.3202 Land development regulations.

163.3204 Cooperation by state and regional agencies.

163.3211 Conflict with other statutes.

163.3213 Administrative review of land development regulations.

163.3215 Standing to enforce local comprehensive plans through development orders.

163.3220 Short title; legislative intent.

163.3221 Definitions.

163.3223 Applicability.

163.3225 Public hearings.

163.3227 Requirements of a development agreement.

163.3229 Duration of a development agreement.

163.3231 Consistency with the comprehensive plan and land development regulations.

163.3233 Local laws and policies governing a development agreement.

163.3235 Periodic review of a development agreement.

163.3237 Amendment or cancellation of a development agreement.

163.3239 Recording of a development agreement.

163.3241 Modification or revocation of a development agreement to comply with subsequently enacted state and federal law.

163.3243 Enforcement.

163.3161 Short title; intent and purpose.—

(1) This part shall be known and may be cited as the "Local Government Comprehensive Planning and Land Development Regulation Act."

(2) In conformity with, and in furtherance of, the purpose of the Florida Environmental Land and Water Management Act of 1972, chapter 380, it is the purpose of this act to utilize and strengthen the existing role, processes, and powers of local governments in the establishment and implementation of comprehensive planning programs to guide and control future development.

(3) It is the intent of this act that its adoption is necessary so that local governments can preserve and enhance present advantages; encourage the most appropriate use of land, water, and resources, consistent with the public interest; overcome present handicaps; and deal effectively with future problems that may result from the use and development of land within their jurisdictions. Through the process of comprehensive plan-

ring, it is intended that units of local government can preserve, promote, protect, and improve the public health, safety, comfort, good order, appearance, convenience, law enforcement and fire prevention, and general welfare; prevent the overcrowding of land and avoid undue concentration of population; facilitate the adequate and efficient provision of transportation, water, sewerage, schools, parks, recreational facilities, housing, and other requirements and services; and conserve, develop, utilize, and protect natural resources within their jurisdictions.

(4) It is the intent of this act to encourage and assure cooperation between and among municipalities and counties and to encourage and assure coordination of planning and development activities of units of local government with the planning activities of regional agencies and state government in accord with applicable provisions of law.

(5) It is the intent of this act that adopted comprehensive plans shall have the legal status set out in this act and that no public or private development shall be permitted except in conformity with comprehensive plans, or elements or portions thereof, prepared and adopted in conformity with this act.

(6) It is the intent of this act that the activities of units of local government in the preparation and adoption of comprehensive plans, or elements or portions thereof, shall be conducted in conformity with the provisions of this act.

(7) The provisions of this act in their interpretation and application are declared to be the minimum requirements necessary to accomplish the stated intent, purposes, and objectives of this act; to protect human, environmental, social, and economic resources; and to maintain, through orderly growth and development, the character and stability of present and future land use and development in this state.

(8) It is the intent of the Legislature that the repeal of sections 163.160 through 163.315 by section 19 of chapter 85-55, Laws of Florida, shall not be interpreted to limit or restrict the powers of municipal or county officials, but shall be interpreted as a recognition of their broad statutory and constitutional powers to plan for and regulate the use of land. It is, further, the intent of the Legislature to reconfirm that sections 163.3161 through 163.3215 have provided and do provide the necessary statutory direction and basis for municipal and county officials to carry out their comprehensive planning and land development regulation powers, duties, and responsibilities.

*History.—ss. 1, 2, ch. 75-257, ss. 1, 20, ch. 85-55*

#### 163.3164 Definitions.—As used in this act:

(1) "Administration Commission" means the Governor and the Cabinet, and for purposes of this chapter the commission shall act on a simple majority vote, except that for purposes of imposing the sanctions provided in s. 163.3184(8), affirmative action shall require the approval of the Governor and at least three other members of the commission.

(2) "Area" or "area of jurisdiction" means the total area qualifying under the provisions of this act, whether this be all of the lands lying within the limits of an incor-

porated municipality, lands in and adjacent to incorporated municipalities, all unincorporated lands within a county, or areas comprising combinations of the lands in incorporated municipalities and unincorporated areas of counties.

(3) "Comprehensive plan" means a plan that meets the requirements of ss. 163.3177 and 163.3178.

(4) "Developer" means any person, including a governmental agency, undertaking any development as defined in this act.

(5) "Development" has the meaning given it in s. 380.04.

(6) "Development order" means any order granting, denying, or granting with conditions an application for a development permit.

(7) "Development permit" includes any building permit, zoning permit, subdivision approval, rezoning, certification, special exception, variance, or any other official action of local government having the effect of permitting the development of land.

(8) "Governing body" means the board of county commissioners of a county, the commission or council of an incorporated municipality, or any other chief governing body of a unit of local government, however designated, or the combination of such bodies where joint utilization of the provisions of this act is accomplished as provided herein.

(9) "Governmental agency" means:

(a) The United States or any department, commission, agency, or other instrumentality thereof.

(b) This state or any department, commission, agency, or other instrumentality thereof.

(c) Any local government, as defined in this section, or any department, commission, agency, or other instrumentality thereof.

(d) Any school board or other special district, authority, or governmental entity

(10) "Land" means the earth, water, and air, above, below, or on the surface, and includes any improvements or structures customarily regarded as land.

(11) "Land use" means the development that has occurred on the land, the development that is proposed by a developer on the land, or the use that is permitted or permissible on the land under an adopted comprehensive plan or element or portion thereof, land development regulations, or a land development code, as the context may indicate.

(12) "Local government" means any county or municipality.

(13) "Local planning agency" means the agency designated to prepare the comprehensive plan required by this act.

(14) A "newspaper of general circulation" means a newspaper published at least on a weekly basis and printed in the language most commonly spoken in the area within which it circulates, but does not include a newspaper intended primarily for members of a particular professional or occupational group, a newspaper whose primary function is to carry legal notices, or a newspaper that is given away primarily to distribute advertising.

(15) "Parcel of land" means any quantity of land capable of being described with such definiteness that its lo-

adjacent to incorporated lands within a municipality or counties of the lands incorporated areas

a plan that meets the requirements of s. 163.3178.

in, including a governing body's development as defined in s. 163.3178.

giving given it in s. 163.3178.

any order granting, or an application for such an order.

any building permit, rezoning, certificate of appropriateness, or any other official action having the effect of permitting such development.

a board of county commissioners or council, or any other chief governing body, however described, where joint action is required to be accomplished.

department, commission, or other official body thereof.

commission, agency, or other official body thereof.

defined in this section, or any other instrument or instrument.

local district, authority, or other official body thereof.

and air, above, and below, or any improvement or structure as defined in s. 163.3178.

development that has occurred or is proposed by a municipality or county that is permitted or prohibited by the comprehensive plan, land development code, or other official instrument.

county or municipality.

the agency designated in the comprehensive plan required by s. 163.3178.

ulation" means a plan or program adopted on a weekly basis and which is publicly spoken in the plan or program but does not include a plan or program of a particular municipality, a newspaper, a newspaper, or a newspaper to distribute advertisements.

ability of land capability, or any other official instrument.

cations and boundaries may be established, which is designated by its owner or developer as land to be used, or developed as, a unit or which has been used or developed as a unit.

(16) "Person" means an individual, corporation, governmental agency, business trust, estate, trust, partnership, association, two or more persons having a joint or common interest, or any other legal entity.

(17) "Public notice" or "due public notice" as used in connection with the phrase "public hearing" or "hearing to be held after due public notice" means publication of notice of the time, place, and purpose of such hearing at least twice in a newspaper of general circulation in the area, with the first publication not less than 14 days prior to the date of the hearing and the second to be at least 5 days prior to the hearing.

(18) "Regional planning agency" means the agency designated by the state land planning agency to exercise responsibilities under law in a particular region of the state.

(19) "State land planning agency" means the Department of Community Affairs.

(20) "Structure" has the meaning given it by subsection 380.031(19).

(21) "Land development regulation commission" means a commission designated by a local government to develop and recommend, to the local governing body, land development regulations which implement the adopted comprehensive plan and to review land development regulations, or amendments thereto, for consistency with the adopted plan and report to the governing body regarding its findings. The responsibilities of the land development regulation commission may be performed by the local planning agency.

(22) "Land development regulations" means ordinances enacted by governing bodies for the regulation of any aspect of development and includes any local government zoning, rezoning, subdivision, building construction, or sign regulations or any other regulations controlling the development of land, except that its definition shall not apply in s. 163.3213.

(23) "Public facilities" means major capital improvements, including, but not limited to, transportation, sanitary sewer, solid waste, drainage, potable water, educational, parks and recreational, and health systems and facilities.

HISTORY.—s. 1, ch. 75-257, § 49; ch. 79-190, § 10; ch. 81-167, § 10; ch. 83-36, § 2, ch. 85-26

#### 163.3167 Scope of act.—

(1) The several incorporated municipalities and counties shall have power and responsibility:

(a) To plan for their future development and growth.

(b) To adopt and amend comprehensive plans, or elements or portions thereof, to guide their future development and growth.

(c) To implement adopted or amended comprehensive plans by the adoption of appropriate land development regulations or elements thereof.

(d) To establish, support, and maintain administrative instruments and procedures to carry out the provisions and purposes of this act.

The powers and authority set out in this act may be employed by municipalities and counties individually or jointly by mutual agreement in accord with the provisions of this act and in such combinations as their common interests may dictate and require.

(2) Each local government shall prepare a comprehensive plan of the type and in the manner set out in this act or shall prepare amendments to its existing comprehensive plan to conform it to the requirements of this part in the manner set out in this part. Each local government, in accordance with the procedures in s. 163.3184, shall submit its complete proposed comprehensive plan or its complete comprehensive plan as proposed to be amended to the state land planning agency by the date specified in the rule adopted by the state land planning agency pursuant to this subsection. The state land planning agency shall, prior to October 1, 1987, adopt a schedule of local governments required to submit complete proposed comprehensive plans or comprehensive plans as proposed to be amended. Such schedule shall specify the exact date of submission for each local government, shall establish equal, staggered submission dates, and shall be consistent with the following time periods:

(a) Beginning on July 1, 1988, and on or before July 1, 1990, each county that is required to include a coastal management element in its comprehensive plan and each municipality in such a county; and

(b) Beginning on July 1, 1989, and on or before July 1, 1991, all other counties or municipalities.

Nothing herein shall preclude the state land planning agency from permitting by rule a county together with each municipality in the county from submitting a proposed comprehensive plan earlier than the dates established in paragraphs (a) and (b). Any county or municipality that fails to meet the schedule set for submission of its proposed comprehensive plan by more than 90 days shall be subject to the sanctions described in s. 163.3184(1)(a) imposed by the Administration Commission. Notwithstanding the time periods established in this subsection, the state land planning agency may establish later deadlines for the submission of proposed comprehensive plans or comprehensive plans as proposed to be amended for a county or municipality which has all or a part of a designated area of critical state concern within its boundaries; however, such deadlines shall not be extended to a date later than July 1, 1991, or the time of de-designation, whichever is earlier.

(3) When a local government has not prepared all of the required elements or has not amended its plan as required by subsection (2), the regional planning agency having responsibility for the area in which the local government lies shall prepare and adopt by rule, pursuant to chapter 120, the missing elements or adopt by rule amendments to the existing plan in accordance with this act by July 1, 1989, or within 1 year after the dates specified or provided in subsection (2) and the state land planning agency review schedule, whichever is later. The regional planning agency shall provide at least 90 days' written notice to any local government whose plan it is required by this subsection to prepare, prior to initiating the planning process. At least 90 days before the



adoption by the regional planning agency of a comprehensive plan, or element or portion thereof, pursuant to this subsection, the regional planning agency shall transmit a copy of the proposed comprehensive plan, or element or portion thereof, to the local government and the state land planning agency for written comment. The state land planning agency shall review and comment on such plan, or element or portion thereof, in accordance with s. 163.3184(6). Subsections (6), (7), and (8) of s. 163.3184 shall be applicable to the regional planning agency as if it were a governing body. Existing comprehensive plans shall remain in effect until they are amended pursuant to subsection (2), this subsection, or s. 163.3187.

(4) A municipality established after the effective date of this act shall, within 1 year after incorporation, establish a local planning agency, pursuant to s. 163.3174, and prepare and adopt a comprehensive plan of the type and in the manner set out in this act within 3 years after the date of such incorporation. A county comprehensive plan shall be deemed controlling until the municipality adopts a comprehensive plan in accord with the provisions of this act. If, upon the expiration of the 3-year time limit, the municipality has not adopted a comprehensive plan, the regional planning agency shall prepare and adopt a comprehensive plan for such municipality.

(5) Any comprehensive plan, or element or portion thereof, adopted pursuant to the provisions of this act, which but for its adoption after the deadlines established pursuant to previous versions of this act would have been valid, shall be valid.

(6) When a regional planning agency is required to prepare or amend a comprehensive plan, or element or portion thereof, pursuant to subsections (3) and (4), the regional planning agency and the local government may agree to a method of compensating the regional planning agency for any verifiable, direct costs incurred. If an agreement is not reached within 6 months after the date the regional planning agency assumes planning responsibilities for the local government pursuant to subsections (3) and (4) or by the time the plan or element, or portion thereof, is completed, whichever is earlier, the regional planning agency shall file invoices for verifiable, direct costs involved with the governing body. Upon the failure of the local government to pay such invoices within 90 days, the regional planning agency may, upon filing proper vouchers with the State Comptroller, request payment by the State Comptroller from unencumbered revenue or other tax sharing funds due such local government from the state for work actually performed, and the State Comptroller shall pay such vouchers; however, the amount of such payment shall not exceed 50 percent of such funds due such local government in any one year.

(7) A local government that is being requested to pay costs may seek an administrative hearing pursuant to s. 120.57 to challenge the amount of costs and to determine if the statutory prerequisites for payment have been complied with. Final agency action shall be taken by the state land planning agency. Payment shall be withheld as to disputed amounts until proceedings under this subsection have been completed.

(8) Nothing in this act shall limit or modify the rights of any person to complete any development that has been authorized as a development of regional impact pursuant to chapter 380 or who has been issued a final local development order and development has commenced and is continuing in good faith.

(9) The Reedy Creek Improvement District shall exercise the authority of this part as it applies to municipalities, consistent with the legislative act under which it was established, for the total area under its jurisdiction.

(10) Nothing in this part shall supersede any provision of ss. 341.321-341.386.

History.—s. 4, ch. 75-257; s. 1, ch. 77-174; s. 3, ch. 85-55; s. 6, ch. 86-191; s. 1, ch. 87-322.

#### 163.3171 Areas of authority under this act.—

(1) A municipality shall exercise authority under this act for the total area under its jurisdiction. Unincorporated areas adjacent to incorporated municipalities may be included in the area of municipal jurisdiction for the purposes of this act if the governing bodies of the municipality and the county in which the area is located agree on the boundaries of such additional areas, on procedures for joint action in the preparation and adoption of the comprehensive plan, on procedures for the administration of land development regulations or the land development code applicable thereto, and on the manner of representation on any joint body or instrument that may be created under the joint agreement. Such joint agreement shall be formally stated and approved in appropriate official action by the governing bodies involved.

(2) A county shall exercise authority under this act for the total unincorporated area under its jurisdiction or in such unincorporated areas as are not included in any joint agreement with municipalities established under the provisions of subsection (1). In the case of chartered counties, the county may exercise such authority over municipalities or districts within its boundaries as is provided for in its charter.

(3) Combinations of municipalities within a county, or counties, or an incorporated municipality or municipalities and a county or counties, or an incorporated municipality or municipalities and portions of a county or counties may jointly exercise the powers granted under the provisions of this act upon formal adoption of an official agreement by the governing bodies involved pursuant to law. No such official agreement shall be adopted by the governing bodies involved until a public hearing on the subject with due public notice has been held by each governing body involved. The general administration of any joint agreement shall be governed by the provisions of s. 163.01 except that when there is conflict with this act the provisions of this act shall govern.

History.—s. 5, ch. 75-257; s. 4, ch. 85-55.

#### 163.3174 Local planning agency.—

(1) The governing body of each local government, individually or in combination as provided in s. 163.3171, shall designate and by ordinance establish a "local planning agency," unless the agency is otherwise established by law. The governing body may designate itself as the local planning agency pursuant to this subsection. The governing body shall notify the state land plan-



163.3191, Florida Statutes, shall be transmitted to the Department at the time of the governing body's transmitted of related amendments pursuant to Subsection 163.3191(4), Florida Statutes; and

(g) A comprehensive plan, element, or plan amendment applicable to a designated area of critical state concern shall not become effective until reviewed and approved as provided in Section 180.05, Florida Statutes, and any rules promulgated pursuant to that section.

Specific Authority 163.3177(9), (10) FS. Law Implemented 163.3167(2), (3), (4), 163.3171, 163.3174, 163.3177, 163.3178, 163.3181, 163.3184, 163.3187, 163.3191 FS. History-New 3-3-86, Amendment \_\_\_\_\_.

**9J-5.006 FUTURE LAND USE ELEMENT.** The purpose of the future land use element is the designation of future land use patterns as reflected in the goals, objectives and policies of the local government comprehensive plan elements. Future land use patterns are depicted on the future land use map or map series within the element.

(1) **EXISTING LAND USE DATA REQUIREMENTS.** The element shall be based upon the following data requirements pursuant to Subsection 9J-5.005(2).

(a) The following generalized land uses shall be shown on the existing land use map or map series:

1. Residential use;
2. Commercial use;
3. Industrial use;
4. Agricultural use;
5. Recreational use;
6. Conservation use;
7. Educational use;
8. Public buildings and grounds;
9. Other public facilities;
10. Vacant or undeveloped land; and
11. Historic resources.

(b) The following natural resources shall be shown on the

existing land use map or map series:

1. Existing and planned waterwells and cones of influence, where these exist;
2. Beaches and shores, including estuarine systems;
3. Rivers, bays, lakes, floodplains, and harbors;
4. Wetlands; and
5. Minerals and soils.

(c) The approximate acreage and the general range of density or intensity of use shall be provided in tabular form for the gross land area included in each existing land use category.

(d) If determined by the local government to be appropriate, subparagraphs (1)(a)7., (1)(a)8., and (1)(a)9. may be shown as one land use category on the existing land use map or map series.

(e) If the local government has determined it necessary to utilize other categories of the public and private use of land, such categories of land use shall be shown on the existing land use map or map series, and clearly identified in the legend.

(f) The existing land use map or map series shall:

1. Indicate the generalized land uses of land adjacent to its boundaries; municipalities shall also indicate unincorporated enclaves located within their corporate limits; and
2. Identify any areas that fall within a designated area of critical state concern, pursuant to Section 380.05, Florida Statutes; and

(g) Population projections as prescribed in the general requirements section of this Chapter.

(2) LAND USE ANALYSIS REQUIREMENTS. The element shall be based upon the following analyses which support the comprehensive plan pursuant to Subsection 9J-5.005(2).

(a) An analysis of the availability of facilities and services as identified in the traffic circulation and sanitary sewer, solid waste, drainage, potable water and natural groundwater aquifer recharge elements, to serve existing land uses included in the data requirements above and land for which

development orders have been issued:

(b) An analysis of the character and magnitude of existing vacant or undeveloped land in order to determine its suitability for use, including where available:

1. Gross vacant or undeveloped land area, as indicated in Paragraph (1)(b);
2. Soils;
3. Topography;
4. Natural resources; and
5. Historic resources;

(c) An analysis of the amount of land needed to accommodate the projected population, including:

1. The categories of land use and their densities or intensities of use,
2. The estimated gross acreage needed by category, and
3. A description of the methodology used;

(d) An analysis of the need for redevelopment including:

1. Renewal of blighted areas, and
2. Elimination or reduction of uses inconsistent with the community's character and proposed future land uses;

(e) An analysis of the proposed development and redevelopment of flood prone areas based upon a suitability determination from Flood Insurance Rate Maps, Flood Hazard Boundary Maps, or other most accurate information available.

**(3) REQUIREMENTS FOR FUTURE LAND USE GOALS, OBJECTIVES AND POLICIES.**

(a) The element shall contain one or more goal statements which establish the long-term end toward which land use programs and activities are ultimately directed.

(b) The element shall contain one or more specific objectives for each goal statement which address the requirements of Paragraph 163.3177(6)(a), Florida Statutes, and which:

1. Coordinate future land uses with the appropriate topography, soil conditions, and the availability of facilities and services;
2. Encourage the redevelopment and renewal of blighted

areas;

3. Encourage the elimination or reduction of uses inconsistent with the community's character and future land uses;

4. Ensure the protection of natural resources and historic resources;

5. Coordinate coastal area population densities with the appropriate local or regional hurricane evacuation plan, when applicable;

6. Coordinate with any appropriate resource planning and management plan prepared pursuant to Chapter 380, Florida Statutes, and approved by the Governor and Cabinet;

7. Discourage the proliferation of urban sprawl;

8. Ensure the availability of suitable land for utility facilities necessary to support proposed development; and

9. Encourage the use of innovative land development regulations which may include provisions for planned unit developments and other mixed land use development techniques.

(c) The element shall contain one or more policies for each objective which address implementation activities for the:

1. Regulation of land use categories included on the future land use map or map series; subdivisions; signage; and areas subject to seasonal or periodic flooding;

2. Provision for compatibility of adjacent land uses;

3. Provision that facilities and services meet the locally established level of service standards, and are available concurrent with the impacts of development, or that development orders and permits are specifically conditioned on the availability of the facilities and services necessary to serve the proposed development; and that facilities that provide utility service to the various land uses are authorized at the same time as the land uses are authorized;

4. Provision for drainage and stormwater management, open space, and safe and convenient on-site traffic flow, considering needed vehicle parking;

5. Provision of mixed land use designation policies, if locally desired;

6. Protection of potable water wellfields, and environmentally sensitive land;

7. Establishment of standards for densities or intensities of use for each future land use category; and

8. Identification, designation and protection of historically significant properties.

(4) FUTURE LAND-USE MAP.

(a) The proposed distribution, extent, and location of the following generalized land uses shall be shown on the future land use map or map series:

1. Residential use;
2. Commercial use;
3. Industrial use;
4. Agricultural use;
5. Recreational use;
6. Conservation use;
7. Educational use;
8. Public buildings and grounds;
9. Other public facilities; and
10. Historic district boundaries and designated historically significant properties meriting protection.

(b) The following natural resources shall be shown on the future land use map or map series:

1. Existing and planned waterwells and cones of influence, where these exist;
2. Beaches and shores, including estuarine systems;
3. Rivers, bays, lakes, floodplains, and harbors;
4. Wetlands; and
5. Minerals and soils.

(c) Mixed use categories of land use are encouraged if the local government determines it needs to utilize another land use category consisting of combinations of the land use categories identified above, and if used, policies for the implementation of

6. Establishment of principles and criteria guiding the location of group homes and foster care facilities licensed or funded by the Florida Department of Health and Rehabilitative Services that foster non-discrimination, and encourage the development of community residential alternatives to institutionalization including supporting infrastructure and public facilities;

7. Consideration of the utilization of federal, state and local subsidy programs; and

8. Provision of relocation housing.

Specific Authority 163.3177(9), (10) FS. Law Implemented 163.3177(1), (5), (6) (5), (8), (9), (10) FS. History-New 3-6-86, Amended \_\_\_\_\_.

9J-5.011 SANITARY SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER AND NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT. The purpose of the element is to provide for necessary public facilities and services correlated to future land use projections.

(1) SANITARY, SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER, AND NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT DATA AND ANALYSIS REQUIREMENTS. The element shall be based upon the following data and analyses requirements pursuant to Subsection 9J-5.005(2).

(a) Each local government shall address in the data and analyses required by this subsection those facilities which provide service within the local government's jurisdiction.

(b) Local governments which provide facilities to serve areas within other local government jurisdictions shall also address those facilities in the data and analyses required by this subsection using data from the comprehensive plan for those areas for the purpose of projecting facility needs as required in this subsection.

(c) For shared facilities, each local government shall indicate the proportional capacity of the systems allocated to serve its jurisdiction.

(d) Public and private sanitary sewer facilities, solid waste facilities, drainage facilities, and potable water facilities, as defined in Section 93-5.003 shall be identified.

(e) The following data shall be included for the facilities identified above:

1. The entity having operational responsibility for the facility;

2. The geographic service area of the facility and the predominant types of land uses served by the facility;

3. The design capacity of the facility;

4. The current demand on the facility capacity; and

5. The level of service provided by the facility.

(f) Existing and projected sanitary sewer, solid waste, drainage and potable water facility needs shall be identified based on the following analyses:

1. A facility capacity analysis, by geographic service area, indicating capacity surpluses and deficiencies for:

a. Existing conditions, based on the facility design capacity and the current demand on the facility capacity;

b. The initial increment of the planning period, at least five years in length, based on the projected demand at current local level of service standards for the facility, resulting from development permitted by local government, the projected population, land use distributions as indicated in the future land use element, and available surplus capacity identified in the existing conditions capacity analysis; and

c. The remaining increment of the planning period, in the same manner as the initial incremental capacity analysis, using the appropriate projected population and future land use distributions for the increment and any available surplus capacity identified in the initial five-year incremental capacity analysis;

2. The general performance of existing facilities, based on best available data, evaluating the adequacy of the current level of service provided by facilities, the general condition and expected life of the facilities, and the impact of the facilities

upon adjacent natural resources:

3. An analysis of the problems and opportunities for sanitary sewer, solid waste, drainage and potable water facilities replacement, expansion and new facility siting; and

4. An analysis of soil surveys for areas served by septic tanks and an explanation of suitability of those soils for such facilities shall be included, based upon best available data from the United States Department of Agriculture, Soil Conservation Service.

(g) Major natural drainage features and natural groundwater aquifer recharge areas within the local government's jurisdiction shall be identified, and a topographic map shall be included depicting any areas adopted by the regional water management districts as prime groundwater recharge areas for the Floridan or Biscayne aquifers.

(h) Existing regulations and programs which govern land use and development of natural drainage features and groundwater recharge areas, or portions thereof, shall be identified and assessed and the strengths and deficiencies in those regulations and programs in maintaining the functions of the natural drainage features and groundwater recharge areas shall be assessed.

(2) REQUIREMENTS FOR SANITARY SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER, AND NATURAL GROUNDWATER AQUIFER RECHARGE GOALS, OBJECTIVES AND POLICIES.

(a) The element shall contain one or more goal statements which establish the long-term end toward which programs and activities are ultimately directed.

(b) The element shall contain one or more specific objectives for each goal statement which address the requirements of Paragraph 163.2177(6)(c), Florida Statutes, and which:

1. Address correcting existing facility deficiencies;
2. Address coordinating the extension of, or increase in the capacity of, facilities to meet future needs;
3. Address maximizing the use of existing facilities and discouraging urban sprawl;



4. Address conserving potable water resources; and
5. Address protecting the functions of natural groundwater recharge areas and natural drainage features.

(c) The element shall contain one or more policies for each objective which address implementation activities for:

1. Establishing priorities for replacement, correcting existing facility deficiencies and providing for future facility needs;

2. Establishing and utilizing level of service standards provided by facilities as provided by Subsection 9J-5.005(3) and Subparagraph 9J-5.015(3)(b)3. of this Chapter, such as:

- a. Average and peak flow design capacity for sanitary sewer facilities;
- b. Design capacity for solid waste facilities;
- c. Design storm return frequency for drainage facilities capacity;
- d. Minimum design flow, storage capacity, and pressure for potable water facilities;

3. Establishing and utilizing potable water conservation strategies and techniques; and

4. Regulating land use and development to protect the functions of natural drainage features and natural groundwater aquifer recharge areas.

Specific Authority 163.3177(9), (10) FS. Law Implemented 163.3177(1), (5), (6)(c), (8), (9), (10) FS. History-New 3-6-86, Amended \_\_\_\_\_.

9J-5.012 COASTAL MANAGEMENT. The purpose of this element is to plan for and where appropriate restrict development activities where such activities would damage or destroy coastal resources, and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.

(1) Local governments required by law to prepare a coastal management element are listed in the document entitled "Local Governments Required to Include Coastal Management Elements in their Comprehensive Plans," dated July 1, 1986, and available from the Department upon request. The local governments listed

*Ret. City of Brooksville*  
*Ex-2*

**Sec. 17-161. Transfer fee for meter deposits.**

Any user of the city utility system, water and sewer, whether residential or commercial, who wishes to transfer the deposits as required under this division, for any reason permitted within this chapter, shall be charged a transfer fee of five dollars (\$5.00) per deposit transfer; such transfer fee shall be deemed for the purpose of government administrative cost.

(Code 1974, § 26-33)

**Secs. 17-162--17-175. Reserved.**

**ARTICLE V. CONNECTION AND SERVICE  
OF CITY WATER AND WASTEWATER  
FACILITIES OF CITY**

**Sec. 17-176. Short title.**

This article shall be known and may be cited as "An ordinance providing for connection to water and wastewater facilities of the City of Brooksville, Florida."

(Code 1974, § 26-131)

**Sec. 17-177. Purpose.**

(a) The purpose of this article is to establish procedures and policies for obtaining water and/or wastewater service from the city in its service area, as defined in this section and as reflected in Exhibit "A" which is on file in the city clerk's office, and, by this reference, made a part hereof, and the payment of connection fees and the issuance of commitments for the services requested.

(b) For the purposes of this article, the "service area" of the city shall be defined as all real property within the corporate limits of the city, and all real property in an unincorporated area or zone adjacent to the existing city limits, which unincorporated area or zone shall not extend for more than five (5) miles from the corporate limits of the city, all in accordance with F.S. section 180.02, and the city's comprehensive plan.

(Code 1974, § 26-132)

**Sec. 17-178. Administration.**

This article shall be administered by the city public works department under the supervision of the city manager.

(Code 1974, § 26-133)

Supp. No. 1

**Sec. 17-179. Jurisdiction.**

This article shall apply to all real property within the city's service area, as defined in section 17-177, and as reflected in Exhibit "A," which is on file in the city clerk's office, unless the city consents to allow Hernando County or franchise service areas to provide such service under such terms and conditions as the city may set forth.

(Code 1974, § 26-134)

**Sec. 17-180. Service of utilities to consumers outside of city limits.**

The city council shall have the power to supply water, electricity or gas, for domestic or other purposes, or the products of any other city-owned public utility services, to individuals, firms or corporations outside the city limits, and to charge and collect reasonable rates, prices and compensation therefor.

(Laws of Fla., 1931, Ch. 15103, § 2)

**Sec. 17-181. Availability of service.**

(a) A franchise application to construct privately owned and operated facilities, within the unincorporated service area, as defined by F.S. section 180.02, shall be submitted to the city. If service cannot be provided by the city or the county, or by an existing franchise previously approved by either governing entity, then such ownership of the system shall be governed by city ordinance.

(b) The city will, within sixty (60) days of receipt of the franchise application, review the franchise application and advise the franchise applicant of such terms and conditions as will be required for the issuance of a franchise agreement. This report will be returned within sixty (60) days, unless extended by action of the city council or request of the petitioning franchise applicant.

(c) Where it is deemed beneficial to the applicant and the city, an agreement may be entered into for the construction and dedication of the facility by the applicant to the city, in lieu of issuance of a franchise.

(d) The availability of service for all applicants shall be determined as follows:

- (1) Upon receipt of an application for water and/or sewer service, the utilities division

**CITY OF BROOKSVILLE  
COMPREHENSIVE PLAN  
(ADOPTABLE PORTION)  
GOALS, OBJECTIVES AND POLICIES  
MAY 1, 1989**

**Prepared by the Withlacoochee Regional Planning Council  
under an agreement with the City of Brooksville**

**CHAPTER I**  
**FUTURE LAND USE ELEMENT**

## FUTURE LAND USE ELEMENT

### Goals, Objectives and Policies

Goal: Ensure that the character, magnitude, and location of all land uses provides a system for orderly growth and development that achieves a balanced natural, physical, and economic environment, and enhances the quality of life of all residents.

Objective 1: Consistent with the time frames delineated by Chapter 163, Florida Statutes, the City shall prepare, adopt, implement and enforce land development regulations which effectively guide and manage future growth.

Policy 1-1: The City shall adopt a unified Land Development Code which will regulate: all land uses shown on the Future Land Use Map, the subdivision of land, the location, size and the height of signages, and areas subject to seasonal or periodic flooding.

Policy 1-2: The City shall develop and adopt specific ordinances which provide for drainage and stormwater management and protect potable water well fields and aquifer recharge areas.

Policy 1-3: The adopted, unified development code shall ensure properly designed and safe ingress/egress is available to all sites, and that on-site traffic flow and parking shall be adequate to meet annual maximum daily requirements.

Policy 1-4: The adopted, unified Land Development Code shall ensure and provide that development orders shall be issued only upon certification that transportation facilities, water, sewer, and solid waste, required services are available to serve proposed development at the adopted level of service, or are committed to be available concurrent with a developments' completion. ✓

Policy 1-5: In conformance with Objective 1, above, the City shall establish, adopt and implement density and intensity standards for all future land uses, as applicable, and as indicated on the Future Land Use Element Map and the adopted City Zoning Map. Specifically, the Residential Land Use subcategories shall delineate single family densities at 1-6 dwelling units/acre, and Mobile Home/Multi-Family densities at 2-18 dwelling units/acre. All other applicable land use intensities shall remain as provided in Table I-1A.

Objective 2: Consistent with the time frames delineated by Chapter 163, Florida Statutes, the City shall provide and adopt a City Zoning Map that ensures future development and redevelopment activities are located in appropriate areas of the City as illustrated on the adopted, Future Land Use Map; which shall be consistent with sound planning principals, and provides for ✓

control of urban sprawl in conformance with directives of the adopted Future Land Use Element. ✓

Policy 2-1: The City shall encourage the use of innovative land use development techniques such as planned development projects, zero lot line patio home subdivisions, and cluster housing techniques.

Policy 2-2: Concentrate higher density and intensity growth in and around areas which are adequately served by transportation facilities, public utilities, and community services and facilities.

Policy 2-3: Locate future land uses at densities and intensities which will control urban sprawl and leap-frog development that unduly depletes the physical, social, and fiscal resources of the City. ✓

Policy 2-4: High density and intensity growth shall not be permitted in conservation areas, or those areas best suited for continued low density and intensity development.

Policy 2-5: Residential subdivisions shall be designed to include an efficient system of internal circulation, including the provision of external collector streets, where applicable, to feed the traffic onto external arterial roads and highways.

Policy 2-6: Develop a broad diversity of residential densities to satisfy the housing preferences and income levels of all residents.

Policy 2-7: Protect residential areas from incompatible commercial and industrial uses.

Policy 2-8: Provide residential areas of sufficient density to economically support adequate community facilities.

Policy 2-9: Require central water and sewer systems for new urban developments, which are designed to be compatible with future public utility systems. ✓

Policy 2-10: Discourage isolated residential developments that require higher service costs through proper implementation of policies 2-2, 2-3, 2-5, 2-8, 2-11, 2-13, and other appropriate, adopted policies of this plan.

Policy 2-11: Direct urban growth by providing community facilities in prime expansion areas, and withhold these facilities from areas in which growth is to be discouraged.

Policy 2-12: Approve the location of new development on the basis of the land's ability to support such uses without adversely affecting the natural environment through use of proper site plan review procedures and appropriate mitigation measures.

Policy 2-13: Prior to approval of locating future development, evaluate the impact of development on existing land use, in relation to employment, transportation, and essential services such as sewer, water, police and fire protection, and schools. ✓

Policy 2-14: Promote development of commercial areas which are convenient to the public, and well integrated into the transportation system, and surrounding land uses. ✓

Policy 2-15: Encourage commercial activities to locate in designated commercial nodes through the use of proper zoning district designation as appropriate to the intensity and type of use to be permitted as directed in the Future Land Use Element. ✓

Policy 2-16: Discourage commercial activities from locating in wetlands, 100-year flood plains and delineated conservation areas through the use of proper site plan review procedures and adopted flood plain management objectives and policies of this plan.

Policy 2-17: Locate planned shopping centers and developments serving regional and community-wide markets at the intersections of existing and proposed arterial roadways, in order to improve accessibility and minimize unnecessary traffic.

Policy 2-18: Locate neighborhood shopping facilities within defined neighborhoods, situated on collector roads.

Policy 2-19: Concentrate heavy commercial activities and buffer them from residential and open space areas.

Policy 2-20: Require adequate off-street parking and loading facilities in all commercial areas.

Policy 2-21: The City shall through application of proper development review procedures permit industrial development which is compatible with the natural environment, while planning the development of prime industrial land in accordance with anticipated development trends.

Policy 2-22: Specifically permit the type, intensity, and location of industrial development in such a way as to foster a diversified economic base, while not being detrimental to the city's aesthetics and the quality of life through appropriate zoning district designation and adherence to proper planning principles.

Policy 2-23: Designate the expansion of industry in those areas already having industrial amenities.

Policy 2-24: Disallow industry from locating in residential areas.

The available capacity can be used to estimate the amount of developed land which can be accommodated at the adopted level of service. The overall density of residential land can be estimated as the number of housing units (2,837) divided by the acreage consumed by residential dwelling (952) with a resultant value of 2.98 dwelling units per acre. Assuming that each dwelling unit constitutes a household and approximately 2.53 persons reside in each household an estimated number of acres to be served by the water system can be calculated.

Using a conservative estimate of the amount of water available on a daily basis the maximum demand residual capacity 2.79 mgd of water is available. At the existing level of service peak consumption rate water is consumed at a rate of 167 gallons per capita per day. The peak demand residual capacity (2.79 mgd) divided by the peak level of service rate (167 gpcd) yields an additional number of persons which can be served by the potable water system (16,706). Dividing the estimated additional population which can be served by the average household size (2.53 persons) an estimated number of housing units can be derived (6,603). At a dwelling unit density equal to the existing one (2.98), approximately 2,609 acres could be served by the existing water system. This estimate assumes that no non-residential domestic uses are consuming water. The estimated number of acres, and number of persons which could be served would decrease in relation to the type of commercial, industrial, or institutional use which consumes water in varying amounts. Of course this estimate is "rough" and the total 2.79 mgd availability is subject to revision of the Southwest Florida Water Management District Consumptive Use Permit, and expansion of the potable water distribution system.

In summary, the potable water system has a relatively plentiful supply of raw water which is available for use by approximately 16,706 persons, or 2,609 acres at current residential domestic rates of use and dwelling unit densities. Commercial, industrial, or institutional consumption of available capacities would significantly alter these estimates of persons and acres which could be served by the system. Furthermore, nearly all potable water which is withdrawn must return through the sanitary sewer system which currently does not have available capacity. So while the potable water supply is sufficient for immediate land development needs, the ability to develop land is actually limited by the City's sanitary sewer system which does not have a surplus of capacity at this time.

Map I-9 pictorially provides the City of Brooksville Potable Water System and components.



**CHAPTER IV**  
**SANITARY SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER, AND**  
**NATURAL GROUND WATER AQUIFER RECHARGE ELEMENT**

## Sanitary Sewer Sub-element

### I. Introduction

This sub-element is devoted to the discussion of wastewater treatment facilities in the City. The City currently operates two treatment plants, Croom Road and the School Street plants, which provide secondary treatment of wastewater by the contact stabilization process.

The purpose of this element is to analyse existing and future demand for wastewater treatment, and to then set a level of service standard which must be maintained as the City grows in population and developed area.

In recent years wastewater flows have both equaled and exceeded the design capacity of both treatment plants. A portion of this overloading has been due to inflow/infiltration conditions.

Recently, the City has sold bonds, which in combination with user fees will assist the City in: expanding usable capacity at the School Street plant, repairing system components that are responsible for a great deal of inflow/infiltration, and constructing a new advanced treatment plant.

### II. Existing Conditions

#### A. Brooksville 201 Facilities Plan.

The City of Brooksville adopted a public facilities plan in 1978. This ("201") plan was developed under the provisions of the Federal Water Pollution Control Act, as a means to guide the improvement of sewage collection and treatment facilities. This plan provided an economical and environmentally sound solution for sewage treatment in the City of Brooksville, as well as the area immediately adjacent to the City (roughly a five mile radius), which was expected to have an urban density by the year 2000. The 201 study and plan analyzed existing conditions; projected future conditions, and developed various alternate waste management concepts; analyzed the alternate concepts for treatment results, cost effectiveness, and environmental impacts; and provided a program of implementation for the selected alternate capacity expansion concept.

#### B. Geographic Service Area and Operational Responsibility.

The City of Brooksville owns and operates two sewage treatment plants (STP), the Croom Road plant and the School Street plant.

7. Rehabilitation of the collection system to reduce infiltration and inflow
8. Instrumentation for treatment plants and pump stations

Policy 1-1: The City shall correct all existing capacity deficiencies in the potable water and sanitary sewer systems before additional demand (above 1987 levels) is added to the system.

Policy 1-2: The City shall minimize urban sprawl by not extending water or sewer service to development which is beyond the City's Statutory Service Area. ✓

Policy 1-3: Upon adoption of this plan the City's Utility Division of Public Works will submit monthly reports to the Department of Planning and Development which state the daily flows for the water and sewer system, and monthly volume of solid waste collected, with a statement of available capacity for each facility. ✓

Policy 1-4: The City Department of Planning and Development shall update the estimate of City population and the estimate of unincorporated population served by City facilities on an annual basis.

Policy 1-5: At the time of development permit application the estimated consumption of water and production of both sewage flow and solid waste shall be determined by the Department of Planning and Development, and a development permit shall be issued under the condition that a Certificate of Occupancy will be issued only if water, sanitary sewer, and solid waste facility capacities are available, (or that capacity requirements for wastewater can otherwise be satisfied under the conditions of Policies 1-7 and 2-2,) (at the time a Certificate of Occupancy is sought), to serve the proposed development at a level of service which is no less than the adopted level of service standards.

Policy 1-6: Prior to issuance of a development permit, the Department of Planning and Development shall require evidence of a stormwater management permit issued by the Southwest Florida Water Management District for all types of developments which are required to obtain such a permit under Florida Administrative Code 40D-4 and 40D-40.

Policy 1-7: Package treatment plants and other on-site sewage disposal shall be permitted only when sewage plant capacity is unavailable, however these package treatment plants shall only be allowed on an interim basis until such time as centralized facility capacity will be available as designated in the City's 5-year Capital Improvement Program. In such situations all sewer connection lines shall be installed at the time of package plant installation so as to



B. Sanitary Sewer

Goal 2: To provide sanitary sewer service which treats wastewater in an environmentally safe manner, and which promotes resource recovery through the year 2000.

Objective 2-1: The City shall negotiate with Hernando County to require that any development in the urban fringe that will be served by package treatment plants, shall be such that the plants shall either be interim in nature or can eventually be linked as a regional system and be publicly owned and operated. ✓

Policy 2-1: Effluent from all City owned treatment plants shall meet all biological and chemical standards of Florida Chapter 17-6.

Policy 2-2: Septic tanks shall be discouraged within the city limits by permitting their use only where soil conditions can provide safe wastewater treatment, and only on an interim basis when the City's central sewer system does not have available capacity, and only until the City's central sewer system has available capacity (including line capacity). At the time that the City increases sanitary sewer capacity the City shall require mandatory hook-up as is authorized in Chapter 10D-6 of the Florida Administrative Code. Development permitted under these conditions shall be required to connect to the central system under a prioritized mandate, in chronological order of septic tank permit issuance. If a subdivision has been developed under such conditions, the priority of the entire subdivision for purposes of connection to the central system, shall be based on the earliest issued septic tank permit in the subdivision. The maximum amount of waste which shall be disposed in septic tanks permitted under these conditions shall not exceed 2500 gallons per acre per day.

C. Solid Waste

Goal 3: The City shall collect and dispose of non-hazardous solid waste in a manner which is environmentally safe and which promotes resource recovery.

Objective 3-1: By 1991 the City will use the Eweson Digester as its primary solid waste disposal method, while indigestible, unrecyclable, or excess non-hazardous wastes will be disposed of at the Hernando County Landfill site or another landfill site.

Objective 3-2: Future solid waste disposal needs shall be met by expansion of the Eweson Digester facility or some other recycling based disposal method.

Objective 3-3: Urban sprawl shall be discouraged and utilization of the Eweson Digester maximized, by requiring

|              |       |     |       |       |
|--------------|-------|-----|-------|-------|
| Outside City | 338   | 122 | .041  | .058  |
| Total        | 6,236 | 122 | .761  | 1.074 |
| <u>1995</u>  |       |     |       |       |
| Within City  | 7,306 | 122 | .891  | 1.258 |
| Outside City | 338   | 122 | .041  | .058  |
| Total        | 7,644 | 122 | .932  | 1.316 |
| <u>2000</u>  |       |     |       |       |
| Within City  | 8,706 | 122 | 1.062 | 1.499 |
| Outside City | 338   | 122 | .041  | .058  |
| Total        | 9,044 | 122 | 1.103 | 1.557 |

Source: Withlacoochee Regional Planning Council,  
population projection estimates, 1988.

Prepared by: WRPC, 1988.

TABLE IV A-7

CAPACITY ASSESSMENT  
PROJECTED DEMAND AND RESIDUAL CAPACITY

CROOM ROAD AND SCHOOL STREET SEWAGE TREATMENT PLANTS

1990-2000

| CAPACITY                 | 1990        |                   | 1995        |                   | 2000        |                   |
|--------------------------|-------------|-------------------|-------------|-------------------|-------------|-------------------|
|                          | PEAK DEMAND | RESIDUAL CAPACITY | PEAK DEMAND | RESIDUAL CAPACITY | PEAK DEMAND | RESIDUAL CAPACITY |
| <u>Croom Road STP</u>    |             |                   |             |                   |             |                   |
| Unincorporated           |             |                   |             |                   |             |                   |
| .060 MGD <sup>1</sup>    | .085        | -0.025            | .085        | -0.025            | .085        | -0.025            |
| City                     |             |                   |             |                   |             |                   |
| .315 MGD <sup>2</sup>    | .462        | -0.147            | .572        | -0.257            | .682        | -0.367            |
| Total                    |             |                   |             |                   |             |                   |
| .375 MGD                 | .547        | -0.172            | .657        | -0.282            | .767        | -0.392            |
| <u>School Street STP</u> |             |                   |             |                   |             |                   |
| Unincorporated           |             |                   |             |                   |             |                   |
| .041 MGD <sup>3</sup>    | .058        | -0.017            | .058        | -0.017            | .058        | -0.017            |
| City                     |             |                   |             |                   |             |                   |
| .709 MGD <sup>4</sup>    | 1.016       | -0.307            | 1.258       | -0.549            | 1.499       | -0.790            |
| Total                    |             |                   |             |                   |             |                   |
| .750 MGD                 | 1.074       | -0.324            | 1.316       | -0.566            | 1.557       | -0.807            |

Objective 4-4: Upon adoption of this Plan the City shall that all development that is obligated under the requirements Chapters 40D-4 and 40D-40 of the Florida Administrative Code obtained the proper stormwater permits from the Southwest Water Management District before a development order is

Objection 6:

Policy 4-2 has been revised to include an effective date and referenced codes.

Policy 4-2: Post-development amounts of stormwater run not exceed pre-development amounts at the adopted level service design standards which shall be no less than those specified by the Florida Administrative Code Chapter 40D-40 as effective on March 1, 1988.

Potable Water Sub-element

Objection 1:

Insert to page IV-D-14 below III. Needs Assessment and Projected Average and Maximum Daily Demand.

A. Proportional Capacity

Since the City provides potable water service to some unincorporated area surrounding the City, all projected demand versus capacity have been calculated with an all capacity set aside for the unincorporated area. The available capacity which has been reserved to serve the unincorporated area is stated in Table IV-D-11.

TABLE IV D-11

CAPACITY ASSESSMENT  
 PROJECTED DEMAND AND RESIDUAL CAPACITY  
 POTABLE WATER TREATMENT PLANTS

1990-2000

| CAPACITY<br>(mgd)                    | 1995                    |                               | 2000                    |                               |
|--------------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|
|                                      | PEAK<br>DEMAND<br>(mgd) | RESIDUAL<br>CAPACITY<br>(mgd) | PEAK<br>DEMAND<br>(mgd) | RESIDUAL<br>CAPACITY<br>(mgd) |
| Unincorporated<br>0.630 <sup>1</sup> | 0.63                    | 0                             | 0.63                    | 0                             |
| City 5.778 <sup>2</sup>              | 2.67                    | 3.108                         | 3.18                    | 2.598                         |
| Total<br>6.408                       | 3.30                    | 3.108                         | 3.81                    | 2.598                         |

Source: Withlacoochee Regional Planning Council Estimates, 1988.

Prepared by: WRPC, 1988.

<sup>1</sup>The proportional capacity that the City has allocated for use in areas outside of the City Limits.

<sup>2</sup>The proportional capacity that the City has allocated for use in areas inside of the City limits.



**CHAPTER VIII**  
**CAPITAL IMPROVEMENTS ELEMENT**

TABLE VIII-11  
5-Year Schedule of Improvements  
Fiscal Years 1989-90 through 1993-94

| Project Description  | Schedule | Projected Cost | General Location    | Revenue Source | Consistency With Other Elements |
|--|----------|----------------|---------------------|----------------|---------------------------------|
| <b>Sewage Treatment Facilities</b>                           |          |                |                     |                |                                 |
| 1. New .750 mgd Treatment Plant                              | 1989-90  | \$1,650,000    | Western City fringe | 1988 Bond      | Yes                             |
| 2. Upgrading and Renovation of School Street Plant           | 1988-89  | \$ 625,000     | School St.          | "              | "                               |
| 3. Effluent Force Main to Florida Crushed Stone Site         | 1989-90  | \$ 650,000     | S.R. 50             | "              | "                               |
| 4. Upgrading and Expansion of Howell Ave. Pump Station       | "        | \$ 600,000     | Howell Ave.         | "              | "                               |
| 5. Renovation of Palm Ave. Pump Station                      | "        | \$ 27,000      | Palm Ave.           | "              | "                               |
| 6. Renovation of School Bus Garage Pump Station              | "        | \$ 35,000      | School Complex      | "              | "                               |
| 7. Renovation of the "A" & "D" Street Lift Stations          | "        | \$ 39,000      | "A" & "D" Sta.      | "              | "                               |
| 8. Reroute S.R. 50 Pump Station                              | "        | \$ 170,000     | S.R. 50             | "              | "                               |
| 9. Sewer Collection System Rehabilitation                    | "        | \$ 97,000      | City-wide           | "              | "                               |
| 10. Sewage Treatment and Pump Station System Instrumentation | "        | \$ 32,500      | "                   | "              | "                               |
| 11. Additional Sewer Apparatus                               | "        | \$ 40,000      | "                   | "              | "                               |

TABLE VIII-11 (Cont.)  
 5-Year Schedule of Improvements  
 Fiscal Years 1989-90 through 1993-94

| Project Description                                 | Schedule | Projected Cost | General Location   | Revenue Source                        | Consistency With Other Elements |
|---|----------|----------------|--------------------|---------------------------------------|---------------------------------|
| <b>Potable Water Facilities</b>                     |          |                |                    |                                       |                                 |
| 12. Master Plan and Hydraulic Model                 | 1989-90  | \$ 100,000     | City-wide          | 1988 Bond                             | Yes                             |
| 13. Lamar Treatment Plant Renovation                | "        | \$ 250,000     | Lamar Plant        | "                                     | "                               |
| 14. Damac Treatment Plant Rehabilitation Permitting | "        | \$ 150,000     | Damac Well         | "                                     | "                               |
| 15. Standby Power Facilities for Damac and Lamar    | "        | \$ 200,000     | Damac/Lamar        | "                                     | "                               |
| 16. System Control and Monitoring Telemetry         | "        | \$ 100,000     | Storage/Tmt.       | "                                     | "                               |
| 17. Water Distribution System Rehab.                | "        | \$ 347,300     | City-wide          | "                                     | "                               |
| 18. Hope Hill Storage Tank Restoration              | "        | \$ 45,000      | Hope Hill          | "                                     | "                               |
| 19. Distribution System Isolation Valves            | "        | \$ 38,000      | City-wide          | "                                     | "                               |
| 20. Additional Water Apparatus                      | "        | \$ 41,000      | Tmt. Plants        | "                                     | "                               |
| <b>Recreation facilities</b>                        |          |                |                    |                                       |                                 |
| 21. 1 Swimming Pool                                 | 1989-90  | \$400,000      | Existing Park Site | General Fund & Federal Matching Grant |                                 |
| 22. 1 Multi-use Court                               | "        | \$ 22,000      | "                  | General Fund                          |                                 |

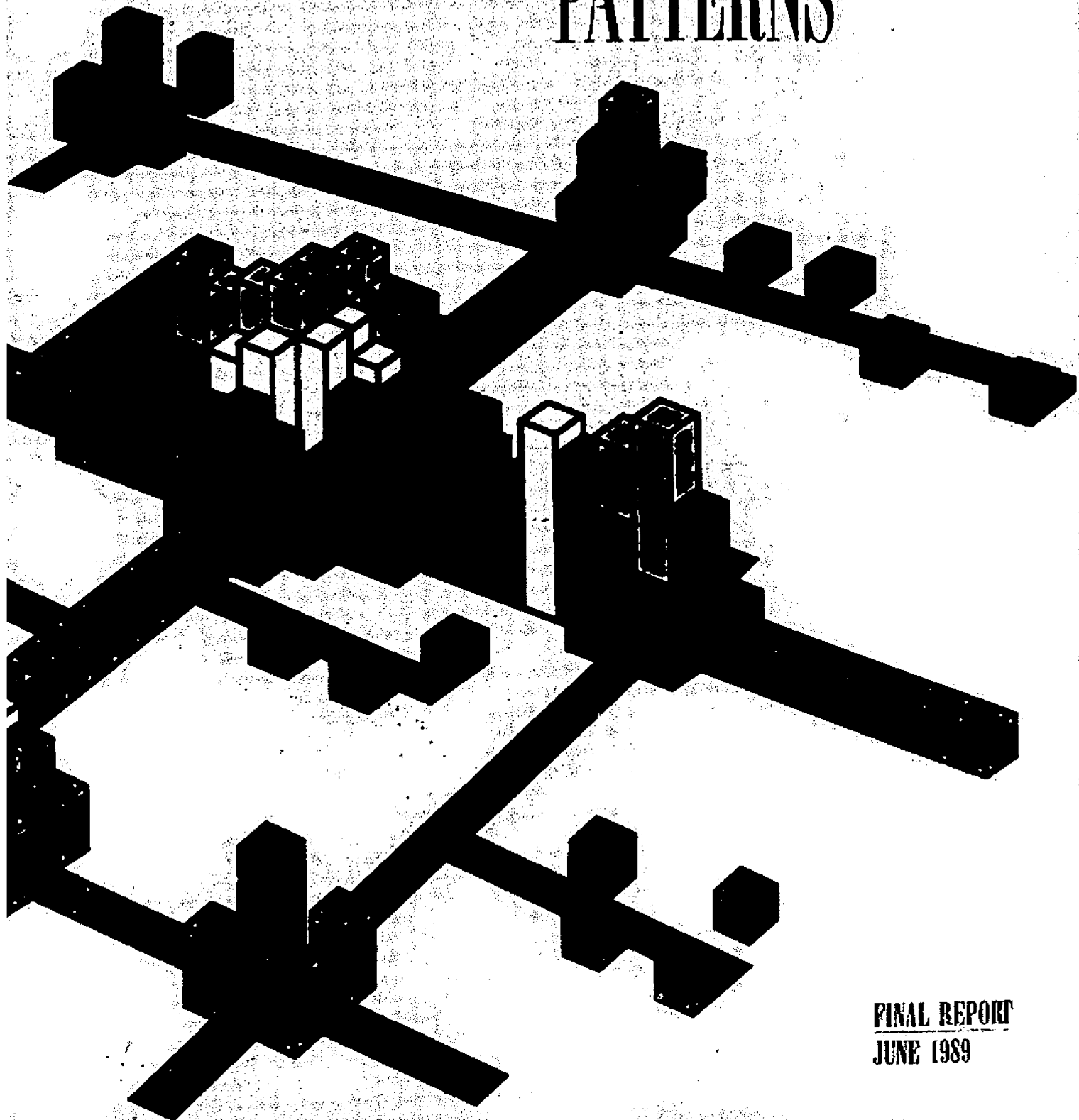
Source: City of Brooksville, Finance Department, 1988.  
 Prepared by: Withlacoochee Regional Planning Council, 1988.

*Pet. City of Knoxville  
EX-3*

GOVERNOR'S TASK FORCE ON

# URBAN GROWTH

# PATTERNS



**FINAL REPORT**  
**JUNE 1989**

## EXECUTIVE SUMMARY

Florida is a rapidly growing state. The majority of this growth is occurring in unincorporated areas at low densities, resulting in a rate of land urbanization that is far outpacing our population growth. Florida is also facing tremendous urban sprawl — a development pattern characterized by scattered, unplanned, low density development that is not functionally related to adjacent land uses. The proliferation of urban sprawl is creating urban growth patterns which are degrading the overall quality of life in Florida and increasing fiscal pressures on our state and local governments.

Florida must combat urban sprawl. This final report contains a comprehensive package of forty-three recommendations addressing this goal. First and foremost among these recommendations is a call for local governments to establish urban service areas and urban expansion areas in their local government comprehensive plans. It is essential that Florida's governments designate areas that are appropriate to accommodate future urban growth and commit to provide the infrastructure and services needed to support those areas. Preservation of our valuable and fragile natural and environmental resources depends on promoting concentrated urban development patterns and reducing low density sprawl. To be effective, this strategy also requires effective economic and regulatory incentives to promote concentrated urban development. In addition, local governments should use full marginal cost pricing policies to allow the market to shape more efficient development patterns.

Second, Florida needs a strategic state urban policy. Florida must determine the nature of its future urban form and, due to limited resources, prioritize its investments to achieve this overall development pattern. Major transportation investments should be located and implemented consistent with this strategic state urban policy.

Third, land development regulations need to be innovative and flexible to enhance our urban environ-

ment. Creation of cost-effective and efficient urban areas depends on bringing about a balance of jobs and housing and implementing plans that will result in functional, integrated areas that have an appropriate mix of housing, employment, shopping, social, and recreational opportunities. Local building codes and parking regulations should be re-examined to ensure they do not actually preclude achievement of desirable development.

Fourth, Florida must preserve its future through aggressive acquisition of urban, beachfront, waterfront, rural, and environmentally sensitive lands.

Fifth, Florida needs to attack urban sprawl through improved intergovernmental coordination. Local planning should be conducted from a county-wide perspective. The relationship between local transportation planning and metropolitan planning organizations must be strengthened. Florida's regional planning councils should also be examined to ensure an effective regional role exists in managing our state's future growth.

Finally, emphasis must be given to integrated transportation planning, specifically including public transit, if Florida's urban areas are to preserve their urban mobility as they continue to grow. Non-structural approaches to increasing transportation capacity, especially programs that reduce peak traffic demand, should be encouraged. Parking policy and the establishment of transportation level of service standards should also be used to help achieve efficient land use patterns.

This executive summary highlights key recommendations in this final report. Each of these major recommendation areas are fully discussed in the following text, along with additional important recommendations for action to eliminate urban sprawl.



## INTRODUCTION

The issue of urban sprawl is a complex and highly charged subject. The bottom line comes down to this, however — will Florida begin to determine where urban growth should and should not go and prioritize its public investments to support these decisions...or will Florida choose not to do so — and perhaps risk an acceptable future quality of life? We unhesitatingly advocate the former response to our growth and provide in this report a bold program for accomplishing this goal.

Florida has experienced and will continue to face tremendous population growth due to its favorable climate, natural beauty, and strong economy. Florida was home to nearly 2.8 million persons in 1950. By 1988, this number had grown to 12.4 million. Medium projections predict 15.4 million persons will live in Florida in the year 2000, an increase of a magnitude greater than Florida's entire population in 1950. The question, therefore, is not whether Florida will grow, but how and where?

Governor Bob Martinez created the Governor's Task

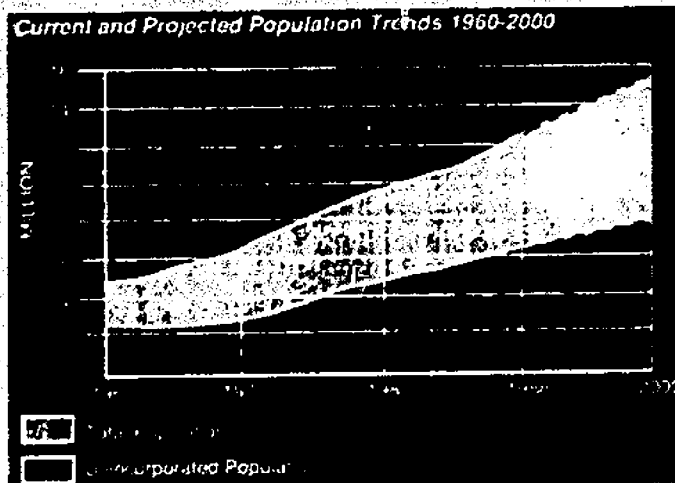
Force on Urban Growth Patterns in May 1988 by Executive Order 88-109, which has been since amended by Executive Order 88-216. The Task Force was created in response to his concern over the sprawling development patterns changing the face of Florida. Florida's development patterns have placed tremendous financial pressure on this state and our local governments, which are continually faced with chasing growth to provide urban services. Our growth patterns have also begun to decrease our quality of life and to increase frustrations associated with everyday living.

Governor Martinez challenged the Task Force to examine state, regional, and local programs influencing Florida's urban

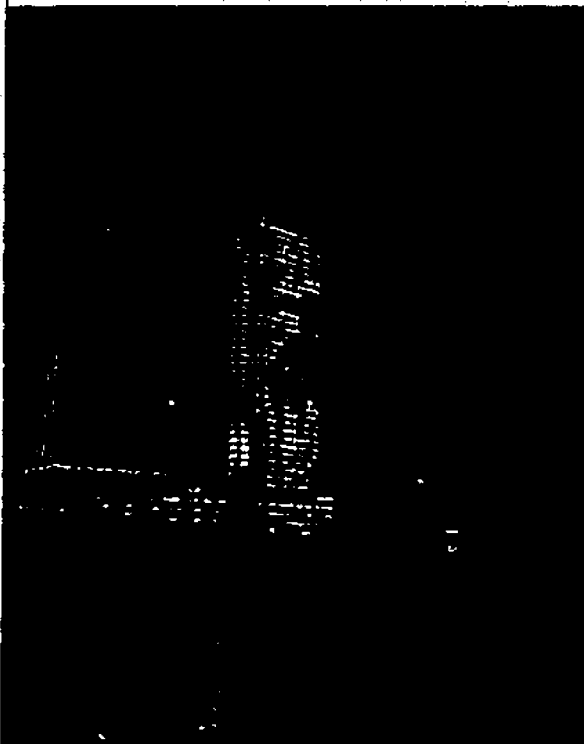
growth patterns and develop recommendations to use those or new programs to promote more efficient, compact urban development patterns. The Task Force was also charged with attempting to identify the costs of sprawl and the savings that can be realized from reducing and slowing sprawl.

The Task Force strongly believes that Florida must act to provide current and future residents with real choices in where and how to live. After thirteen months of intensive debate, the Task Force finds that most of Florida's future growth will be accommodated through sprawling, low density development on raw land, with jobs and housing moving away from existing urban centers, unless decisive action is taken at every level of government and by the private sector to reverse this trend. The "chase for capacity" spawned by our historic lack of attention to Florida's urban infrastructure, especially roadways, must be reversed.

To accomplish this objective, Florida must encourage and promote the development of vibrant and functional urban cities and downtowns, fiscally efficient suburban and ex-



urban areas, and rural residential areas while still protecting the environmental resources and agricultural industries so important to Florida's economy. Current development trends are straining Florida's financial resources, threatening the ability to provide diverse and traditional lifestyles, and risking our natural and environmental assets.



Consumers looking for new residences look for amenities, security, schools, low density, and community identity. Corporations building homes want low upfront costs, easy land assembly, certainty over infrastructure availability, volume sales, and long-term value creation. Implementation of an effective program to designate areas to receive concentrated urban development and prioritize public investments to support those areas, combined with meaningful economic and

regulatory incentives to support infill development and redevelopment, can help existing urban areas to meet these diverse demands, promote the creation of new concentrated urban development nodes, and overcome any anti-urban bias that may exist in our growth management system. Education of local elected officials, public sector planners and regulators, the development community, and existing residents on the benefits of compact development patterns and higher densities will also be essential for accomplishing this objective.

Continued sprawling development patterns present risks to Florida's fragile and valuable natural environment and strong agricultural economy. Recreational opportunities, potable water supplies, wildlife habitats, and sensitive environmental areas will suffer from

uncontrolled, low density development if areas appropriate for urban growth are not identified.

We agree with Al Burt, the noted observer of Florida, who stated in a speech to the Commission on the Future of Florida's Environment on January 4, 1989:

"In history, the job for pioneers was to conquer natural Florida — to tame it, to make it habitable. That was done, perhaps overdone. Now our job is the opposite: to preserve the spirit of Florida, to

nourish that natural and wild side. To save those soothing natural vistas and green, growing things. To make the necessities and conveniences of a large population compatible with the true nature of this special place, Florida."

In addition to land development concerns, Florida faces a different type of crisis that threatens its high quality of life. Many residents have enjoyed a high quality of life while living in low density, primarily residential areas in the past. Due to the impact of this development pattern on the environment, the ability to provide services, and the cost of infrastructure, this cannot be the prevalent pattern of the future as Florida continues to grow. Our development patterns have created one dimensional communities, urban areas without a coherent community image that fail to create a sense of place or a feeling of community identity. Urban form and design considerations need to move to the forefront. Development of mixed-use, integrated and distinct communities is necessary to meet the needs of Florida's current and future residents and maintain and afford a high quality of life in the future.

It is far from too late for Florida to reverse current development trends. With a land area of 54,153 square miles, Florida can continue to accommodate new growth if it does so wisely. It is time for action, however, to take



control of the destiny of our state. Florida needs to create livable communities, diverse and functional urban spaces interspersed with large and small green areas.

Recognizing the diversity of the different regions of the state, the public and private sectors must plan for and build more efficient development patterns if we are to meet current infrastructure backlogs, provide for future services concurrent with the impacts of the developments using those services, and protect our valuable environmental resources. This is a challenge and responsibility for us all. At stake is the quality of life in our state at and after the turn of the century, along with the quality of life of Florida's environmental and economic systems.

### Efficient Urban Growth Patterns

In an effort to identify and quantify public costs attributable to alternative development patterns and the savings which could result from the adoption of policies, regulations, and other actions designed to reduce sprawling, inefficient development in the state of Florida, the Task Force commissioned a detailed study of eight areas in Florida. The consultants conducting the study classified each of the eight study areas as being within an area representing one of five different overall urban growth patterns: scattered, compact, contiguous, linear, and satellite.

Real areas in Florida in vari-

*" In history, the job for pioneers was to conquer natural Florida — to tame it, to make it habitable. That was done, perhaps overdone. Now our job is the opposite: to preserve the spirit of Florida, to nourish that natural and wild side. To save those soothing natural vistas and green, growing things. To make the necessities and conveniences of a large population compatible with the true nature of this special place, Florida."*

ous stages of development are being studied, a distinct departure from most prior studies in this field which have utilized hypothetical development pattern scenarios.

In each of the case study areas, a small detailed study area (ranging from just under one square mile to four square miles) is being examined to assess the external, or off-site, capital and operating costs of providing eight urban services to the developments in the detailed study area. The services being examined are: roadways, wastewater, potable water, education, law enforcement, fire and emergency services, solid waste, and parks and recreation. The study is also identifying the revenues attributable to the land and developments within each study area. This cost-revenue analysis will allow an evaluation of the extent to which each detailed study area "pays its own way" and thus could be said to represent an efficient develop-

ment pattern.

Three basic factors relating to urban development patterns are generally considered to affect public facility and service delivery costs: density, land use, and distance. Numerous studies have been previously conducted that examined the impact of density on on-site, or internal, capital development costs within hypothetical residential neighborhoods. These studies have shown clearly that the more dense and compact a development, generally, the less expensive it is to provide services on a per unit basis. It

should be noted that these studies have focused on costs associated with new developments, however, and did not examine costs associated with retrofitting developed areas to accommodate higher densities. This issue area clearly requires additional research effort.

Although we believe continued evaluation and refinement of the detailed findings of the study, when complete, will be both necessary and appropriate, general trends are evident in the preliminary findings of the study. Most importantly, both capital facility costs to support residential development and detailed study area annual revenue:cost ratios appear to be more favorable in compact, close-in urban areas than they are in scattered, outlying suburban areas. In short, the consultants conclude that their results, when evaluated with the findings of previous studies concerning the effect of density, indicate that compact and contiguous



mixed-use development patterns are more cost efficient than growth patterns of a linear or scattered nature.

Preliminary study findings and previous research also indicate that when land uses are of a predominantly residential character and distances are greater between residential and nonresi-

which an area can be considered efficient or inefficient.

These preliminary findings are consistent with the Task Force's belief that Florida needs to encourage mixed-use areas to achieve efficient urban growth patterns. Preliminary conclusions indicate that planning for compact, integrated areas that will

available for the study also requires us to caution readers to consider the conclusiveness of the study's detailed findings limited until the methodologies, typologies, and data used by the research team can be subject to detailed evaluation. The study should not be presumed to provide the definitive answer to the question of development efficiencies. Given the tremendous complexity of this issue, policymakers would benefit from continued refinement and scrutiny of the methodologies, typologies, and data employed in this study as well as from the commissioning of additional research in this area.

Due to the incomplete nature of this study, the Task Force has not based its recommendations in this final report or its preliminary conclusions. We note, however, that the preliminary findings of the study appear to be consistent with the Task Force's recommendations. The 43 recommendations in this report reflect the complex nature of the issue before us. Our recommendations are based on the considerable testimony presented to the Task Force, a broad spectrum of existing research and additional research sponsored by the Task Force, conclusions drawn as a result of exhaustive debate, and, finally, the knowledge and experience brought to the Task Force by its diverse membership.



dential uses, revenue:cost ratios can be significantly less favorable than when there are compact urban relationships and mixed-use development patterns. In other words, shorter transportation trip lengths helps reduce transportation costs, just as a balance between residential and nonresidential land uses is a fiscal positive when delivering educational facilities and services. Finally, local government pricing policies and the quality and quantity of services being received also heavily influence the extent to

have a balance of residential and nonresidential uses, a range of housing densities, and short trips between housing, jobs, and shopping opportunities can result in more efficient development patterns and help Florida and its local governments to afford an attractive quality of life. Effective planning for mixed-use development patterns will be a key to development of fiscally solvent suburban and exurban areas.

The research commissioned by the Task Force is incomplete. The amount of time and funding

# LAND USE AND DEMOGRAPHIC TRENDS

Although reliable data related to existing land use and densities statewide is scarce, the paragraphs below illustrate several trends that are of concern to the Task Force. First, while metropolitan populations are increasing, the proportion of persons living in the central cities of our metropolitan areas is declining. Seventeen of Florida's 21 metropolitan areas had a rate of central city population growth from 1980 to 1988 that was exceeded, in many cases dramatically, by the rate of the population growth of their associated metropolitan area.

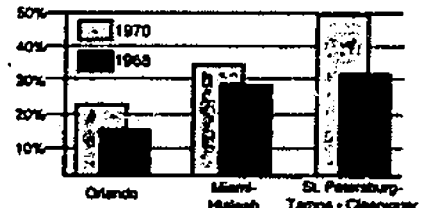
This is not a new trend in Florida. In fact, over the period from 1970 to 1988, the population of the St. Petersburg-Tampa-

Clearwater metropolitan area increased by 85 percent, while the total population increase within those three central cities over this period was only 15 percent. The number of residents living in the two major cities comprising the Miami-Hialeah metro area increased from 1970 to 1988 by 22 percent, less than half of Dade County's metropolitan growth rate of 45 percent. The City of Orlando had an impressive 61 percent growth rate over this period, but this was still dwarfed by the 117 percent increase in the population of the Orlando metropolitan area.

The decline in relative populations of our central cities can be attributed to these demographic trends. Likewise, it is not surpris-

ing that the central cities in Florida's two fastest growing metropolitan areas, Naples and Ft. Pierce, housed only 14 percent and 17 percent, respectively, of

Relative Decline Of Metropolitan Population Living in Central Cities 1970 - 1988

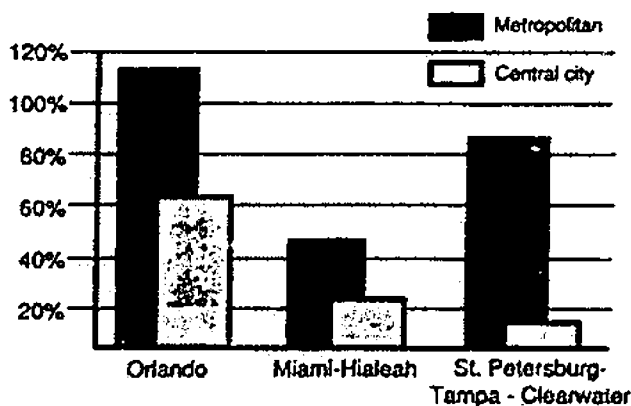


the 1988 populations of their metropolitan areas.

This trend is also reflected across the nation. The President's 1988 National Urban Policy Report states:

*The Nation's metropolitan areas are undergoing a complex series of economic adjustments within the overall framework of economic growth. Population has shifted slightly back toward metropolitan areas, a shift that is reflected primarily in suburban growth as the suburbs have continued to gain population share relative to their cities. As the relative size of populations employed in manufacturing decreases, and as manufacturing environments and practices change, central cities find themselves competing against their own suburbs in far more diversified economic*

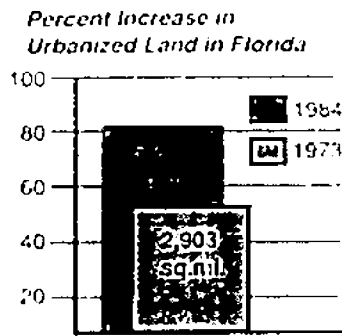
Sample Metropolitan and Central City Population Changes 1970-1988



market. The central city role is becoming one of sharing in the overall success of the metropolitan area striving for an adequate share of metropolitan success rather than being the economic engine that drives the entire local market. Employment, communications, and services are more and more distributed throughout urban regions, with cross-suburban commuting and social patterns diversifying the entire character of urban life.

These demographic trends present economic and growth management challenges for Florida's elected officials and policymakers. Florida's tremendous population growth may somewhat insulate our healthy economy from national economic downturns, although we face an increased need to target central cities and mature areas with high concentrations of urban poor to receive economic development programs and enhanced public education opportunities. Economically disadvantaged residents must believe that they have the opportunity to participate in our economic growth if they are willing to work hard to do so. The public sector has a special responsibility on its part to ensure urban mobility is maintained throughout our metropolitan areas to enhance the overall integration of our communities and residents.

Florida's growth management challenge is compounded by decreasing average statewide urban population densities. This can be documented in several ways. First, the amount of land being converted to urban uses is outpacing the rate of population growth. Florida consists of a total area of 54,153 square miles, not counting waterbodies. In 1973, aerial photography classified



2,903 square miles (or 5.4%) of Florida as urban or urban rural transition land. This urbanized area supported an estimated population of 6.6 million, for an urban density of 2,283 persons per square mile. Looking at total population and total land area, the gross density of the state in 1973 was an estimated 141 persons per square mile.

By 1984, satellite data classified 5,217 square miles of Florida as urban or urban rural transition land, 80 percent of the land area of the state. This represents an 80 percent increase in urban or urban rural transition land in just eleven years, greatly exceeding Florida's population growth of 35 percent over this period. This land area supported an estimated

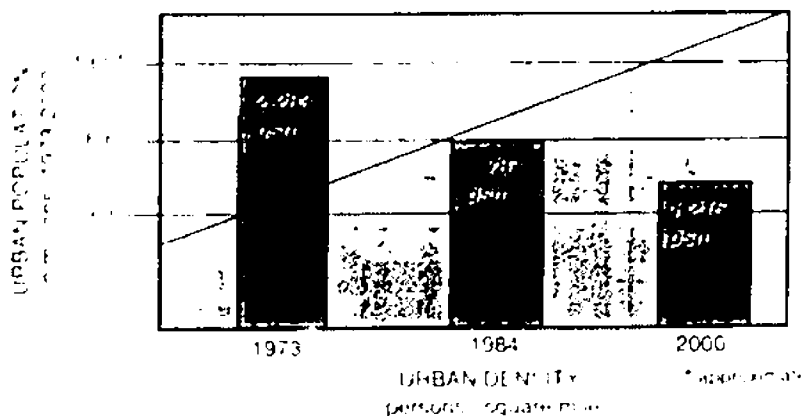
urban population of 9.5 million, a decrease in the average density of Florida's urban areas to 1,787 persons per square mile, although the state's gross density rose to 202 persons per square mile.

The United States Forestry Service also maintains information on land coverage as part of its operations. Analysis of this data finds the average density of Florida's urban areas in 1980 to be 1,553 persons per square mile. Paralleling the trend toward declining statewide urban densities, the estimated average urban area density falls to 1,466 persons per square mile in 1987.

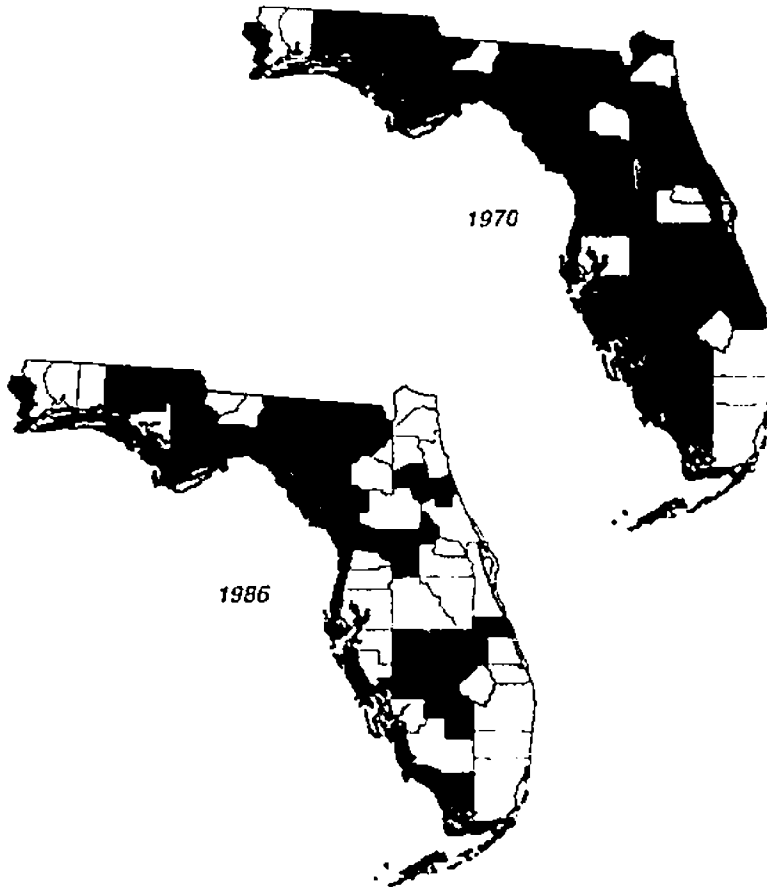
Finally, the ratio of the standard deviation of density to the mean was also calculated in several ways for 1980 and 1986 for 23 of Florida's cities. This ratio fell in every case from 1980 to 1986, reinforcing indication that settlement of Florida has become less compact.

To summarize, the state's population is rising, both in absolute numbers and in gross density per square mile, but new urban development is less compact, adding to the per capita cost of providing many services. Florida's metropolitan areas are

**Urban Density Trends 1973 - 2000**



*Counties Classified as Including Metropolitan Areas 1970-1986*



expanding, both in size as well as in population. Thirty-two counties are now classified as part of metropolitan areas, a nearly three-fold increase from twelve counties in 1970. The proportion of metropolitan residents living in the central cities of their metro areas, however, is rapidly declining.

The land use implications of these growth trends place increasing pressure on the governments serving suburban and unincorporated areas to plan for and service new urban growth. Given Florida's restrictive annexation laws, suburban and urban fringe

areas are the areas that accommodate urban sprawl. This growth will generate more conflict and competition between Florida's large cities and adjacent counties, especially as so-called urban counties respond by undertaking the provision of urban services traditionally viewed as municipal responsibilities.

The tremendous growth of Florida's unincorporated areas will exacerbate this problem. Counties face a need to become more sophisticated and it should be noted some already have in handling the increasing administrative demands this

growth is placing upon them. Interlocal planning and cooperation between cities and counties must improve. Unincorporated areas have accommodated nearly 61 percent of Florida's explosive population growth during the period from 1970 to 1986, increasing Florida's unincorporated area population from just under 40 percent of Florida's total population to almost 50 percent over this period. This trend will soon result in a majority of Florida's population living in unincorporated areas, reinforcing the need for cities and counties to coexist as equal partners in planning for and servicing our future growth.

Expanding metropolitan areas combined with declining urban densities are indicative of the urban development pattern known as urban sprawl - scattered, unplanned, low density development that is not functionally related to adjacent land uses.

a development pattern that has come to characterize Florida in the minds of many. Continuation of these trends will pose serious problems for growth management and service delivery in Florida, especially in meeting Florida's current and future transportation needs, protecting Florida's natural resources, and maintaining a high quality of life.

Your attention is also directed to a map of Florida contained in the center of this report. The map identifies the dominant land use in each square mile in Florida in 1987, except for those sections in Wakulla and Washington Counties, which represent 1986 data.

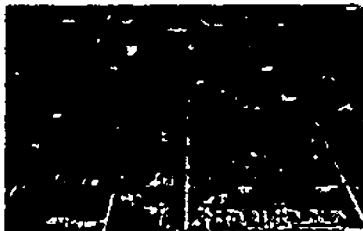


## RECOMMENDATIONS

### A STRATEGY TO COMBAT URBAN SPRAWL

#### Establish Urban Service Areas and Urban Expansion Areas

Urban sprawl is a recurring urban development pattern in Florida for a variety of reasons. Mobile consumers with sufficient economic resources have repeatedly indicated a preference for low density living environments. The ability to "get away from it all" is being compromised, however, by the sprawling development patterns that have evolved to service this market. As the suburbs close in, so to speak, many suburban residents respond by seeking new low density options even further away from existing urban areas. Deterioration of inner city infrastructure and services, socioeconomic forces, dispersal of job opportunities, and pub-



lic sector land use, housing, transportation, and tax policies are also contributing to sprawling development trends.

Market forces also generally promote urban sprawl in Florida's regulatory environment, which attempts primarily to mitigate onsite and offsite impacts of development but does little to intervene in private sector determinations of where or what to build. Land prices are less expensive further away from urban areas, a key determinant of development costs, and the large tracts of land needed to accommodate single family home subdivisions are generally located in fringe or peripheral areas. Installation of certain types of onsite infrastructure like water, wastewater, and drainage systems also are typically less expensive on raw land. Initial transportation costs may also be lower at the fringe, for example, many existing rural roads have excess capacity, which limits the short-term offsite costs assigned to the developer.

Coupled with the prevailing market demand, it is easily understood why urban sprawl exists in Florida. As frequently happens,

however, the sum total of a series of individual decisions based on consumer self interest and developer and builder profit maximization fails to protect or promote the regional and state interest, perhaps even not the interests of the local government that permitted the sprawl development. The collective development pattern this process generates over time represents an area-wide sprawling development pattern that taxes and overwhelms government's ability to effectively provide urban services at the level of quality eventually demanded by the area's voters and taxpayers.

Suburban sprawl and premature conversion of rural land to developed land are engendering a lack of meaningful choice between urban, suburban, and rural lifestyles and contributing to dissatisfaction among suburban residents. A recent survey of Florida households by the University of Florida's Bureau of Economic and Business Research found clear preferences for living in rural and semi-rural areas and in downtowns of major cities and a pronounced antipathy for living in suburbs of both large and small cities.

A primary objective of the Task Force was to address the growing homogenization facing Florida due to rampant suburban sprawl. The Task Force does not

advocate channeling all development into limited areas so as to create urban areas reminiscent of America's major northeast and midwestern cities. The Task Force does recommend management of Florida's growth in such a way as to provide current and future residents with real choices in where to live. This means encouraging and promoting the development of exciting, functional downtowns and urban areas, fiscally-efficient suburban and exurban areas, and limited rural residential areas while protecting the environmental and rural resources so important to Florida's economy. Continuation of current development trends is threatening Florida's diversity, risking Florida's future ability to provide a choice of residential lifestyles, and overwhelming our state's fragile and invaluable natural and environmental resources.

State Comprehensive Plan Goal #16 and Policies 1 and 2 under that goal state:

*"In recognition of the importance of preserving the natural resources and enhancing the quality of life of the state, development shall be directed to those areas which have in place, or have agreements to provide, the land and water resources, fiscal abilities, and the service capacity to accommodate growth in an environmentally acceptable manner.*

1. *Promote state programs, investments and development and redevelopment activities which encourage efficient development and occur in areas which will have the capacity to service new population and commerce.*

2. *Develop a system of incentives and disincentives which encourages a separation of urban and rural land*

*A primary objective of the Task Force was to address the growing homogenization facing Florida due to rampant suburban sprawl. The Task Force does not advocate channeling all development into limited areas so as to create urban areas reminiscent of America's major northeast and midwestern cities. The Task Force does recommend management of Florida's growth in such a way as to provide current and future residents with real choices in where to live.*

*uses while protecting water supplies, resource development, and fish and wildlife habitats."*

To implement these and other goals and policies in the State Comprehensive Plan, the Task Force recommends a program to promote urban growth patterns which provide distinct choices, slow the unplanned conversion of undeveloped lands, and also increase predictability on behalf of the development community on where infrastructure capacity will be provided with public funds. The program is to be implemented primarily through local government comprehensive planning. The Task Force believes strongly that promotion of compact urban development patterns must begin through proper plan-

ning by Florida's local governments and be supported by prioritized investments at the state level. The program involves establishing three types of areas in local government comprehensive plans. Periodic updates to the plans should be encouraged to adjust the allocations given to each of the areas to reflect the growth that has actually occurred and new growth projections and circumstances.

The foundation of the program is the delineation by local governments of land areas to be known as urban service areas. Urban service areas are defined as areas designated in a local government comprehensive plan, prepared either by a city or county or jointly, to receive concentrated, mixed-use development and in which a local government agrees and commits to provide new or expanded infrastructure with public funds as set forth in a financially-feasible capital improvements element. Infrastructure means, in this context, those facilities and services subject to the concurrency requirement: transportation, drainage, solid waste, potable water, sanitary sewer, and parks and recreation. Public infrastructure investments need not be strictly limited to these areas, although making concurrency work within them should be a state and local government priority. State and local governments should give special priority to addressing infrastructure backlogs in urban service areas prior to expanding infrastructure to service new developing areas.

Given the special planning and public commitment to provide infrastructure that should be associated with urban service areas, a more flexible approach to the timing of concurrency could

be appropriate within designated, compact urban service areas located within metropolitan and urban centers. Transportation level of service standards within urban service areas should also reflect the different requirements of intensive urban development patterns.

Recognizing that the capacity of the urban service areas should be less than that needed to accommodate Florida's rapid population growth, urban expansion areas sufficient in total area to accommodate twenty years projected population growth should also be designated by local governments in their comprehensive plans. These areas should take into account the projected growth that can be accommodated inside the urban service areas. A moderate over-allocation of land should be permitted when establishing these areas to take into account market imperfections, site restrictions, and other variables that can remove developable land from the market.

Development within urban expansion areas but outside urban service areas should only occur if the development provides or pays for the full marginal cost of all onsite and offsite infrastructure necessitated by the development at the smallest logical increment that functions independently. A mix of densities should be provided in these areas to meet the demand for rural residential and suburban living options but policies should be employed to ensure urban expansion areas are not entirely developed at densities which would preclude subsequent development or redevelopment of lands at urban densities when the urban service area boundaries are expanded. In-

deed, compact urban development should be expressly permitted and strongly encouraged in these areas at up to and including intensive urban densities where appropriate. These areas should be planned to receive an efficient mix of land uses and to provide a variety of housing and housing affordability.

Local governments are explicitly encouraged to designate multiple urban service areas to provide for regional activity centers and distinct, compact, mixed-use urban villages and communities. Regulators reviewing proposed areas should look for an appropriate range of residential densities, the extent to which a balanced mix of land uses is provided, including balanced jobs and housing opportunities, and the manner in which the total amount of land designated for development relates to projected needs.

Lands not located within urban service areas or urban expansion areas should be designated as rural areas with greenbelt or very large lot rural residential zoning, e.g., 1 unit per 40 acres. Farmworker housing should be permitted in these areas, so long as minimum health and safety standards are met, the housing is provided onsite, and the land used for such housing is not subdivided into individual lots. Minimizing widespread rural residential sprawl will be essential in these areas to protect valuable rural industries and sensitive environmental resources, minimize inappropriate conversion of rural land to urban land, preserve natural open space, and ensure areas are available to accommodate those needed public facilities which are incompatible with residential development,

e.g., airports, landfills, prisons.

It is not anticipated that areas initially designated as rural would be totally excluded from receiving any urban development. Areas surrounding intersections in rural areas, for example, could be designated as either urban service areas or urban expansion areas or some combination of

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*Local governments are explicitly encouraged to designate multiple urban service areas to provide for regional activity centers and distinct, compact, mixed-use urban villages and communities.*

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both, depending on the local jurisdiction's investment policy, to serve neighborhood commercial needs and provide semi-rural residential opportunities. It is important that this type of development be clustered, however, to avoid promoting linear sprawl and excessive curb cuts along rural roadways.

The Task Force clearly recognizes that this recommendation involves considerably more public intervention in private sector market decisions than previously undertaken in Florida. While all Task Force members support the objective of promoting compact urban development patterns, unanimity does not exist among the diverse membership of the Task Force that this program is

the preferred strategy for managing Florida's future growth. Concerns have in particular been expressed over the appropriateness of "drawing lines," impact on property rights, and the possible decline of quality of life in existing urban areas. Differences of perspective will also occur among and within the many interest groups that will be involved in the debate that should accompany the implementation of this concept.

The Task Force is also cognizant of the potential impact of this program on housing affordability. A comprehensive package of incentives to offset higher land prices in urban service areas and stimulate infill development and redevelopment is presented later in this report. Florida's very real affordable housing problem will not be met, however, through the stocks of detached single family housing being provided by today's development patterns. Our affordable housing crisis will instead be met through more effective economic programs and through planning that supports higher densities in our urban areas. The latter of these two issue areas is directly addressed by the Task Force's program.

Actions that can be taken today to address affordable housing needs are supported by this and other proposals of the Task Force. First, we need to increase densities in our center cities and suburbs. Establishment of very high densities is not needed. What is required are densities that will encourage construction of more townhouses, garden apartments, and other moderate density attached living units to complement our single family housing stocks. Second, we need to adopt policies and land development codes that

will encourage affordable housing production by allowing smaller lots, innovative designs, and accessory apartments.

Third, affordable housing must be located in development patterns that can be served by transit to reduce the tremendous transportation costs faced by low and moderate income families that need to maintain automobiles with all their attendant costs to preserve their urban mobility. Finally, the public and private sectors need to join forces to educate new residents and existing neighborhoods about the benefits of increased densities and about affordable housing issues to offset growing sentiments toward the "not in my back yard (NIMBY)" philosophy that can hinder the siting of affordable housing projects.

Rural concerns with this program will be varied. For example, Florida's farms smaller than 50 acres, which represent more than half of Florida's farms, may welcome a program to reduce urban pressures on their lands. On the other hand, Florida's larger full-time commercial farms, which produce a majority of our state's agricultural exports, stress the need to be able to convert land from agricultural to non-agricultural use when they believe it to be necessary.

Speaking to these concerns, the Task Force believes that rural interests can play an effective role in managing Florida's future growth. As the development community responds to housing demands and economic opportunities presented by future populations, the Task Force believes that intensive development of undeveloped environmentally sensitive coastal areas will be inappropriate. Large interior

landholders can participate in meeting the demands presented by Florida's rapid population growth without increasing urban sprawl by providing new compact, full service, mixed-use communities in interior areas of the state.

This Task Force proposal is admittedly controversial. The Task Force believes, however, that it represents an essential foundation for the program of decisive actions needed to reverse current development trends and preserve Florida's environmental and economic systems. Citizen and interest group education and state and local sensitivity in the implementation process will be essential for building a constituency for this bold program to maintain choice and a distinction between urban, suburban, and rural areas in Florida.

#### Recommendation # 1

*Florida's growth management laws should be amended to require local governments to establish urban service areas and, where appropriate, urban expansion areas. Recognizing that more intensive development is not desired in high hazard coastal areas and environmentally sensitive areas, urban development should be directed to the urban service areas, and ultimately the urban expansion areas, and strongly discouraged outside of the urban service areas and urban expansion areas by appropriate techniques, mechanisms, incentives, and disincentives.*

*The designation of such areas should be accomplished on a county-wide basis. Where a chartered county-wide planning system exists with a county-wide planning council rec-*



ommending to a Board of County Commissioners, such a system should be utilized for establishing these areas. If such a system is not in existence, then the Board of County Commissioners and the municipalities within the county should, working together, designate the areas. Environmental issues should receive strong consideration with respect to development of these areas.

Each county should contain at least two distinct service areas: urban and rural. Where appropriate, the urban area should be further defined to identify urban expansion areas and urban service areas. Plans for the areas should define not only the areas and boundaries, but also the land use and activities to be contained within each of the areas and include implementation incentives designed to achieve the objectives for the areas. It is presumed that some areas of the state can be considered viable for rural uses and other areas of the state can be considered viable for urban uses. It is also presumed that a county is a viable provider of urban services, as is a city.

#### Recommendation # 2

Large-scale, mixed use, integrated, compact and distinct urban developments located in interior areas of the state are encouraged over new large-scale urban developments in environmentally sensitive coastal areas if they provide for the full cost of necessary infrastructure and services and have the land and other natural resources necessary to support future urban growth.

### **Use Market Forces to Promote Efficient Development Patterns**

The earlier recommendations

### ***Use of efficient pricing policies would allow the marketplace to operate without subsidy and for consumer decisions to be based on true market prices.***

In this first section have focused on using planning, regulatory strategies, and prioritized public investments to promote concentrated development patterns. The market, through application of marginal cost public pricing policies, can be used to stimulate efficient and less costly development patterns. This can complement governmental programs established to promote compactness by increasing the overall efficiency of the resulting development patterns. The Task Force believes that a choice of residential lifestyles should be available to current and future residents. The Task Force also firmly believes, however, that residents should pay the full marginal cost price of the lifestyle they choose.

Use of efficient pricing policies would allow the marketplace to operate without subsidy and for consumer decisions to be based on true market prices. Service providers today typically employ average cost prices in user charges and impact fees, generating a subsidy of development in areas that cost more to serve than the average cost. For example, in the Task Force's examination of the service costs of alternative development patterns, only two of the six jurisdictions with transporta-

tion impact fees were found to have locationally-sensitive variable fee structures to attempt to account for the different trip characteristics of the areas. Not charging new development for the cost of expensive-to-serve locations subsidizes the push to locate new development long distances away from central facilities and to build at low densities.

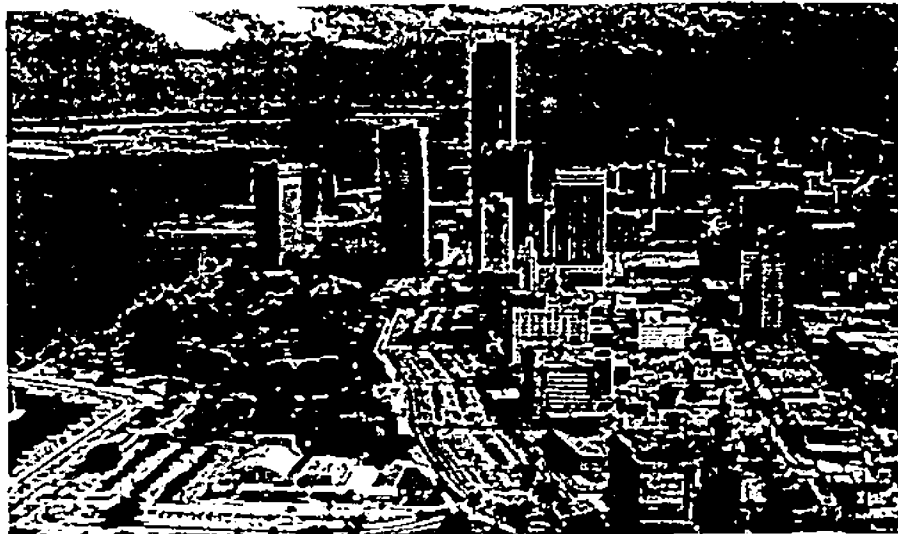
Reliance on average cost user charges and impact fees also can contribute to fiscal distress of growing communities. If the marginal cost for extending services continually exceeds the average cost being charged, use of average cost pricing systematically underfunds the fiscal responsibility associated with servicing new growth by an ever-widening gap. This widening fiscal deficit has resulted in chronic and perpetual underinvestment in infrastructure capacity in Florida, as evidenced by the enormous infrastructure backlogs identified by the State Comprehensive Plan Committee in 1986 and in the capital improvement elements of the local government comprehensive plans currently being submitted to the Department of Community Affairs.

Finally, few current pricing systems charge even the full average cost, much less the full marginal cost, for infrastructure and services. When less than full costs are charged, resulting shortfalls must either be made up by other revenues, or, as often happens, needed facilities are not provided and levels of service are reduced. Repeated selection of this latter option contributed to the enactment of the concurrency requirement that provides the "teeth" in Florida's current growth management laws.

the city's economic and social vitality. The city's economic vitality is a function of the city's ability to attract and retain talent, and the city's social vitality is a function of the city's ability to provide a high quality of life for its residents. The city's economic and social vitality are both essential for the city's long-term success. The city's economic vitality is a function of the city's ability to attract and retain talent, and the city's social vitality is a function of the city's ability to provide a high quality of life for its residents. The city's economic and social vitality are both essential for the city's long-term success.

### Provide Incentives for Concentrated Urban Development

The city should provide incentives for concentrated urban development in order to attract and retain talent, and to provide a high quality of life for its residents. The city should provide incentives for concentrated urban development in order to attract and retain talent, and to provide a high quality of life for its residents. The city should provide incentives for concentrated urban development in order to attract and retain talent, and to provide a high quality of life for its residents. The city should provide incentives for concentrated urban development in order to attract and retain talent, and to provide a high quality of life for its residents.



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The Task Force encourages that incentives, including but not limited to the following, be provided to promote concentrated urban development:

- \* Provide increased infrastructure capacity and thus developer certainty of being able to obtain development permits by giving state financial priority to making concurrency work inside urban service areas;

- \* Provide increased infrastructure capacity and thus developer certainty of being able to obtain development permits by requiring local governments to give priority to addressing infrastructure backlogs in urban service areas prior to expanding services to service new developing additional areas;

- \* Encourage greater flexibility in the timing for meeting the concurrency requirement inside urban service areas although do not waive the concurrency requirement itself;

- \* Increase development of regional impact thresholds for residential, office, commercial and hotel projects inside urban service areas;

- \* Promote use of downtown and area-wide development of regional impact programs in urban service areas by local governments to increase developer certainty and reduce regulatory disincentives to construction of major projects in highly urbanized areas;

- \* Create a bonus program to allow increased floor area ratios (FARs) in exchange for including residential units in downtown projects and for other socially-responsible development, such as inclusion of day-care facilities. Reward the inclusion of affordable housing units by further increasing the FAR bonus;

- \* Amend s.163.3229, Florida Statutes, to allow local governments to enter into development agreements inside urban service areas for a 20-year period rather than five years;

- \* Consider a multi-year payment program for impact fees in the urban service area. An extended payment schedule would reduce large upfront payments required of developers while allowing a local government to bond the funds in order to receive the money upfront. The unpaid portion of the fee should be considered a lien on the property in order to guarantee full payment of the fee;

- \* Consider available public transit capacity inside urban service areas and participation in transportation demand management programs when evaluating projects for their impact on transportation capacity and for compliance with the concurrency requirement;

- \* Amend s.125.01, Florida Statutes, to authorize cities and counties to use municipal service taxing units (MSTUs) inside urban service areas with the ad valorem levy of the MSTU not counting against established millage caps;

- \* Provide greater authority to use tax increment financing, special assessment districts, and dependent special districts;

- \* Encourage local governments to adopt and implement flexible zoning classifications that encourage mixed-use development;

- \* Designate urban service areas as receiving zones for transfer of development rights programs; and

- \* Increase predictability concerning the availability of infrastructure capacity through firm public com-

mitment to implement adopted capital improvement programs in a timely manner.

## Encourage Urban Infill Development and Redevelopment

Promotion of compact urban development requires special consideration of the role of infill development and redevelopment. The creation of urban service areas, in and of themselves, will not necessarily produce concentrated development patterns. Infill development and redevelopment projects, on the other hand, directly contribute to compact development patterns. Further, aggressive action will be needed in Florida's urban areas to alleviate some of the market pressures that will be generated by the successful implementation of a regulatory urban containment strategy such as the one proposed by this Task Force.

It must be recognized that many obstacles to infill development and redevelopment exist. A survey of 1000 infill property owners in Tampa commissioned by the Task Force and other valuable research efforts conducted to assist the Task Force shed considerable light on this issue. First, many vacant infill parcels have already been passed over because for some reason they were believed not to be appropriate or attractive for development. Smaller sites also frequently have site limitations or fail to meet current zoning requirements. In addition, land assembly can be extremely difficult, as can be dealing with local government regulators and regulations. Neighborhood groups concerned with higher densities, loss of

urban open space, property tax impacts, and traffic and parking problems may also resist infill development and redevelopment projects.

It also cannot be assumed that adequate infrastructure capacity will exist in infill locations. In the Task Force's study of infrastructure capacity in infill locations in the City of Orlando conducted by the Florida Advisory Council on Intergovernmental Relations, capacity problems were clearly evident in the following facilities: elementary schools, sewage transmission, and arterial roads. Alleviating existing infrastructure backlogs in highly urbanized areas can involve tremendous expense.

Finally, social issues play an important role in determining the feasibility and success of the infill development and redevelopment projects. Many of our urban areas are faced with a high incidence of street crime and homelessness, drug trafficking and abuse, low academic achievement in the public schools, and increased segregation of poor families and individuals from the economic mainstream.

Despite these social problems and other constraints, abandonment of Florida's urban areas and downtowns is not an acceptable private or public sector response. Indeed, these problems and constraints reinforce the need for economic growth to be directed to Florida's urban areas through a package of inducements and incentives that help overcome obstacles to infill development and redevelopment. Promotion of infill development and redevelopment will also help to address the problem of a increasing lack of metropolitan balance. Increasingly troubling mis-

matches can be seen in our metropolitan areas — mismatches between job opportunities and the unemployed, of educational opportunities and the uneducated, and of transportation patterns and mobility needs.

Promotion of infill development and redevelopment cannot be represented as a panacea for today's diverse urban problems. Meaningful promotion of infill development and redevelopment will, however, be an essential element of any program to redress the above problems, increase housing stocks in downtowns and urban areas, enhance the vitality of current urban areas, and control and limit urban sprawl.

#### Recommendation # 5

*Florida's local governments and regional and state agencies should work together to promote and support infill development and redevelopment projects. The Task Force believes that the local government comprehensive planning process represents an essential aspect of the promotion of infill development and redevelopment projects. Chapter 163, Part II, Florida Statutes, should be amended to include an infill development and redevelopment element that can be included in local government comprehensive plans. This element should enable local governments to:*

- \* identify potential infill development and redevelopment sites inside designated urban service areas;*
- \* provide an inventory of these sites;*
- \* identify the characteristics of each parcel, including zoning, infrastructure availability, and major site limitations;*

*\* present a strategy for reuse of abandoned property inside urban service areas;*

*\* outline broad urban design review criteria to be considered when evaluating infill development and redevelopment projects;*

*\* provide for a simplified and streamlined permit and development order approval process for infill development and redevelopment projects inside the urban core; and*

*\* evaluate the effect on the urban core of the future land use and capital improvements elements.*

*Upon the finding of a local jurisdiction's local government comprehensive plan containing an infill development and redevelopment element in compliance by the Department of Community Affairs, the department should be authorized to allow the local government, at its request, to establish lower transportation levels of service if necessary to accommodate an infill development and redevelopment project and otherwise employ special regulatory and economic incentives that should be developed and recommended to the department by a coalition of development interests.*

#### Recommendation # 6

*Additional incentives should be provided to promote infill development and redevelopment projects. These include:*

- \* The Legislature should establish a revolving loan program to provide matching funds to support redevelopment efforts. This program should be administered by the Department of Community Affairs;*

*\* Streamline the development review process for infill development and redevelopment projects inside urban service areas through a streamlined and creative design review process that includes expedited simultaneous permit reviews, approval processes, and neighborhood review, and fast tracking of paperwork;*

*\* The Department of Community Affairs should work with the Florida League of Cities, the Urban Land Institute, the American Planning Association, and other interested parties to create a model infill development and redevelopment ordinance which (1) provides a guide for the adoption of zoning ordinances that encourage infill development and redevelopment through incentives to aggregate parcels, (2) encourages neighborhood revitalization, (3) permits higher densities in designated areas as well as a greater range of housing types, and (4) increases flexibility in requirements for building codes and siting;*

*\* Local governments should have the authority to provide tax abatements in designated redevelopment areas. This proposal will require a constitutional amendment;*

*\* The Legislature should establish a "start-up" loan fund at the state level for community redevelopment agencies (CRAs), with funds being made available at the time the tax increment financing structure is put in place to address the need for initial operating capital for CRAs until the funds generated by the tax increment begin to be available;*

*\* Local governments should consider subsidizing or completely paying out of general revenues impact fees for projects in infill and redevelopment areas if affordable housing units are included;*

*\* The Legislature should amend Chapter 163, Part III, Florida Statutes to authorize community-wide redevelopment agencies using the CRA process as a model. These entities should be given taxing authority that falls outside the municipal ad valorem cap and tax increment financing capability; and*

*\* The Department of Education should encourage school boards to adopt policies that allow registrations into public schools based upon proximity to the parent's job in downtown or redeveloping areas.*

### **Integrate Wastewater Treatment Facility Permitting, Consumptive Use Permitting, and Septic Tank Permitting with Local Planning**

State policies conducive to permitting small-scale wastewater treatment facilities, individual potable water wells, and septic tanks have played a major role in contributing to urban sprawl. The Task Force has not investigated environmental considerations associated with these systems but finds, regardless of their environmental efficiency, that these permitting processes have clearly supported low density, sprawling development patterns. The ability of low density sprawling and exurban development to rely on septic tanks at densities up to four units per acre, small-scale package treatment plants, and potable water wells to meet their water and wastewater needs clearly undercuts the ability to use public investment decisions to guide and manage urban growth patterns.

Moreover, the short-term costs of installing such facilities

on raw land is low, allowing developers to side-step the higher costs that would be associated with connecting to central facilities from costly-to-serve locations. At the same time, long-term costs faced by local governments that have to acquire these systems to integrate them into central facilities as the urban area grows can be very high. Thus, these programs also provide an economic subsidy to urban sprawl.

In calendar year 1988, more than 60,000 septic tank permit approvals were issued statewide. A significant proportion of these permits were issued in lower density urban areas without central sewer systems. The result of this type of permitting has been the pattern of urban sprawl development which has come to characterize much of Florida's urban areas. The permit approval process for small-scale wastewater treatment plants, consumptive water use and septic tanks tends to focus on environmental impacts without consideration of intergovernmental concerns such as efficient capital facility site location, the promotion of efficient urban development patterns, or consistency with local land use or capital improvements plans.

One problem with such a narrow permit review process is that local government often assumes that the "official" state permit has addressed all comprehensive planning and intergovernmental concerns and is reluctant to deny necessary local permits, even if the project is inconsistent with local plans.

#### Recommendation # 7

*While the Task Force supports increased limitations on the use of sep-*

tic tanks, small-scale package treatment plants, and individual potable water wells, situations will continue where their use is appropriate. Further, local governments should be primarily responsible for managing land development patterns within their jurisdictions, not regulatory agencies such as the Department of Environmental Regulation, the Department of Health and Rehabilitative Services, and the Water Management Districts. The Task Force recommends, therefore, that application of these permitting programs be more closely tied to the local government comprehensive planning process in the following manner:

*\* The Department of Environmental Regulation should require small scale wastewater treatment plant permit applications to include a certificate from the local government demonstrating a preliminary finding of consistency with the local government comprehensive plan before a DER permit is issued; and*

*\* Chapter 10D-6, F.A.C. and s.381.282, F.S., should be amended to require septic tank permits to clearly state in bold letters on the front of the first page that the permit is not effective until the local government has found that the related use is consistent with the local government comprehensive plan and land development regulations.*

### **Address Urban Sprawl Through the Development of Regional Impact Program**

Developments of Regional Impact (DRIs), projects which due to their character, magnitude, or location have a substantial effect upon the health, safety, or welfare of citizens of more than one

county, have been estimated to comprise five to ten percent of all development in Florida. These developments undergo special state and regional review in addition to local government analysis. From the state and regional perspective, the primary focus of the DRI program is the mitigation of the regional impacts of proposed projects given their proposed locations.

The DRI program should be brought into and integrated with Florida's current growth management system. The DRI process was formalized in the Florida Statutes in 1972, a dozen years prior to the adoption of the State and Regional Planning Act and thirteen years before the adoption of both the State Comprehensive Plan and the Local Government Comprehensive Planning and Land Development Regulation Act. The DRI process today should be revised to facilitate consideration of the goals and policies of the State Comprehensive Plan and the appropriate regional policy plan, obtain the information necessary to be able to determine consistency with the applicable goals and policies, and complement the local government comprehensive planning being conducted under Chapter 163, Florida Statutes.

As Florida grows, the public sector will face increasing pressure to intercede in private market decisions concerning the siting of projects in order to achieve desirable urban development patterns. Builder and developer decisions based on profit maximization may provide individuals in low density residential developments with a high individual quality of life — but it may be at the expense of the quality of life of the community as a whole.

With moderate program revisions and appropriate policy guidance, reviews of developments of regional impact could look at proposed projects in the context of a region's overall urban form. DRI reviews could consider issues such as whether or not a proposed project contributes to urban sprawl and how it impacts on and interacts with metropolitan and regional development patterns as well as consider specific site mitigation issues. The DRI process can also be used to promote development of mixed-use projects and full service communities and discourage single-use low density exurban residential projects that further separate jobs and housing opportunities in our metropolitan areas.

#### Recommendation # 8

*The Development of Regional Impact Program should incorporate considerations of a proposed project's impacts on metropolitan and regional development patterns as part of project evaluation criteria. The program should also promote projects which will help achieve balances of jobs and appropriate housing within and across regions and discourage projects which exacerbate urban sprawl and do not contribute to achievement of this balance. Developments of regional impact located outside of an urban service area should be permitted only if they represent compact projects and provide or pay the full cost of all needed onsite and offsite infrastructure improvements.*

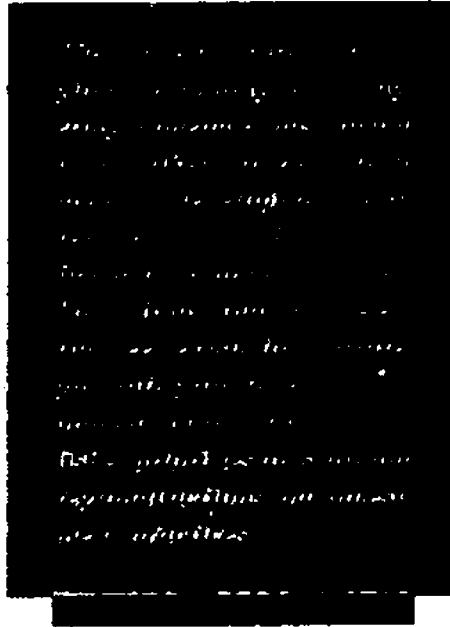


# FLORIDA NEEDS A STRATEGIC STATE URBAN POLICY

## Develop a Strategic State Growth and Development Plan

The realistic achievement of compact and concentrated urban development patterns under the current state planning and budgeting system will be difficult if not impossible without basic structural or administrative improvements as well as other specific incentives and disincentives designed to encourage such patterns. The current state and regional planning and budgeting framework has not and is not likely to be able to achieve development patterns in Florida that are efficient or compact. The Task Force finds that an essential need exists for a strategic state growth and development policy that establishes priorities for state and regional actions and investment practices.

The recommendations presented below are provided to guide the development of a strategic implementation program designed to achieve high priority objectives of the State Comprehensive Plan. This coordination of planning efforts with budgeting activities should ensure that the expenditure of scarce state resources through the fixed capital outlay budgeting process is done in a manner that maximizes achievement of Florida's strategic goals by establishing priorities. This process is designed to refine the State Comprehensive



Plan and to ensure its effective and timely implementation.

### Recommendation #9

*The state planning and budgeting process should be amended to incorporate and adopt a Strategic State Growth and Development Plan that provides priorities for state and regional actions and investments. The Plan should be consistent with and implement the goals of the State Comprehensive Plan and accomplish the integration of the State Land Development Plan, the State Water Use Plan, the Florida Transportation Plan, and the Turnpike System Plan. The Plan should be a strategic plan developed by the Executive*

*Branch and formally adopted by rule by the Administration Commission in order to have maximum effect on the state planning and budgeting process. All state agency functional plans, state and regional agency capital improvement plans and programs, and comprehensive regional policy plans should be consistent with this Plan, which will form the implementation means of prioritizing and accomplishing the goals of the State Comprehensive Plan. The Plan should be based on socioeconomic projections and be specific enough for direct implementation.*

*The Task Force recommends that the Plan be developed to achieve the following state growth and development objective:*

*Florida shall direct its public investments so as to promote compact development in an environmentally sound and economically efficient manner.*

## Principles to Guide the Strategic State Growth and Development Plan

The Task Force has presented in this report a comprehensive strategy for managing Florida's future growth while discouraging sprawling development patterns. For this reason, the Task Force recommends that the Strategic State Growth and Development Plan be based upon the entire body of recommendations formulated by this Task Force. To complement these recommendations and to provide clear policy guidance for the Strategic State Growth and Development Plan, however, the Task Force recommends several specific principles to form the foundation of the Plan. Several of these principles are

addressed in greater detail elsewhere in this report.

#### Recommendation #10

The Strategic State Growth and Development Plan should be based on the following principles:

- \* Recognizing a need for vibrant metropolitan areas, the state shall promote the continued development of major metropolitan centers through preferential state investment policies, especially cultural, educational, and public transportation investments, although such funds should not be strictly limited to these areas;
- \* Ensure state, regional, and local plans and programs support Florida's urban centers as centers for high intensity commercial, residential, and mixed-use development. Florida's urban centers should be defined as municipalities greater than 50,000 population and primary municipalities in counties without cities with populations in excess of 50,000. Prioritized metropolitan and urban centers should be mapped;
- \* Identify and map areas of special state and regional concern and ensure through adequate acquisition funding and planning that such areas are preserved and protected;
- \* Establish state policies for Florida's future growth as it relates to land use, transportation, air quality, and water resources;
- \* Provide guidelines for determining where urban growth is appropriate and for the promotion of an efficient pattern of urban development;
- \* Mandate state investment practices, especially transportation investments, give priority to supporting

existing metropolitan and urban centers to achieve concentrated development patterns and reward local governments that plan for efficient and concentrated development patterns. Financial priority is to be given to making concurrency work in existing urban areas,

- \* Require timely and reliable implementation of cost feasible state capital improvement programs and plans;
- \* Revise formulas for distribution of state revenue sharing and other available tax dollars to reward local governments which undertake planning for concentrated development patterns and control of sprawling development patterns. State funding priorities should further actions and activities that are in conformance with the urban or rural plan for that respective area;
- \* Require state and regional agency actions to be consistent with local comprehensive plans absent an overriding state interest;
- \* Provide guidelines for locating new state transportation corridors of regional or state significance. Map existing and proposed transportation corridors that are projected to be of regional or state significance, including those new multi-lane highways contained in the Major Transportation Facilities Siting and Location Plan;
- \* Ensure aggressive state and local land acquisition programs provide for natural open space needs, urban recreational opportunities, and water access;
- \* Direct discretionary state funds to support the objectives of the plan; and

\* Establish a program for addressing affordable housing needs.

#### **Prioritize State Investment Policies**

The Task Force finds that a process must be established to ensure that proposed state capital expenditures are consistent with the Strategic State Growth and Development Plan if the development and implementation of the Plan is to have a meaningful impact on state investment policies. Priorities must be established which direct state investment practices towards achievement of objectives of the Strategic State Growth and Development Plan and the prioritized goals of the State Comprehensive Plan.

#### Recommendation #11

The Task Force recommends that the Governor's Office of Planning and Budgeting and appropriate agencies work with the Legislative Appropriations Committees to develop a process for ensuring and certifying that all state capital expenditures are made consistent with the objectives and policies of the Strategic State Growth and Development Plan. The process of capital budgeting within the State of Florida should be altered to require that prior to expenditure of capital funds, findings are made that such capital expenditures are consistent with and further the specific objectives of the Strategic State Growth and Development Plan, thereby being consistent with the State Comprehensive Plan.



## Site State-Owned Office Facilities to Promote Compact Urban Growth

As state government continues to expand, there will be growing pressure to construct state-owned office buildings rather than continue to lease office space from the private sector. In fact, the trend towards utilization of more state-owned office space is evidenced by the planned construction during the period of 1989-1993 of 12 major office facilities statewide with a approximately two million net square feet of

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*"...growth will provide an excellent opportunity for the state to become a leader in siting its facilities so as to support compact urban development objectives."*

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office space. This growth will provide an excellent opportunity for the state to become a leader in siting its facilities so as to support compact urban development objectives.

The Task Force supports the State's aggressive action to construct more state-owned office buildings when the economic benefits outweigh leased office space costs. We strongly believe, however, that the state must be sensitive to the impact state-

owned office facilities have on local development patterns and infrastructure capacity. A primary reason for this position is that major state-owned facilities, unlike private projects, also present a dilemma for local governments in that public facilities are tax exempt and do not pay impact fees. Yet state-owned office facilities, not unlike private projects, occasionally require local governments to expand infrastructure to accommodate the impacts of the new facility.

Since there is no general statutory language to the contrary, state office facilities apparently are subject to local land development regulations and the DRI process. These processes do play a role in determining the preferred location of major state-owned office facilities. Nonetheless, a concern has been raised by local governments that the state could possibly override local land regulations without clear statutory requirements to conform to them. Consequently, the Task Force believes there is a need to ensure that state-owned office facilities are sited in accordance with local comprehensive plans and local land development regulations, that the state financially offsets the impacts of its major office facilities, and that the Department of General Services and other state agencies work cooperatively with local governments in the planning and siting of major state-owned office facilities.

### Recommendation #12

*The Task Force recommends that the state be a leader in siting its office facilities to promote compact urban development objectives. The Task Force further recommends:*

*\* State-owned office facilities should be sited in such a way as to promote compact urban development objectives and stimulate existing downtowns consistent with State Comprehensive Plan goal #17 regarding downtown revitalization;*

*\* The Florida Legislature amends .255.25, F.S., to require the state to adhere to local land development regulations in the planning and construction of state-owned office facilities. The Legislature should also ensure the state pays impact fees and otherwise offsets external impacts state-owned office facilities may have on local and state infrastructure; and*

*\* The Department of General Services should ensure consistency between plans for state-owned parking facilities and the transportation system elements of local government comprehensive plans.*



**CITY OF BROOKSVILLE, FLORIDA**

**AN ASSESSMENT OF THE  
ADEQUACY OF  
EXISTING WATER AND SEWER  
CONNECTION FEES**

**FINAL REPORT**

**DECEMBER, 1987**

*RBT*  
~~RBT~~'s City of Brooksville  
Ex 5



A MEMBER OF ARTHUR YOUNG INTERNATIONAL

# Arthur Young

1500 Independent Square  
Jacksonville, Florida 32202  
Telephone: (904) 358-2000

December 3, 1987

Mr. Charlie Arbuckle  
Utilities Director  
City of Brooksville  
26 South Brooksville Avenue  
Brooksville, Florida 33512

Dear Mr. Arbuckle:

Arthur Young & Company is pleased to submit this final report which contains the results of our assessment of existing water and sewer connection fees for the City of Brooksville. The report presents a revised sewer connection fee and documents the results, methodology and assumptions used in determining this proposed fee. Also presented are alternative financing assessments of your Capital Improvement Program along with an assessment of the impact the program might have on rate payers.

We would like to take this opportunity to express our appreciation to you and to all the City personnel involved in this study for your continued cooperation and assistance. In the meantime, should you have any questions regarding the contents, please contact Mr. Steve Dunn at area code (904) 358-2000.

Very truly yours,

*Arthur Young & Company*

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**I. Introduction**



## I. Introduction

Arthur Young was engaged to conduct an assessment of the existing water and sewer connection fees for the City of Brooksville. The product of the study was to be: a determination of the water and sewer capital improvement needs through the year 2008; an assessment of the existing water and sewer connection fees to determine the adequacy of the fees to produce the revenues necessary to fund the growth requirements; revisions to the water and sewer connection fees, if appropriate; an assessment of the financing requirements with regard to the capital improvement program, and; the projected impact of the financing program on rate payers.

The first step in the study included an extensive data collection effort with regard to the existing condition of the City's water and sewer system and projections of future needs. This was conducted by Arthur Young's subcontractor, Hensley-Schmidt, Inc., and resulted in projections of capital cost for both expansion and rehabilitation requirements of the system. In addition, projected growth in connections to the system was determined through the year 2008. This information was then utilized to perform the financial calculations related to the adequacy of the existing connection fees, proposed revised fees, financing alternatives, and rate impacts.

The remainder of this report is organized into the following chapters:

- Chapter II - Existing Conditions - a discussion of the existing conditions of the water and sewer system is presented in this chapter.
- Chapter III - Projected Conditions - this chapter presents a discussion of the identified capital improvement projects for the water and sewer system through 2008.
- Chapter IV - Assessment of Existing Connection Fees - this chapter presents the estimated water and sewer capital costs identified in Chapter II and compares the CIP expansion requirements with the anticipated revenue to be generated by the existing water and sewer connection fees.

- Chapter V - Connection Fee Methodology - a discussion of the methodology used to calculate the proposed sewer connection fee is presented in this chapter. In addition, recommendations with regard to assessment of the fees are also presented.
- Chapter VI - Determination of Revised Sewer Connection Fees - presents the proposed sewer connection fee.
- Chapter VII - Financing Considerations of the Capital Improvement Program - this chapter presents a discussion of the proposed capital improvement program and the financing requirements necessary to fund the program as presented in Chapter II.
- Chapter VIII - Projected Rate Impact of the Capital Improvement Program - this presents the estimated impacts on monthly rates of the financing program alternatives demonstrated in Chapter VI.

**A. Length of Connection Fee**

The proposed sewer connection fee presented in this report has been calculated using estimates of future capital expansion projects expressed in current dollars. Consequently, it is recommended that the proposed fee be adjusted annually for inflation by a recognized engineering index such as the Engineering News Record or Handy-Whitman Index. In addition, it is suggested that these fees be periodically recalculated (every 2-3 years) to reflect changes in expansion plans and financing requirements.

**B. Reliance on Engineering and Financial Data in Cost Determination and Rate Setting**

A significant amount of financial and engineering data has been incorporated in this study. Arthur Young has relied on City personnel, and its engineering subcontractor, Hensley-Schmidt, Inc. While the assumptions used in developing this data appear reasonable, cost and revenue projections employed in this report should not be construed as statements of fact. The accuracy of any projection is dependent upon the occurrence of future events which cannot be assured and may be affected favorably or unfavorably by many factors such as water usage, governmental regulations or controls, inflation rates and general economic conditions.

## **II. Existing Conditions**

## II. Existing Conditions

This chapter presents a discussion of the existing conditions of the water and sewer system. The chapter consists of the following sections:

- . Water Utility
- . Sewer Utility

Each of these topics is described below:

### A. Water Utility

**General:** The City of Brooksville Water Utility is a long established and expansive operation serving customers both in and outside City boundaries. Its present day componentry includes Four (4) Water Plants which accommodate six (6) water supply wells; Four (4) Water Storage Tanks of which two (2) fit the category of intermediate ground storage and two (2) serve as elevated distribution storage; and a Distribution network that includes several miles of piping that ranges from one (1) inch up to twelve (12) inches in diameter. The Utility is operated jointly with the Municipal Sewer Utility, by the City, employing a Superintendent and labor force dedicated to that purpose.

**Supply:** The four (4) water plant installations are distributed in a north-south corridor. Two (2) are within corporate boundaries and two are outside. Each is unique with its own capacity, mechanical and structural characteristics. All are generally depicted on Table No. 2-1, following, and each is more particularly described as follows:

- 1) Lamar Water Plant - This facility is the oldest in the City's supply inventory, dating back to the Great Depression. It is a two (2) stage operation whereby water is drawn from two (2) wells and discharged to a rectangular in-ground, 70,000 gallon concrete storage chamber. Two (2) second stage (also known as booster or high pressure) pumps deliver the water to the distribution network for consumer use. Before leaving the site, the water is aerated, chlorinated and fluoridated to Florida DER limits and/or standards.

TABLE NO. 2-1  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

WATER SUPPLY INVENTORY

| NAME OF SUPPLY             | NO. OF WELLS | EST. WELL CAPACITY<br>(1) | ONE/TWO STAGES | RELIABLE CAPACITY<br>(2) | CUP LIMIT<br>(3) |
|----------------------------|--------------|---------------------------|----------------|--------------------------|------------------|
| Lamar                      | 2            | 2100 GPM                  | Two            | 2.0 MGD<br>(1400 GPM)    | 0.4/0.8<br>MGD   |
| Hillside<br>(Summit Drive) | 1            | 1050 GPM                  | Two            | 1.5 MGD<br>(1050 GPM)    | 0.4/0.6<br>MGD   |
| Hope Hill                  | 2            | 1400 GPM                  | One            | 2.0 MGD<br>(1400 GPM)    | 0.8/1.4<br>MGD   |
| DAMAC (4)                  | 1            | 700 GPM                   | One            | 1.0 MGD<br>( 700 GPM)    | 0.2/0.4<br>MGD   |
| -----                      |              |                           |                |                          |                  |
| TOTALS                     | 6            | 5250 GPM<br>(7.6 MGD)     |                | 6.5 MGD<br>(4550 GPM)    | 1.8/3.2<br>MGD   |

Total Supply with largest out of service = 4.5 MGD  
 (Includes DAMAC; Lamar out of service)

(1) Total site capacity.

(2) Based on limiting factor: second stage pumping at Lamar;  
 individual well pump capacity at others.

(3) 0.4/0.8 = Daily Average/Daily Maximum.

(4) Not presently operationally permitted; does have CUP.

Both wells are equipped with 50 Horsepower vertical turbine pumps, each reportedly being capable of delivering 1.5 MGD (1050 GPM) to the ground storage tank. The pumps are driven electrically, only, although the housing for the newer unit (#2) can and does accommodate a back-up engine (present unit is non-operational). An emergency pipe connection is also provided within the Well #2 building to permit direct transfer of well water from this well to the distribution network with the use of a Fire Department Pumper.

Second stage pumping is accomplished by one (1)-350 GPM (referred to as a "Jockey") unit and one (1)-1050 GPM unit. Therefore, the controlling factor in determining the capacity of this facility becomes the limiting aspects of second stage pumping, at 1400 GPM, or 2.0 MGD. Pumps are automatically controlled by pressure sensing.

Aeration is passive, using conventional cascade techniques. Chlorination is accomplished using standard gas solution equipment. Fluoridation is relatively new with piston/diaphragm devices feeding liquid Hydrofluosilicic Acid. Both chlorination and fluoridation are proportionately fed by tandem piping from well pumps. The 70,000 gallon intermediate storage tank has recently been re-roofed and houses the cascade aerator. Float devices control the operation of well pumps. Only discharge to the distribution system is metered. The entire facility (the building also houses maintenance shops and utility offices) is secure and well kept.

Despite its age, Lamar Water Plant can be expected to continue serving the City, structurally, throughout the study period. Useful life expectancy for various pieces of equipment will fall short of Year 2008, however. Table No.2-2 has been prepared and illustrates the various life expectancies of Lamar componentry.

The City has concerns about the quality of water provided by the older of the two Lamar wells. In the past, the presence of coliform bacteria has been attributed to this source while, in recent years, sand content has consistently worsened.

2) Hillside (Summit Drive) Water Plant - Activated in 1967, this facility is a two (2) stage operation that includes one (1) well that discharges to a circular, above ground, 200,000 gallon concrete storage chamber. Two (2) second stage pumps transfer water from the intermediate storage to the distribution system and an on-site

TABLE NO. 2-2  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

USEFUL LIFE ASSESSMENT-WATER SYSTEM

| COMPONENT        | 0-5 YEARS | 5-10 YEARS | 10-20 YEARS | 20+ YEARS |
|------------------|-----------|------------|-------------|-----------|
| I Lamar WP       |           |            |             |           |
| A. Well No. 1    | X         |            |             |           |
| B. Well No. 2    |           |            |             | X         |
| C. Pumps         | X         |            |             |           |
| D. Controls      | X         |            |             |           |
| II Hillside WP   |           |            |             |           |
| A. Well          |           |            |             | X         |
| B. Pumps         |           |            | X           |           |
| C. Controls      |           |            | X           |           |
| III Hope Hill WP |           |            |             |           |
| A. Well No. 1    |           |            |             | X         |
| B. Well No. 2    |           |            | X           |           |
| C. Pumps         |           |            | X           |           |
| D. Controls      |           |            | X           |           |
| IV DAMAC WP      |           |            |             |           |
| A. Well          |           |            |             | X         |
| B. Pump          | X         |            |             |           |
| C. Controls      | X         |            |             |           |
| V Storage Tanks  |           |            |             | X         |

Note: Controls include treatment aspects, piping, metering and electrical.

hydropneumatic storage tank. The water supply is aerated, chlorinated and fluoridated prior to delivery to the distribution system.

The single well is equipped with a 60 Horsepower vertical turbine pump, capable of producing 1.5 MGD (1050 GPM) to the ground storage tank. The well pump is driven electrically, only. There is a standby generator on site. However, it is not operational and is reported to be too small and of the wrong voltage. Therefore, this source of supply becomes unavailable during periods of utility power outage.

Second stage pumping is accomplished by one (1)-150 GPM "Jockey" unit and one (1)-1050 GPM unit; matching the output of the well. Therefore, the controlling element at this supply is the first stage pumping, at 1050 GPM, or 1.5 MGD. Second stage pumping is automatically controlled by pressure sensing at the site.

Aeration is passive, using conventional cascade techniques. Chlorination is accomplished using standard gas solution equipment. Fluoridation is relatively new with piston/diaphragm devices feeding liquid Hydrofluosilicic Acid. Both chlorination and fluoridation are proportionately fed by tandem pacing from the well pump.

The 200,000 gallon intermediate storage tank is in good condition and houses the cascade aerator and level sensing controls that automatically operate the well pump. The hydropneumatic tank is kept in operation to mitigate surge potential along with surge control valving on the larger booster pump. Single point metering occurs immediately prior to discharge to the distribution network. The entire site is secured by a chain link perimeter fence.

Structurally, Hillside is in excellent shape. This fact, coupled with land availability for expansion render this site capable of serving the City throughout the study period. Useful life expectancy for various pieces of equipment will fall short of Year 2008, however, as depicted on Table No. 2-2.

3) Hope Hill Water Plant - The Hope Hill complex is the newest of Brooksville's supply facilities. It is a single stage operation and consists of two (2) wells which discharge, via a control/treatment building, directly to an on site elevated storage tank and the distribution system. The well water is both chlorinated and fluoridated



as it passes through the control/treatment building. There is no aeration and no indication of dedicated chlorine contact storage at the facility.

Originally, both wells were expected to produce equal outputs. However, the yield of the second well (No.2) deteriorated dramatically after installation. Consequently, the facility now exhibits differing characteristics; the No. 1 well being equipped with a 75 Horsepower vertical turbine pump, capable of delivering 1.5 MGD (1050 GPM), while the No. 2 well supports a 40 Horsepower vertical turbine capable of producing 0.5 MGD (350 GPM). Both pump directly into the distribution network pressure gradient and the No. 1 unit is equipped with the water systems only operational back-up power source, in the form of an engine operated right angle gear drive. The controlling capacity of this single stage operation becomes the combined output of the two wells, or 1400 GPM (2.0 MGD).

Chlorination is accomplished using standard gas solution equipment. Fluoridation is relatively new with piston/diaphragm devices feeding liquid Hydrofluosilicic Acid. Both chlorination and fluoridation are proportionately fed by tandem pacing from the No. 1 well pump. There is no indication of dedicated chlorine contact storage, however. The two well pumps are automatically controlled by pressure sensing equipment in the control/treatment building. Single point metering occurs immediately prior to discharge to the distribution network. The building site, which includes the 250,000 gallon elevated storage tank, is secured by a chain link perimeter fence.

Like Hillside, the Hope Hill complex is in excellent structural condition. The site, itself, is capable of serving the City throughout the study period. Useful life expectancy for various pieces of equipment will fall short of Year 2008, however, as outlined on Table No. 2-2.

4) DAMAC Water Plant - This source of supply was acquired by the City from others. It is comprised of a single well, equipped with a 50 Horsepower vertical turbine and rated for an output of 700 GPM (1.0 MGD). The operation is single staged, with an hydropneumatic storage tank provided within the water plant building. Chlorination and fluoridation facilities are provided at the site.

DAMAC does not presently have an operational permit, although it is included with an allocation in the City's Consumptive Use Permit (CUP). At present, this supply is maintained only as an emergency source. It suffers from several mechanical, logistical and safety deficiencies, including a bad motor thrust bearing, an inoperable standby engine system and a lack of separate chlorine gas facilities housing. Surge control valving, pressure sensing pump controls and fluoridation equipment are first stages of efforts undertaken by the City to integrate this supply into the overall water utility program. Unless the hydro tank is to be retained, chlorine contact will present a future problem. The site is securely fenced.

Structurally, DAMAC is in fair condition and, with some repair, can be expected to survive the planning period. Major renovation is needed to major componentry, however, if this source is expected to be a viable component to long range planning.

**Storage/Distribution:** As indicated previously, the Brooksville distribution network consists of a variety of pipe sizes, materials and ages. Some of the system dates back to the 1920's, while other portions are practically new. Virtually all of the pre-World War II piping is metallic (cast iron, galvanized steel, copper), while post war installations include asbestos cement, PVC and ductile iron. A great deal of the system is woefully undersized, a consequence of growth coupled with an apparent lack of definitive utility regulations and planning during early years.

The Brooksville water system has always operated around gravity feed elevated storage. While this concept is the standard for good waterworks practice, it is a rarity in Florida where artificially produced hydropneumatic storage techniques prevail in even many large systems. The establishment of elevated storage in Brooksville is a credit to the foresight of the City's early Engineering advisors.

The first elevated tank to support Brooksville' distribution gradient had a volumetric capacity of 75,000 gallons and was just retired from service two years ago. Today, the City operates two elevated tanks, the previously mentioned Hope Hill facility, with a volumetric capacity of 250,000 gallons and a new central tank, of 250,000 gallons storage, located adjacent to the site of and replacing the original tower. The new tank was just pressed into service in late September of this year, bringing the City's total system storage capacity to an aggregate of 500,000 gallons.

Together, the distribution network and elevated storage combine to serve the domestic and fire protection needs of the City. The facilities are lacking in various locations of the City, primarily due to inadequate pipe sizing. Also, the system is operated automatically from pressure sensing devices that are LOCATED AT THE WATER PLANT SITES, which frequently fail to represent true tank levels. Presently, true tank levels can only be determined by reading gauges at tank bases, or climbing the towers, or a combination of both. The most recent technical document that seems to be available to the water utility for guidance in pipeline size planning is a comprehensive study performed a decade ago and there is some question as to applicability of that document to today's needs.

#### B. Sewer Utility

**General:** Brooksville has provided municipal sewerage to its inhabitants for nearly as long as it has water. The system has seen steady growth over the decades which, along with increased Regulatory pressure, has caused the City to progressively alter its wastewater treatment strategy from communal septic tank and Inhoff tank treatment to present day "Secondary" facilities. The City sewer utility of today includes three (3) wastewater treatment plants (WWTP) that receive pollutional discharges from fifteen (15) City operated sewage lift stations, several private lift stations and several miles of gravity collection piping that ranges in size from four (4) inch up to twelve (12) inches in diameter.

**Treatment:** While the City does operate three (3) WWTP facilities, only two (2), the Croom Road WWTP and the School Street WWTP, are permitted to dispose of treatment effluent. The third installation, the DAMAC WWTP; is simply utilized to reduce organic constituencies from DAMAC wastewater before it is re-introduced into the collection network for further treatment and disposal at the Croom Road WWTP. The permitted facilities are more particularly described as follows:

1) Croom Road WWTP - Situated in the Northeast corner of the City, this WWTP is a "package" variety facility, steel constructed by the Walker Process Division of The Chicago Bridge & Iron Co., and is designed/permitted to treat up to 0.375 MGD in the "Contact Stabilization" mode of Activated Sludge Secondary Treatment. Treated liquid effluent is disposed of on site to roughly 12 acres of

percolation ponds via "Rapid Rate Land Application" techniques. Accumulated sludge solids are wasted via a tank truck to a local land application facility.

Wastewater enters the facility through a manually cleaned bar-rack (an original comminutor has long been out of service) and into a conventionally configured contact stabilization layout. The outer ring of the circular WWTP is dedicated, in appropriate proportions, to wastewater contact, sludge re-aeration and aerobic sludge digestion zones, while the inner circle comprises a mechanically cleaned and skimmed secondary clarifier. A final chlorine contact zone is passed through, then the liquid effluent is transferred to any combination of the "perc" ponds for final disposal. Oxygen needs are fulfilled by diffused aeration techniques, with air supply coming from three (3) centrifugal blowers. Chlorination disinfection is accomplished using gas solution facilities which inject the effluent immediately prior to the chlorine contact tank.

The Croom Road facility dates back to the 1960's and its useable life is drawing to a close. Some structural deterioration has begun to be pronounced (walkway bridge) and equipment componentry is starting to wear out. Table No. 2-3, following, lists the key aspects of this WWTP and their life expectancies. As can be seen, this plant will require complete replacement before the end of the study period.

2) School Street WWTP - Portions of this facility date back to the early 1950's. In fact the original grit chamber is still in use while the original Imhoff Tank serves as influent lift station for the plant. Throughout this facility there is older componentry and tankage that is being utilized, today, for a variety of purposes that may not remotely resemble their original intent. This continued utilization is a credit to the innovative thinking of the utility staff and has contributed measurably to the City's compliance with water pollution control standards at a low cost.

The heart of the School Street operation is a "package" type, steel constructed, contact stabilization plant, bearing the proprietary "Oxygest" name. The design capacity of the package plant is 0.750 MGD. It includes the usual modal volume allocations but without separating walls. Diffused aeration is provided via two (2) large 75 Horsepower centrifugal blowers. Chlorine contact is provided in a separate concrete chamber, while aerobic digestion of waste sludge is accomplished

TABLE NO. 2-3  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

USEFUL LIFE ASSESSMENT-SEWER SYSTEM

| COMPONENT           | 0-5 YEARS | 5-10 YEARS | 10-20 YEARS | 20+ YEARS |
|---------------------|-----------|------------|-------------|-----------|
| I Croom Rd. WWTP    |           |            |             |           |
| A. Structural       |           | X          |             |           |
| B. Equipment        |           | X          |             |           |
| C. Controls         |           | X          |             |           |
| D. Effluent Disp.   |           | X          |             |           |
| II School St, WWTP  |           |            |             |           |
| A. Structural       |           | X          |             |           |
| B. Equipment        | X         | X          |             |           |
| C. Controls         |           | X          |             |           |
| D. Effluent Disp.   | X         |            |             |           |
| III SR 50 Lift Sta. |           |            |             |           |
| A. Structural       |           |            |             | X         |
| B. Pumps            |           |            |             | X         |
| C. Controls         |           |            | X           |           |
| IV Howell Ave. LS   |           |            |             |           |
| A. Structural       | X         |            |             |           |
| B. Pumps            |           | X          |             |           |
| C. Controls         | X         |            |             |           |

Note: Controls include metering, laboratory, piping and electrical.

in what used to be a trickling filter. An original digester now serves as influent flow equalization, while original clarifiers act as digested sludge thickeners prior to trucking to a land application site.

Effluent disposal for the School Street WWTP is somewhat unique. Disinfected secondary effluent is pumped to the abandoned "Cone Quarry" where it percolates into the surrounding ground.

Similar to the Croom Road WWTP, the packaged unit at School Street dates back to the 1960's and is near the end of its useful life. An original comminutor is no longer operational, the clarifier mechanism drive has seen thousands of hours beyond its original design and the structure is starting to show signs of discernible decay. The life expectancies of key componentry is outlined on Table No. 2-1.

**Collection System:** Considerable study has been performed upon the Brooksville sewer system, including capacity adequacies, infiltration/inflow analysis and expansion projections. Today, the City is still coping with the problems associated with extraneous flows but is generally in a favorable position as far as dealing with the future demands that will be placed upon the utility's collection piping networks.

Although Brooksville is situated in a geographic area that exhibits considerably more topographic relief than most of the rest of the State of Florida, a considerable number of sewage lift stations is still needed to convey wastewater within the municipal system. At last count the City operates fifteen (15) such stations of its own, while several other "private" installations also exist within the system. Of the City's lift station installations, most are small and of the standard submersible format. Two (2) stations, however, are considerably larger than the others and are critical to the operation of the sewer utility. These are the SR 50 Lift Station and the Howell Avenue Lift Station.

The SR 50 Lift Station is relatively new and is the key satellite to the School Street WWTP. Its 200 Horsepower pumps presently discharge 1200 GPM to equalization storage at the WWTP, via a 16 inch diameter force main. By changing pulleys and sheaves, the capacity of this station can be increased to 2050 GPM. Due to its newness, this facility can be expected to survive the planning period of this study without major alternation/restoration. The exception to this projection concerns the

provision of standby power which is not presently a part of the facility but is expected to be needed before Year 2008.

The Howell Avenue Lift Station is a completely different story. Despite its importance of being the key feeder to the Croom Road WWTP, this 400 GPM lift station barely qualifies as such. In reality, the facility is a spartan retrofit of an old Imhoff tank, into which submersible pumps have been placed. There is no provision for standby power, the installation is susceptible to vandalism and its level of operating reliability can only be classed as marginal. As in the case of the School Street WWTP, the effectiveness of this lift station is a labor of staff innovation. As the sewer system grows toward the north and east so will the dependence upon this pivotal pumping installation. Previous studies have recommended that Howell Street discharge be re-directed to the School Street WWTP due to the anticipated growth of this portion of the municipal sewer system. In its present condition, this lift station does not exhibit nearly the degree of reliability and continuity that should be commensurate with its importance.

### C. Administrative

**General:** The Brooksville water and sewer utilities are self supporting public facilities that are independently staffed and derive their operating revenues from a system of utility rate schedules that are usage oriented. Administrative activities include system operations, maintenance, planning, permit compliance, billing and budgeting.

**Staffing:** The water and sewer utility staff includes a Utilities Director, an Operations Superintendent and a support group specializing in the myriad of maintenance aspects associated with the systems. Included in the staffing are meter readers, laboratory technicians, clerks, plumbing and electrical specialists, equipment operators and laborers.

**Permits:** Both the water and sewer utilities require regulatory approval before they can be operated. Each source of water supply must satisfy Florida DER review and must receive a withdrawal allocation from the regional water management district within whose boundaries the source falls. In the case of Brooksville, the responsible agency is the Southwest Florida Water Management District (SWFWMD). On the dirty water side, all WWTP's must be permitted for operation by DER.

The City's two (2) WWTP facilities are presently permitted for operation. These permits are expected to require frequent modification over the planning period of this study. In fact, in depth discussions are presently ongoing between the City and DER as to the future strategies that the City will have to adopt to satisfy long range regulatory constraints. The critical elements to those strategies are effluent quality and effluent disposal.

Brooksville presently holds a valid Consumptive Use Permit (CUP), issued by SWFWMD. The particular limits of Permit No. 207627 are illustrated in Table No. 2-1. As will be shown later, in Table No. 3-1, the limits of the present CUP will remain valid through its initial expiration date of April 4, 1990, but that re-issue of the permit will also require an increase in consumptive use allocations.

Planning: A variety of investigations have been conducted upon the various aspects of the Brooksville water and sewer utilities over the years. Significant analyses, all of which have been utilized in the preparation of this study, include:

- 1) "Recommending Improvements to the Sewerage and Water Distribution Facilities of Brooksville, Florida"; January, 1955; by Pimm Engineering Company.
- 2) "Citywide Comprehensive Plan"; 1979; by Coastal Engineering Associates, Inc.
- 3) "Preliminary Design Report-Upgrading and Expansion of School Street Wastewater Treatment Plant and Effluent Disposal Facilities"; December, 1986 DRAFT; by Camp Dresser and McKee, Inc.
- 4) "Utility Rate Study for the City of Brooksville"; March, 1987; by Coastal Engineering Associates, Inc.
- 5) "City of Brooksville Utility Division Report-Five Year Renewal and Rehabilitation Program"; 1986-87; by William S. Smith, Superintendent, Utility Operations.
- 6) "ISO Investigation Report-City of Brooksville"; June, 1987; by ISO Commercial Risk Services, Inc.



**Billing/Budgeting:** Fee and charges are levied to support the continuation of the water and sewer utilities in Brooksville. Revenues are distributed to four (4) key areas of cost. These are:

- 1) Operations and Maintenance
- 2) Existing Debt Service
- 3) General Fund
- 4) Renewal and Replacement (R&R)

Of particular interest to the Engineering segment of this study is the Renewal and Replacement category, since a potential for overlap, or redundancy can develop. Close scrutiny of the Superintendent's Five Year Plan has confirmed the intent to establish/restore standby power facilities at the City's key electrical power consuming components (water plants, major sewage lift stations). As will be seen later, it is the opinion of this study that standby power is sufficiently growth oriented that it should be considered as a capital outlay expense, rather than R& R and has been treated as such.

### **III. Projected Conditions**

TABLE NO. 3-4  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

PROJECTED WATER SYSTEM IMPROVEMENTS SUMMARY

| CATEGORY                          | PRIORITY | DESCRIPTION  | ESTIMATED COST                       |
|-----------------------------------|----------|--|--------------------------------------|
| Immediate<br>(0-2 Yrs)            | 1        | Comprehensive Water Study with Distribution Assessment Modeling                              | \$ 100,000 ✓<br>(Growth=50%)         |
| Short Range<br>(0-2 Yrs)          | 2        | Standby Power Facilities (Generator/Engine) at all Water Plants                              | \$ 200,000<br>(Growth=50%)           |
| Short Range<br>(0-2 Yrs)          | 3        | System Control Telemetry   | \$ 100,000<br>(Growth= 100%)         |
| Short Range<br>(0-5 Yrs)          | 4        | Rehabilitate/Update Lamar  | \$ 250,000<br>(Growth=75%)           |
| Short Range<br>(0-5 Yrs)          | 5        | Rehabilitate DAMAC Water Plant and acquire Operating Permit                                  | \$ 150,000<br>(Growth=25%)<br>-----  |
| TOTAL ESTIMATED SHORT RANGE COST: |          |  | \$ 800,000<br>(Growth= 59%)          |
| Long Range<br>(5-20 Yrs)          | 6        | Modify/Upgrade/Supplement Hillside and Hope Hill Water Plants                                | \$ 400,000<br>(Growth=100%)          |
| Long Range<br>(5-20 Yrs)          | 7        | Construct 25,000+/- feet of strategically located 12" transmission piping per study findings | \$1,000,000<br>(Growth= 50%)         |
| Long Range<br>(5-20 Yrs)          | 8        | Construct third 0.25 MG Elevated Water Storage Tank  | \$ 700,000<br>(Growth=100%)<br>----- |
| TOTAL ESTIMATED LONG RANGE COST:  |          |  | \$2,100,000<br>(Growth= 76%)         |

Notes:

- 1) Improvements do not include R & R elements, other than standby power.
- 2) Estimates are based upon Fall, 1987 values.

TABLE NO. 3-5  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

PROJECTED SEWER SYSTEM IMPROVEMENTS SUMMARY

| CATEGORY                          | PRIORITY | DESCRIPTION   | ESTIMATED COST              |
|-----------------------------------|----------|---|-----------------------------|
| Short Range<br>(0-2 Yrs)          | 1        | Replace Howell Avenue sewage lift station with new 500 GPM capability                                 | \$ 400,000<br>(Growth=20%)  |
| Short Range<br>(0-2 Yrs)          | 2        | Re-route Howell Avenue lift station discharge to South Street WWTP with new 8" FM                     | \$ 200,000<br>(Growth=20%)  |
| Short Range<br>(0-2 Yrs)          | 3        | Provide increased treatment capacity from presently permitted 1.125 MGD to 1.625 MGD                  | \$1,350,000<br>(Growth=75%) |
| Short Range<br>(0-2 Yrs)          | 4        | Provide expanded effluent disposal facilities to accomodate 0.50 MGD increased treatment capability   | \$ 700,000<br>(Growth=100%) |
| TOTAL ESTIMATED SHORT RANGE COST: |          |   | \$2,650,000<br>(Growth=68%) |
| Long Range<br>(5-20 Yrs)          | 5        | Provide new/expanded effluent disposal facilities to accomodate full 2.25 MGD capacity                | \$2,500,000<br>(Growth=50%) |
| Long Range<br>(5-20 Yrs)          | 6        | Replace Croom Road WWTP and expand overall treatment capacity to 2.25 MGD (1.0 MGD of new facilities) | \$3,250,000<br>(Growth=60%) |
| TOTAL ESTIMATED LONG RANGE COST:  |          |   | \$5,750,000<br>(Growth=56%) |

Notes:

- 1) Improvements do not include R & R elements
- 2) Estimates are based upon Fall, 1987 values.
- 3) Does not include land costs (except in cases of rapid rate effluent disposal).

TABLE NO. 3-6  
 WATER AND SEWER UTILITY EVALUATION  
 CITY OF BROOKSVILLE, FLORIDA

IMPLEMENTATION SCHEDULE-WATER AND SEWER SYSTEM CAPITAL IMPROVEMENTS

| ELEMENT OF WORK                  | PRIORITY | 1988-1989  | 1989-1990    | 1990-1992  | 1992-1995  | 1995-2000    | 2000-2008  |
|----------------------------------|----------|------------|--------------|------------|------------|--------------|------------|
| <b>I. WATER</b>                  |          |            |              |            |            |              |            |
| Comprehensive Water Study        | 1        | \$ 100,000 |              |            |            |              |            |
| Standby Power                    | 2        | \$ 200,000 |              |            |            |              |            |
| Telemetry                        | 3        | \$ 100,000 |              |            |            |              |            |
| Lamar Update                     | 4        |            | \$ 250,000   |            |            |              |            |
| DAMAC Rehabilitation             | 5        |            |              | \$ 150,000 |            |              |            |
| Hope Hill/Hillside Modifications | 6        |            |              |            | \$ 400,000 |              |            |
| Transmission Piping              | 7        |            |              |            |            | \$ 1,000,000 |            |
| Elevated Tank                    |          |            |              |            |            |              | \$ 700,000 |
| <b>II. SEWER</b>                 |          |            |              |            |            |              |            |
| Howell Ave. L. S.                | 1        |            | \$ 400,000   |            |            |              |            |
| Howell Ave. F. M.                | 2        |            | \$ 200,000   |            |            |              |            |
| Treatment Capacity Expansion     | 3        |            | \$ 1,350,000 |            |            |              |            |

| ELEMENT OF WORK                   | PRIORITY | 1988-1989  | 1989-1990   | 1990-1992   | 1992-1995   | 1995-2000   | 2000-2008  |
|-----------------------------------|----------|------------|-------------|-------------|-------------|-------------|------------|
| Effluent Disposal Expansion       | 4        |            | \$ 700,000  |             |             |             |            |
| New/Exp Eff. Disp.                | 5        |            |             | \$2,500,000 |             |             |            |
| Replace Croom Rd. Expand Capacity | 6        |            |             | \$3,250,000 |             |             |            |
| -----                             |          |            |             |             |             |             |            |
| III SCHEDULE TOTALS               |          | \$ 400,000 | \$2,900,000 | \$ 150,000  | \$6,150,000 | \$1,000,000 | \$ 700,000 |
| IV GROWTH RELATED TOTALS          |          | \$ 250,000 | \$2,020,000 | \$ 37,500   | \$3,600,000 | \$ 500,000  | \$ 700,000 |

#### **IV. Assessment of Existing Connection Fees**

#### IV. Assessment of Existing Connection Fees

This Chapter presents a comparison of the projected CIP expansion requirements with the anticipated revenues to be generated by the existing water and sewer connection fees. The Chapter consists of the following sections:

- . Assessment of existing water connection fee; and
- . Assessment of existing sewer connection fee.

Each of these topics is discussed below:

##### A. Assessment of Existing Water Connection Fee

The existing water connection fee of \$315 per equivalent residential unit has been in effect since 1984. In order to determine the adequacy of this charge, the anticipated connections in ERUs presented in Chapter III were multiplied by the charge in order to develop projected water connection fee revenues per period through the year 2008. These revenues were then compared against the anticipated capital improvement expansion requirements per period through the year 2008 to determine if sufficient revenues would be generated.

As shown in Schedule IV-1, the total cost in 1988 dollars for expansion projects through the year 2008 amounts to \$2,075,000. Given projected connections in ERUs during the same period of 9,630, the revenue projected with existing connection fees results in approximately \$3,000,000. Therefore, even though a small negative balance in the 1989 to 1990 period is anticipated, the current charge of \$315 appears to be adequate. It is important to note, however, that these calculations assumed no credit for offsite development.

Given the results of this analysis, a revised water connection fee was not calculated.



Schedule IV-1

CITY OF BROOKSVILLE, FLORIDA  
ADEQUACY OF EXISTING WATER CONNECTION FEES TEST

|   | 1988-89         | 1989-90         | 1990-92         | 1992-95         | 1995-00           | 2000-08         | Total             |
|---|-----------------|-----------------|-----------------|-----------------|-------------------|-----------------|-------------------|
| <b>Water CIP Costs</b>                                      |                 |                 |                 |                 |                   |                 |                   |
| Expansion   | 1250,000        | 1187,500        | 137,500         | 1400,000        | 1500,000          | 1700,000        | 12,075,000        |
| Non-expansion   | 150,000         | 62,500          | 112,500         | 0               | 500,000           | 0               | 825,000           |
| <b>Total CIP Costs</b>                                      | <b>1400,000</b> | <b>1250,000</b> | <b>1150,000</b> | <b>1400,000</b> | <b>11,000,000</b> | <b>1700,000</b> | <b>12,900,000</b> |
| <b>Projected Connections (ERLPs)</b>                        | 300             | 300             | 724             | 1,086           | 2,293             | 4,925           | 9,630             |
| <b>Existing Connection Fee (ERL)</b>                        | 1315            | 1315            | 1315            | 1315            | 1315              | 1315            | 1315              |
| <b>Projected Revenue from Connection Fees</b>               | 194,500         | 194,500         | 1228,060        | 1342,090        | 1722,925          | 11,351,375      | 13,032,450        |
| <b>Projected Beginning Balance Connection Fees</b>          | 164,000         | 0               | 0               | 1190,560        | 1132,650          | 1355,575        |                   |
| <b>Connection Fees Available</b>                            | 1158,500        | 194,500         | 1228,060        | 1332,650        | 1453,575          | 11,906,950      |                   |
| <b>LESS: CIP Expansion Costs</b>                            | (1250,000)      | (1187,500)      | (137,500)       | (1400,000)      | (1500,000)        | (1700,000)      | (12,075,000)      |
| <b>Projected Connection Fee Revenue Surplus (Shortfall)</b> | 1091,500        | (993,000)       | 1190,560        | 1132,650        | 1355,575          | 11,206,950      |                   |

**B. Assessment of Existing Sewer Connection Fee**

The existing sewer connection fee has also been in effect since 1984 and amounts to \$675 per ERU. The adequacy of the existing fee was assessed in a manner identical to that described for the water connection fee assessment.

As shown in Schedule IV-2, the total expansion related CIP costs through the year 2008 amount to approximately \$5,000,000 in 1988 dollars. Given the projected connections in ERUs and assuming no credit offset for offsite development, projected revenue from connection fees totals approximately \$4,000,000 during the same period. Consequently, if the existing fee remains in place there would be a projected shortfall of approximately \$1,000,000 in sewer connection fee revenue required even if the current practice of allowing for offsite development credits is eliminated. Consequently, the current sewer connection fee appears to be inadequate and a revised connection fee will be necessary in order for the City to successfully complete its proposed expansion related Sewer Capital Improvement Plan.

Schedule IV-2

CITY OF INDOLESVILLE, FLORIDA  
SUFFICIENCY OF EXISTING SEWER CONNECTION FEES TEST

|  | 1988-89          | 1989-90            | 1990-92          | 1992-95            | 1995-00          | 2000-08            | Total              |
|--|------------------|--------------------|------------------|--------------------|------------------|--------------------|--------------------|
| <b>Sewer CIP Costs:</b>                            |                  |                    |                  |                    |                  |                    |                    |
| Expansion  | 0                | \$1,832,500        | 0                | \$1,200,000        | 0                | 0                  | \$3,032,500        |
| Non-expansion                                      | 0                | 617,500            | 0                | 2,350,000          | 0                | 0                  | 3,267,500          |
| <b>Total CIP Costs</b>                             | <b>0</b>         | <b>\$2,450,000</b> | <b>0</b>         | <b>\$3,550,000</b> | <b>0</b>         | <b>0</b>           | <b>\$6,000,000</b> |
| <b>Projected Connections (ERU's)</b>               | <b>367</b>       | <b>367</b>         | <b>671</b>       | <b>1,006</b>       | <b>1,448</b>     | <b>2,010</b>       | <b>5,869</b>       |
| Existing Connection Fee (ERU)                      | \$675            | \$675              | \$675            | \$675              | \$675            | \$675              | \$675              |
| <b>Projected Revenue from Connection Fees</b>      | <b>\$247,725</b> | <b>\$247,725</b>   | <b>\$452,790</b> | <b>\$679,185</b>   | <b>\$977,400</b> | <b>\$1,356,750</b> | <b>\$3,961,575</b> |
| Projected Beginning Balance Connection Fees        | \$450,000        | \$697,725          | 0                | \$452,790          | 0                | \$977,400          |                    |
| <b>Connection Fees Available</b>                   | <b>\$697,725</b> | <b>\$945,450</b>   | <b>\$452,790</b> | <b>\$1,131,975</b> | <b>\$977,400</b> | <b>\$2,334,150</b> |                    |
| LESS: CIP Expansion Costs                          | 0                | (\$1,832,500)      | 0                | (\$1,200,000)      | 0                | 0                  | (\$3,032,500)      |
| <b>Projected Connection Fee Surplus(Shortfall)</b> | <b>\$697,725</b> | <b>(\$887,050)</b> | <b>\$452,790</b> | <b>(\$68,025)</b>  | <b>\$977,400</b> | <b>\$2,334,150</b> |                    |

## **V. Connection Fee Methodology**

## V. Connection Fee Methodology

This chapter presents a discussion of the approach used to determine the updated sewer connection fee. The chapter consists of the following sections.

- . Approach to Selecting the Appropriate Connection Fees
- . Description of the Marginal/Incremental Method of Capital Recovery
- . Evaluation of the Marginal/Incremental Method

Each of these topics is discussed below.

### A. Approach to Selecting the Appropriate Connection Fee

After analyzing available data three capital cost recovery alternatives were identified. These methods are as follows:

- . Value of Service or Original Cost Method - This method is based on recovery of a customers' proportionate share of the original cost of the system escalated to current dollars.
- . System Buy-In or Net Book Value Method - This method is based on recovery of a customers' proportionate share of the original cost of the system less depreciation escalated to current dollars.
- . Marginal/Incremental Method - This method is based on recovery of a customers' proportionate share of the present value of planned capital improvement projects for expansion of system capacity.

It is feasible to develop capital recovery fees based upon each of these capital cost recovery alternatives and each represents an equitable and understandable methodology. However, in utilities faced with significant capital improvement requirements, there can be substantial variances among the alternatives. The reason being is that the cost of existing plant and facilities may not represent current or future costs of improved technology and higher

standards. For this reason, it is recommended that the Marginal/Incremental Method be adopted.

In addition to identifying an appropriate capital cost recovery alternative, it is also important to recognize the relationship between user fees and capital recovery fees. Typically in water and sewer user charges there is an element of cost recovered which represents plant capacity. This cost usually exists in the form of debt service and possibly an annual amount budgeted for capital expenditures. If capital recovery fees are calculated at full capital cost recovery, there is the potential that after connecting to the system, the new customer will also be paying for plant capacity in the user charge. In order to mitigate this possibility, the recommended connection fee was calculated at full cost recovery and adjusted by a credit representing the estimated average amount of debt service (principal) a new connector will pay in user charges over the life of the outstanding debt. Conversely, if a new connector does not connect to the system immediately, there will be some period in which the system will be responsible for the interest carrying costs associated with bonded debt. Therefore, a debit has also been calculated to represent the interest carrying cost, on average, that a new customer will avoid until connected to the system.

#### B. Description of Marginal/Incremental Method of Cost Recovery

This method uses as a basis for the unit cost computation the cost of system capacity for specific projects planned in the future. The basis for the cost computation under this alternative is engineering cost estimates of identified projects. Hensley-Schmidt estimated these system costs which are representative of major functional cost components of the system. Based on this information, the capital recovery fees were calculated using the cost of system capacity for specific projects planned through Fiscal Year 2008.

#### C. Evaluation of Marginal/Incremental Cost Recovery Method

This section presents an analysis of the capital recovery fee methodology by means of two separate criteria. One set of criteria assesses the appropriateness in terms of sound rate making principles. These criteria include equity, legality, and ease of administration. The other set of criteria evaluates the methodology based on considerations specific to Brooksville, such as appropriateness of cost recovery based on capital improvement activities and unit costing approaches.

## 1. Analysis of Rate Making Criteria For Selected Methodology

The following presents an analysis of the selected methodology based on sound rate making principles.

. Equity

. Legality

- a. Equity - In the development of a utility pricing schedule, it is important to achieve fairness and equity among customer classes in terms of distribution of system costs. Complete fairness and equity is almost impossible to achieve; however, a rate alternative should strive to be as fair and equitable as possible. One good test of the question of fairness and equity is to ask the question, "Are the costs of the system being recovered from system users and new connectors necessitating those costs?" This can be tempered or balanced with another question, "What customers, existing or new, benefit from expenditure of these costs?" Of the viable alternatives potentially applicable, the Marginal/Incremental Method of cost recovery is the most equitable in that it is predicated upon recovering the estimated costs of major system expansion required to service the needs of the system resulting from expansion.
- b. Legality - It is very important that any schedule of capital recovery fees implemented be able to withstand the test of intense public scrutiny and, even more importantly, be legally defensible under challenge in the courts. This requires that a rate alternative be consistent with generally accepted rate making practice and also be compatible with legal case precedents in the State and throughout the Country. The selected methodology is legal in that it is based on proven rate making methodologies, uses estimated engineering cost data presented in the proposed capital improvement plans and is applied uniformly. However, with respect to capital recovery fees, legality usually focuses on the potential for "double" recovery of cost, i.e., recovery of principal and interest through the capital recovery fee that is also being recovered in the service charge. The sewer connection fee developed in this study was calculated on the basis of allowing a credit for the estimated value of principal payments the customer would pay in the user charges after connecting to the system and a debit for the estimated value of interest payments not made until the customer connects.--

## 2. Other Considerations for Evaluating the Selected Methodology

In the selection of an appropriate capital cost recovery methodology, two other factors should be considered. These factors are discussed below:

a. Appropriateness of Cost Recovery - The appropriateness of the cost recovery methodology is dependent upon the reasons for additional capital facilities and the status of the capital facility projects. Additional capital facilities may be required for replacement or expansion of the system. However, the capital recovery fee should be restricted for funding expansion projects only. The Marginal/Incremental Method views the system in increments of capacity. Therefore, this alternative appropriately captures only the costs of on-going projects or projects slated for the future.

b. Fee Assessment Method - The unit cost for capital recovery can be based upon many factors, i.e. meter size, fixtures, land use, a combination of fixtures and land use, availability or equivalent residential units. The City currently assesses their connection fee using a meter size approach for commercial establishments and an equivalent residential unit approach for residences.

Two alternatives which the City may wish to consider as a method of assessing the fee would be use of state standards or use of fixture units. The state standard method is based on a composite or average usage by various customer installation classes throughout the State. The advantage of this method is that it is easy to apply and requires little additional work on the part of City staff. The disadvantage of this method is that since the method is based on average usage throughout the State it is possible that the usage patterns in the City of Brooksville may not approximate the usage patterns throughout the State and variations could exist between demand as determined by this method and the actual demand placed on the water and sewer system.

The fixture unit basis of assessment can reduce the potential assessment inequities caused by using the state standard method. The advantage of the fixture method is that it generally results in a more equitable assessment because it is based on the relative potential water and sewer demand of specific plumbing fixtures. Under this method, the types and number of supply and drainage fixture units are determined for each project and the fee is assessed accordingly. This method recognizes and allows for the fact that different levels of demand can be generated by similar development projects



depending on the use of the facility and the number of fixture units. For these reasons we would suggest that the City assess its connection fee using the fixture unit method because it results in a more accurate estimate of demand placed on the water and sewer system and a more equitable assessment on individual development projects. Although we recognize that adoption of the fixture unit method may result in some initial implementation difficulties (such as verifying the number of fixture units for each project), we still recommend its consideration because of the objectivity and accuracy of the assessment generated by this method.

Regardless of the assessment method used by the City, either the existing method, the state standards method, or the fixture unit method, the following considerations should be adopted:

- Assessors need accurate and complete information from developers on each project, and ample time to review the project prior to establishing an assessment.
- There will often be changes in project plans and a corresponding need to revise the assessment accordingly. Therefore, verification of the ultimate project use will be necessary in order to finalize and adjust the assessment as required.
- There will be a need for periodic project inspection regardless of the assessment method used in order to identify and verify any changes in the project use and adjust the assessment accordingly.

It is suggested that the current practice of allowing a credit of up to 50% of the connection fee for offsite development be carefully reconsidered with regard to the proposed sewer connection fee and eliminated altogether for the existing water connection fee. As shown in Chapter III, the existing water connection of \$315 per ERU is barely adequate given the estimated water expansion needs and projected connections to the system. A reduction in the fee that leads to reduced revenue realized could have a negative impact on the Water Capital Improvement Plan.

The proposed sewer connection fee is based on identified costs of projects necessary to meet anticipated growth requirements. If the current practice of allowing a credit for offsite development is continued, the credit should apply only to expansion projects

included in the proposed CIP, upon which the connection fee is based, and be limited to the estimated costs included for the project.

**VI. Determination of Revised Sewer Connection Fee**

## VI. Determination of Revised Sewer Connection Fee

This chapter presents an analysis of the estimated capital costs of expanding the sewer system which are key inputs to the computer model presented in Schedule VI-1. This model as described below in Section B performs the detailed calculations used to determine the connection fee. The chapter consists of the following sections:

- . Sewer Capital Improvement Plan
- . Calculation of Revised Sewer Connection Fee

Each of these topics is described below:

### A. Sewer Capital Improvement Plan

For the period 1988 through 2008, identified improvement and expansion projects total \$8.4 million as projected by Hensley-Schmidt, Inc. Projects necessitated by expansion or growth amount to approximately \$5 million while maintenance and improvement projects total approximately \$3.4 million. These dollar amounts are shown in Schedule IV-2.

### B. Calculation of Sewer Connection Fee

Schedule VI-1 presents the model used to calculate the sewer connection fee. The proposed connection fee is calculated on an ERU basis and is predicated upon the capital cost estimates and financing assumptions related to proposed debt service as presented in Chapter VIII. The model is comprised of two segments consisting of a fee calculated upon total cost recovery and a fee calculated upon an allowance of a credit for the principal portion of the debt service relating to the new connector's user charge and a debit for the interest portion of the debt service related to the new connector's user charge. The following narrative presents a step-by-step description of the methodology calculations as presented in Schedule VI-1. As described previously, the total capital cost for expanding the City's sewer system has been estimated to be approximately \$5,000,000 (shown in Column 2). Column 3 presents the additional system capacity added by the expansion projects or 1.00 MGD. The capacity in ERUs provided by the expansion program is shown in Column 4. Column 5 presents the marginal cost per

Schedule VI-1

CITY OF BROOKSVILLE, FLORIDA  
SEWER CAPITAL RECOVERY CHARGE MODEL

| (1)                 | (2)<br>Present<br>Value of<br>Expansion<br>Construct.<br>Cost<br>(1000's) | (3)<br>Additional<br>Capacity<br>(MGD) | (4)<br>Capacity<br>ERPs<br>at<br>0<br>GPD | (5)<br>Marginal<br>Cost<br>per ERU | (6)<br>Current<br>Number<br>ERPs<br>on System | (7)<br>Estimated<br>Conn/Year<br>in ERPs | (8)<br>Years to<br>Buildout | (9)<br>Assumed<br>Years of<br>Debt Serv | (10)<br>Average<br>Number<br>ERPs<br>On-line<br>During<br>Buildout |
|---------------------|---|--|---|------------------------------------|---|--|-----------------------------|---|--|
| Sewer System        |   |  |   |                                    |   |  |                             |   |  |
| Identified Projects | \$5,033   | 1.00                                   | 5,869                                     |                                    |   |  |                             |   |  |
| Total Sewer System  | \$5,033   |  |   | 0.857                              | 3,434   | 293                                      | 20.00                       | 30                                      | 4,369  |

| (11)<br>Average<br>Annual<br>Debt<br>Service<br>Principal<br>(1000's) | (12)<br>Average<br>Annual<br>Debt Serv<br>Princ.<br>per ERU | (13)<br>Avg Years<br>New Conn<br>Will Pay<br>Debt Serv<br>Princ. | (14)<br>Present<br>Value<br>Debt Serv<br>Princ.<br>Paid<br>in Rates | (15)<br>Average<br>Annual<br>Debt<br>Service<br>Interest<br>(1000's) | (16)<br>Average<br>Annual<br>Debt Serv<br>Interest<br>per ERU | (17)<br>Avg Years<br>New Conn<br>Will Not<br>Pay<br>Interest | (18)<br>Present<br>Value<br>Interest<br>Not<br>Paid<br>in Rates | (19)<br>Adjusted<br>Marginal/<br>Incremental<br>Cost<br>per ERU |      |
|---|---|--|---|--|---|--|---|---|------|
| Sewer System  |   |  |   |  |   |  |   |   |      |
| Identified Projects   |   |  |   |  |   |  |   |   |      |
| Total Sewer System  | 670   | 64   | 15  | 677  | 1126  | 615  | 15  | 6137  | 6918 |

ERU (\$857) based on dividing \$5,033,000 by the capacity of 5,869 ERUs. Columns 6, 7 and 8 present information on the current number of ERUs on the sewer system (5,434) the estimated connections to be added per year on average (293) and the number of years to buildout (i.e., the CIP projection period of the model which is twenty years). The model then takes the information in Columns 9 through 12 which includes the assumed years of debt service, the average number of ERUs on-line during the twenty year buildout, and the average debt service principal amount, and calculates the average principal per ERU or \$8. The sole purpose of the calculations covered in Columns 6 through 12 is to estimate the amount of principal payments new customers will pay in the user charges on average during the life of the bond to be issued to cover the costs of expansion capital improvements. Based on this information and the average years a new connection will pay debt service (estimated to be fifteen years as shown in Column 13), the model estimates the present value of debt service paid in the rates in Column 14 in order to calculate the credit to the connection fee. Columns 15, 16 and 17 perform similar calculations in order to determine the average amount of interest required in the user charges per ERU as a result of the proposed bond issue. Column 17 presents the average years that a new connector will not pay interest, or stated another way, given equal connections to the system during the thirty year period, the average ERU will be connected to the system in year fifteen. Column 18 presents the present value of interest not paid in the rates or \$137. Columns 14 and 18 are then added to and subtracted from Column 5, respectively, in order to arrive at the adjusted marginal incremental cost per ERU shown in Column 19 of \$918.

**VII. Financing Considerations of the Capital  
Improvement Program**

## VII. Financing Considerations of the Capital Improvement Program

This chapter presents a discussion of the proposed Capital Improvement Program and the resultant revenue bond financing requirements necessary to fund the program. The chapter presents an assessment of the proposed sewer connection fees given the capital improvement program as described in Chapter II, discusses the acceleration of water and sewer projects identified in the Capital Improvement Plan and presents the financing needs assessment based upon an acceleration of water and sewer projects. The chapter consists of the following sections:

- . Assessment of proposed sewer connection fees
- . Acceleration of water and sewer projects
- . Financing needs assessment

Each of these topics is described below:

### A. Assessment of Proposed Sewer Connection Fees

Schedule IV-2 in Chapter IV presented an assessment of the existing sewer connection fee compared to the proposed sewer capital expansion requirements and indicated the existing fees were not adequate. Chapter VI presented a calculation of revised sewer connection fees. In this chapter Schedule VII-1 presents a comparison of the proposed sewer connection fee compared to the Capital Improvement Program presented in Chapter III and indicates that given the projected connections to the system, the proposed fee will be adequate to cover the currently identified sewer expansion projects.

### B. Acceleration of Water and Sewer Capital Improvement Projects

The Capital Improvement Program described in Chapter III identified and prioritized water and sewer capital improvement projects and estimated the timing of project initiation for each. The timing of these projects is necessarily dependent upon a certain critical path which dictates the order in which projects should proceed. However, within certain reasonable limits, many of these projects may be accelerated if desired.



Schedule VII-1

CITY OF BROOKSVILLE, FLORIDA  
 ADEQUACY OF PROPOSED SEWER CONNECTION FEES TEST

|   | 1988-89   | 1989-90       | 1990-92   | 1992-95       | 1995-00     | 2000-08     | Total         |
|---|-----------|---------------|-----------|---------------|-------------|-------------|---------------|
| <b>Sewer CIP Costs:</b>                             |           |               |           |               |             |             |               |
| Expansion   | \$0       | \$1,832,500   | \$0       | \$3,200,000   | \$0         | \$0         | \$5,032,500   |
| Non-expansion                                       | 0         | 817,500       | 0         | 2,550,000     | 0           | 0           | 3,367,500     |
| <b>Total CIP Costs</b>                              | \$0       | \$2,650,000   | \$0       | \$5,750,000   | \$0         | \$0         | \$8,400,000   |
| <b>Projected Connections (ERF's)</b>                | 367       | 367           | 671       | 1,006         | 1,448       | 2,010       | 5,869         |
| <b>Existing Connection Fee (ERF)</b>                | \$918     | \$918         | \$918     | \$918         | \$918       | \$918       | \$5,869       |
| <b>Projected Revenue from Connection Fees</b>       | \$336,906 | \$336,906     | \$615,794 | \$923,692     | \$1,329,264 | \$1,845,180 | \$5,387,742   |
| <b>Projected Beginning Balance Connection Fees</b>  | \$450,000 | \$786,906     | \$0       | \$615,794     | \$0         | \$1,329,264 |               |
| <b>Connection Fees Available</b>                    | \$786,906 | \$1,123,812   | \$615,794 | \$1,539,486   | \$1,329,264 | \$1,174,444 |               |
| <b>LESS: CIP Expansion Costs</b>                    | \$0       | (\$1,832,500) | \$0       | (\$3,200,000) | \$0         | \$0         | (\$5,032,500) |
| <b>Projected Connection Fee Surplus (Shortfall)</b> | \$786,906 | (\$708,688)   | \$615,794 | (\$1,660,514) | \$1,329,264 | \$1,174,444 |               |

Since the non-expansion related projects identified in the Capital Improvement Plan cannot be financed through excess operating revenues without a significant impact on rate payers, these projects, if undertaken, must be financed using some form of outside financing. If outside financing is desired, there may be certain cost efficiencies in reducing the number of financings and, to the extent possible, obtaining a larger amount of financing in fewer issues. This is particularly true with regard to revenue bond financing given the time and effort involved in structuring a bond issue, not to mention the costs of issuance. Therefore, Schedules VII-2 and VII-3, show an acceleration of water and sewer projects, respectively, and a comparison of connection fee revenues available to offset the expansion related portions of the financings.

C. Financing Needs Assessment

Schedule VII-4 presents the water and sewer financing needs resulting from the acceleration of the Capital Improvement Program as discussed above. As shown in the period 1988 to 1989 under this alternative, water financing needs would amount to approximately \$1,000,000 while sewer financing needs would amount to approximately \$1,900,000. Total financing needs would approximate \$2.9 million in 1988 and 1989 and another \$4.9 million in the 1992 to 1995 period.

Schedule VII-2

CITY OF BULKINSVILLE, FLORIDA  
ASSESSMENT OF EXISTING WATER CONNECTION FEES TEST

|  | 1988-89            | 1989-90         | 1990-92          | 1992-95            | 1995-00          | 2000-08            | Total              |
|--|--------------------|-----------------|------------------|--------------------|------------------|--------------------|--------------------|
| Water CIP Costs:   |                    |                 |                  |                    |                  |                    |                    |
| Expansion  | \$875,000          | \$0             | \$0              | \$1,200,000        | \$0              | \$0                | \$2,075,000        |
| Non-expansion  | 325,000            | 0               | 0                | 500,000            | 0                | 0                  | 825,000            |
| <b>Total CIP Costs</b>                                     | <b>\$1,200,000</b> | <b>\$0</b>      | <b>\$0</b>       | <b>\$1,700,000</b> | <b>\$0</b>       | <b>\$0</b>         | <b>\$2,900,000</b> |
| Projected Connections (ERP)                                | 300                | 300             | 724              | 1,086              | 2,295            | 4,925              | 9,630              |
| Existing Connection Fee (ERF)                              | \$315              | \$315           | \$315            | \$315              | \$315            | \$315              | \$315              |
| Projected Revenue from Connection Fees                     | \$94,500           | \$94,500        | \$228,060        | \$342,090          | \$722,925        | \$1,551,375        | \$3,031,450        |
| Projected Beginning Balance Connection Fees                | \$64,000           | \$0             | \$94,500         | \$322,560          | \$0              | \$722,925          |                    |
| Connection Fees Available                                  | \$158,500          | \$94,500        | \$322,560        | \$664,650          | \$722,925        | \$2,274,300        |                    |
| LESS: CIP Expansion Costs                                  | (\$875,000)        | \$0             | \$0              | (\$1,200,000)      | \$0              | \$0                | (\$12,075,000)     |
| <b>Projected Connection Fee Revenue Surplus(Shortfall)</b> | <b>(\$716,500)</b> | <b>\$94,500</b> | <b>\$322,560</b> | <b>(\$535,350)</b> | <b>\$722,925</b> | <b>\$2,274,300</b> |                    |

Schedule VII-3

CITY OF BROOKSVILLE, FLORIDA  
 AMENDMENT OF PROPOSED SEWER CONNECTION FEES TEST

|  | 1988-89              | 1989-90          | 1990-92          | 1992-95              | 1995-00            | 2000-08            | Total                |
|--|----------------------|------------------|------------------|----------------------|--------------------|--------------------|----------------------|
| <b>Sewer CIP Costs:</b>                            |                      |                  |                  |                      |                    |                    |                      |
| Expansion  | \$1,832,500          | 0                | 0                | \$3,200,000          | 0                  | 0                  | \$5,032,500          |
| Non-expansion                                      | \$17,500             | 0                | 0                | 2,350,000            | 0                  | 0                  | 2,367,500            |
| <b>Total CIP Costs</b>                             | <b>\$2,650,000</b>   | <b>0</b>         | <b>0</b>         | <b>\$5,550,000</b>   | <b>0</b>           | <b>0</b>           | <b>\$8,400,000</b>   |
| <b>Projected Connections (ERP's)</b>               | <b>367</b>           | <b>367</b>       | <b>671</b>       | <b>1,006</b>         | <b>1,448</b>       | <b>2,010</b>       | <b>5,869</b>         |
| <b>Existing Connection Fee (ERF)</b>               | <b>6918</b>          | <b>6918</b>      | <b>6918</b>      | <b>9918</b>          | <b>9918</b>        | <b>6918</b>        |                      |
| <b>Projected Revenue from Connection Fees</b>      | <b>\$336,906</b>     | <b>\$336,906</b> | <b>\$615,794</b> | <b>\$923,652</b>     | <b>\$1,329,264</b> | <b>\$1,445,180</b> | <b>\$5,387,742</b>   |
| <b>Projected Beginning Balance Connection Fees</b> | <b>\$450,000</b>     | <b>0</b>         | <b>\$336,906</b> | <b>\$952,700</b>     | <b>0</b>           | <b>\$1,323,264</b> |                      |
| <b>Connection Fees Available</b>                   | <b>\$786,906</b>     | <b>\$336,906</b> | <b>\$952,700</b> | <b>\$1,876,352</b>   | <b>\$1,329,264</b> | <b>\$3,174,444</b> |                      |
| <b>LESS: CIP Expansion Costs</b>                   | <b>(\$1,832,500)</b> | <b>0</b>         | <b>0</b>         | <b>(\$3,200,000)</b> | <b>0</b>           | <b>0</b>           | <b>(\$5,032,500)</b> |
| <b>Projected Connection Fee Surplus(Shortfall)</b> | <b>(\$1,045,594)</b> | <b>\$336,906</b> | <b>\$952,700</b> | <b>(\$1,323,608)</b> | <b>\$1,329,264</b> | <b>\$3,174,444</b> |                      |

Schedule VII-4

CITY OF BROOKSVILLE, FLORIDA  
FINANCING NEEDS ASSESSMENT

|  | 1988-89            | 1989-90      | 1990-92      | 1992-93            | 1995-00      | 2000-08      | Total              |
|--|--------------------|--------------|--------------|--------------------|--------------|--------------|--------------------|
| Water Non-expansion Requirements                           | \$325,000          | \$0          | \$0          | \$300,000          | \$0          | \$0          | \$625,000          |
| Water Expansion Requirements                               | \$675,000          | \$0          | \$0          | \$1,800,000        | \$0          | \$0          | \$2,475,000        |
| Water Connection Fees Available to Offset Debt             | (\$150,500)        | \$0          | \$0          | (\$464,830)        | \$0          | \$0          | (\$615,330)        |
| <b>Water Financing Needs \$</b>                            | <b>\$1,049,500</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$1,635,170</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$2,684,670</b> |
| <b>Water Financing Needs as % of Total Financing Needs</b> | <b>35.86%</b>      | <b>0.00%</b> | <b>0.00%</b> | <b>21.09%</b>      | <b>0.00%</b> | <b>0.00%</b> | <b>26.58%</b>      |
| Sewer Non-expansion Requirements                           | \$1,832,500        | \$0          | \$0          | \$3,200,000        | \$0          | \$0          | \$5,032,500        |
| Sewer Expansion Requirements                               | \$817,500          | \$0          | \$0          | \$2,530,000        | \$0          | \$0          | \$3,347,500        |
| Sewer Connection Fees Available to Offset Debt             | (\$786,906)        | \$0          | \$0          | (\$1,876,392)      | \$0          | \$0          | (\$2,663,298)      |
| <b>Sewer Financing Needs \$</b>                            | <b>\$1,863,094</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$3,853,608</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$5,716,702</b> |
| <b>Sewer Financing Needs as % of Total Financing Needs</b> | <b>64.14%</b>      | <b>0.00%</b> | <b>0.00%</b> | <b>78.91%</b>      | <b>0.00%</b> | <b>0.00%</b> | <b>73.42%</b>      |
| <b>Total Financing Needs</b>                               | <b>\$2,904,594</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$4,908,778</b> | <b>\$0</b>   | <b>\$0</b>   | <b>\$7,813,372</b> |

**VIII. Projected Impact on Rates**

## VIII. Projected Impact on Rates

This chapter presents the projected impact that the financing program alternatives would have on monthly water and sewer rates. The chapter consists of the following sections:

- . Impact on Rates of Conventional Revenue Bond Financing
- . Impact on Rates of Revenue Bond Financing with Pledged Connection Fee Revenues to Offset Debt Service Coverage Requirements

Each of these topics is described below:

### A. Impact on Rates of Conventional Revenue Bond Financing

Schedule VIII-1 presents the estimated impacts on monthly water and sewer rates per ERU given the financing needs identified in Chapter VII. The schedule shows the financing requirements in the years 1988-89 and 1992-95 along with estimated issuance costs to determine an estimated issue size. This estimated issue size is then used to calculate an estimated debt service requirement based upon an average interest rate of 8 1/2% and level debt service for a period of thirty years. Estimated debt service coverage is based upon an assumed 1.25 coverage requirement which is added to the debt service requirement to arrive at an amount to be recovered through the rates.

The amount to be recovered through rates is then allocated to water and sewer rates based upon the allocation percentage identified in Schedule VII-3 for water and sewer financing needs, respectively. The resultant dollar amounts allocated to water and sewer rates are then offset by the estimated number of ERUs on the system in each period in order to arrive at an estimated incremental monthly cost per water and sewer ERU resulting from the assumed revenue bond financing. As shown in Schedule VIII-1, the incremental monthly cost per water ERU amounts to \$1.68 in the 1988-89 period and decreases each period thereafter until the next assumed issue in the 1992-95 period, at which point it increases and then decreases in the 2000-08 period to \$1.51.

Similarly, the incremental monthly cost per sewer ERU ranges from \$3.53 in the period 1988-89 to a high of \$7.82 in the period 1992-95, before decreasing in the 2000-08 period to \$5.43.

Schedule VIII-1

CITY OF BROOKSVILLE, FLORIDA  
PROJECTED IMPACT ON RATES

|   | 1988-89     | 1989-90   | 1990-92   | 1992-95      | 1995-00     | 2000-08     | Total        |
|---|-------------|-----------|-----------|--------------|-------------|-------------|--------------|
| Financing Required                          | \$2,904,534 | 00        | 00        | 14,908,950   | 00          | 00          | \$17,813,522 |
| Estimated Insurance Costs                   | 636,458     | 00        | 00        | 663,140      | 00          | 00          | \$1,303,598  |
| Estimated Issue Size                        | \$3,291,052 | 00        | 00        | \$15,572,090 | 00          | 00          | \$14,863,150 |
| Estimated Debt Service Requirement          | \$306,234   | \$306,234 | \$306,234 | \$823,791    | \$823,791   | \$823,791   |              |
| Estimated Coverage Requirement              | \$76,559    | \$76,559  | \$76,559  | \$205,948    | \$205,948   | \$205,948   |              |
| Estimated Coverage Requirement Offset       | 00          | 00        | 00        | 00           | 00          | 00          |              |
| Estimated Amount to be Recovered Thru Rates | \$382,793   | \$382,793 | \$382,793 | \$1,029,739  | \$1,029,738 | \$1,029,738 |              |
| \$ Allocation to Water Rates                | 35.86%      | 35.86%    | 35.86%    | 28.47%       | 28.47%      | 28.47%      |              |
| \$ Allocation to Sewer Rates                | \$137,258   | \$137,258 | \$137,258 | \$293,208    | \$293,208   | \$293,208   |              |
| Current ERU's on Water System               | 6,815       | 6,815     | 7,115     | 7,839        | 8,925       | 11,220      |              |
| Projected Water Connections (ERU's)         | 300         | 300       | 724       | 1,086        | 2,295       | 4,925       |              |
| Total Water ERU's in Rate Base              | 6,815       | 7,115     | 7,839     | 8,925        | 11,220      | 16,145      |              |
| Annual Cost per Water ERU                   | \$20.16     | \$19.29   | \$17.51   | \$32.85      | \$26.13     | \$18.16     |              |
| Monthly Cost per Water ERU                  | \$1.68      | \$1.61    | \$1.46    | \$2.74       | \$2.18      | \$1.51      |              |
| \$ Allocation to Sewer Rates                | 64.14%      | 64.14%    | 64.14%    | 71.53%       | 71.53%      | 71.53%      |              |
| \$ Allocation to Water Rates                | \$245,535   | \$245,535 | \$245,535 | \$736,531    | \$736,531   | \$736,531   |              |
| Current ERU's on Sewer System               | 5,434       | 5,801     | 6,168     | 6,839        | 7,845       | 9,293       |              |
| Projected Sewer Connections (ERU's)         | 367         | 367       | 671       | 1,006        | 1,448       | 2,010       |              |
| Total Sewer ERU's in Rate Base              | 5,801       | 6,168     | 6,839     | 7,845        | 9,293       | 11,303      |              |
| Annual Cost per Sewer ERU                   | \$42.33     | \$39.81   | \$35.90   | \$53.89      | \$79.26     | \$63.16     |              |
| Monthly Cost per Sewer ERU                  | \$3.53      | \$3.32    | \$2.99    | \$4.52       | \$6.60      | \$5.26      |              |

File 5.21/mo



B. Impact on Rates of Revenue Bond Financing with Pledged Connection Fee Revenues to Offset Debt Service Coverage Requirements

There has been considerable recent interest in the utilization of connection fee revenues as a pledged revenue source for debt service requirements resulting from revenue bond issues. While this is an interesting concept and would negate the impacts of revenue bond financing on monthly water and sewer rates, to date there has been little acceptance of this as a viable alternative by the investment community. There is, however, the possibility of utilizing connection fee revenues to meet the coverage test requirements of revenue bond issues.

Schedule VIII-2 presents projected impacts on monthly water and sewer rates assuming the use of connection fee revenues to meet the coverage requirement. The financing requirements and estimated issuance costs under this alternative are identical to the alternative presented in Schedule VIII-1. Consequently, the estimated debt service (principal and interest) requirements are also identical. The difference under this alternative is that the coverage requirement is eliminated due to the offset of connection fee balances to the coverage requirement. Consequently, the estimated amount to be recovered through the rates with the exception of the periods 1988-89 and 1992-95 during which connection fee balances have been used to reduce the assumed bond sizes, the estimated amounts to be recovered through both water and sewer rates are reduced. Consequently, the incremental increases to monthly water and sewer ERUs are reduced. As shown, the periods 1988-89 and 1992-95 show no difference due to the fact that no connection fee revenues are available to offset the coverage requirement. However, in the other years under this alternative the increases are less in each period.

It is suggested that the City explore this alternative with its financial advisor in order to ascertain whether or not connection fee revenues may be pledged as an offset to the coverage requirements. In any event, assuming that current rates are not generating significant surpluses to apply against increased debt requirements, if outside financing of any kind is obtained then water and sewer rates will have to be increased.

Schedule VIII-2

CITY OF BROWNVILLE, FLORIDA  
PROJECTED IMPACT ON RATES

|   | 1988-89    | 1989-90   | 1990-92   | 1992-93    | 1993-00    | 2000-08    | Total       |
|---|------------|-----------|-----------|------------|------------|------------|-------------|
| Financing Required                          | 62,904,594 | 00        | 00        | 64,908,958 | 00         | 00         | 127,813,552 |
| Estimated Insurance Costs                   | 6386,458   | 00        | 00        | 6453,140   | 00         | 00         | 13,039,598  |
| Estimated Issue Size                        | 63,291,052 | 00        | 00        | 63,962,098 | 00         | 00         | 127,253,150 |
| Estimated Debt Service Requirement          | 6306,234   | 6306,234  | 6306,234  | 6823,791   | 6823,791   | 6823,791   |             |
| Estimated Coverage Requirement              | 976,359    | 976,359   | 976,359   | 1293,948   | 1293,948   | 1293,948   |             |
| Estimated Coverage Requirement Offset       | 00         | (976,359) | (976,359) | 00         | (1293,948) | (1293,948) |             |
| Estimated Amount to be Recovered Thru Rates | 6382,793   | 6306,234  | 6306,234  | 61,029,728 | 6823,791   | 6823,791   |             |
| % Allocation to Water Rates                 | 33.86%     | 33.86%    | 33.86%    | 28.47%     | 28.47%     | 28.47%     |             |
| \$ Allocation to Water Rates                | 6127,258   | 6109,806  | 6109,806  | 6293,208   | 6234,566   | 6234,566   |             |
| Current ERU's on Water System               | 6,915      | 6,815     | 7,115     | 7,839      | 8,925      | 11,220     |             |
| Projected Water Connections (ERU's)         | 300        | 300       | 724       | 1,086      | 2,295      | 4,923      |             |
| Total Water ERU's in Rate Base              | 6,815      | 7,115     | 7,839     | 8,925      | 11,220     | 16,143     |             |
| Annual Cost per Water ERU                   | 620.14     | 613.43    | 614.01    | 632.85     | 620.91     | 614.53     |             |
| Monthly Cost per Water ERU                  | 61.68      | 61.29     | 61.17     | 62.74      | 61.74      | 61.21      |             |
| % Allocation to Sewer Rates                 | 64.14%     | 64.14%    | 64.14%    | 71.53%     | 71.53%     | 71.53%     |             |
| \$ Allocation to Sewer Rates                | 6493,535   | 6196,428  | 6196,428  | 6736,531   | 6289,224   | 6289,224   |             |
| Current ERU's on Sewer System               | 3,434      | 3,801     | 6,168     | 6,839      | 7,845      | 9,293      |             |
| Projected Sewer Connections (ERU's)         | 367        | 367       | 671       | 1,006      | 1,448      | 2,010      |             |
| Total Sewer ERU's in Rate Base              | 3,801      | 6,168     | 6,839     | 7,845      | 9,293      | 11,303     |             |
| Annual Cost per Sewer ERU                   | 642.37     | 631.85    | 628.72    | 693.89     | 663.41     | 632.13     |             |
| Monthly Cost per Sewer ERU                  | 63.53      | 62.65     | 62.39     | 67.82      | 65.28      | 64.34      |             |

INTER-LOCAL AGREEMENT

*Set City of Brooksville  
Ex-6*

THIS AGREEMENT, entered into this 28th day of February, 1978, by and between the City of Brooksville, a municipal corporation under the laws of the State of Florida, hereinafter called "City", and the County of Hernando, a county in the State of Florida, hereinafter called "County".

WHEREAS, under date of April 25, 1975, the City of Brooksville passed a Resolution, Resolution No. 414, authorizing and directing the Mayor of the City of Brooksville to make application for Federal Assistance under Public Law 92-500, commonly called "201 Facilities Plan", and hereinafter called "201 Plan"; and

WHEREAS, said application was made and the Environmental Protection Agency made a grant offer to the City of Brooksville by virtue of said application; and

WHEREAS, by Resolution No. 427, dated the 3rd day of November, 1975, the City of Brooksville accepted a grant from Environmental Protection Agency for the planning phase of the 201 Plan; and

WHEREAS, by Resolution No. 76-83, subsequently amended by Resolution 76-84, the County Commission agreed and concurred with the City Commission of the City of Brooksville in the City's use of Chapter 180, Florida Statutes, for the extension of water and sewer systems, sewage treatment plants, and such other related facilities as described in the 201 Plan; and

WHEREAS, in the aforesaid Resolution 76-84, the Board of County Commissioners agreed to enter into an Inter-Local Agreement between the City and County setting forth in detail the rights, duties and powers of the respective political bodies as required by Chapter 163, Florida Statutes, after applicable public hearings had been completed and the Department of Environmental Regulation and Environmental Protection Agencies have concurred in the 201 Plan; and

WHEREAS, the applicable public hearings have been completed, been approved by the TAC Committee, the City of Brooksville, and have been submitted to the Department of Environmental Regulation and the Environmental Protection Agency for review and concurrence.

WHEREAS, it is the purpose of this Agreement to set forth in detail the rights, duties and powers of the respective political bodies as required by Chapter 163, Florida Statutes.

W I T N E S S E T H:

The City and County agree to enter into an Inter-Local Agreement pursuant to Florida Statute Chapter 163, and in particular Florida Statute 163.01, commonly called the Florida Inter-Local Act of 1969.

ARTICLE I

Purpose of Agreement

Section A:

The purpose of this Agreement is for the extension of water and sewer facilities beyond the territorial limits of the City of Brooksville and within the five mile radius as defined and authorized in Chapter 180, Florida Statutes, said water and sewer facilities to be interconnected with the existing water and sewer facilities located within and without the territorial limits of the City of Brooksville.

Section B: Power to be exercised:

The power to be exercised by this Agreement are all of those powers granted to and reserved, individually and collectively, in cities and counties by the Constitution of the State of Florida, laws of the State of Florida, and Ordinances, Resolutions, Rules and Policies of the herein-named local governments, to accomplish those purposes mutually agreed upon as set forth in Section "A" above and as included throughout this Agreement.

Section C: Method by which the purpose will be accomplished:

The method and manner by which the above-stated purpose would be accomplished is that the City of Brooksville shall be the Lead Applicant in all phases to accomplish the purposes herein-stated and that the City is to design and construct those projects that are agreed upon and concurred in by the County.

## ARTICLE II

### Duration of this Agreement

#### Section A:

It is anticipated that this Agreement shall be a continuing obligation of the part of both the City and the County as contemplated in 201 Facilities Plan as outlined and as approved by both herein-named political subdivisions.

#### Section B: Method of Recision or Termination of Agreement:

The method of recision or termination of this Agreement shall be by Resolution of either of the participating political subdivisions provided, however, this Agreement shall not be terminated until the completion of any approved and funded phase or step in the program until successful conclusion of that particular part of the project.

## ARTICLE III

### Composition and Organization

#### Section A: Separate entity:

There shall not be a separate entity created to administer the 201 Facilities Plan which is the subject of this Agreement.

#### Section B: Financial Arrangements:

The City of Brooksville shall be totally responsible for all financial arrangements related to the 20 Plan, unless agreed to by the herein-named parties at public meetings and which shall be the subject of separate negotiations and not a part of this initial Agreement, but may be made a part hereof by mutual Agreement.

## ARTICLE IV

### Provision of and Disbursement of Funds

The City of Brooksville shall make application for, provide for and finance the capital improvements and operation and maintenance costs, including payments to any debt service, reserve funds or sinking funds as may be necessary or required by law.

## ARTICLE V

### Benefits, Taxes and Assessments

The City shall receive all benefits and be responsible for the levying of taxes and assessments to pay the cost of the service areas,

subject only to the limitations as may be contained in the Constitution, the laws of the State of Florida and rules and regulations of any Federal and State agency and laws and rules as may be promulgated by the local government. All rate structures, taxes and assessments that may be proposed shall be presented to and concurred in by both of the political subdivisions who are part of this Agreement.

The fixing and collection of charges and rates or fees, and the making and promulgation of rules and regulations shall be consistent with the ordinances and rates as established by the City of Brooksville.

#### ARTICLE VI

##### Contracting and Employment Practices

The manner of employing and engaging compensation, transferring or discharging personnel shall be subject to the hiring and firing practices and wages of the City of Brooksville and by the contracts entered into between the City of Brooksville and the various contractors, subject to Federal and State requirements for minimum wages and for hiring and firing practices.

#### ARTICLE VII

##### Purchase, Contractual Relations, Operation and Maintenance and Real and Personal Property

Purchase, contractual relations, acquisition, ownership, custody, operation and maintenance, lease and sale of real or personal property, and the distribution, diversion or disposition of any property shall be in a manner consistent with the law governing municipalities.

#### ARTICLE VIII

##### Grants, Gifts, Assistance Funds

Grants, gifts, assistance funds, or bequests shall be accepted, or rejected, at the sole discretion of the City, as it is the purpose of this Agreement to apply for and receive grants from private and public sources and to accept gifts of real and personal property and for the acquisition of real and personal property.

## ARTICLE IX

### Applications for Federal and State Aid

The making of applications by the City for Federal and State aid, payable to the City, is one of the primary purposes of this Agreement.

## ARTICLE X

### Responsibility for Liabilities

The responsibility for liabilities that may be incurred during the performance of this Agreement, and insuring against any such liability, shall be the responsibility of the City, and its Agents, during the various steps and phases of the 201 Plan and the City shall maintain any liability and other insurance coverage as it sees fit, to protect the participants of this Inter-Local Agreement.

## ARTICLE XI

### Adjudication of Disputes or Disagreements

The adjudication of disputes or disagreements and the effects or failure of participating parties to pay their share of the costs and expenses shall not apply, except as specifically provided herein.

## ARTICLE XII

### Accountability and Reporting

The City shall be responsible for strict accountability and shall provide to the County copies of any law or reports which may be required by the City, State and Federal, or Agencies, and at any other time that the County may request a status or interim report.

## ARTICLE XIII

### Project Already Approved; Approval of Future Projects

As to the parts of the project that have already been approved or may be approved in the future, that are inside of the five mile radius, as herein provided, the County agrees that it shall cooperate on approved projects, and in instances that require eminent domain proceedings, the County shall accept the responsibility for eminent

domain proceedings or shall waive their rights and allow the City to proceed outside the City's municipal boundaries to complete the necessary eminent domain proceedings.

ARTICLE XIV

201, or Similar Type Studies

In the event that the County decides to embark on a 201 Facilities Plan, or similar type study, in the future, the parties hereto agree to one or a combination of any of the following:

A. The County may embark solely on its own 201 Facilities Plan, or other similar study.

B. The County may choose to take over, with the City's concurrence, any existing phases and/or steps that may be underway by the City; provided, however, that if the County does exercise this provision, it shall reimburse to the City any monies spent by the City on that phase and/or step.

C. The County may request the City to expand its 201 Study and go beyond the five-mile limitations into areas that the County may designate.

ARTICLE XV

Expansion of Purposes of 201 and 92-500  
Facilities Plan

Although the terminology used under the 201 Facilities Plan and the 92-500 Program, contemplates only sewage facilities, this Inter-Local Agreement shall apply to the extension and providing of water and sewer facilities within the five-mile radius area and extra-territorial areas as agreed upon by the parties.

ARTICLE XVI

Subdivision and Development Review Procedures

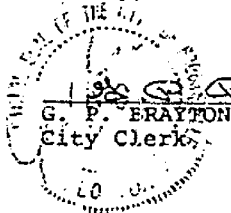
The County agrees that it shall cooperate in its review procedures under County subdivision and zoning ordinances and requirements to insure that subdivisions and developments involving water and sewer facilities within the five-mile radius shall be routinely submitted to the City for review and comments as to its compliance and compatibility with the 201 Facilities Plan.



IN WITNESS WHEREOF, the parties have set their hands and seals the day and year first above written.

ATTEST:

CITY OF BROOKSVILLE



By:

*Edwin H. Ragan*  
EDWIN H. RAGAN  
Mayor

ATTEST:

COUNTY OF HERNANDO

*Harold William Brown*  
Clerk

By:

*William E. Hunt*  
Chairman of the Board

RESOLUTION NO. 76-84

A RESOLUTION AMENDING RESOLUTION NO. 76-83

WHEREAS, the City Commission of the City of Brooksville is in the process of developing a 201 Planning Study for a five-mile area surrounding the City of Brooksville; and

WHEREAS, the City of Brooksville is presently processing applications for funds for developing Phase I, Step 2 of said 201 Plan; and

WHEREAS, the Board of County Commissioners is willing to consent to development of water and sewer services within said five-mile area by the City of Brooksville on a project-by-project basis;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF HERNANDO COUNTY, FLORIDA, as follows:

SECTION 1. That the Board of County Commissioners of Hernando County, Florida, hereby agrees and concurs with the City Commission of the City of Brooksville in the City's use of Chapter 180, Florida Statutes, for the extension of water and sewage systems, sewage treatment plants, and such other related facilities as outlined in Paragraph 3 hereof subject to the scope as outlined therein.

SECTION 2. That such concurrence shall be limited to a project-by-project basis; subsequent projects shall first be submitted to Hernando County for review, recommendation, and approval.

SECTION 3. That the scope of concurrence by the Board of County Commissioners as evidenced by this Resolution shall be limited to the Phase I, Step 2 application under the City of Brooksville's 201 Study and conceptually including 3 sewage treatment plants within the five-mile radius area and 1 sewage treatment plant outside the five-mile radius area to be located on Hernando County Airport property, and to the City of Brooksville's

Public Works Employment Act of 1976, Brooksville West Water System Project.

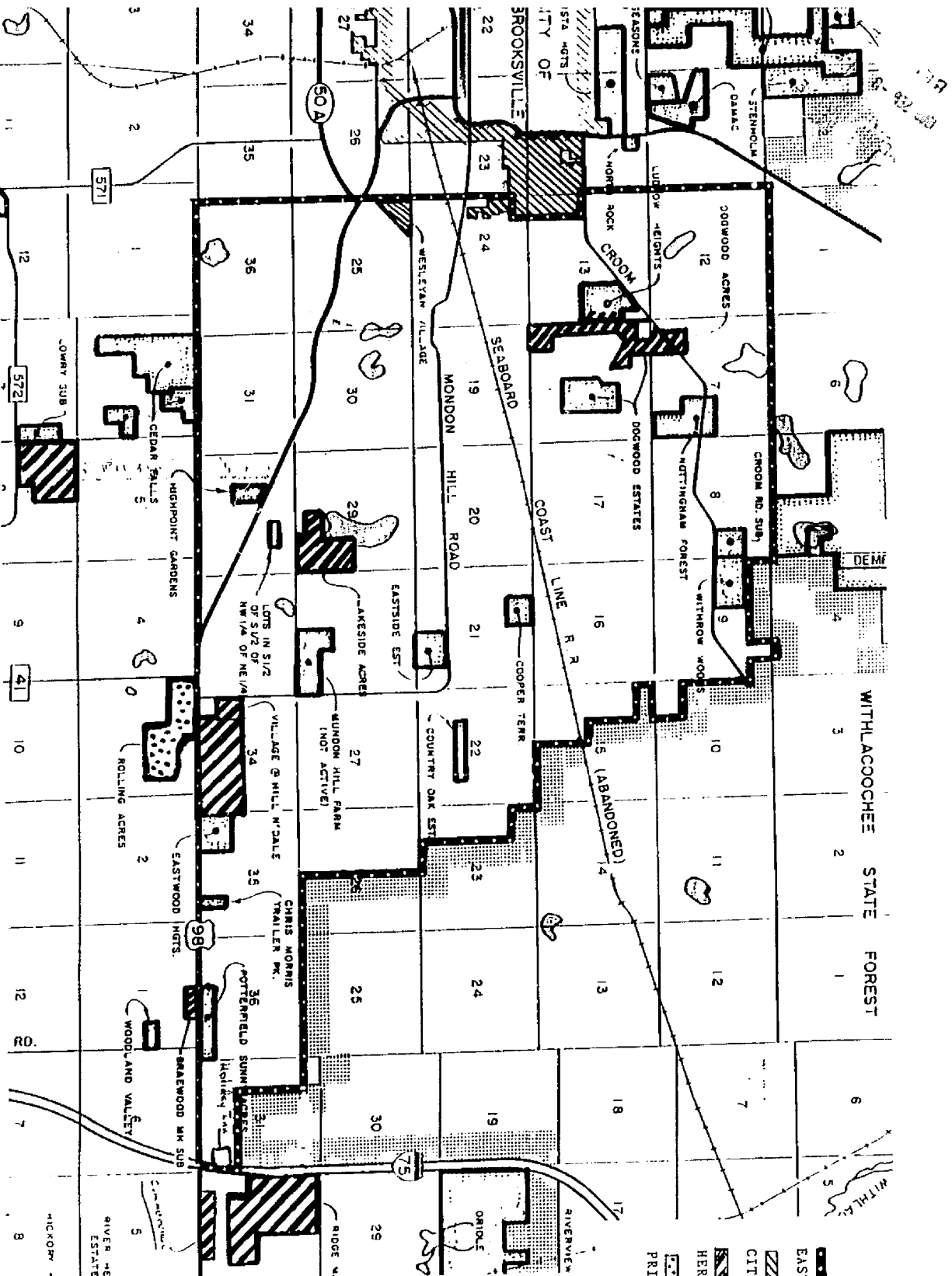
SECTION 4. That the Board of County Commissioners agrees to enter into an Interlocal Agreement between the City and County setting forth in detail the rights, duties, and powers of the respective political bodies as required by Chapter 163, Florida Statutes, after applicable public hearings have been completed and the Department of Environmental Regulation and Environmental Protection Agency have concurred in the 201 Plan.

ADOPTED in Regular Session this 30<sup>th</sup> day of November, 1976.

BOARD OF COUNTY COMMISSIONERS  
HERNANDO COUNTY, FLORIDA

By: Adrian W. Belle, Jr.  
ADRIAN W. BELLE, JR., CHAIRMAN

Attest: Harold William Brown  
HAROLD WILLIAM BROWN, CLERK



**LEGEND**

- PROPOSED CONROCK
- ░ EAST SERVICE AREA.
- ▨ AREAS SERVED BY CITY OF BROOKSVILLE
- ▧ AREAS SERVED BY HERNANDO COUNTY UTILITIES
- ░ AREAS SERVED BY PRIVATE UTILITY

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By: R. ALAN HOLBRACH, ENGINEERING COORDINATOR  
HERNANDO COUNTY UTILITIES DEPARTMENT

DRAWING IN SUPPORT OF INTERROGATORY NO. 4

STATE OF FLORIDA  
DIVISION OF ADMINISTRATIVE HEARINGS

ROLLING ACRES ENTERPRISES,  
CITY OF BROOKSVILLE, and  
HERNANDO COUNTY,

Case No.: 89-2700

Petitioners,

vs.

CONROCK UTILITY COMPANY,

Respondent.

*PME*

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DIVISION OF  
ADMINISTRATIVE  
HEARINGS

RESPONSE TO REQUEST FOR  
PRODUCTION OF DOCUMENTS

COMES NOW, the Petitioner, HERNANDO COUNTY, a political subdivision of the State of Florida, by and through the undersigned counsel, and files this its response to FLORIDA PUBLIC SERVICE COMMISSION'S by attaching those available documents requested hereto.

*Peyton B. Hyslop*

PEYTON B. HYSLOP  
Chief Assistant County Attorney  
Attorney for Hernando County  
10 North Brooksville Avenue  
Brooksville, FL 34601  
FL Bar No.: 379980  
904-754-4122

*HO has  
tagged Documents  
Cm*

CERTIFICATE OF SERVICE

I HEREBY CERTIFY a true and correct copy of the foregoing has been furnished by U.S., Regular Mail to the following parties, on this 6<sup>th</sup> day of ~~August~~, 1989.

Spt.

  
PEYTON B. HYSLOP

WILLIAM B. EPPLEY, ESQUIRE  
Attorney for City of Brooksville  
P.O. Box 1478  
Brooksville, FL 34605-1478

MR. GHALE C. THOMAS  
(Rolling Acres)  
6128 Spring Lake Highway  
Brooksville, FL 34601

MICHAEL J. NOLAN, ESQUIRE  
Attorney for Conrock Utilities  
Suite 1400 Ashley Tower  
P.O. Box 1050  
Tampa, FL 33601-1050

DAVID C. SCHWARTZ, ESQ.  
Attorney for Florida Public Service Commission  
Fletcher Building 101 East Gaines Street  
Tallahassee, FL 32399-00870

**HERNANDO COUNTY**

**COMPREHENSIVE PLAN**

**RECEIVED**

**NOV 8 8 49 24**

**DIVISION OF  
ADMINISTRATIVE  
HEARINGS**



**ADOPTED**

**JUNE 7, 1989**

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OFFICER; NO COPY MADE; FILE  
IN CASE FILE AFTER REVIEW.  
H.O. INITIALS**

**HERNANDO COUNTY  
COMPREHENSIVE PLAN  
(Adopted Portion)**

**Date Prepared: June 7, 1989**

**Elements Prepared by Coastal Engineering Associates, Inc.:**

Future Land Use  
Mass Transit, Ports, and Related Facilities  
Aviation  
Housing  
Sanitary Sewer, Solid Waste, Drainage, Potable Water, and  
Natural Groundwater Aquifer Recharge  
Coastal Management  
Conservation  
Recreation and Open Space  
Intergovernmental Coordination

**Elements Prepared by Barton-Aschman Associates, Inc.:**

Traffic Circulation

**Elements Prepared by James C. Nicholas:**

Capital Improvements



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**SECTION A:  
GOALS, OBJECTIVES, AND POLICIES**

**FUTURE LAND USE ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

# Future Land Use Element

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**GOAL 1.01: TO REQUIRE COMPATIBLE AND COORDINATED DISTRIBUTIONS AND INTENSITIES OF LAND USES WHICH WILL PROMOTE THE HEALTH, SAFETY AND WELFARE OF THE CITIZENS OF HERNANDO COUNTY AND DISCOURAGE THE PROLIFERATION OF URBAN SPRAWL.**

**PLANNED UNIT DEVELOPMENT**

**OBJECTIVE A: LAND DEVELOPMENT REGULATIONS SHALL BE DEVELOPED WHICH INCLUDE PROVISIONS FOR PLANNED UNIT DEVELOPMENTS AND OTHER INNOVATIVE LAND USE DEVELOPMENT TECHNIQUES.**

**POLICY 1: A Planned Unit Development (PUD) shall be developed as an integral unit with one or more land uses.**

**POLICY 2: PUD categories shall be established by land development regulations for the following uses: complementary and compatible commercial or industrial uses or both; planned commercial centers with complementary and compatible residential or industrial uses or both; planned industrial parks with complementary and compatible residential or commercial uses or both; and public and quasi-public facilities developed in accordance with an approved Development Plan.**

**POLICY 3: Land Development Regulations shall be adopted which establish PUD criteria for diversification of uses, structures, and open spaces in a manner compatible with existing and permitted land uses on abutting properties.**

**POLICY 4: Development within a PUD shall occur according to limitations of use, design, density, coverage, and phasing stipulated on an approved Development Plan.**

**POLICY 5: Land Development Regulations shall be adopted which establish PUD criteria to preserve the natural amenities and environmental assets of the land.**

**POLICY 6: Land Development Regulations shall be adopted which establish PUD criteria for the amount and use of open space areas and the concentration of building areas.**

**POLICY 7: Delineation of the allowable intensity of development shall be contingent upon the ability**



to provide the adopted level of service of public services and facilities.

**POLICY 8:** PUD criteria shall be established through land development regulations which provide definitions of different levels of deviations from the approved development plan and provide for appropriate levels of review for such deviations. The relocation of land uses within a Planned Unit Development (PUD) shall not in itself be considered a deviation significant enough to require a comprehensive plan amendment.

**POLICY 9:** The Land Development Regulations shall establish a Planned Unit Development (PUD) district which can be used for single use or mixed use projects, with flexibility in standards allowed if projects provide environmental protection, landscaping, open space, public facilities, innovative planning design or other appropriate public benefits.

**POLICY 10:** Provide maximum opportunity for application of innovative concepts of site planning in the creation of aesthetically pleasing living, shopping, and working environments on properties of adequate size, shape and location.

**AGRICULTURE/RURAL RESIDENTIAL LAND USE REGULATION AND DENSITY STANDARDS**

**OBJECTIVE B:** PROVIDE FOR A COMPATIBLE AND COORDINATED LAND USE ARRANGEMENT WHICH WILL PROMOTE THE RETENTION AND EXPANSION OF AGRICULTURAL ACTIVITIES WHILE ALLOWING FOR RESIDENTIAL USES.

**POLICY 1:** Establish an agriculture/rural residential future land use category within which agricultural activities can be retained and expanded.

**POLICY 2:** Allowable land uses are: Agriculture, Agricultural Commercial, Recreation, Residential Development with lots a minimum of 1.2 acres to 5 acres. Land Development Regulations shall provide criteria and standards for determining appropriate locations for residential densities allowed within the range stated above. Criteria and standards for determining appropriate locations for higher residential densities in areas designated as agriculture/rural residential will include:

Ability to provide sufficient buffers;

Proximity to a roadway with a functional classification of collector or above;

Provision of water/sewer facilities consistent with long range plans of the Hernando County Water and Sewer District;

Suitability of the land for septic tank sewage disposal;

Proximity to existing commercial or employment centers;

Ability to mitigate negative impacts to active agricultural operations of close proximity;

Proximity to residential developments of compatible density and character;

Other applicable goals, objectives or policies included in this Comprehensive Plan.

- POLICY 3: This designation recognizes the need for the coexistence of agricultural activities with emerging low density residential uses in specific areas of the County.
- POLICY 4: The County should establish development standards whereby landowners of parcels in agricultural use would be able to establish limited internal development areas for agricultural owners and employees without complying with subdivision standards.
- POLICY 5: Non-agricultural land use in agricultural areas should be permitted where the land use does not require urban facilities or services and is compatible with the agricultural and rural nature of the area.
- POLICY 6: The range of residential density allowed will be conditioned on site specific criteria which attempts to maintain an orderly progression of intensity from development nodes.
- POLICY 7: Appropriate buffers shall be established between high intensity agricultural uses and low density residential areas to protect the use and enjoyment of land by each separate type use.
- POLICY 8: Multiple zoning districts will be established for the range of allowed densities. Specific

densities will be based on performance criteria established in the land development regulations.

**POLICY 9:** Lot sizes, a minimum of 1.0 acre, may be allowed for planned development projects if additional open space or recreational land is provided beyond County minimum standards.

**POLICY 10:** Residential development with density greater than that allowed in Policy 9 above shall require a Comprehensive Plan amendment.

**POLICY 11:** The County shall establish a procedure to evaluate the potential conversion of agricultural lands to nonagricultural uses which incorporates a site assessment process that considers the following:

- a. Adjacent land uses;
- b. Viability of adjacent parcels for continued or future agricultural use;
- c. Compatibility of proposed use with existing land characteristics;
- d. Comprehensive development plans;
- e. Available infrastructure.

**POLICY 12:** The County shall evaluate and revise the Land Development Regulations to ensure that agricultural structures and practices are not unduly restricted in agricultural use areas.

**POLICY 13:** A use-value assessment for conservation and other preservation lands should be available for land owners.

**POLICY 14:** A Purchase of Development Rights (PDR) or Transfer of Development Rights (TDR) method shall be reviewed for use in the preservation of agricultural lands.

**POLICY 15:** Provide for land uses which do not adversely affect highly erodible soils in Hernando County, as defined by U.S. Soil Conservation Service.

#### SOUTHEAST OVERLAY ZONE

**OBJECTIVE C:** PROVIDE FOR THE ORDERLY TRANSITION OF RESIDENTIAL DEVELOPMENT IN AGRICULTURAL AREAS EXPECTED TO EXPERIENCE DEVELOPMENT PRESSURES DUE TO THEIR LACK OF PHYSICAL LIMITATIONS AND PROXIMITY TO I-75.

**POLICY 1:** By 1992, prepare a sector study for the southeast overlay zone shown on the Future Land Use Map

Series, addressing at a minimum the following issues:

- a. development projections based upon relevant factors;
- b. transportation networks analysis and required improvements;
- c. analysis of sub-regional sewage treatment and water supply;
- d. fire protection;
- e. agricultural land use projections;
- f. Conservation/protection of natural resources.

**POLICY 2:** Within one year after the adoption of the sector study, the County shall initiate any comprehensive plan amendment and/or ordinance revisions necessary to implement the study.

**RURAL RESIDENTIAL/AGRICULTURE LAND USE REGULATION AND DENSITY STANDARDS**

**OBJECTIVE D:** LOW DENSITY RESIDENTIAL DEVELOPMENT SHOULD PRESERVE THE OPEN CHARACTER OF RURAL LAND AT DENSITIES RANGING FROM A MINIMUM OF ONE (1) UNIT PER 5 ACRES TO ONE (1) UNIT PER ACRE.

**POLICY 1:** Zoning districts shall be established to promote and encourage the preservation of the character of certain lands, which, by virtue of their topography, soil types, natural resources, and/or relationship to other land use areas, should be carefully reviewed and evaluated prior to their possible development or else should continue to be developed at a low density not to exceed .2 units per acre (one unit per 5 acres) to maintain the overall natural environment and unique character within the County.

**POLICY 2:** Zoning districts shall be established for use in areas which by virtue of their location, physical characteristics, and/or relationship to other land use areas, should be developed carefully and at low density less than or equal to .4 units per acre to maintain their overall character within the County. (Maximum density of one unit per 2.5 acres.)

**POLICY 3:** Zoning districts shall be established to provide the utilization of land for single family dwellings at a maximum density of one unit per acre, while preserving the open character of the land.

**POLICY 4:** The County should establish development standards whereby landowners of parcels in agricultural use would be able to establish limited internal development areas for agricultural owners and employees without complying with subdivision standards.

**POLICY 5:** Allowable uses are: recreation, agricultural commercial, pursuant to performance standards, residential development from 1 unit per acre to 1 unit per 5 acres, and residential development (with a density in excess of 1 unit per acre) located up to 1,320 feet into the Rural Residential/Agriculture District where it lies contiguous to the Residential District, pursuant to performance standards. Land Development Regulations shall provide criteria and standards for determining appropriate locations for residential densities allowed within the range stated above. Criteria and standards for determining appropriate locations for higher residential densities in areas designated rural residential/ agriculture will include:

Ability to provide sufficient buffers;

Direct access to a roadway with a functional classification of collector or above; or access to a roadway with a functional classification of collector or above via limited use of local roadways;

Provision of water/sewer facilities consistent with long range plans of the Hernando County Water and Sewer District;

Suitability of the land for septic tank sewage disposal;

Close proximity to fire station facilities;

Close proximity to existing commercial or employment centers;

Close proximity to residential developments of compatible density and character;

Other applicable goals, objectives or policies included in this Comprehensive Plan.

**POLICY 6:** Significant amounts of agricultural activities exist within areas designated as rural residen-

tial/agriculture. Since the demarcation line between the agriculture/rural residential and rural residential/agriculture future land use areas are difficult to establish, new agriculture land use approvals would be allowed without a comprehensive plan amendment within 1,320 feet of the joint demarcation line, provided that it does not detrimentally impact any rural residential tendencies.

**POLICY 7:** Residential (in excess of one unit per acre) up to 1,320 feet within the rural residential/agriculture classification without a comprehensive plan amendment should be allowed only where it lies contiguous to a residential classification, the owner can ensure the provision of appropriate infrastructure and services, and it does not detrimentally impact the established rural residential nature of the area.

#### RESIDENTIAL LAND USE REGULATION AND DENSITY

**OBJECTIVE E:** TO PROVIDE FOR MODERATE TO HIGH DENSITY RESIDENTIAL DEVELOPMENT IN SUITABLE AREAS.

**POLICY 1:** Low density zoning districts shall be established to encourage and promote single family development at densities not to exceed 2.5 units per acre and are intended to be the district most utilized for regulating future single family development.

**POLICY 2:** Medium high density zoning districts shall be directed to areas within or adjacent to urbanizing sectors within the County at densities not to exceed 4.0 units per acre.

**POLICY 3:** High density single-family zoning districts shall be limited to the continuation of existing single family residential development at densities not to exceed 5.4 units per acre in designated areas and will not be utilized extensively for future development.

**POLICY 4:** Any single family density of greater than 4.0 units per acre, other than described in Policy 3, above, should be considered as a Planned Unit Development.

**POLICY 5:** Land uses allowed are: Single family residential densities from 1 unit/acre to 5.4 units/acre, resort residential, and ancillary land uses such as recreation, churches, and community centers.

Land uses which can be located in this classification with performance standards being met include multi-family housing, rural residential, neighborhood commercial, schools and minor public facilities.

- POLICY 6:** Rural residential/agriculture land use densities and uses will be allowed in this classification without a comprehensive plan amendment. Greater restrictions, may be placed on any agricultural activities or animal maintenance in these rural residential/agriculture land use areas.
- POLICY 7:** The general performance standards required for the location of neighborhood commercial are established in Goal 1.01, Objective K. More specific standards may be delineated in the Land Use Regulations.
- POLICY 8:** Land Development Regulations, which allow residential development in suitable areas, shall provide criteria and standards for determining residential densities for land included in the Residential land use category. The criteria and standards used in the determination of appropriate locations of higher residential densities shall consider:
- Proximity to existing or designated commercial areas or corridors or major employment centers;
  - Direct access to arterial or collector roadways or access to arterial or collector roadways via limited use of local roadways;
  - Provision of appropriate police, fire and EMS services;
  - Service by existing or proposed expansion of County water supply facilities;
  - Service by existing or proposed expansion of County sewer facilities;
  - Suitability of the land for septic tank sewage disposal;
  - The character and density of existing or approved residential developments of close proximity;
  - Availability of appropriate public primary and secondary school facilities;

Provision of open space beyond minimum County standards;

Preservation, conservation or enhancement of high quality, ecologically viable environmentally sensitive areas;

Preservation, conservation or restoration of historic or archaeologically significant features;

Aesthetic or architectural quality;

Other applicable goals, objectives or policies contained in this Comprehensive Plan.

#### LOCATION OF MULTI-FAMILY RESIDENTIAL LAND USES

**OBJECTIVE F: ESTABLISH A MULTI-FAMILY SUB-CATEGORY WITHIN THE RESIDENTIAL LAND USE CATEGORIES, AND ESTABLISH APPROPRIATE DENSITY AND LOCATIONAL CRITERIA.**

**POLICY 1:** Establish a low density multi-family zoning district to permit residential development consisting of densities not to exceed 7.5 units per acre.

**POLICY 2:** Establish a medium density multi-family zoning district to permit residential development consisting of densities not to exceed 9.6 units per acre.

**POLICY 3:** Establish a high density multi-family zoning district to permit residential development consisting of multi-family dwellings at densities not to exceed 12.5 units per acre.

**POLICY 4:** High density multi-family residential development in other than multi-use PUDs should be located in close proximity to commercial or employment clusters.

**POLICY 5:** Multi-family developments should not be located where access to the arterial or collector roadway system is through single family neighborhoods.

**POLICY 6:** Multi-family development shall be encouraged as "step-down" in intensity of use between single family residential and intensive uses such as commercial and industrial.



- POLICY 7: Encourage coordination of access and facilities by utilizing a Planned Unit Development designation where multi-family housing is located in mixed use areas.
- POLICY 8: Require high density and medium density multi-family residential development to have appropriate open space, buffering, landscaping, and recreation areas suited to their density and design.
- POLICY 9: Clustering multi-family residential development should be encouraged as a means of providing more open space.
- POLICY 10: Establish Land Use Intensity ratios by utilizing the number of bedrooms per unit as shown on the Table of Land Use Intensity Standards.

| TABLE OF LAND USE INTENSITY STANDARDS |                           |
|---------------------------------------|---------------------------|
| <u>Number of Bedrooms</u>             | <u>Units of Intensity</u> |
| Efficiency or Studio                  | 0.5                       |
| 1 Bedroom                             | 0.75                      |
| 2 Bedrooms                            | 1.0                       |
| 3 Bedrooms or more                    | 1.25                      |

- POLICY 11: Land uses allowed are: multi-family housing up to 12.5 units/acre, resort residential housing, single family attached housing, and neighborhood commercial, recreation and minor public facilities.

RESIDENTIAL PROTECTION AND REDEVELOPMENT OF PLATTED LANDS

- OBJECTIVE G: PROTECT ESTABLISHED RESIDENTIAL AREAS AND PROVIDE FOR REDEVELOPMENT OF HISTORICALLY PLATTED LANDS.
- POLICY 1: Accommodate a diverse choice of housing types, densities and prices within the County.
- POLICY 2: Protect existing and future residential areas from encroachment of incompatible uses that are destructive to the character and integrity of the residential environment.
- POLICY 3: Provide incentives for and encourage the reassembly, redesign, and replatting of vacant platted residential lots that are not suitable for timely, safe, efficient, and healthy development.

## EDUCATIONAL LAND USE REGULATION AND DENSITY STANDARDS

- OBJECTIVE H: ESTABLISH STANDARDS FOR THE LOCATION OF FUTURE SCHOOL SITES.**
- POLICY 1:** A density standard for educational land use should range from twenty (20) to fifty (50) students per acre for each school site.
- POLICY 2:** The School Board shall maintain and update a projected school location map showing approximate location of future schools.
- POLICY 3:** School siting decisions shall be consistent with the map referred to in Policy 2.
- POLICY 4:** School siting approvals shall be consistent with appropriate service standards.
- POLICY 5:** Land uses allowed are: schools and ancillary activities such as recreation facilities, offices and housing for security purposes.

## NOISE REGULATION AND STANDARDS BY RECEIVING LAND USE

- OBJECTIVE I: NO PERSON SHALL OPERATE OR CAUSE TO BE OPERATED ANY SOURCE OF SOUND IN SUCH A MANNER AS TO CREATE A SOUND LEVEL WHICH EXCEEDS ESTABLISHED NOISE LIMITS.**
- POLICY 1:** By 1990, adopt an amended Noise Control Ordinance which establishes amongst other standards the limits of allowable noise in receiving land use categories.
- POLICY 2:** Establish and regulate blasting standards, including vibration and air blast overpressure limits, blasting hours, records and reporting procedures, and public safety precautions.
- POLICY 3:** The Noise Ordinance shall provide modified standards for existing noise sources.
- POLICY 4:** These noise standards do not apply to the areas of Hernando County which are within noise contours as outlined in the Hernando County Airport Noise Ordinance.
- POLICY 5:** The following activities should be regulated by the Hernando County Noise Control Ordinance, but not required to meet standards of allowable noise in receiving land uses:

- a. Street Sales
- b. Animals
- c. Stationary Non-emergency Signaling Devices
- d. Emergency Signaling Devices
- e. Domestic Power Tools
- f. Air-Conditioning and Air-Handling Equipment
- g. Motor Vehicles operating on public right-of-way
- h. Refuse Collection Vehicles
- i. The Unamplified Human Voice
- j. Railway Locomotives and Cars
- k. Non-Stationary Farming Equipment
- l. Aircraft Operations
- m. Routine Maintenance of Public Service Utilities

**POLICY 6:** Short duration noises of one second or less duration (of the nature of gunshots or other explosive sounds, excluding blasting) should be addressed in the Hernando County Noise Control Ordinance.

**MOBILE HOME STANDARDS**

**OBJECTIVE J:** TO REGULATE THE LOCATION OF MOBILE HOMES IN HERNANDO COUNTY THROUGH REQUIREMENTS WHICH SHALL ENSURE THE AVAILABILITY OF THE NECESSARY FACILITIES AND SERVICES AND WHICH SHALL ENSURE COMPATIBILITY WITH OTHER ADJACENT LAND USES.

**POLICY 1:** The location of mobile homes shall be guided by the same criteria and standards as are applied to conventional single family detached housing. The County will establish zoning districts within those areas designated as residential land uses on the Future Land Use Map which allow mobile homes.

**POLICY 2:** Minimum design standards shall be developed for mobile home parks and subdivisions which include lot size, access, parking, buffering and screening, open space and recreation, and utilities.

**POLICY 3:** Mobile homes shall be located only in zoning districts which are exclusively established for mobile homes with the exception of existing developed residential areas already containing a mix of dwelling unit types.

- POLICY 4:** Buffers shall be used to maintain the integrity of mobile home developments as separate entities unless bordered by similar developments.
- POLICY 5:** In order to facilitate hurricane evacuation requirements, mobile home developments at a net density of one (1) unit per acre or greater shall have direct access to arterials or major collector roads.
- POLICY 6:** The Land Development Regulations shall establish a zoning district to allow park model trailers and modular manufactured housing 300 to 600 square feet in area. The gross density for park model trailer developments shall not exceed 8.7 units per acre and the park model trailer zoning district will not be used extensively for future development.
- POLICY 7:** Mobile homes located in mobile home parks or subdivisions shall not exceed 5.4 units per acre.
- POLICY 8:** Mobile home developments approved through the planned development project process shall be allowed to cluster lots with a minimum size of 5,000 square feet, provided the gross density does not exceed that established in Policy 7 and that the additional area resulting from clustering be put into open space or recreation.
- POLICY 9:** Zoning districts shall be created which allow the placement of mobile homes only.
- POLICY 10:** Zoning districts shall be created which recognize the necessity of the continuation of existing mixed uses including both mobile homes and conventional homes.

**COMMERCIAL LAND USE REGULATION AND DENSITY STANDARDS**

**OBJECTIVE K:** THE COUNTY SHALL ESTABLISH STANDARDS FOR COMMERCIAL LAND USES WHICH ARE BASED ON THE FOLLOWING CATEGORIES OF FACILITIES: NEIGHBORHOOD COMMERCIAL, GENERAL COMMERCIAL, AND REGIONAL COMMERCIAL.

**POLICY 1:** For the purposes of this element, the commercial category shall be divided into the following subcategories:

### Neighborhood Commercial

Function: Provide for the sale of convenience goods and personal services to meet the daily needs of an immediate neighborhood.

Service Area: 1 mile or less

Parcel Size: Up to 5 acres

Floor Area: Up to 50,000 square feet

### Community Commercial

Function: Provide the adjacent community with a limited range of commercial uses and professional services.

Service Area: 1 - 3 miles

Parcel Size: Up to 15 acres

Floor Area: Up to 150,000 square feet

### General Commercial

Function: Provide the surrounding developed urban area with a wide range of commercial, office, professional, institutional, and governmental uses.

Service Area: 3 - 5 miles

Parcel Size: Up to 40 acres

Floor Area: Up to 500,000 square feet

### Regional Commercial

Function: Provide the greatest variety of commercial, office, professional, institutional, and governmental uses to serve the needs of the Countywide region or larger.

Service Area: Countywide or larger

Parcel Size: 40 acres or larger

Floor Area: 200,000 - 1,000,000 or more square feet

**POLICY 2:** Commercial corridors along major roadways which have significant existing development or contain significant existing commercial zoning and which are expected to continue developing based on the traffic volume of the roadway and the proximity of existing residential development, shall be considered as infill areas. Regulations shall be prepared to address the special needs of these corridors including at a minimum, additional setbacks, buffers, landscaping requirements, access limitations, and frontage roads. These infill areas shall include, but are not limited to, the following roadway segments:

- a. U.S. 19 south of Section 12, Township 22 S, Range 17 E;
- b. S.R. 50 between U.S. 19 and C.R. 485;
- c. S.R. 50 Truck Bypass south of the City of Brooksville;
- d. U.S. 41 between S.R. 50 Truck Bypass and the Hernando County Fairgrounds;
- e. East side of U.S. 19 north of Section 12, Township 22 S, Range 17 E;
- f. U.S. 41 south of railroad spur in Section 30, Township 23 S, Range 19 E.

**POLICY 3:** Regional commercial uses shall be directly accessible from the arterial system or frontage road and generally be located near the intersection of two arterial roadways.

**POLICY 4:** Neighborhood commercial uses shall be located within a commercial cluster at the intersection of two roadways functionally classified as collector or higher. The neighborhood commercial cluster shall be no larger than five acres.

**POLICY 5:** Community commercial uses shall be located within a commercial node at the intersection of two roadways functionally classified as collector or higher. The node shall extend a maximum of 800 feet as measured along the frontage of the roadways extending from the intersection of the rights-of-way of the two roadways. This distance may be reasonably increased based upon property ownership, natural features, adjacent land uses, and other relevant factors which justify the extension of the node.

**POLICY 6:** General commercial uses shall be located within a commercial node at the intersection of two roadways, one of which shall be functionally classified as an arterial and the other being functionally classified as a collector or higher. The node shall extend a maximum of 1320 feet as measured along the frontage of the roadways extending from the intersection of the rights-of-way of the two roadways. This distance may be reasonably increased based upon property ownership, natural features, adjacent land uses, and other relevant factors which justify the extension of the node.

**POLICY 7:** The commercial nodal concept shall not apply in cases where vested developments have secured greater commercial frontage than allowed with commercial nodes or in infill areas.

**POLICY 8:** Commercial growth may proceed from a commercial node when a significant amount of the land area within the node has been developed. Where applicable, the commercial development will be connected to the commercial node by the County's frontage road system. Commercial development of parcels proximate to and proceeding from the nodes may be approved by the County upon a showing by the applicant that such development would be compatible with surrounding land uses and supportable by existing or proposed infrastructure.

**POLICY 9:** Prior to 1990, the County shall amend its Land Development Regulations to include specific

criteria for neighborhood commercial, general commercial, regional commercial, agricultural commercial and any sub categories thereof, addressing permitted uses, bulk regulations, buffer requirements, performance standards, signage, aesthetics, parking requirements and special exceptions or other mechanisms to allow flexibility.

- POLICY 10:** Prior to 1990, the County shall amend its landscape ordinance to ensure that a minimum of 10% of site areas (other than drainage retention) is landscaped or maintained in natural vegetation and that shade trees are preserved or planted and maintained.
- POLICY 11:** Commercial zoning regulations shall be written to ensure that commercial activities which have greater potential for adverse impact on residential neighborhoods such as (traffic, noise, health, safety, visual) will require a more restrictive zoning category, increased buffers, performance standards or be handled as exceptions.
- POLICY 12:** The use of the commercial planned development zoning will be encouraged along major arterial roads or in multiple land use developments to ensure compatible land use and maximize coordination of facilities and access.
- POLICY 13:** Commercial development along major arterials shall provide for extension of the County's frontage road network, where applicable.
- POLICY 14:** Land uses allowed are: commercial activity with an intensity ranging from neighborhood commercial to regional commercial centers. Other land uses allowed include recreation, offices, hotels and minor public facilities. Residential units may be allowed.

#### RECREATIONAL VEHICLE STANDARDS

- OBJECTIVE L:** ESTABLISH STANDARDS FOR DENSITY, LOCATION, LAND USES AND LENGTH OF STAY IN RECREATIONAL VEHICLE PARKS AS A METHOD OF DISTINGUISHING BETWEEN RECREATIONAL AND RESIDENTIAL LAND USES.
- POLICY 1:** Recreational vehicle parks shall not allow any recreational vehicle unit to stay at the park



(excluding storage areas) longer than 183 days per 365 day period.

- POLICY 2:** Permanent structures in recreational vehicle parks, which are required for the operation of the parks, should be restricted to the following: marinas, clubhouses, bathrooms, recreational halls, laundry facilities, recreational vehicle storage, park store, and living units for the resident manager and permanent employees.
- POLICY 3:** Recreational vehicle parks should be accessed via adequately designed roads, but not through residential streets.
- POLICY 4:** Separate zoning classification(s) shall be established for recreational vehicle parks which are potentially allowable in the residential, planned development, commercial, and rural residential/agriculture in areas where comparable residential services are available.
- POLICY 5:** Recreational vehicle parks should be directed to locate in areas which contain tourist attractions, natural resources or major traffic corridors.
- POLICY 6:** By 1990, the County shall establish infrastructure standards applicable to recreational vehicle parks.
- POLICY 7:** Flexible standards may be allowed for the location of recreational vehicle sites and tent camping facilities within recreational vehicle parks.
- POLICY 8:** By 1990, the Hernando County Zoning Ordinance shall be amended to establish standards for recreational vehicle parks densities, buffers, and setbacks in addition to implementing the above policies.

#### LOCATION OF SINGLE FAMILY RESIDENTIAL LAND USES

- OBJECTIVE M:** ESTABLISH APPROPRIATE LOCATIONAL CRITERIA FOR ALL SINGLE FAMILY RESIDENTIAL LAND USE CATEGORIES.
- POLICY 1:** Single family housing development of a density greater than .4 dwelling units per acre should be located in proximity to existing development in order to make efficient use of infrastructure and services.

- POLICY 2:** Single family developments should have points of access onto the arterial or collector road system, but should have no residential driveways connecting directly to that system.
- POLICY 3:** Where infrastructure exists or is planned, infill development shall be encourage by allowing greater densities and prioritizing capital infrastructure expenditures.
- POLICY 4:** Single family density of greater than .2 dwelling units per acre in the major flood areas should not be allowed.
- POLICY 5:** Single family development should not encroach upon mining, commercial, industrial or other land uses of questionable compatibility unless through a planned unit development approval which addresses access, buffers and purchaser notification.

#### LAND USE COMMERCIAL INTENSITY CRITERIA

- OBJECTIVE N:** ESTABLISH DIFFERENT LEVELS OF COMMERCIAL INTENSITY APPROPRIATE TO THE LOCATION AND COMPARABLE WITH ADJACENT PROPERTIES.
- POLICY 1:** Within the zoning ordinance, establish several commercial zoning classifications with different levels of intensity, encouraging the clustering of similar commercial uses. Classifications will range from heavy commercial to low-density professional offices.
- POLICY 2:** To the extent feasible, higher intensity commercial uses will be buffered from residential areas by lower intensity commercial, multi-family or other appropriate land uses. These "steps of intensity" will be criteria within the land use approval process.
- POLICY 3:** In areas where existing residential usage is expected to transition into commercial, the initial commercial land uses approved shall be of lower intensity.
- POLICY 4:** Within the zoning ordinance, establish criteria for "ancillary commercial" which is to be allowed as part of the development of resource areas around the County such as the Airport, I-75 corridor, recreation sites, and the coastal zone.

## LAND DEVELOPMENT REGULATIONS

- OBJECTIVE 0:** BY 1990, ESTABLISH LAND DEVELOPMENT REGULATIONS TO INCORPORATE POLICIES AND PROCEDURES ESTABLISHED IN ELEMENTS OF THE COMPREHENSIVE PLAN. THE ISSUES ADDRESSED IN POLICIES BELOW ARE MAJOR COMPONENTS OF THE REVISION, BUT DO NOT CONSTITUTE A COMPREHENSIVE LIST.
- POLICY 1:** A number of zoning categories will be established for each of the following land use categories to allow for clustering of like uses, reduction of encroachment of incompatible uses, and distinction in the infrastructure and services required: Residential, Rural Residential/Agriculture, Agriculture/Rural Residential, Commercial, Industrial, and Mining.
- POLICY 2:** Performance standards which may be required for approval of a zoning designation can cover such issues as services, access, noise, bulk, height, traffic, buffers, open space, acreage minimums or maximums, landscaping, signage and timing.
- POLICY 3:** Environmental protection shall be considered in zoning evaluation procedures, with reasonable conditions placed upon development approvals. Conditions on approvals may address, but are not limited to the following issues:
- a. retention of significant natural habitat;
  - b. minimization of disturbance to water bodies;
  - c. protection of threatened or endangered species;
  - d. avoidance of pollution to the groundwater aquifer;
  - e. protection of historical and archaeological sites;
  - f. maintenance of scenic vistas;
  - g. minimization of air pollution.
- POLICY 4:** The Land Development Regulations shall establish a list of allowable uses for each zoning district, with standards provided for the issuance of special exceptions.
- POLICY 5:** Procedures shall be placed in the Land Development Regulations to provide for conditional plats, variances and conditional use permits, with appropriate standards established.

**POLICY 6:** Any land use approval application process should require sufficient information from the applicant to allow the County to address the issues required under this Comprehensive Plan.

**POLICY 7:** The County may establish Land Development Regulations establishing architectural and aesthetic standards.

**BUFFERS**

**OBJECTIVE P: ESTABLISH BUFFERS BETWEEN ADJACENT LAND USES AND BETWEEN LAND USES AND ENVIRONMENTAL OR ARCHAEOLOGICAL FEATURES.**

**POLICY 1:** By 1990, incorporate within Land Development Regulations the County's ability to require buffers as part of the review and approval process.

**POLICY 2:** By 1991, promulgate guidelines to be utilized in the establishment of buffers. The guidelines shall allow some flexibility in application, but will address criteria for the following:

- a. degree of opacity;
- b. type of buffers (open space, hedges, walls, trees, etc.);
- c. differing purpose of buffers (visual, noise, etc.);
- d. lists of acceptable plants and trees;
- e. model standard buffers between land uses.

**POLICY 3:** Vegetative buffers shall consist of species acceptable to the County, using native species whenever practical.

**POLICY 4:** Buffers shall be greater (height, width, or opacity) as the extent of incompatibility between land uses increases.

**POLICY 5:** Buffers shall normally be the responsibility of the encroaching land use, however, developers may be required to establish a buffer from a planned land use on adjacent property as designated on the Future Land Use Map or by other land use approvals.

**POLICY 6:** Buffers may be reduced between different land uses within a Planned Unit Development or between consenting owners of adjoining parcels, provided

that the parties involved can show that the reduced buffers are sufficient.

**POLICY 7:** At the discretion of the County, a combination of types of buffers may be utilized.

**POLICY 8:** In order to reduce the impact of encroaching land uses, buffers may be required between proposed development and lakes, rivers, wetlands, historical or archaeological sites, eagles' nests, sinkholes or similar significant natural features which could otherwise be disturbed.

**POLICY 9:** Buffers shall be shown on all conditional plats and construction plans.

#### LOCATION OF PUBLIC FACILITIES

**OBJECTIVE Q:** PROVIDE FOR THE DEVELOPMENT OF MECHANISMS TO LOCATE PUBLIC FACILITIES IN SUCH A MANNER AS TO EFFECTIVELY AND EFFICIENTLY SERVE EXISTING AND PROJECTED DEVELOPMENT AND MINIMIZE THE FACILITIES' IMPACT ON NEARBY NATURE RESOURCES AND EXISTING LAND USES.

**POLICY 1:** The location of major public facilities shall be approved only after adequate opportunity has been provided for public review and comment.

**POLICY 2:** As part of the major public facility locational review process, a statement of impact shall be prepared for new facilities describing the current condition of adjacent natural resources and land uses, the projected impact of the proposed facility on these adjacent areas and how the projected impact will be mitigated or minimized.

**POLICY 3:** Conditions imposed by the public facility locational review process shall be binding for purposes of issuance of development orders and other development permits.

**POLICY 4:** Major public facilities shall be within a separate zoning district which is allowed in any future land use classification with performance standards.

**GOAL 1.02:** TO PROVIDE FOR A DIVERSE, BALANCED, AND STABLE LOCAL ECONOMY.

INDUSTRIAL LAND USE REGULATIONS AND INTENSITIES STANDARDS

**OBJECTIVE A:** THE COUNTY SHALL ESTABLISH STANDARDS FOR INDUSTRIAL LAND USES WHICH ALLOW FOR THE EXPANSION OF INDUSTRIAL EMPLOYMENT OPPORTUNITIES WHILE PROTECTING THE NATURAL ENVIRONMENT AND THE INTEGRITY OF ADJOINING LAND USES.

**POLICY 1:** Industrial developments should be located along arterial or non-residential collector roadways and have adequate access to major arterials.

**POLICY 2:** Industrial land uses identified on the Land Use Map Series should not be restricted by the encroachment of incompatible land uses.

**POLICY 3:** The County shall encourage the concentration of industrial uses in planned industrial parks or in appropriately sited and designed mixed developments using the planned development zoning method.

**POLICY 4:** Prior to 1990, the County shall amend its Land Development Regulations for industrial uses to address internal and external transportation facilities, off street parking and unloading, landscaping and buffering, access controls, utility sizing and placement, signage, bulk regulations, special exceptions, and compatibility with adjacent developments.

**POLICY 5:** Proposed industrial developments shall be evaluated for their effect on the natural environment, including tree retention, water consumption, habitat destruction, wetland disturbance, threatened and endangered wildlife, potential for the generation of point or non-point source pollution, the amount, kind, and method of handling hazardous wastes, and the effect on air quality.

**POLICY 6:** Industrial development along major arterials shall provide for extension of the County's frontage road network, where applicable.

**POLICY 7:** Land uses allowed are: industrial uses, ancillary commercial activities, minor public facilities, and ancillary residential.

## INDUSTRIAL LAND USE CATEGORIES

- OBJECTIVE B:** DEFINE AND INCORPORATE ON THE FUTURE LAND USE MAP SERIES, PLANNED DEVELOPMENT, AND INDUSTRIAL LAND USE CATEGORIES.
- POLICY 1:** The Industrial Land Use category shall incorporate parcels to be used exclusively for industrial uses.
- POLICY 2:** Designation of areas for industrial use shall include consideration of transportation and access standards, level of service standards, availability of sewer and water facilities, proximity to rail or air access, proximity to employment base, minimal potential for environmental degradation, and minimal land use conflicts.
- GOAL 1.03:** TO DIRECT DEVELOPMENT TO THOSE AREAS OF THE COUNTY WHICH HAVE ADEQUATE PUBLIC FACILITIES OR HAVE ASSURANCE OF ADEQUATE PUBLIC FACILITIES IN ORDER TO ACCOMMODATE GROWTH IN AN ENVIRONMENTALLY ACCEPTABLE AND FISCALLY RESPONSIBLE MANNER.

## ORDERLY TRANSFER AND SUBDIVISION OF LAND

- OBJECTIVE A:** TO PERMIT THE DIVISION OF PARCELS INTO LOTS TO FACILITATE THE ANTICIPATED GROWTH WHILE PROVIDING THAT ADEQUATE PUBLIC AND PRIVATE FACILITIES ARE AVAILABLE OR ENSURED.
- POLICY 1:** A subdivision shall mean the division of a parcel of land into two or more contiguous parcels for the purpose either of transferring ownership thereof or of building development thereon.
- POLICY 2:** The subdivision of land or the transfer of parcels created by such subdivision shall require compliance with subdivision regulations.
- POLICY 3:** Approval procedures shall be established to ensure that each subdivision provides adequate facilities such as streets, roads or other access, sewage disposal, potable water, stormwater drainage, and open space to meet the needs of the users of the individual lots. Specific standards shall be established in the subdivision regulations.
- POLICY 4:** By 1990, the County shall adopt subdivision regulations which allow the division of property

when the division meets reasonable standards related to the size of the smallest parcel created, the levels of service available to said parcel, and the density of the total parcel from which the division was made.

**POLICY 5:** Wherever lots are created that do not front on public right of ways, sufficient easements shall be provided to allow vehicular access and the extension of all available public and private utilities.

**GOAL 1.04:** TO REQUIRE NEW DEVELOPMENT TO PAY A FAIR, EQUITABLE AND PROPORTIONATE SHARE OF THE COSTS REQUIRED TO PROVIDE ADEQUATE PUBLIC FACILITIES TO THAT NEW DEVELOPMENT.

**LAND USE AND PUBLIC FACILITIES LEVELS OF SERVICE (LOS) STANDARDS**

**OBJECTIVE A:** TO ESTABLISH NEW OR IMPROVE EXISTING FACILITIES IN ORDER TO MAINTAIN THE CURRENT LEVEL OF SERVICE STANDARDS FOR EDUCATIONAL FACILITIES, LIBRARIES, PUBLIC BUILDINGS, LAW ENFORCEMENT, PARKS, ROADS, FIRE AND EMERGENCY MEDICAL SERVICES, AND PUBLIC POTABLE WATER AND SANITARY SEWER FACILITIES.

**POLICY 1:** Hernando County must expand its educational facilities in order to maintain current standards if new development is to be accommodated without decreasing current standards.

**POLICY 2:** Hernando County must expand its libraries in order to maintain current standards if new development is to be accommodated without decreasing current standards.

**POLICY 3:** Hernando County must expand its public buildings in order to maintain current standards if new development is to be accommodated without decreasing current standards.

**POLICY 4:** Hernando County must expand its police protection in order to maintain current standards if new development is to be accommodated without decreasing current standards.

**POLICY 5:** Hernando County must expand its parks system in order to maintain current parks standards if new development is to be accommodated without decreasing current standards.



- POLICY 6:** Hernando County must expand its road system in order to maintain current road standards if new development is to be accommodated without decreasing current standards.
- POLICY 7:** Hernando County must expand its fire and emergency medical services in order to maintain current standards if new development is to be accommodated without decreasing current standards.
- POLICY 8:** Hernando County must expand its potable water and sanitary sewer facilities and services in order to maintain the current standards if new development is to be accommodated without decreasing current standards.
- POLICY 9:** In lieu of expansion, alternative methods of maintaining current standards required by new development may be utilized.
- POLICY 10:** Methodology shall be established as to how development will pay a fair, equitable and proportionate share of the costs of new solid waste management/disposal facilities and drainage facilities.

**LAND USE AND PUBLIC FACILITIES IMPACT FEES**

- OBJECTIVE B:** IMPLEMENT IMPACT FEES TO BE USED FOR CAPITAL FACILITIES OR LAND ACQUISITION FOR EDUCATIONAL FACILITIES, LIBRARIES, PUBLIC BUILDINGS, LAW ENFORCEMENT, PARKS, ROADS, FIRE AND EMERGENCY MEDICAL SERVICES, POTABLE WATER, AND SANITARY SEWERAGE IMPROVEMENTS. OTHER FUNDING SOURCES SHOULD BE EVALUATED.
- POLICY 1:** The imposition of impact fees and dedication requirements are two of the preferred methods of regulating land development in order to help ensure that it bears a proportionate share of the cost of capital facilities necessary to protect the public health, safety and general welfare.
- POLICY 2:** Implement an Educational Facilities Impact Fee Ordinance to help distribute the cost of new educational facilities that are necessary for future development.
- POLICY 3:** Implement a Public Capital Facilities Impact Fee Ordinance to help distribute the cost of new libraries, public buildings, and police protection

capital facilities that are necessary for future development.

- POLICY 4:** Implement a Parks Impact Fee Ordinance to help distribute the cost of new parks capital facilities that are necessary for future development within each impact fee district.
- POLICY 5:** Implement a Roads Impact Fee Ordinance to help distribute the cost of new road capital facilities that are necessary for future development.
- POLICY 6:** Implement a Fire Protection and Emergency Medical Services Capital Facilities Impact Fees Ordinance to help distribute within each impact fee district the cost of new fire protection and emergency medical services capital facilities that are necessary for future development.
- POLICY 7:** Implement a Potable Water and Sanitary Sewer Impact Fee Ordinance to help distribute the cost of new potable water and sanitary sewer capital facilities that are necessary for future development within each district.

**AVAILABILITY OF FACILITIES AND SERVICES CONCURRENT WITH IMPACTS OF DEVELOPMENT**

**OBJECTIVE C:** LAND DEVELOPMENT SHALL NOT BE PERMITTED UNLESS THE NECESSARY FACILITIES AND SERVICES TO MAINTAIN PUBLIC HEALTH, SAFETY AND GENERAL WELFARE ARE EITHER EXISTING OR ENSURED.

**POLICY 1:** Facilities and services shall be available to provide the adopted levels of service concurrent with development including roadways, potable water, sewage treatment, drainage, solid waste disposal and parks.

**POLICY 2:** A level of service standard shall be adopted for facilities and services which includes schools, libraries, public buildings, police protection, and fire protection. These standards shall be used for the purpose of implementing impact fees and not for the issuance of development orders and are as follows:

**Fire Protection**

To maintain or exceed an ISO (Insurance Service Office) rating of Class 5 for Spring Hill Fire and Rescue, Class 6 for Brooksville (Township 22) Fire

Department, and Class 7/9 for Northwest Hernando County Fire District.

Law Enforcement

To maintain a ratio of 1.32 sworn officers per 1,000 permanent residents (unincorporated population) with accompanying equipment and facilities.

Public Buildings

To maintain the provision of public buildings at 1,500 square feet per 1,000 (peak) population.

Public Libraries

Maintain a book collection equal to at least 1.5 items per capita.

Educational Facilities

To adopt a level of service of one permanent student station, including all ancillary facilities for each public school student.

**POLICY 3:** Levels of service, standards and criteria for facilities and services shall be established within this Comprehensive Plan or shall be those standards which were adopted for the purposes of establishing impact fees within duly enacted ordinances prior to the adoption of this Comprehensive Plan.

**GOAL 1.05:** TO PROTECT PRIVATE PROPERTY RIGHTS AND RECOGNIZE THE EXISTENCE OF LEGITIMATE AND OFTEN COMPETING PUBLIC INTERESTS AND PRIVATE INTERESTS IN LAND USE REGULATIONS AND OTHER GOVERNMENT ACTION.

COMPENSATION FOR DEVELOPMENT LIMITATIONS

**OBJECTIVE A:** TO ESTABLISH METHODS OF COMPENSATING PROPERTY OWNERS FOR DEVELOPMENT LIMITATIONS PLACED ON LAND IN THE PUBLIC INTEREST.

**POLICY 1:** By 1992, the County shall conduct a study to determine the feasibility of using the Transfer of Development Rights, Purchase of Development Rights, planned unit development, conservation easements, or other techniques to preserve ecologically sensitive areas, wetlands, open

space, wildlife habitats, estuaries, mangroves, archaeological, historical sites, agricultural and other areas deemed worthy of preservation. If determined to be feasible, Land Development Regulations shall be amended to include the techniques.

**DEVELOPMENT REGULATIONS CONSISTENT WITH JUDICIAL INTERPRETATIONS**

**OBJECTIVE B: LAND DEVELOPMENT REGULATIONS SHOULD BE CONSISTENT WITH EXISTING JUDICIAL INTERPRETATIONS OF THE RIGHTS OF PRIVATE PROPERTY OWNERS.**

**POLICY 1:** This Comprehensive Plan shall be interpreted in, and all County development regulations shall be designed on a rational basis.

**POLICY 2:** Existing and future land use regulations shall be reviewed annually for consistency with judicial interpretations of private property rights.

**NON-CONFORMING ZONING**

**OBJECTIVE C: TO ALLOW OR INITIATE REZONING IN MEASURED STEPS TO REACH THE FUTURE LAND USE MAP DEVELOPMENT PATTERN BY THE YEAR 2010.**

**POLICY 1:** Within 9 months of the adoption of this Comprehensive Plan and any scheduled 5-year updates, the Department of Planning and Development shall have prepared a plan indicating all non-conforming zoning, recommending those parcels which warrant rezoning to conform to the Future Land Use Map at this time.

**POLICY 2:** Within 12 months of the adoption of this Comprehensive Plan and any scheduled 5-year updates, the County Commission shall initiate rezoning actions for parcels which should be rezoned to ensure the integrity of the future land use plan.

**POLICY 3:** Parcels considered to warrant immediate rezoning under Policies 1 and 2 shall include those whose existence in a non-conforming zoning status would endanger the integrity of the Future Land Use Map. The following types of parcels are among those generally considered to meet that test.

- a. All areas within the Conservation classification;

- b. All areas within the Recreation, Public Facilities, Education classifications;
- c. All undeveloped parcels zoned as residential without an active conditional plat or master plan, or without a conditional plat or master plan approval within the previous five (5) years, which lie within Rural Residential/Agriculture or Agriculture/Rural Residential districts.
- d. All agriculturally zoned parcels within the Rural Residential/Agriculture district which exhibit rural residential usage.

**POLICY 4:** Rezoning may be initiated by either the County or property owner parties at any time to bring other parcels into compliance with the year 2010 Future Land Use Map.

**POLICY 5:** Parcels not considered to warrant immediate rezoning under Policies 1 and 2 shall include those whose continued existence in a non-conforming zoning status would not endanger the integrity of the Future Land Use Map. Such parcels shall not be rezoned without the consent of the owner. The following types of parcels are among those generally considered to meet that test:

- a. Agricultural zonings in any classification other than Conservation or Riverine Protection Area; or selected rural residential/agriculture areas (see Policy 3.d.).
- b. Commercial zonings of smaller than mapping threshold size which lie adjacent to collector or arterial roadways.
- c. Zonings in any land use classification where a conditional plat or master plan is either active or has been approved within the previous five (5) years.
- d. Mining zoning in rural residential/agriculture land use areas.

**POLICY 6:** Notification shall be sent to affected property owners by certified mail return receipt requested.

**POLICY 7:** Development or re-development of parcels in existence at the time of adoption of this Plan, including lots of record, which comply with the lot size criteria existing at said time or which are legal non-conforming lots at said time, and which do not meet the minimum lot size criteria

for the land use district in which they are located, shall be allowed as a non-conforming lot size in said land use district.

**GOAL 1.06:** TO PROVIDE FOR THE PROTECTION OF NATURAL COASTAL, RIVERINE, AND WETLAND ECOSYSTEMS, AND VALUABLE HABITATS, IN ORDER TO PRESERVE THE EXISTING HIGH ENVIRONMENTAL QUALITY IN HERNANDO COUNTY.

**TOPOGRAPHY AND SOIL CONDITIONS**

**OBJECTIVE A:** TO COORDINATE FUTURE LAND USES WITH TOPOGRAPHY AND SOIL CONDITIONS AS INVENTORIED AND EVALUATED BY THE U.S. SOIL CONSERVATION SERVICE (SCS) AND TO CONSERVE, DEVELOP, AND PRODUCTIVELY USE SOIL RESOURCES CONSISTENT WITH THE MEASURABLE STANDARDS OF THE HERNANDO COUNTY SOIL SURVEY.

**POLICY 1:** All required drainage and stormwater management must be consistent with applicable regulations and rules of State and Federal agencies.

**POLICY 2:** Delineation of upland hardwood hammocks comprising the Big Hammock Region will be accomplished utilizing the soils which support upland hardwood hammocks community identified by SCS and cross-referencing with the original public land survey data.

**POLICY 3:** Identify hydric soils shown on the Soils Map Series of the Future Land Use Map Series as constituting wetlands.

**POLICY 4:** Utilize the Soil Conservation Service identification of soils subject to flooding, in addition to FEMA mapping, in the regulation of seasonally or periodically flooded areas.

**POLICY 5:** All urban future land use categories, including commercial, residential, industrial districts, shall address the structural capability of the soils, through the development review process.

**POLICY 6:** Coordinate recreational land use planning with the interpretations for recreational development of the Hernando County Soil Survey.

**POLICY 7:** The siting of major public facilities, including but not limited to sanitary facilities and public building site development, shall include an on-site soils investigation.

**POLICY 8:** Protect and conserve highly erodible lands as defined by U.S. Soil Conservation Service (SCS).

**GOAL 1.07:** TO HAVE COMPREHENSIVE PLANNING OF CERTAIN AREAS WITHIN THE COUNTY IN WHICH MIXED LAND USES ARE ENVISIONED AND MORE PLANNING CONTROL IS DETERMINED TO BE NECESSARY TO BEST UTILIZE A LIMITED RESOURCE.

**BAYPORT PLANNED DEVELOPMENT DISTRICT**

**OBJECTIVE A:** MAXIMIZE THE RECREATIONAL USE OF THE BAYPORT PLANNED DEVELOPMENT DISTRICT BY CLUSTERING RESIDENTIAL LAND USES AND ASSOCIATED COMMERCIAL.

**POLICY 1:** Establish a planned-development area on the Future Land Use Map which allows for a mixture of the following land uses: Recreation, Ancillary Commercial, Residential and Multi-family (includes resort residential).

**POLICY 2:** Locate public and/or private recreational facilities to the south half of the property, with priority emphasis being given to Gulf access (boat ramps, marinas) and parks.

**POLICY 3:** Allow the clustering of residential uses to the northern portion of the property, with intensities increasing in proportion to the amount of property made available for public recreation.

**POLICY 4:** Prepare a master plan with development standards for the utilization of the area prior to any development approvals being issued. This plan may be prepared by the landowners and submitted to the County for review and approval or it may be a jointly-prepared plan for approval by all parties.

**POLICY 5:** Land development approvals shall be consistent with the approved site master plan.

**POLICY 6:** The following are usage guidelines for the master plan. Residential density shall be a maximum of 4 units per gross acre of land within the planned development district, with a residential land usage of no greater than 50% of the land area. A combined residential/commercial usage should be no greater than 60% of the land area, with the remainder devoted to recreational uses. Up to 25%

of the recreation area should be utilized for marinas.

**POLICY 7:** Permitted ancillary commercial usage shall include the following types of commercial activities: Boat/marine store associated with a marina, bait shop, restaurant, convenience store, and other compatible activities.

**I-75/SR 50 PLANNED DEVELOPMENT DISTRICT**

**OBJECTIVE B:** EFFICIENTLY UTILIZE THE COMMERCIAL/INDUSTRIAL VALUE OF THE I-75 CORRIDOR, THROUGH MASTER PLANNING OF LAND USES, ROADWAY NETWORK, INFRASTRUCTURE AND AESTHETICS.

**POLICY 1:** Establish a planned-development area on the Future Land Use Map which allows for a mixture of the following land uses: commercial, industrial, residential, multi-family, recreation and public facilities. The planned development area shall extend between the County's existing (SR 50) and proposed (Hickory Hill Road) I-75 interchanges and from Lockhart Road to the abandoned railroad right-of-way.

**POLICY 2:** By 1991, prepare a master plan for the planned-development area. An areawide DRI application may be prepared.

**POLICY 3:** The master plan for the planned-development area shall incorporate the following standards or concepts:

- a. Industrial usage from 20-40% of the land area, commercial usage from 10-25% of the land area; public facility and recreational use as needed; residential and multi-family use.
- b. Clustering of industrial uses within areas of good transportation access to I-75.
- c. Establishment of a commercial/light industrial corridor of approximately 1,000-1,500 feet on either side of I-75.
- d. The plan will establish criteria for increased landscaping, and architectural standards within the corridor.



- e. Utilization of "steps in intensity" and buffers to minimize incompatibility of adjacent land uses.
- f. A master transportation network which includes the following:
  - 1. parallel collector roads within the I-75 commercial/light industrial corridor;
  - 2. identification of all proposed SR 50 median cuts;
  - 3. establishment of a frontage road network which can move traffic within the planned development area, minimizing unnecessary access to SR 50 and comparable major arterials;
  - 4. requirement of an interconnecting internal roadway network to maintain access between the planned development land uses;
  - 5. coordination with FDOT during the transportation planning process;
  - 6. considerations of non-vehicular traffic.
- g. An infrastructure analysis to determine the needs for traffic improvements, sewer and water facilities, fire protection and recreation.
- h. Provision for sub-regional facilities to serve utility needs.

**POLICY 4:** Land development approvals shall be generally consistent with the master plan.

**AIRPORT PLANNED DEVELOPMENT DISTRICT**

**OBJECTIVE C:** MAXIMIZE THE USE OF THE HERNANDO COUNTY AIRPORT AND SURROUNDING LANDS BY PROVIDING FOR AVIATION, AVIATION RELATED ACTIVITIES, INDUSTRIAL USES, AND OTHER LAND USES NOT INCOMPATIBLE WITH THE AIRPORT.

**POLICY 1:** Establish a planned development area on the Future Land Use Map which allows for a mixture of the following land uses: Aviation, Commercial, Industrial, Public Facility, and limited agriculture.

**POLICY 2:** Aviation uses will be restricted to the Hernando County Airport properties.

- POLICY 3:** By 1990, prepare a master plan for the Hernando County Airport property which controls the uses allowed within the airport properties.
- POLICY 4:** The Master Plan for the Hernando County Airport property shall be updated at least every five (5) years.
- POLICY 5:** The location of land uses within the Airport Planned Development area, not owned by Hernando County, shall be governed by the locational criteria for the proposed use.
- POLICY 6:** Industrial uses allowed within the Planned Development area shall not be incompatible with the aviation activities at the airport.

**MINING SUB-ELEMENT**  
**GOALS, OBJECTIVES, AND POLICIES**

## Mining Sub-Element

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**GOAL 1.08:**       **HERNANDO COUNTY SHALL PROTECT ITS CITIZENS, AIR, LAND AND WATER RESOURCES FROM THE ADVERSE EFFECTS OF RESOURCE EXTRACTION AND ENSURE THAT THE DISTURBED AREAS ARE RECLAIMED TO WHOLESOME CONDITION AS SOON AS REASONABLY POSSIBLE.**

**EARTHEN DAM STANDARDS**

**OBJECTIVE A:**   **ALL EARTHEN DAMS FOR IMPOUNDING LIQUID MATERIALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACCEPTABLE DESIGN STANDARDS ESTABLISHED BY STATE AND FEDERAL CRITERIA. PLANS AND SPECIFICATIONS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.**

**POLICY 1:**       Earthen dams shall be engineered to incorporate the most stringent design standards, including those for safety factors, materials shear strengths, permeability and seepage, horizontal sliding, minimum freeboard levels and water level control structures, promulgated by any regulatory agency having jurisdiction. Dams shall be properly engineered to receive limestone slurry by gravity or by pump. All soil tests, design calculations, and construction data shall be maintained on file by the operator. A plan of the dam outline and typical dam design cross section shall be furnished to the County.

**POLICY 2:**       A planned maintenance program shall be developed by the operator and maintained on file. The maintenance program shall include re-vegetation of exposed surfaces, preservation of cross-sections, and maintenance of a clay road on top of the embankment.

**POLICY 3:**       Annual inspection reports, certified by an independent Florida registered engineer, as well as monthly internal inspection reports of dams, shall be maintained by the operator and submitted to the County.

**MINING SETBACKS**

**OBJECTIVE B:**   **WHEN AN ACTIVE MINING AREA IS CONTIGUOUS TO LANDS NOT OWNED OR CONTROLLED BY THE OPERATOR, A 100 FOOT SET-BACK SHALL BE MAINTAINED AS THE MINIMUM DISTANCE OF ANY CONSTRUCTION OR MINING ACTIVITY FROM THE PROPERTY LINE BOUNDARY.**

**POLICY 1:**       The only permanent construction which may be permitted within the 100 foot setback includes roads, fences, utility services, and berms.

- POLICY 2:** Berms shall not be constructed closer than 50 feet to the property line.
- POLICY 3:** If an active mining area is contiguous to lands dedicated for public right-of-way, then the 100 foot setback shall be measured from the right-of-way line.
- POLICY 4:** In the event of non-compliance with Hernando County's noise and blasting standards, an additional set-back may be required in order to meet those standards.

#### **BERMS AND BUFFERS**

- OBJECTIVE C:** **WHEN AN ACTIVE MINING AREA IS CONTIGUOUS TO LANDS NOT OWNED OR CONTROLLED BY THE OPERATOR, A 100 FOOT VISUAL BUFFER ZONE SHALL BE MAINTAINED.**
- POLICY 1:** A berm must be constructed if the existing and supplemental vegetation does not provide 80 percent opacity screening.
- POLICY 2:** A berm shall not be constructed closer than 50 feet to the property line.
- POLICY 3:** If an earthen berm is built, it may be built to a maximum height of ten (10) feet above the natural surface of the ground and must be planted with shrubs or groundcover. If the earthen berm is utilized, the outer 50 feet shall be planted with shrubs or groundcover, which provide 50 percent opacity between the contiguous land and the earthen berm. Adequate control shall be provided to protect the adjacent properties from additional run-off caused by the earthen berm.
- POLICY 4:** If a berm is not required then up to 100 feet of the buffer shall be planted to provide 80 percent opacity.

#### **MINING RECLAMATION**

- OBJECTIVE D:** **REQUIRE MINING RECLAMATION INCLUDING PLANS, SCHEDULES, BONDS, AND SECURITY FOR RECLAMATION ACTIVITIES.**
- POLICY 1:** As a condition of obtaining a permit to mine, a reclamation plan shall be submitted for review and approval and shall contain a site plan, pre-mining topography and drainage, pre-mining vegetation, total area to be mined and disturbed, post reclamation topography, drainage, and structures, planned post-reclamation vegetation, cross-sections of reclaimed sheer walls or water bodies,

and schedules and descriptions of reclamation phasing.

**POLICY 2:** Where the mining in any area is being accomplished in benches which are more than five (5) years apart, general maintenance to control erosion, provide safety sheer slopes, provide stormwater drainage and minimize groundwater impacts shall be implemented.

**POLICY 3:** Where the mining has been completed through the "hard limerock" strata at the mine site and the operator intends to continue mining of the underlying "soft rock" at some later date, the operator has the option of performing either final reclamation, or an "interim reclamation", if mining operations cease for more than five (5) years at a time, based on the following guidelines:

- a. Where a sheer wall occurs, a transition shelf shall be established and access shall be controlled by the use of berms, fences or other restrictive measures.
- b. Available overburden shall be spread over the disturbed area to the depth of up to 18 inches to support grasses or other perennial vegetation which can be easily removed during subsequent mining.
- c. Contouring or other suitable land shaping techniques shall be used to enhance stabilization and control erosion.

**POLICY 4:** Final reclamation activities shall be completed within three years of the cessation of all mining activities.

**POLICY 5:** To provide for the safety of persons, wildlife, and adjoining property, during final reclamation activities, the site shall be adequately cleared of debris, equipment, materials, and structures, and overburden when available used to reduce slopes to no steeper than three horizontal feet for each vertical foot.

**POLICY 6:** Revegetation of reclaimed areas shall consist primarily of perennial species native to the area or other species approved by the County.

**POLICY 7:** Security shall be provided in an amount consistent with predictable reclamation costs. Cost estimates shall be provided by the operator with the reclamation plan and be approved by the County. The cost estimate shall be reviewed every

five (5) years and the security shall be updated as needed.

**POLICY 8:** Security shall remain in effect until the affected lands have been reclaimed, inspected and approved by the County.

**POLICY 9:** Interim and final reclamation activities shall meet or exceed all requirements of all agencies having jurisdiction.

**GOAL 1.09:** PROVIDE FOR THE RETENTION OF MINING IN HERNANDO COUNTY.

#### SURFACE MINING PERMITS

**OBJECTIVE A:** A PERMIT SHALL BE REQUIRED FOR SURFACE MINING.

**POLICY 1:** By 1990, Hernando County shall adopt an industrial ordinance with a surface mining permit section to implement the policies under Goal 1.09 of the Hernando County Comprehensive Plan.

**POLICY 2:** Each geographically distinct mining site shall require a separate permit application.

**POLICY 3:** Hernando County shall charge a per acre fee for each permit which shall be specified in the County's adopted fee schedule.

**POLICY 4:** In instances where Hernando County determines that a mine operator has failed to adequately comply with the provisions of the Hernando County industrial ordinance, Hernando County may require the operator to pay a fine or impose other appropriate penalties.

**POLICY 5:** Mining permits shall be reviewed for issuance at a public hearing which shall be announced with proper, timely, and legal notice. Mining permits shall be issued for a maximum period of 25 years. At least every five (5) years the local governing body shall review each individually permitted geographically distinct mining site and either continue, modify, or revoke each surface mining permit based upon input supplied to it.

#### MINING PLANS

**OBJECTIVE B:** A MINING PLAN SHALL BE PREPARED WHICH SHALL SHOW AREAS TO BE MINED FOR THE NEXT THIRTY MONTH (30) PERIOD FOR EACH CURRENTLY PERMITTED GEOGRAPHICALLY DISTINCT MINING SITE.



**POLICY 1:** A Mining Plan shall be a series of maps consisting of boundaries and acreage for existing and proposed mining activities; site plans and cross-sections; methods of compliance with the appropriate mining standards; existing and proposed facilities (structures). All such data shall be specified on the mining plan check list to be submitted every thirty (30) months.

**POLICY 2:** Original preparations of Mining Plans shall be presented in a public meeting which shall be announced with proper, timely, and legal notice. Mining Plan updates shall be submitted to Hernando County on a thirty-month basis.

**GOAL 1.10:** **HERNANDO COUNTY SHALL STRENGTHEN THE EXISTING MINING ORDINANCE THROUGH THE CREATION OF A COUNTY INDUSTRIAL/MINING REGULATORY FUNCTION.**

**BLASTING STANDARDS**

**OBJECTIVE A:** **BY 1990, THE COUNTY SHALL ADOPT BLASTING STANDARDS.**

**POLICY 1:** Particle velocity and blast overpressure shall be as established in the U.S. Bureau of Mines Blasting Standard of Peak Particle Velocity, R.I. 8507, November 1980, Alternate Curve, as amended. Explosives shall not be detonated in an active mining area in which ground vibrations in any plane exceed the following thresholds:

- a. 0.2 inches per second peak particle velocity at one or less Hz measured at the site of a protected structure, or
- b. 0.75 inches per second peak particle velocity between 4 and 12 Hz as measured at the site of a protected structure, or
- c. 1.0 inches per second peak particle velocity at 30 Hz or above as measured at the site of a protected structure, or
- d. Vibrations resulting from mining operations in excess of the values shown in figure 1 as published March 8, 1983, in the Federal Register by the U.S. Office of Surface Mining, (as modified by Objective A(1)(c) above) when measured at the site of a protected structure shall be considered a violation.

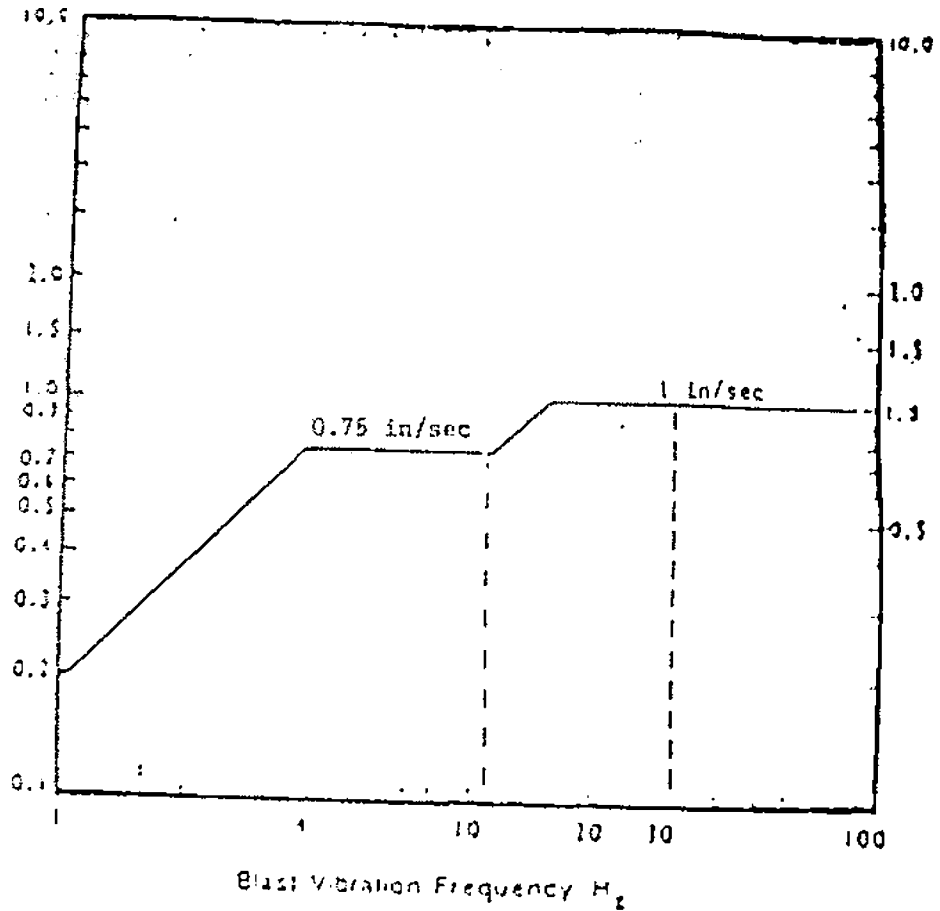


Figure 2. Alternative blasting level criteria  
(Source: Modified from figure B-1, Bureau of Mines A19507)

Approved by the Local Planning Council (LPC) on May 21, 1987

- e. The conduct of mining operations and excavations, including the detonation of explosives related thereto, shall not exceed any of the following safe maximum air blast overpressure levels as measured at the site of a protected structure:

| <u>Lower Frequency Limit of<br/>Measuring System in Hz</u><br>3dB | <u>Measurement Level</u><br>dB |
|---|--------------------------------|
| 0.1 Hz or lower - Flat Response                                   | 134 Peak                       |
| 2 Hz or lower - Flat Response                                     | 133 Peak                       |
| 6 Hz or lower - Flat Response                                     | 129 Peak                       |
| C-Weighted - Slow Response  | 105 Peak dBC                   |

POLICY 2: Blasting shall be conducted only between the hours of 8:00 A.M. and 5:00 P.M. from Monday through Saturday, except that the hourly period may be extended by Hernando County to all daylight hours (sunrise to sunset) for blast sites deemed remote from residential areas. Blasting may occur at any time for a hazardous condition with notice being given to the County on the next business day.

POLICY 3: The mine operator shall be responsible for monitoring and recording blasting vibration results, and submitting monthly reports to the County.

POLICY 4: The County shall be responsible for obtaining and maintaining for a minimum of five (5) years all blasting vibration records, issuing notices of ordinance violation, and investigating complaints of alleged violations.

POLICY 5: The mine operator shall, in instances where the blast site is sufficiently close to a public road so as to constitute a public safety hazard, temporarily control vehicular traffic during blasting operations, shall conspicuously post "Danger! Mine blasting" signs along the blast area where a public or private road is less than 200 feet distant and at the junction of access roads leading to the blast site, and shall be prohibited from allowing rock, debris or refuse to be blast propelled from the mine property onto adjacent private property.

**POLICY 6:**

The mine operators shall continually explore new technology to reduce adverse human response. The 30 month mining plan update shall address appropriate modifications in this area.

**TRAFFIC CIRCULATION SUB-ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

# Traffic Circulation Element

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**GOAL 2.01: COORDINATE THE EXPANSION OF EXISTING OR NEW TRAFFIC CIRCULATION COMPONENTS, SITING OF PORTS, AIRPORTS, OR RELATED FACILITIES WITH FUTURE LAND USE.**

**COMPATIBILITY WITH FUTURE LAND USE ELEMENT**

**OBJECTIVE A: THE TRAFFIC CIRCULATION ELEMENT SHALL BE COMPATIBLE WITH THE FUTURE LAND USE ELEMENT.**

**POLICY 1:** To require that a traffic circulation plan modeling process be undertaken prior to making any major land use plan revisions.

**POLICY 2:** To maintain data files indicating numbers of dwelling units as well as employment activity by traffic analysis zone.

**POLICY 3:** To utilize dwelling unit and employment projections obtained from the Future Land Use Plan Element as data assumptions in the traffic models.

**GOAL 2.02: COORDINATE WITH THE PLANS OF PUBLIC TRANSPORTATION AUTHORITIES; THE PLANS FOR TRANSPORTATION DISADVANTAGED PEOPLE; AND THE FLORIDA DEPARTMENT OF TRANSPORTATION'S FIVE-YEAR TRANSPORTATION PLAN.**

**COORDINATION WITH OTHER PLAN ELEMENTS, FDOT, WRPC, AND ADJACENT COUNTIES**

**OBJECTIVE A: ENSURE THAT ALL ASSUMPTIONS AND POLICIES IN THE TRAFFIC CIRCULATION ELEMENT ARE CONSISTENT OR COORDINATED WITH OTHER PLAN ELEMENTS, THE FDOT FIVE YEAR TRANSPORTATION PLAN, THE WITHLACOOCHEE REGIONAL POLICY PLAN, THE COMPREHENSIVE PLANS OF BROOKSVILLE, WEEKI WACHEE, AND ADJACENT COUNTIES THROUGH ESTABLISHMENT OF AT LEAST THREE FORMAL COORDINATION MECHANISMS AND OTHER INFORMAL COORDINATION MECHANISMS.**

**POLICY 1:** To utilize data from land use plans to update and maintain a consistent Traffic Circulation Element.

**POLICY 2:** To review revised Florida legislation, as well as FDOT and Withlacoochee Regional Planning Council actions to identify necessary modifications to the Traffic Circulation Element that will be required to ensure consistency.

- POLICY 3:** To include all Florida Department of Transportation plans for major roadway facilities in the analysis.
- POLICY 4:** To include all regionally significant roadways as major facilities to undergo analysis.
- POLICY 5:** To review the plans of the cities of Brooksville and Weeki Wachee for coordination with County transportation plans.
- POLICY 6:** To review the plans of adjacent counties to determine transportation impacts upon Hernando County.
- POLICY 7:** To invite a representative from FDOT/District 7 to attend bi-weekly meetings to discuss proposed local development along the State Highway System.
- POLICY 8:** To require that an analysis of the impact on the existing and future traffic circulation system, as depicted in the Traffic Circulation Element, be done prior to adoption of amendments to the Future Land Use Element or the Future Land Use Map.
- POLICY 9:** To ensure Hernando County Staff participation at traffic methodology meetings held in conjunction with regional review of Developments of Regional Impact affecting Hernando County.
- GOAL 2.03:** PLAN FOR A SAFE, EFFICIENT, AND COST-EFFECTIVE MOTORIZED AND NON-MOTORIZED TRANSPORTATION SYSTEM FOR THE MOVEMENT OF PEOPLE AND GOODS WITHIN HERNANDO COUNTY.

#### AIR QUALITY

- OBJECTIVE A:** MAINTAIN AIR QUALITY STANDARDS, ESTABLISHED FOR TRANSPORTATION-RELATED POLLUTANTS, BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS (RULE 17.2, FLORIDA ADMINISTRATIVE CODE), AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY (40 CODE OF FEDERAL REGULATIONS 50.6).
- POLICY 1:** To evaluate air quality as it relates to the transportation model.
- POLICY 2:** Minimize air quality degradation through intersection design and other transportation endeavors.



**SAFETY**

- OBJECTIVE B:** BY 1991, ADOPT DESIGN STANDARDS WHICH SERVE TO REDUCE DESIGN-RELATED VEHICLE ACCIDENTS.
- POLICY 1:** Establish a minimum sight distance pursuant to the standards of the manual of uniform minimum standards for design construction and maintenance for streets and highways, as published by FDOT.
- POLICY 2:** Establish driveway spacing of a minimum of 200 feet between driveways accessing County maintained arterial and collector roadways, unless existing development or adjacent design problems necessitate closer spacing.
- POLICY 3:** By 1990, the county will implement a program to identify high-accident locations through systematic reviews of accident reports. Results of these analyses shall be considered in the determination of transportation facility improvements for accident reductions.
- POLICY 4:** Establish driveway and median cut spacing along the state highway system consistent with FDOT state highway access standards.
- POLICY 5:** New development will be required to submit a site plan that provides for adequate parking and safe, convenient on-site traffic flow which does not contradict the provision of safe and convenient off-site flow.

**COUNTY-WIDE SIDEWALK SYSTEM**

- OBJECTIVE C:** BY 1992, PREPARE A COUNTY-WIDE SIDEWALK (PEDESTRIAN WAYS) PLAN.
- POLICY 1:** To encourage non-vehicular transportation uses.
- POLICY 2:** Prepare a plan for linking residential and non-residential areas via sidewalks.

**COUNTY-WIDE BIKE PATH PLAN**

- OBJECTIVE D:** BY 1992, PREPARE A PLAN TO BUILD A COUNTY-WIDE BIKE PATH PLAN.
- POLICY 1:** Encourage bicycle use by residents for work as well as recreational purposes.
- POLICY 2:** Develop a plan for bicycle routes.

**GOAL 2.04: TO ASSURE THE ADEQUACY OF TRAFFIC CIRCULATION CAPACITY IN ORDER TO ACCOMMODATE THE ANTICIPATED GROWTH OF HERNANDO COUNTY.**

**ROADS LEVEL OF SERVICE (LOS) STANDARDS**

**OBJECTIVE A: LEVELS OF SERVICE STANDARDS FOR ROADWAYS SHALL BE ADOPTED AS PART OF THIS COMPREHENSIVE PLAN.**

**POLICY 1:** For County maintained roadways, the level of service standard shall be "C" for average daily traffic volumes, which constitutes a volume of traffic as shown in the table of generalized highway capacities and level of service "D" for peak-hour traffic volume.

**POLICY 2:** For State maintained roadways, the level of service standard shall be "D" for peak-hour volumes except for those facilities designated "backlogged facilities" which are listed below:

- a. Broad Street (U.S. 41) from Melendez Road (S.R. 50) to Powell Road (C.R. 572)
- b. Cortez Boulevard (S.R. 50) from U.S. 19 to Melendez Road (C.R. 485)
- c. Cortez Boulevard (S.R. 50/U.S. 98) from Melendez Road (S.R. 50) to I-75.

Within six (6) months of Plan adoption, the appropriate analysis shall be performed to verify existing operating conditions.

**POLICY 3:** For those facilities designated above as backlogged facilities, the interim level of service standard shall be one level of service below the existing average operating conditions. The interim level of service shall be improved by the Florida Department of Transportation in cooperation with Hernando County.

**POLICY 4:** To preserve scenic vistas and environmentally sensitive areas along roadways, County maintained roadways designated in the County's scenic road ordinance shall have a level of service standard of LOS "E" for peak hour traffic.

## ROADS IMPACT FEES

**OBJECTIVE B:** REQUIRE THE PAYMENT OF AN IMPACT FEE AND/OR DEDICATION OF ADDITIONAL LAND FOR ROAD CAPITAL IMPROVEMENTS, WHICH WILL PROPORTIONATELY CONTRIBUTE TO THE COST OF NEW ROAD CAPITAL FACILITIES NEEDED BECAUSE OF THE IMPACT OF NEW DEVELOPMENT ON THE ROADWAY NETWORK. OTHER FUNDING SOURCES SHOULD BE EVALUATED.

**POLICY 1:** Implement an impact fee ordinance to help equitably distribute the cost of new road capital facilities that are necessary for future development.

**POLICY 2:** By 1992, implement a land dedication requirement for planned road capital improvements rights-of-way with appropriate credits against impact fees.

**POLICY 3:** Land development shall not be permitted unless adequate road capital facilities exist or are ensured.

**POLICY 4:** Land development shall bear a proportionate share of the cost of the provision of the new or expanded road capital facilities required by such development.

**POLICY 5:** The imposition of impact fees and dedication requirements are two of the preferred methods of regulating land development in order to help ensure that it bears a proportionate share of the cost of road capital facilities necessary to accommodate that development and to promote and protect the public health, safety, and general welfare.

**POLICY 6:** After compensation for administrative expense, all remaining funds collected from roads impact fees shall be used for the purpose of capital improvements to and expansion of transportation facilities associated with the arterial and collector road networks in Hernando County.

**POLICY 7:** Transportation capital improvements which may be funded by impact fees include transportation planning, preliminary engineering, engineering design studies, land surveys, rights-of-way acquisition, engineering, permitting, and construction of all the necessary features for any road construction project of the type made necessary by the new development.

**GOAL 2.05: RESTRICT ENCROACHMENT ON EXISTING AND DESIGNATED FUTURE RIGHTS-OF-WAY.**

**RIGHTS-OF-WAY**

**OBJECTIVE A: TO IDENTIFY RIGHTS-OF-WAY NEEDS ACCORDING TO PROJECTED FUTURE TRAFFIC DEMANDS.**

**POLICY 1:** By 1990, the County shall, in conjunction with the Florida Department of Transportation (FDOT), designate a future local functional classification system to augment the functional classification system designated by FDOT.

**POLICY 2:** By 1990, adopt a set of rights-of-way standards for various functional classification of roadways, which will be incorporated into land development regulations.

**POLICY 3:** By 1995, implement and maintain a rights-of-way protection ordinance for planned road capital improvements rights-of-way.

**SETBACKS FROM RIGHTS-OF-WAY**

**OBJECTIVE B: PROVIDE ADEQUATE SETBACKS FROM RIGHTS-OF-WAYS.**

**POLICY 1:** By 1990, establish setback standards based on the functional classification, the design configuration of the roadway and frontage roads.

**FUTURE AVAILABILITY OF RIGHTS-OF-WAY**

**OBJECTIVE C: PROVIDE FOR THE FUTURE AVAILABILITY OF RIGHTS-OF-WAY CONSISTENT WITH PLANNED FUNCTIONAL CLASSIFICATIONS.**

**POLICY 1:** By 1995, develop a rights-of-way reservation program including acquisition to reserve rights-of-way needs identified in the plan.

**POLICY 2:** By 1995, develop a land dedication program for planned major road capital improvements rights-of-way with appropriate credits to reduce impact fees.

**MASS TRANSIT, PORTS, AND RELATED FACILITIES SUB-ELEMENTS  
GOALS, OBJECTIVES, AND POLICIES**

**Mass Transit, Ports, and Related  
Facilities Subelements**

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**GOAL 2.06: PROVIDE FOR FUTURE MASS TRANSIT SYSTEM FEATURES WHERE THEY ARE DETERMINED TO BE FEASIBLE.**

**TRANSPORTATION DISADVANTAGED**

**OBJECTIVE A: MAINTAIN SUPPORT FOR THE PROVISION OF TRANSPORTATION SERVICES TO THE TRANSPORTATION DISADVANTAGED.**

**POLICY 1:** The County shall assist the designated transportation service provider in their annual planning of transportation services to the transportation disadvantaged.

**POLICY 2:** The County shall assist the designated transportation service provider in the preparation of grant applications to FDOT and UMTA to secure both operating and capital funds.

**POLICY 3:** As part of the annual budgeting process, the County shall evaluate making a budget allocation for the designated transportation service provider to support the operation of the services for the transportation disadvantaged.

**POLICY 4:** The County shall provide appropriate and practicable non-financial assistance to private organizations, such as churches, community service groups, etc., which provide transit services to the transportation disadvantaged.

**MASS TRANSIT FEASIBILITY STUDY**

**OBJECTIVE B: PREPARE A COUNTYWIDE MASS TRANSIT FEASIBILITY STUDY WHEN THE COUNTY IS DESIGNATED A METROPOLITAN PLANNING ORGANIZATION (MPO).**

**POLICY 1:** Within one year of designation as an MPO, the County shall prepare a mass transit feasibility study to include an analysis of generators and attractors, potential ridership, service areas, financial feasibility, and methods of service.

**POLICY 2:** Within one year of the completion of the feasibility study in Policy 1, the County shall prepare a mass transit program if recommended by the study. The program shall incorporate the most feasible methods of service delivery.

**POLICY 3:** The County shall investigate funding sources and prepare applications for funding to state and federal agencies where applicable.

### MASS TRANSIT SYSTEMS FEATURES

**OBJECTIVE C: INCORPORATE OR RESERVE AREAS FOR MASS TRANSIT SYSTEM FEATURES IN ROADWAY IMPROVEMENTS OR NEW DEVELOPMENT.**

**POLICY 1:** By 1995, include review criteria in the land development regulation approval process which addresses collector roadway design which is conducive to later adaptation to bus transit.

**POLICY 2:** By 1995, the County shall establish standards for collector and arterial roadways, which reserve sufficient ROW space for mass transit features.

**POLICY 3:** The County shall encourage the State of Florida through FDOT, to acquire abandoned railroad rights-of-way that could have a future impact upon mass transit facilities.

### PUBLIC AND PRIVATE TRANSIT SERVICES

**OBJECTIVE D: THE COUNTY SHALL COORDINATE WITH PUBLIC AND PRIVATE TRANSIT SERVICES WHICH PROVIDE FOR SAFE AND AVAILABLE TRANSIT SERVICES.**

**POLICY 1:** By 1990, the County shall establish regulations for taxicab companies in order to maintain safe and efficient service levels.

**POLICY 2:** The County shall evaluate the possible expansion of intercounty bus routes to link the County with other portions of the Tampa/St. Petersburg area and other metropolitan areas of the State.

**GOAL 2.07: TO ENSURE PLANNING OF PORT AUTHORITY ACTIVITIES WHICH CONSIDERS THE RAMIFICATIONS OF IMPROVEMENTS ON BOTH THE MAN-MADE AND NATURAL SYSTEMS.**

### ESTABLISHMENT OF AN ORDERLY PLANNING PROGRAM

**OBJECTIVE A: TO ESTABLISH A PROGRAM OF ORDERLY PLANNING CONSISTENT WITH THE FUTURE LAND USE, COASTAL MANAGEMENT, AND CONSERVATION ELEMENTS OF THIS COMPREHENSIVE PLAN, FOR HERNANDO COUNTY PORT AUTHORITY ACTIVITIES.**

**POLICY 1:** The Hernando County Port Authority, together with the Hernando County staff, shall prepare and annually review a five year plan for the



planning of Port Authority activities including physical considerations.

**POLICY 2:** The five-year plan established in Policy 1 under Objective A shall be consistent with environmental, facility and land use criteria established in the Coastal Management, Land Use, Traffic Circulation, Recreation, and Conservation Elements.

**REVIEW OF PORT AUTHORITY FACILITY IMPROVEMENT AND EXPANSION**

**OBJECTIVE B:** TO REVIEW ANY PORT AUTHORITY FACILITY MODIFICATION, IMPROVEMENT, AND EXPANSION FOR ITS EFFECTS ON THE COASTAL ZONE, TRANSPORTATION SYSTEM, AND LAND USE PATTERN.

**POLICY 1:** The County shall establish a review procedure that evaluates the effect of proposed Port Authority projects on the environment, public facilities, road and adjacent land uses, proposing mitigation measures, if required.

**AVIATION SUB-ELEMENT**  
**GOALS, OBJECTIVES, AND POLICIES**

Aviation Sub-Element

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**GOAL 2.08:** TO PROMOTE THE CONTINUATION AND EXPANSION OF AVIATION AND AVIATION RELATED FACILITIES, INCLUDING COORDINATION OF SURFACE TRANSPORTATION ACCESS, CONSISTENT WITH THE FUTURE LAND USE ELEMENT, TRAFFIC CIRCULATION ELEMENT, AND CONSERVATION ELEMENT.

**AIRPORT LAND USE REGULATION**

**OBJECTIVE A:** LAND USES FOR THOSE AREAS SURROUNDING THE HERNANDO COUNTY AIRPORT LAND USE DISTRICT SHALL BE COORDINATED AND ARRANGED SO AS TO ENSURE COMPATIBILITY WITH ZONING RESTRICTIONS.

**POLICY 1:** No building, structure or other artificial or natural object shall be permitted that exceeds or would exceed 150 feet above the established airport elevation within the airport's "horizontal zone" or that penetrates or would penetrate the conical surface within the airport's conical zone, as both zones have been delineated on the Airport Land Use Map.

**POLICY 2:** No building, structure, or other artificial or natural object shall be permitted in the "approach zone" that would penetrate the approach slope for that runway or that would raise a planned or existing published minimum descent altitude, decision height, or missed approach procedure for any airport runway, or that would raise or increase the minimum obstruction clearance altitude or minimum enroute altitude on any federal airway, raise the minimum vectoring altitude, or alter any missed approach procedure, in Hernando County.

**POLICY 3:** Approval of permitted uses of land and water in Hernando County shall be contingent upon all lights or illumination being arranged and operated so as not to be misleading or dangerous to aircraft operating from or in the vicinity of a public airport; structures over two hundred (200) feet above the ground shall be equipped with lighting, and structures over seven hundred forty-nine (749) feet above mean sea level shall be equipped with white obstruction lights in accordance with FAA guidelines.

**POLICY 4:** Operations from any land use that produces smoke, glare, or other visual hazards within three statute miles of any usable public airport runway, or that produces electronic interference with

navigation signals or radio communications between aircraft and the airport or air traffic control personnel shall not be permitted.

- POLICY 5:** Noise zones shall be developed to identify land areas impacted or expected to be impacted by aviation related noise. Within "Noise Zone A" as identified on the County Airport Land Use Map, agricultural land uses with a density not in excess of 6,000 square feet of residential single-family dwelling per five (5) acres of land shall be permitted; no multi-family residential dwellings or residential subdivisions shall be permitted; commercial and light industrial land uses that comply with the airport height limitations and use restrictions shall be permitted.
- POLICY 6:** Within "Noise Zone B" of the County airport noise impact area as designated on the County Airport Land Use Map, no lots or parcels shall be sold or leased unless the prospective buyer or lessee has received a "noise warning" notification as specified in the County Airport Zoning Ordinance, and the sale or lease contract contains such notification.
- POLICY 7:** Non-conforming buildings, structures, land uses, or legally platted and accepted lots or parcels approved as of June 13, 1977 shall not have to comply with the use and density restrictions. All applicable Federal Aviation Administration rules and regulations shall be complied with on a timely basis.
- POLICY 8:** The County will pursue funding from the Federal Aviation Administration and the State Department of Transportation to conduct a FAA Part 150 Study (Airport Noise Abatement and Land Use Compatibility Study). Upon completion of the study the County will readdress the Airport Zoning Ordinance to determine whether additional modifications are necessary to assure compatibility of the surrounding community land uses with the airport. Additionally, results of the study will be incorporated into a "Land Use Guide" to be issued by the County for land uses surrounding the airport.
- POLICY 9:** Upon completion of the FAA Part 150 Study, the "Airport Zoning Ordinance" will be amended to reflect the identified noise impact zones and

subsequent recommendations be included as a part of the ordinance.

**POLICY 10:** The land use densities identified in the Comprehensive Plan will determine the maximum density levels which can be obtained. The densities developed in conjunction with the FAA Part 150 Study, will be adopted when more restrictive than those developed in the Comprehensive Plan.

**POLICY 11:** By 1990, the County shall submit the Airport Master Plan to the Federal Aviation Administration for review and approval. The Master Plan shall be continuously updated in not more than five-year increments. Any proposed amendments shall also be submitted for review and approval.

**PLANNING, DEVELOPMENT, AND MANAGEMENT OF SURFACE AND AIR MODES OF TRANSPORTATION**

**OBJECTIVE B:** BY 1995, ESTABLISH INTEGRATION MECHANISMS TO ASSURE COORDINATED PLANNING, DEVELOPMENT AND MANAGEMENT OF SURFACE AND AIR MODES OF TRANSPORTATION.

**POLICY 1:** The County shall establish review procedures to ensure that airport facility modification, improvement and expansion is consistent with the Future Land Use, Traffic Circulation and Conservation Elements of this Comprehensive Plan.

**POLICY 2:** Airport ingress and egress on major roadways shall be designed and built in such a manner as to minimize the impact of airport-related traffic on the roadway's operating level of service.

**POLICY 3:** Plans to modify, expand or improve airport facilities shall include provisions for the mitigation/minimization of impacts to adjacent natural resources. This shall include designing improvements, where ever possible, in such a manner as to maintain the functions of on-site natural resources.

**GOAL 2.09:** HERNANDO COUNTY SHALL ENSURE THAT THE COUNTY AIRPORT IS MAINTAINED AND DEVELOPED TO MEET THE FUTURE NEEDS OF THE RESIDENTS AND BUSINESS COMMUNITY.

COORDINATION WITH FAA AND FDOT

**OBJECTIVE A:** ANY PROPOSED PLANS OR IMPROVEMENT PROJECTS TO THE COUNTY AIRPORT SHALL BE COORDINATED WITH ANY APPROPRIATE FEDERAL, OR STATE AGENCY INCLUDING THE FEDERAL AVIATION ADMINISTRATION AND THE FLORIDA DEPARTMENT OF TRANSPORTATION.

**POLICY 1:** The County shall prepare a five-year airport improvement plan for inclusion in the Florida Department of Transportation 5-year work plan. This improvement plan shall be updated on an annual basis.

**POLICY 2:** By 1990, the County shall submit the Airport Master Plan to the Federal Aviation Administration for review and approval. The Master Plan shall be continuously updated in not more than five-year increments. Any proposed amendments shall also be submitted for review and approval.

**POLICY 3:** The County shall coordinate all improvement projects with the Federal Aviation Administration to ensure compliance with federal regulation.

**POLICY 4:** The County shall seek financial assistance in the form of grants, when available, for airport improvement projects from the Federal Aviation Administration and Florida Department of Transportation.

**HOUSING ELEMENT**  
**GOALS, OBJECTIVES, AND POLICIES**



## Housing Element

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**GOAL 3.01: TO PROVIDE THE OPPORTUNITY FOR ALL HERNANDO COUNTY RESIDENTS, TO OBTAIN SAFE, DECENT AND SANITARY HOUSING AT AFFORDABLE COST WHILE ENCOURAGING THEIR SELF-SUFFICIENCY.**

**ADEQUATE AND AFFORDABLE HOUSING**

**OBJECTIVE A: THE COUNTY SHALL CONTRIBUTE TO THE PROVISION OF ADEQUATE AND AFFORDABLE HOUSING OPPORTUNITIES TO ACCOMMODATE THE EXPECTED POPULATION, AS SHOWN IN TABLE H-20.**

**POLICY 1: Provide within the residential categories of the Future Land Use Element, a range of densities in locations convenient to the needs of various segments of the population.**

**POLICY 2: By 1990, revise Land Development Regulations to allow a variety of lot sizes, densities, and housing types including single family, multi-family, zero-lot line, and mobile homes to help ensure a housing choice for all segments of the population.**

**POLICY 3: Include in the Land Development Regulations, provisions which prevent the occurrence of exclusionary zoning.**

**POLICY 4: Bi-annually review housing regulations in order to incorporate new standards which allow low-income housing and eliminate standards which cause unnecessary delays and/or add unnecessary costs to housing units.**

**PROVISION OF DWELLING UNITS**

**OBJECTIVE B: THE PROVISION OF DWELLING UNITS BY AMOUNT, SIZE AND COST TO MEET THE POPULATION AND HOUSING PROJECTION FOUND IN LAND USE TABLE LU-4 AND HOUSING TABLE H-18.**

**POLICY 1: Designate residential areas on the Future Land Use Map to support residential growth. The number of new households projected are 24,055 between 1986-1994, and 43,737 between 1995-2010.**

**GOAL 3.02: TO ENCOURAGE THE UPGRADING AND/OR ELIMINATION OF SUBSTANDARD HOUSING CONDITIONS AND THE PRESERVATION OF NEIGHBORHOOD STABILITY.**

## SUBSTANDARD HOUSING

**OBJECTIVE A:** BY 1991, IDENTIFY CONDITIONS OF SUBSTANDARD HOUSING IN HERNANDO COUNTY AND ESTABLISH A PROGRAM TO REDUCE OR ELIMINATE SUCH CONDITIONS.

**POLICY 1:** By 1991, conduct a survey of the housing stock to determine the condition, extent, and location of substandard housing in Hernando County.

**POLICY 2:** Prepare updates of the housing condition survey at five year intervals.

**POLICY 3:** By 1991, prepare and adopt a housing maintenance code which establishes minimum standards for housing to help ensure that the existing housing stock is maintained in a safe and sanitary condition.

**POLICY 4:** Establish a code enforcement program to eliminate or rehabilitate existing substandard housing units. A priority for code enforcement activities shall be the rehabilitation of units rather than removal of units from the housing stock.

**POLICY 5:** If a concentration of substandard units is identified in the initial housing condition survey, an areawide assessment shall be prepared to determine the condition of infrastructure in the area. Infrastructure improvement programs shall be developed, as appropriate within budget constraints, to support the rehabilitation of individual housing units.

**POLICY 6:** The County shall utilize, where feasible, any state or federal program designed to assist the rehabilitation of identified substandard units.

## RELOCATED HOUSEHOLDS

**OBJECTIVE B:** PROVIDE EQUITABLE HOUSING FOR HOUSEHOLDS THAT MUST BE RELOCATED AS A RESULT OF GOVERNMENT ACQUISITION.

**POLICY 1:** Assure that reasonably located, safe and sanitary housing at affordable costs is available to households displaced through public action prior to such displacement.

**POLICY 2:** Displacement activities shall be accomplished in a method which minimizes disruption of existing neighborhood identities.

### PRESERVING THE QUALITY OF NEIGHBORHOODS

- OBJECTIVE C:** BY 1994, CONSERVE AND IMPROVE THE EXISTING HOUSING STOCK TO PRESERVE THE QUALITY OF NEIGHBORHOODS AND TO PROTECT THE SAFETY, HEALTH, AND WELFARE OF HERNANDO COUNTY RESIDENTS.
- POLICY 1:** The County shall support neighborhood self-help programs.
- POLICY 2:** Continue to seek grants to support provision of public infrastructure and facilities to upgrade the quality of existing neighborhoods.
- POLICY 3:** Provide information and technical assistance to homeowners for increasing private reinvestment in housing.
- GOAL 3.03:** TO ENCOURAGE THE PUBLIC AND PRIVATE SECTORS TO PROMOTE ADEQUATE HOUSING FOR THE EXISTING AND THE ANTICIPATED TOTAL POPULATION GROWTH.

### HOUSING IMPLEMENTATION PROGRAMS

- OBJECTIVE A:** BY 1991, ESTABLISH A SET OF MECHANISMS WHICH WILL IMPROVE THE HOUSING DELIVERY SYSTEM BY IMPROVING THE COMMUNICATION PROCESS, INCREASING THE INTERACTIONS OF HOUSING SERVICE PROVIDERS, AND ADVANCING THE EFFICIENCY OF THE COUNTY HOUSING REGULATORY PROCESS.
- POLICY 1:** Provide information and technical assistance to the private sector to maintain a housing production capacity sufficient to meet the required production.
- POLICY 2:** Bi-annually review and where necessary make changes to the residential building permit process, including plan review, permit fees, inspection services, and occupancy requirements, to ensure the system operates as efficiently as possible.
- POLICY 3:** Ensure that all Building Department personnel, including plan reviewers and field inspectors are qualified, trained, and where applicable, certified to carry out the duties of their positions.

- POLICY 4:** Require all subcontractors and contractors to be licensed as a condition of obtaining building permits. A homeowner, constructing his own residence or out buildings, will not need a license to obtain a building permit.
- POLICY 5:** By 1991, establish an ongoing communication mechanism such as a housing advisory committee, to include representatives from developers, contractors, financial institutions, and the County, for the purpose of increasing the understanding of each group and its role in the housing delivery process and to discuss and resolve potential problems in the housing delivery process.
- POLICY 6:** By 1990, the County shall prepare and make available information pamphlets describing the necessary steps for County approvals relating to the development of subdivisions and construction of housing.

**GOAL 3.04:** TO PROVIDE ADEQUATE AND APPROPRIATE SITES FOR FUTURE HOUSING INCLUDING HOUSING FOR LOW-INCOME AND MODERATE-INCOME FAMILIES, MOBILE HOMES, AND GROUP HOME FACILITIES AND FOSTER CARE FACILITIES, WITH SUPPORTING INFRASTRUCTURE AND PUBLIC FACILITIES.

SITES FOR LOW AND MODERATE INCOME HOUSING

- OBJECTIVE A:** THE COUNTY SHALL CONTRIBUTE TO THE PROVISION OF ADEQUATE SITES TO MEET THE PROJECTED DEMAND FOR 40,979 LOW AND MODERATE INCOME HOUSING UNITS, BY 2010, THROUGH EFFICIENT LAND DEVELOPMENT REGULATIONS AND SUPPORT OF THE HERNANDO COUNTY HOUSING AUTHORITY.
- POLICY 1:** By 1991, the County shall establish locational criteria to guide projects which accommodate low and moderate income households. The criteria shall address accessibility to shopping, services, and employment and will avoid concentration of such units in single areas or neighborhoods.
- POLICY 2:** Include in the Land Development Regulations, standards which allow small lot single family units in several different zoning classifications.

**POLICY 3:** Support the efforts of the Hernando County Housing Authority to locate and develop sites for low and moderate income housing.

**POLICY 4:** Support the efforts of the Hernando County Housing Authority to provide housing assistance to households in greatest need including but not limited to the following programs: FmHA 515 Rental Housing Loans, HUD Section 8 Rent Subsidy Program, and FmHA 502 Rural Housing Loans.

**POLICY 5:** Encourage active participation of the local financial community in providing affordable housing through mortgage or rental assistance or other similar programs.

#### SITES FOR GROUP HOMES AND FOSTER CARE FACILITIES

**OBJECTIVE B:** ADEQUATE SITES WILL BE AVAILABLE TO ACCOMMODATE GROUP HOME FACILITIES AND FOSTER CARE FACILITIES AS LICENSED BY THE FLORIDA DEPARTMENT OF HEALTH REHABILITATIVE SERVICES.

**POLICY 1:** By 1990, address within Land Development Regulations the location of group homes and foster care facilities. These standards shall be non-discriminatory in nature, and address proximity to services, concentration of homes in a single area, isolation of homes, and incompatible land uses.

**POLICY 2:** Group homes shall be a permitted use or special exception in a variety of zoning districts throughout the County.

**GOAL 3.05:** TO PROMOTE THE AESTHETIC IMPROVEMENTS OF EXISTING HOUSING WHILE CONSERVING HISTORICALLY SIGNIFICANT HOUSING.

#### HISTORIC NEIGHBORHOODS, SITES, AND STRUCTURES

**OBJECTIVE A:** IDENTIFY HISTORIC NEIGHBORHOODS, SITES, STRUCTURES WITHIN THE COUNTY WHICH WERE CONSTRUCTED PRIOR TO 1940.

**POLICY 1:** As part of the housing stock survey (by 1991), determine the amount and location of all housing units in the County which were constructed prior to 1940.

**POLICY 2:** By 1990, establish criteria to determine what constitutes a historically significant residential

structure and a historically significant neighborhood.

- POLICY 3:** Systematically evaluate potentially significant historical structures and neighborhoods (districts) in Policy 1 under Objective A and designate as significant those resources considered eligible for inclusion on local and/or national register of historical places.
- POLICY 4:** Promote the designation of historical structures and neighborhoods identified in Policy 3 under Objective A.
- POLICY 5:** Coordinate the identification process with local historic preservation groups.

**HISTORICALLY AND ARCHITECTURALLY SIGNIFICANT STRUCTURES**

- OBJECTIVE B:** PROVIDE FOR THE STABILIZATION, MAINTENANCE, PROTECTION, PRESERVATION AND REHABILITATION OF SIGNIFICANT HISTORICAL AND ARCHITECTURAL STRUCTURES, BOTH PUBLIC AND PRIVATE.
- POLICY 1:** By 1992, adopt a historic preservation ordinance which establishes the process to designate and regulate historically significant residential structures.
- POLICY 2:** By 1992, review, and revise where appropriate, the Hernando County Building Code, and other relevant codes, to ensure their consistency and compatibility with the intention of the historic preservation process.
- POLICY 3:** Notify owners of historic properties of the status of listing for their property, eligibility for various programs, and results and benefits of participation.
- POLICY 4:** By 1992, establish a program to recognize certain historic properties with plaques, monuments, and certificates of significance.
- POLICY 5:** Coordinate the preservation process with local historic preservation groups.

**GENERAL SANITARY SEWER SUBELEMENT  
GOALS, OBJECTIVES, AND POLICIES**



# General Sanitary Sewer Subelement

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**GOAL 4.01: TO PROVIDE FOR THE MOST COST EFFECTIVE AND EFFICIENT PROVISION OF SEWER SERVICE WHILE PROVIDING MAXIMUM PRACTICAL PROTECTION OF WATER RESOURCES AND PUBLIC HEALTH.**

**WASTEWATER SERVICE PLAN**

**OBJECTIVE A: BY 1990, THE COUNTY SHALL DEVELOP A WASTEWATER SERVICE PLAN FOR A TWENTY (20) YEAR PERIOD AT FIVE (5) YEAR INTERVALS TO BE UPDATED ANNUALLY WHICH EVALUATES THE DEMANDS AND SUPPLY OF WASTEWATER TREATMENT FACILITIES AND ESTABLISHES CRITERIA AND COSTS FOR THE DEVELOPMENT OF SERVICE AREAS WHICH DISCOURAGES URBAN SPRAWL.**

**POLICY 1: The plan shall be prepared under the joint supervision of the Hernando County Utilities Department and the Hernando County Department of Planning and Development.**

**POLICY 2: The County will initiate the construction of wastewater treatment facilities based on the Wastewater Service Plan as required in Objective A.**

**POLICY 3: The five (5) year Wastewater Service Plan, and it's annual updates, shall address the impacts on existing treatment systems of changes in technical standards and criteria contained in State Law for wastewater treatment.**

**POLICY 4: The annual update to the Wastewater Service Plan will include an evaluation of areas within the County currently serviced or proposed to be serviced by septic systems which will incorporate the best available information on the impacts of septic systems on ground water quality.**

**POLICY 5: All future wastewater collection and treatment systems within Hernando County should be owned and operated by or under contract with Hernando County, the Hernando County Water and Sewer District, or a municipality within Hernando County.**

**WASTEWATER COLLECTION AND TRANSMISSION SYSTEM**

**OBJECTIVE B: CONNECTION TO AN EXISTING OR PROPOSED WASTEWATER COLLECTION AND TRANSMISSION SYSTEM IS IN THE BEST INTEREST OF HERNANDO COUNTY, AND IN THOSE INSTANCES WHERE THE COUNTY DETERMINES THAT CONNECTION IS IN THE BEST INTERESTS OF THE PUBLIC**

**FOR HEALTH AND SAFETY REASONS, THE LOT OWNER SHALL BE REQUIRED TO CONNECT.**

- POLICY 1:** Where central collection systems or sub-regional facilities are available, developments within those system's five (5) year service areas, which are serviced by package plants, shall be required to connect to the new facilities.
- POLICY 2:** As part of the Wastewater Service Plan, establish standards to determine when commercial and industrial septic tanks will be required to connect to central services.
- POLICY 3:** All new subdivisions with net upland densities greater than two units per acre shall be on central sewer.
- POLICY 4:** The sizing of collection and transmission facilities shall be based upon the potential to service anticipated future growth.
- POLICY 5:** Through ordinance adoption, establish pre-treatment standards for influent, other than normal domestic strength, to be accepted in County sewer transmission lines.
- POLICY 6:** In the determination by the County that central services are necessary to protect the citizens of the County, within specific areas, the imminent threat of contamination of groundwater as identified in the Conservation Element shall be considered.
- POLICY 7:** Proposed sanitary sewer projects will be evaluated and ranked according to the priority level guidelines included in the Capital Improvements Element.

**WASTEWATER TREATMENT AND DISPOSAL LEVELS OF SERVICE (LOS)**

- OBJECTIVE C:** LEVELS OF SERVICE FOR THE TREATMENT AND DISPOSAL OF WASTEWATER SHALL BE ESTABLISHED TO MAINTAIN A MINIMUM ACCEPTABLE STANDARD FOR TREATED WASTEWATER.
- POLICY 1:** Minimum acceptable standard for treated wastewater is 20mg/l B.O.D. (Bio-Chemical Oxygen Demand) and 20 mg/l suspended solids.
- POLICY 2:** Appropriate disinfection and pH control of effluents shall be required.

**POLICY 3:** Additional levels of treatment beyond secondary shall be required for Class I waters, consistent with the requirements of the Florida Administrative Code, and may also be required for treatment and disposal in certain environmentally sensitive areas, as identified in the Conservation Element.

**POLICY 4:** Each wastewater treatment plant shall have a qualified operator who shall monitor effluent and inspect wastewater treatment plants on a monthly basis, utilizing the Florida Department of Environmental Regulation (FDER) standards. These monthly operating statements will be filed with FDER.

**POLICY 5:** The level of service standard for sanitary sewer treatment capacity for those areas served by central sewer shall be 200 gallons per equivalent residential unit per day.

**GOAL 4.02:** TO COORDINATE THE EXTENSION OF, OR INCREASE IN THE CAPACITY OF SEWER FACILITIES TO MEET FUTURE NEEDS AND TO MAXIMIZE THE USE OF EXISTING SEWER FACILITIES, DISCOURAGE AND CORRECT EXISTING FACILITY DEFICIENCIES FOR HERNANDO COUNTY'S PROJECTED POPULATION GROWTH.

#### SUB-REGIONAL WASTEWATER TREATMENT FACILITIES

**OBJECTIVE A:** DEVELOP A SYSTEM OF SUB-REGIONAL WASTEWATER TREATMENT FACILITIES WHICH WILL EFFICIENTLY PROVIDE SUFFICIENT CAPACITY TO ACCOMMODATE ANTICIPATED GROWTH.

**POLICY 1:** By 1990, prepare a county-wide study establishing sub-regional sewage treatment service areas, projected needs, prospective sites, cost and revenue analysis and timing.

**POLICY 2:** Incorporate flexibility within the plant design to allow for efficient expansion of treatment facilities and a potential increase in the level of treatment.

#### CONSOLIDATION OF WASTEWATER TREATMENT FACILITIES

**OBJECTIVE B:** CONSOLIDATE WASTEWATER TREATMENT FACILITIES INCORPORATING ANY SMALL PACKAGE PLANTS INTO A SUB-REGIONAL SYSTEM.

- POLICY 1:** Developments on package plants shall be required to connect to sub-regional facilities where available.
- POLICY 2:** Future package plants will only be permitted where the sub-regional plant is not yet operational. No impact fee credits will be allowed for facilities which will not be incorporated in a sub-regional plant system.
- POLICY 3:** Where feasible, new package plants should be located on designated sub-regional plant sites.
- GOAL 4.03:** WASTEWATER TREATMENT AND DISPOSAL SYSTEMS WHICH UTILIZE BUT PROTECT NATURAL SYSTEMS AND CONSERVE WATER USAGE.

**WATER QUALITY AND WASTEWATER MANAGEMENT**

- OBJECTIVE A:** THE LEVEL OF WASTEWATER TREATMENT SHALL BE SUFFICIENT TO PROTECT THE RECEIVING ENVIRONMENT, INCLUDING THE QUALITY OF WATER IN THE AQUIFER AND SURFACE WATER BODIES.
- POLICY 1:** Areas served by existing sewage treatment plants which are below County or DER standards for quality of treatment shall be scheduled for connection to the County sewage treatment plant system if feasible, or scheduled for necessary corrective action.
- POLICY 2:** Sufficient subsurface investigation shall be performed and monitoring network established prior to the approval of any wastewater treatment plant which is meant to percolate into the water table.
- POLICY 3:** Wetland disposal of wastewater may be utilized where the nutrient loading is determined not to have an undue impact in changing the nature of the receiving habitat.
- POLICY 4:** Advanced secondary and tertiary treatment should be considered for future permanent sewage treatment plants, particularly those which are located near water bodies or in soils which do not have a defined impermeable clay lens or significantly thick sand layers between the surface and the Floridan aquifer.

## WASTEWATER REUSE

- OBJECTIVE B:** WHERE FEASIBLE, UTILIZE WASTEWATER TREATMENT AND/OR DISPOSAL TECHNOLOGIES WHICH CONSERVE OR REUSE WATER AND OTHER BY-PRODUCTS.
- POLICY 1:** By 1991, prepare a study which reviews known and tested technologies of wastewater reuse and assesses the feasibility of applying those technologies in Hernando County.
- POLICY 2:** Spray disposal of effluent shall be utilized where possible health, environmental and other management issues can be satisfactorily resolved.
- POLICY 3:** Where possible, provide flexibility in public or private facility design to allow for development of reuse systems.
- POLICY 4:** Wetland disposal of sufficiently treated effluent shall be considered where appropriate.
- POLICY 5:** Domestic wastewater sludge shall be treated by composting or other methods, to prevent environmental degradation.
- GOAL 4.04:** ENACT IMPACT FEE ORDINANCES: FUNDS OBTAINED WILL BE USED FOR LAND ACQUISITION AND IMPROVEMENT OF CAPITAL FACILITIES. OTHER FUNDING SOURCES SHOULD BE EVALUATED.

## SANITARY SEWER IMPACT FEES

- OBJECTIVE A:** LAND DEVELOPMENT SHALL BEAR A PROPORTIONATE SHARE OF THE COST OF THE PROVISION OF NEW OR EXPANDED SANITARY SEWER CAPITAL FACILITIES REQUIRED BY SUCH DEVELOPMENT, CONSISTENT WITH THE ESTABLISHED LEVEL OF SERVICE AND PLANNING CRITERIA FOR SEWAGE TREATMENT FACILITIES.
- POLICY 1:** Land development shall not be permitted unless adequate sewage treatment is ensured.
- POLICY 2:** The imposition of impact fees is a preferred method of ensuring that development bears a proportionate share of the cost of sewage treatment facilities necessary to accommodate that development and to promote and protect the public health, safety, and general welfare.

- POLICY 3:** Impact fees for sewage treatment facilities shall cover the costs for land acquisition, sewage treatment plants and appurtenances, and major pump stations and transmission lines identified in the County Utility plans and necessary professional fees to provide the above.
- POLICY 4:** Impact fee credits shall not be given for any interim treatment plants or transmission lines and pump stations which are not utilized in the County utility system.
- POLICY 5:** The County may require up-front payment of impact fees for a new development if the County is required to construct new facilities or expand facilities to serve that development.
- POLICY 6:** A sewer/water agreement should be executed between developers and the appropriate entity prior to initiation of development.

**SOLID WASTE SUBELEMENT**  
**GOALS, OBJECTIVES, AND POLICIES**



## Solid Waste Subelement

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**GOAL 4.05: TO FOSTER A SOLID WASTE DISPOSAL SYSTEM WHICH PROVIDES AN EFFECTIVE AND ECONOMICAL SERVICE TO THE CITIZENS OF THE COUNTY WHILE PROTECTING ITS PHYSICAL AND AESTHETIC ASSETS.**

**LEVEL OF SERVICE GUIDELINES FOR SOLID WASTE DISPOSAL CAPACITY**

**OBJECTIVE A: ESTABLISH LEVEL OF SERVICE GUIDELINES FOR A SOLID WASTE DISPOSAL CAPACITY.**

**POLICY 1:** Until the Solid Waste Master Plan is completed, 5 pounds per day of solid waste per person shall be the interim level of service standard.

**POLICY 2:** Upon adoption of the Solid Waste Master Plan, a new level of service standard for solid waste shall be adopted based on data contained in the master plan. The level of service standard shall correct existing deficiencies as well as provide capacity for future projected demand.

**POLICY 3:** Solid waste disposal facility plans should accommodate at the minimum, a five year planning period.

**ADDITIONAL SANITARY LANDFILL SITE**

**OBJECTIVE B: DEVELOP ONE ADDITIONAL SANITARY LANDFILL SITE BY 1991.**

**POLICY 1:** Conduct the necessary site selection, design and permitting process in order to locate one additional sanitary landfill site in Hernando County by 1991.

**CRITERIA FOR THE TESTING OF GROUNDWATER**

**OBJECTIVE C: ESTABLISH CRITERIA FOR THE TESTING OF GROUNDWATER NEAR LANDFILLS TO DETERMINE WATER QUALITY.**

**POLICY 1:** Include in the operation of sanitary landfills a groundwater monitoring program to evaluate the emission of leachates into the groundwater system.

**POLICY 2:** By 1992, complete an inventory of all discontinued landfills and dumps.

**SOLID WASTE COLLECTION SERVICE**

**OBJECTIVE D: ESTABLISH AN EQUITABLE SYSTEM OF SOLID WASTE COLLECTION SERVICE TO THE EXTENT PRACTICAL AND FEASIBLE.**

- POLICY 1:** Solid waste collection services shall be provided to populated areas, either through County collection systems or franchises.
- POLICY 2:** Where solid waste collection service is provided by the County or through franchises, subscription shall be mandatory upon demand of the County.
- POLICY 3:** Solid waste disposal shall also be provided at the landfill and other appropriately located facilities.
- POLICY 4:** By 1991, establish standards for the disposal of septage.

**CRITERIA FOR THE COLLECTION, STORAGE, AND DISPOSAL OF SLUDGE**

**OBJECTIVE E:** ESTABLISH CRITERIA FOR THE COLLECTION, STORAGE AND DISPOSAL OF SLUDGE.

**POLICY 1:** The processing of sludge shall meet or exceed standards set by the Department of Environmental Regulation with regard to collection, storage and disposal.

**POLICY 2:** The use of sludge for land applications such as lawns, golf courses, nurseries and crops shall meet all criteria set by the Department of Environmental Regulation.

**POLICY 3:** An approved sludge disposal site shall be maintained for use by Hernando County.

**GOAL 4.06:** TO REDUCE THE VOLUME OF SOLID WASTE DISPOSAL IN LANDFILLS AND DEVELOP ALTERNATIVE METHODS OF SOLID WASTE MANAGEMENT.

**SOLID WASTE MANAGEMENT STRATEGY**

**OBJECTIVE A:** DURING 1989, DEVELOP AN OVERALL SOLID WASTE MANAGEMENT STRATEGY WHICH INCORPORATES VARIOUS METHODS OF PROCESSING AND DISPOSAL, INCLUDING LANDFILLING. THIS MANAGEMENT STRATEGY SHALL CORRECT EXISTING DEFICIENCIES AND PROVIDE FOR FUTURE PROJECTED DEMAND.

**POLICY 1:** Conduct a solid waste assessment for Hernando County including an analysis of the volume and type of wastes generated at the present and for wastes projected to the year 2010.

**POLICY 2:** Evaluate various methods of handling wastes to determine the feasibility of their use in Hernando County, including incineration, composting, digesting, resource recovery/recycling, and landfilling.

**POLICY 3:** Evaluate the feasibility of regional alternatives of solid waste management including the possibility of intergovernmental agreements with adjacent local governments.

**POLICY 4:** Adopt and initiate implementation of a Solid Waste Management Plan which incorporates additional methods of solid waste management along with a reduced dependence on landfills.

**POLICY 5:** By 1991, establish a recycling program for commercially viable products in the waste stream.

**GOAL 4.07:** TO MINIMIZE SECONDARY POLLUTION GENERATION IN SOLID WASTE DISPOSAL.

**TREATMENT OF ENVIRONMENTALLY DAMAGING MATERIALS**

**OBJECTIVE A:** UTILIZE ALTERNATIVE TREATMENT METHODS TO LANDFILLING ENVIRONMENTALLY DAMAGING MATERIALS.

**POLICY 1:** Participate in Federal and State programs which encourage or require treatment of hazardous waste materials at the point of use.

**POLICY 2:** Establish program which allows residential holders of small amounts of hazardous waste to deliver them to the County for disposal.

**POLICY 3:** Investigate and utilize methods of solid waste disposal which recycle, decompose or dilute environmentally damaging materials prior to any landfilling.

**DRAINAGE AND NATURAL GROUNDWATER  
AQUIFER RECHARGE SUBELEMENTS**

**GOALS, OBJECTIVES, AND POLICIES**

**Drainage and Natural Groundwater  
Aquifer Recharge Subelements**

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**GOAL 4.08: PROTECT NATURAL DRAINAGE FEATURES AND RESTORE MODIFIED FEATURES, WHERE FEASIBLE.**

**FUNCTIONS OF NATURAL DRAINAGE SYSTEM**

**OBJECTIVE A: BY THE DEADLINE MANDATED BY STATE STATUTE HERNANDO COUNTY WILL ADOPT LAND DEVELOPMENT REGULATIONS TO REQUIRE NEW DEVELOPMENT TO UTILIZE, BUT NOT DEGRADE THE FUNCTIONS OF NATURAL DRAINAGE SYSTEMS, INCLUDING FLOODPLAINS, WETLANDS, STREAMS, RIVERS, AND LAKES.**

**POLICY 1: Prohibit land filling which results in net loss of storage within the areas inundated by the 100-year storm event.**

**POLICY 2: Review and modify the landscape and subdivision ordinances to ensure that development will not have an adverse impact on storage capacities or water quality, increase floodprone areas, erosion, or cause other unfavorable drainage conditions.**

**POLICY 3: Increase the use of vegetated swales, sodding, landscaping, and retention of natural vegetation as components of the drainage system for natural runoff and filtration control through the use of landscape and subdivision ordinances.**

**POLICY 4: The County shall practice coordinated permitting with the Southwest Florida Water Management District in matters related to the quality of storm water runoff.**

**DRAINAGE PROBLEMS**

**OBJECTIVE B: BY 1995, IDENTIFIED DRAINAGE DEFICIENCIES SHALL BE EVALUATED AND SCHEDULED FOR APPROPRIATE RESOLUTION.**

**POLICY 1: The County shall work with the Southwest Florida Water Management District to establish and implement a work program to alleviate specific drainage problem areas as identified in this element. The initial priority will be the Bystre Lake Drainage Study. Both structural and non-structural alternatives will be considered as solutions.**

**POLICY 2: The County shall acquire future drainage retention sites, water storage rights, and access as feasible to include funding, in order to construct drainage system improvements that are identified**

in the county-wide drainage study. This shall not preclude the County from entering into agreements with other governmental entities.

**GOAL 4.09: PROVIDE OR REQUIRE DRAINAGE FACILITIES WHICH AFFORD THE MAXIMUM FEASIBLE PROTECTION OF RESIDENTS, PROPERTY, AND THE ENVIRONMENT.**

**DRAINAGE FACILITIES LEVEL OF SERVICE STANDARDS**

**OBJECTIVE A: ALL NEW DRAINAGE FACILITIES TO CORRECT EXISTING DEFICIENCIES AND ADDRESS FUTURE NEEDS SHALL MEET LEVELS OF SERVICE STANDARDS ESTABLISHED BY HERNANDO COUNTY AND THE STATE OF FLORIDA.**

**POLICY 1:** By 1991, a county-wide drainage study shall be prepared which identifies major drainage basins, major drainage sinkholes, natural storage areas, anticipated storage capacity requirements, flood prone areas, conveyance features, and appropriate areas for major drainage retention facilities.

**POLICY 2:** By 1991, the feasibility of implementing drainage improvement projects under a county master drainage plan shall be determined, with priority given to areas of known flooding proclivity.

**POLICY 3:** The County shall consider establishing an impact fee and/or other equitable user-oriented revenue sources for the construction of drainage facilities, either county-wide or in districts of high flooding potential.

**POLICY 4:** The County shall coordinate closely with other drainage regulatory agencies, (Southwest Florida Water Management District, Florida Department of Transportation, and Federal Emergency Management Agency) prior to the adoption and implementation of county drainage regulations and pursuant to revisions in agency regulations.

**POLICY 5:** Upon adoption of a county-wide drainage plan, the Office of the County Engineer shall prepare for adoption, and update regulations and levels of service standards for drainage retention for all development. Existing standards as described in State of Florida regulations Southwest Florida Water Management District (SWFWMD) regulations, and Hernando County ordinances shall be in effect until revisions are made and adopted. Until standards are developed based upon the county-wide



drainage plan, the interim level of service standard shall be: post development runoff shall be no greater than pre-development runoff based on 25-year frequency, 24-hour duration; Rainfall Intensity curve-zone 8, Florida Department of Transportation (FDOT) Drainage Manual, 1979.

**GOAL 4.10: TO PROTECT AQUIFERS FROM CONTAMINATION THROUGH APPROPRIATE REGULATION AND EDUCATION PROGRAMS.**

**FUNCTIONING AND INTEGRITY OF THE AQUIFER RECHARGE SYSTEM**

**OBJECTIVE A: APPROPRIATE METHODS SHALL BE ADOPTED WHICH ENSURE THE FUNCTION AND INTEGRITY OF THE AQUIFER RECHARGE SYSTEM.**

**POLICY 1:** By 1991, develop a hazardous materials program including public education, coordination with appropriate agencies, provision of adequate collection, and disposal facilities in order to limit the amount of contaminants reaching the surficial or Floridan aquifers.

**POLICY 2:** Public facility review of sewage treatment plant siting shall include an evaluation of the site characteristics and the disposal methods for sludge and effluent to determine potential effects on the aquifer.

**POLICY 3:** Appropriate County standards shall be equivalent to or more stringent than State rules.

**AQUIFER RECHARGE PROTECTION**

**OBJECTIVE B: MAP AND PROTECT NATURAL GROUNDWATER RECHARGE AREAS.**

**POLICY 1:** The County shall encourage SWFWMD to complete the technical analysis and computer models to identify and map prime groundwater recharge areas.

**POLICY 2:** Within one year of receiving SWFWMD mapping of prime groundwater recharge areas, adopt a groundwater protection ordinance which addresses protection of the quantity and quality of groundwater within prime recharge areas.

**POTABLE WATER SUBELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

# Potable Water Subelement

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**GOAL 4.11: A WATER DISTRIBUTION SYSTEM WHICH MEETS THE DEMANDS OF RESIDENTIAL, INDUSTRIAL AND COMMERCIAL USES AND PROVIDES THE PUBLIC WITH ADEQUATE FIRE PROTECTION.**

**WATER SYSTEMS FACILITIES DESIGN AND CONSTRUCTION STANDARDS**

**OBJECTIVE A: ESTABLISH STANDARDS FOR THE LOCATION, SIZE, DESIGN AND CONSTRUCTION OF WATER SYSTEM FACILITIES CONSISTENT WITH MEETING THE NEEDS OF PROJECTED GROWTH AND TO DISCOURAGE URBAN SPRAWL.**

**POLICY 1:** Pipe fittings, valves, water mains, fire hydrants and other components of water distribution system at the time of installation shall conform to the latest standards issued by the American Water Works Association and be acceptable to the Hernando County Utilities Department.

**POLICY 2:** Uniform standards for design and construction of water system facilities after review by the Utilities Department shall be adopted by the local Hernando County governing body.

**POLICY 3:** For the purpose of facility planning, a standard of 250 gallons per day per equivalent residential unit should be used.

**WATER PRESSURE REQUIREMENTS**

**OBJECTIVE B: SIZING OF WATER LINES SHALL BE DEPENDENT ON WATER PRESSURE REQUIREMENTS.**

**POLICY 1:** Minimum Water Pressure Standard shall be 40 PSI during peak flow period.

**POLICY 2:** Public water system design shall be such that fire flows and facilities are in accordance with the requirements of the Insurance Services Office.

**POLICY 3:** Water systems shall be interconnected where feasible in order to enhance water pressures and decrease service interruptions.

**STORAGE CAPACITY STANDARDS FOR POTABLE WATER FACILITIES**

**OBJECTIVE C: ESTABLISH MINIMUM STORAGE CAPACITY STANDARDS FOR POTABLE WATER FACILITIES, WITH AND WITHOUT FIRE PROTECTION.**

**POLICY 1:** Storage facilities should have sufficient capacity, as determined by engineering studies to

meet domestic demands, and where fire protection is provided, fire flow demands.

**POLICY 2:** All finished water storage structures shall have suitable watertight roofs which exclude birds, animals, insects and excessive dust.

#### STANDARDS FOR SIZE OF WATER MAIN

**OBJECTIVE D:** ESTABLISH MINIMUM STANDARDS FOR SIZE OF WATER MAIN TO BE USED FOR FIRE PROTECTION.

**POLICY 1:** The minimum size water main for providing fire protection and serving fire hydrants shall not be less than six inches.

**POLICY 2:** Spacing of fire hydrants should not exceed 1,000 feet (curbline distance) for residential subdivisions and 500 feet (curbline distance) for commercial, industrial and institutional areas.

#### CONDITION OF THE EXISTING WATER DISTRIBUTION SYSTEMS

**OBJECTIVE E:** DETERMINE THE CONDITION OF THE HERNANDO COUNTY WATER AND SEWER DISTRICT'S EXISTING WATER DISTRIBUTION SYSTEM AND CORRECT EXISTING DEFICIENCIES.

**POLICY 1:** By 1993, inventory the operation of the County's existing water distribution system and identify any deficiencies with relation to the above standards.

**POLICY 2:** The County shall work with the major non-publicly owned potable water supply systems in Hernando County to help ensure that the type of analysis outlined in Policy 1 under Objective E is done for non-publicly owned systems in the same time frame.

**POLICY 3:** Prepare a report summarizing system deficiencies, recommended actions, scheduling and funding.

#### WATER SHORTAGE REGULATIONS

**OBJECTIVE F:** BY 1992, THE COUNTY SHALL ADOPT APPROPRIATE WATER SHORTAGE REGULATIONS.

**POLICY 1:** Water shortage regulations shall be consistent with the Florida Administrative Code.

- POLICY 2:** The regulations shall be applicable to areas of the County where a water shortage is declared by the Southwest Florida Water Management District.
- POLICY 3:** The County shall establish a liaison with the Southwest Florida Water Management District in the administration of the regulations.
- GOAL 4.12:** **TO PROTECT THE SOURCE AND QUALITY OF DRINKING WATER SUPPLIES BY THE USE OF ZONING LAWS TO CONSERVE WELLFIELD SITES FOR HERNANDO COUNTY AND TO ENCOURAGE THE DEDICATION OF WELL SITES FROM FUTURE DEVELOPMENT.**

**GROUNDWATER AND DRINKING WATER PROTECTION**

- OBJECTIVE A:** **TO ENSURE THAT POTABLE WATER SUPPLIES ARE AVAILABLE IN SUFFICIENT QUANTITIES TO SERVE THE NEEDS OF HERNANDO COUNTY RESIDENTS BY IMPLEMENTING A COUNTY GROUNDWATER PROTECTION ORDINANCE THAT CREATES ZONES OF PROTECTION AROUND MAJOR COMMUNITY POTABLE WATER SUPPLY WELLFIELDS.**
- POLICY 1:** To adopt by 1991 a County groundwater protection ordinance to protect existing potable water supply wellfields from the adverse effects of bacterial and chemical contamination.
- POLICY 2:** By 1990, complete the necessary technical analysis and computer models to support a groundwater protection ordinance to protect existing and future major community potable water supply wellfields based on best available hydrogeological data.
- POLICY 3:** To ensure that the groundwater protection ordinance provides for the staff and equipment necessary to effectively implement, and monitor compliance with the intent of the regulations by 1991.
- POLICY 4:** In support of the groundwater protection ordinance, wellfield protection zones shall be established and accurately mapped.
- POLICY 5:** To establish and periodically revise the areal extent of existing wellfield zones of protection.
- POLICY 6:** To control the storage, handling, use or production of all known hazardous or toxic

substances within zones of influence of wellfields.

**POLICY 7:** Protect against significant point and non-point sources of groundwater pollution within zones of influence of wellfields.

**POLICY 8:** Adopt a master water supply plan which will identify and delineate future wellfield sites.

**GOAL 4.13:** TO ENSURE THAT THE WITHDRAWAL OF WATER WITHIN HERNANDO COUNTY IS IN THE PUBLIC INTEREST.

#### WITHDRAWAL OF WATER

**OBJECTIVE A:** ESTABLISH A PROCEDURE TO ENSURE THAT THE WITHDRAWAL OF GROUNDWATER OR SURFACE WATER FROM HERNANDO COUNTY SHALL ONLY TAKE PLACE IF IT DOES NOT NEGATIVELY IMPACT THE QUALITY AND QUANTITY OF POTABLE WATER REQUIRED FOR HERNANDO COUNTY'S ULTIMATE DEVELOPMENT.

**POLICY 1:** Public Facility Zoning Approval shall be required prior to the construction of any major potable water well fields to review the impacts on surrounding and proposed land uses and the aquifer and require mitigation of significant negative impacts.

**POLICY 2:** The County will continue to participate with the Withlacoochee Regional Water Supply Authority to ensure that regional water supply issues are coordinated.

**POLICY 3:** The County shall coordinate major water supply issues with the Southwest Florida Water Management District, including water supply studies, water well rezoning and consumptive use permits.

#### WELLFIELD SITING CRITERIA AND PROCEDURES

**OBJECTIVE B:** BY 1994, ESTABLISH WELLFIELD SITING CRITERIA AND PROCEDURES WHICH WILL ENSURE THE PROVISION OF POTABLE WATER WHICH MEETS STATE AND LOCAL STANDARDS FOR WATER QUALITY AND WILL MEET LOCAL LEVEL OF SERVICE STANDARDS TO SUPPLY FUTURE NEEDS.

**POLICY 1:** Future wellfield siting should be prepared by the County in consultation with SWFWMD staff and any applicable authority.

**POLICY 2:** A wellfield siting plan shall be prepared and maintained by the County, projecting anticipated potable water needs for a minimum of 50 years.

**POLICY 3:** Siting factors to be considered shall include but not be limited to the following: aquifer characteristics, sinkhole proclivity, saltwater intrusion, general proximity to development, specific proximity to low intensity land uses, water quality and County, State, and Federal regulations.

**GOAL 4.14:** TO ENSURE THAT NEW DEVELOPMENT IS COMPATIBLE WITH AVAILABLE LOCAL WATER SUPPLIES.

**ADEQUATE WATER SUPPLIES**

**OBJECTIVE A:** DEVELOPMENT MUST BE SERVED WITH POTABLE WATER MEETING ACCEPTED LEVEL OF SERVICE STANDARDS.

**POLICY 1:** For those areas of the County which are served or will be served by a community water system, the level of service standard for facility capacity is 250 gallons per equivalent residential unit per day.

**POLICY 2:** Land Development Regulations shall incorporate requirements that ensure a review of the potable water needs for new developments.

**POLICY 3:** New development located in the service area of a planned, but unbuilt public water system may be required to bear the cost of establishing new well fields, pumping facilities, and transmission lines with the appropriate credits given for the improvements.

**POLICY 4:** Interim potable water systems or individual wells shall be allowed where it is not feasible to initiate construction of the public water system.

**POLICY 5:** Development using any interim potable water systems shall be required to connect to a public water system, when available.

**POLICY 6:** Development using individual wells may be required to connect to a public water system, when available.

**GOAL 4.15:** MAXIMIZE POTABLE WATER CONSERVATION.



**POTABLE WATER CONSERVATION**

- OBJECTIVE A:** A PROGRAM TO CONSERVE POTABLE WATER SUPPLIES SHALL BE PREPARED IN CONJUNCTION WITH SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, ADDRESSING BOTH DEMAND REDUCTION AND SUPPLY ENHANCEMENT METHODS.
- POLICY 1:** An evaluation study shall be prepared, in conjunction with Southwest Florida Water Management District, of user patterns and supply system conditions to identify areas where water conservation methods could have a positive effect on potable water supply.
- POLICY 2:** Water conservation methods to be evaluated for use in a program shall include regulatory, fiscal, operational, and educational options.
- POLICY 3:** Options shall be evaluated based on a) potential for water savings; b) program costs, including impacts on revenues; c) environmental impacts; d) customer impacts; e) social acceptability; f) technical feasibility; and g) political practicability.
- POLICY 4:** Review existing ordinances, codes, and inspection procedures for adherence to applicable conservation standards, including those contained in the Florida Statutes.
- POLICY 5:** Reduce the need for landscape irrigation systems by increasing the use of xeriscape methods which incorporate the use of natural plant material and drought tolerant plants.
- POLICY 6:** Discourage the use of publicly supplied potable water for irrigation.
- POLICY 7:** Establish disincentive programs for the overconsumption of publicly supplied potable water.
- GOAL 4.16:** ENACT IMPACT FEE ORDINANCES: FUNDS OBTAINED WILL BE USED FOR LAND ACQUISITION AND IMPROVEMENT OF CAPITAL FACILITIES. OTHER FUNDING SOURCES SHOULD BE EVALUATED.

POTABLE WATER IMPACT FEES

**OBJECTIVE A:** LAND DEVELOPMENT SHALL BEAR A PROPORTIONATE SHARE OF THE COST OF THE PROVISION OF NEW OR EXPANDED POTABLE WATER CAPITAL FACILITIES REQUIRED BY SUCH DEVELOPMENT, CONSISTENT WITH THE ESTABLISHED LEVEL OF SERVICE AND PLANNING CRITERIA FOR POTABLE WATER FACILITIES.

**POLICY 1:** Land development shall not be permitted unless adequate potable water is ensured.

**POLICY 2:** The imposition of impact fees is a preferred method of ensuring that development bears a proportionate share of the cost of potable water facilities necessary to accommodate that development and to promote and protect the public health, safety, and general welfare.

**POLICY 3:** Impact fees for potable water facilities shall cover the costs for land acquisition, well fields and appurtenances, major pump stations and transmission lines identified in the County Water plans, and necessary professional fees to provide the above.

**POLICY 4:** The County may require up-front payment of impact fees for a new development if the County is required to construct new facilities or expand facilities to serve that development.

**POLICY 5:** New development shall bear the cost of construction of any interim wells and appurtenances. Impact fee credits shall not be given for any interim wells or transmission lines and pump stations which are not utilized in the permanent County Water system.

**POLICY 6:** A sewer/water agreement should be executed between developers and the appropriate entity prior to initiation of development.

**COASTAL MANAGEMENT ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

## Coastal Management Element

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**GOAL 5.01: PROTECT, CONSERVE AND ENHANCE REMAINING COASTAL WETLANDS, LIVING MARINE RESOURCES AND WILDLIFE HABITATS.**

**PROTECTION OF COASTAL WETLANDS AND ISOLATED UPLANDS**

**OBJECTIVE A: IDENTIFY COASTAL WETLANDS AND PLACE THEM AND ANY SMALL ISOLATED UPLANDS IN A CONSERVATION DESIGNATION TO BE PRESERVED AND PROTECTED FOR THE ENVIRONMENTAL BENEFITS PROVIDED.**

**POLICY 1:** All contiguous wetlands, including isolated uplands not accessible by roadways, shall be designated as conservation on the Future Land Use Map. For the purpose of mapping, the Soil Conservation Service Hydric Soil Designation will be utilized, however, ultimate designation of wetlands will be wetland jurisdictional lines by appropriate agencies.

**POLICY 2:** Development rights based upon one unit per 40 acres of wetlands, or as otherwise consistent with the quarter/quarter land management concept, and one unit per one acre of uplands may be transferred to development areas within the coastal zone or other suitable receiving areas outside the coastal zone.

**POLICY 3:** Existing private ownership of conservation areas will be encouraged only if sufficient safeguards are in place to ensure that no incompatible use can be made. Where public ownership is necessary or desirable, conservation areas will be acquired by negotiation using public funds as appropriate.

**CONSERVATION AREA USAGE**

**OBJECTIVE B: TO PROVIDE FOR CAREFUL UTILIZATION OF CONSERVATION AREAS WITH FULL IDENTIFICATION OF AND RESPECT FOR THE NATURAL RESOURCE LIMITATIONS OF THESE AREAS.**

**POLICY 1:** Access may be constructed in conservation areas in conjunction with the development of open space facilities, extension of the County hurricane evacuation highway network, or driveways to individual parcels. Improvements should not have a substantially adverse affect upon the water quality of coastal wetlands or estuaries nor a substantially negative affect upon wildlife habitats.

- POLICY 2: In wetland soils, there shall be applied a density restriction of one residential unit per forty acres, or as otherwise consistent with the quarter/quarter land management concept. Regulations to implement this policy shall take into account, among other things, existing hardships caused by parcel size.
- POLICY 3: Residential densities shall not render more than 10% of the development site impervious.
- POLICY 4: Development approvals in flood prone areas will be specifically conditioned upon the ability of evacuation routes to provide safe exodus for all potential residents of existing development within the flood prone area and the proposed new development.
- POLICY 5: Forestry, recreation, and open space uses will be given priority over urban development in conservation areas.

#### MANAGEMENT PROCEDURE TO MONITOR NATURAL RESOURCES

- OBJECTIVE C: BY 1994, THE COUNTY SHALL PLAY A ROLE IN PROTECTING WETLANDS, RIVERS, AND STREAMS BY DEVELOPING AND IMPLEMENTING A MANAGEMENT PROCEDURE TO MONITOR THE ABOVE NATURAL RESOURCES.
- POLICY 1: Establish a general management responsibility for the coastal wetlands, rivers, and streams within one County department. This department will coordinate the efforts of all applicable local and state regulatory bodies.
- POLICY 2: Prepare and update every five years an informational report which utilizes information and monitoring data prepared by SWFWMD, DER, USGS, and other agencies.
- POLICY 3: The Southwest Florida Water Management District and DER are encouraged to monitor and research water quality in the coastal zone.
- POLICY 4: State and Federal funds shall be sought for data acquisition in order to establish baseline data of estuarine conditions.
- POLICY 5: Prepare and update every five years an action plan for the future use and protection of coastal rivers and streams.

**POLICY 6:** One elected official, the County Administrator and the County Development Manager shall constitute an interagency task force for coastal zone management, with additional members appointed at the discretion of the local governing body. The task force shall report to the local governing body on an annual basis, with findings and recommendations as to accomplishments, needs and recommendations for local governing body action. The task force will also recommend changes in this plan needed to coordinate with any new or revised resource planning and management plans, aquatic preserve management plans, and estuarine sanctuary plans.

**MAINTENANCE OF ESTUARINE WATER QUALITY, VEGETATIVE COMMUNITIES, AND HABITAT**

**OBJECTIVE D:** MAINTAIN OR RESTORE ESTUARINE WATER QUALITY, VEGETATIVE COMMUNITIES AND HABITAT AT OR ABOVE PRE-DEVELOPMENT CONDITIONS, IN TERMS OF BOTH QUANTITY AND QUALITY.

**POLICY 1:** The interagency task force shall have responsibility for coordinating with other local governments to ensure adequate sites for water dependent uses, prevent estuarine pollution, control surface water runoff, protect living resources, reduce exposure to natural hazards, and ensure public access.

**POLICY 2:** Develop and implement management plans and Land Development Regulations to limit man-made diversion of water from coastal springs and rivers to maintain the balance between freshwater and saltwater necessary to support the estuarine habitat.

**PROTECTION OF WATER QUALITY AND THE RIVERINE**

**OBJECTIVE E:** TO PROTECT THE WATER QUALITY AND THE RIVERINE AND NATIVE BOTTOM COMMUNITIES OF THE ENTIRE SEVEN (7) MILE LENGTH OF THE WEEKI WACHEE RIVER AND ITS ESTUARY.

**POLICY 1:** Hernando County shall vigorously promote the designation of the Weeki Wachee River and estuary as Outstanding Florida Waters (OFW's).

**POLICY 2:** Hernando County shall provide the data and information requested by DER and the Environmental Regulatory Commission for use in a report on the



designation of the Weeki Wachee River and Estuary as Outstanding Florida Waters (OFW's).

PURCHASE OF LAND UNDER THE "SAVE OUR RIVERS" PROGRAM

**OBJECTIVE F:** ENCOURAGE PURCHASE BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT UNDER THE "SAVE OUR RIVERS" PROGRAM OF 1,565 + ACRES OF LAND ALONG THE WEEKI WACHEE RIVER AND ASSOCIATED RIVERINE HABITATS.

**POLICY 1:** Vigorously pursue SWFWMD purchase of the Weeki Wachee riverine and estuarine lands identified by the local governing body.

**POLICY 2:** Vigorously promote SWFWMD purchase of the Weeki Wachee River lands, through the "Save Our River" program, by attendance at SWFWMD basin board and governing board meetings and solicitation of endorsements.

PURCHASE OF LAND THROUGH THE C.A.R.L. PROGRAM

**OBJECTIVE G:** ENCOURAGE STATE PURCHASE OF AN ADDITIONAL 11,200 + ACRES OF COASTAL LANDS THROUGH THE C.A.R.L. PROGRAM.

**POLICY 1:** Complete and file an application for C.A.R.L. purchase of the coastal lands identified by the local governing body.

**POLICY 2:** Promote state acquisition of additional coastal lands in Hernando County through attendance at cabinet and C.A.R.L. committee meetings and solicitation of expert, citizen, and civic group endorsements.

MAINTENANCE OF WILDLIFE AND FISH POPULATIONS

**OBJECTIVE H:** BY 1994, THE COUNTY SHALL IMPLEMENT MECHANISMS TO ASSIST IN THE INVENTORY AND PROTECTION OF WILDLIFE AND FISH POPULATIONS.

**POLICY 1:** The County shall adopt Land Development Regulations which establish standards for and require vegetation surveys for new developments locating in naturally vegetated, undeveloped areas in the coastal zone in order to encourage designs which will protect important vegetation communities.

**POLICY 2:** Where vegetation communities are altered by future development, mitigation measures, including the

replanting of native vegetation, will be implemented to maintain fish and wildlife habitats.

**POLICY 3:** Encourage and assist the Florida Game and Freshwater Fish Commission in compiling information concerning marine and upland wildlife populations, habitats and protection status.

**POLICY 4:** Activities which restore environmentally degraded areas, and which increase wildlife carrying capacity through habitat modification, will be supported and may be initiated by the local governing body.

**GOAL 5.02:** ESTABLISH A FUTURE LAND USE PLAN WHICH ALLOWS ACCESS TO AND UTILIZATION OF COASTAL RESOURCES WHILE GENERALLY DIRECTING POPULATION CONCENTRATIONS AWAY FROM KNOWN OR PREDICTED COASTAL HIGH-HAZARD AREAS.

**DEVELOPMENT WITHIN COASTAL HIGH-HAZARD AREAS**

**OBJECTIVE A:** DEVELOPMENT WITHIN COASTAL HIGH-HAZARD AREAS SHALL BE RESTRICTED TO LOW INTENSITY USES AND RECREATION ORIENTED PROJECTS.

**POLICY 1:** Hernando County will establish, through zoning, a coastal high hazard district within which water-dependent uses are encouraged, the transfer of development rights is permitted and County or State purchase is considered as a first option prior to the issuance of zoning approval and building permits. As defined herein, "coastal high hazard" district includes and is limited to the "V-Zone" on the adopted flood insurance rate map.

**POLICY 2:** New county funded public facilities shall not be built in the coastal high-hazard area unless the facility is for recreation, public access or resource restoration.

**POLICY 3:** Infill residential development in existing communities will be allowed, consistent with present densities, provided that all applicable federal, state and county zoning, construction and environmental regulations are met.

**POLICY 4:** Those portions of Hernando Beach and Pine Island in the Coastal High Hazard Areas will be allowed

to continue limited new development in accordance with vested development rights, provided that all applicable zoning, construction and environmental regulations are met.

**POLICY 5:** The remaining portion of Bayport under consolidated ownership shall be designated as Planned Development which mandates a comprehensive land use planning effort to incorporate recreational, residential, multi-family, and commercial uses which will enhance public access to the Gulf of Mexico and make appropriate use of the limited remaining uplands with direct Gulf frontage.

**POLICY 6:** Residential densities in any other new developments approved in the Coastal High Hazard Area will be no greater than 1.0 dwelling unit per acre of upland.

#### REVIEW OF FUTURE USE OF MINING AREAS IN THE COASTAL ZONE

**OBJECTIVE B:** ANNUALLY REVIEW FUTURE USE OF MINING AREAS IN THE COASTAL ZONE, PROMOTING PROTECTION AND SAFE USE OF EXISTING NATURAL RESOURCES.

**POLICY 1:** Review in detail mining reports from the Aripeka Limerock Mine and DRI Annual Reports for consistency with the Oak Sound DRI development order.

**POLICY 2:** Prior to commencement of development of any areas adjacent to mining pits (lakes), require County review and approval of a development plan for the lake(s) outlining safety measures along the waterfront.

**POLICY 3:** Encourage the use of mining lakes for recreational uses with public access.

**GOAL 5.03:** MAINTAIN THE EFFICIENT FUNCTIONING OF TRANSPORTATION CORRIDORS WITHIN THE COASTAL ZONE.

#### COASTAL TRANSPORTATION NETWORK

**OBJECTIVE A:** PROVIDE AN ADEQUATE TRANSPORTATION NETWORK IN THE COASTAL ZONE TO MEET COUNTY-WIDE LEVELS-OF-SERVICE STANDARDS AND HURRICANE EVACUATION LEVELS-OF-SERVICE.

- POLICY 1:** By 1991, initiate a transportation planning analysis for the coastal transportation network, identifying the type, timing, location and cost of improvements needed to accommodate:
- a. The population proposed for the coastal zone, based upon the Future Land Use Map;
  - b. Increased demand for water-dependent recreational opportunities;
  - c. Hurricane evacuation; and
  - d. Roadway elevations.
- POLICY 2:** Develop the capability to evacuate all residents before roads become impassable and within eight (8) hours or less (medium response, from Table CZ-9).
- POLICY 3:** The County will evaluate road levels and determine adequate heights at which the various roads will flood during a hurricane storm surge.
- POLICY 5:** Any deficiencies or needs identified in this analysis will be incorporated into the local evacuation plan.
- GOAL 5.04:** TO PROVIDE ADEQUATE INFRASTRUCTURE NEEDED FOR EXISTING AND PROPOSED DEVELOPMENT IN THE COASTAL ZONE, WHILE LIMITING PUBLIC EXPENDITURES IN COASTAL HIGH HAZARD AREAS.

**INFRASTRUCTURE NEEDED IN THE COASTAL ZONE**

- OBJECTIVE A:** BY 1990, HERNANDO COUNTY SHALL DISCOURAGE THE DEVELOPMENT OF LANDS WITHIN THE DESIGNATED COASTAL HIGH-HAZARD ZONE BY ELIMINATING ALL DIRECT AND INDIRECT COUNTY SUBSIDIES TO NEW DEVELOPMENT.
- POLICY 1:** Each new development in the designated coastal high-hazard zone shall provide and maintain all the necessary infrastructure (roads, drainage, sewer collection and water distribution systems) concurrent with demand generated by that development.
- POLICY 2:** Hernando County shall not accept for public ownership or maintenance, any roads, drainage, sewer or water infrastructure of new developments in the designated coastal high-hazard area.
- POLICY 3:** Hernando County shall not construct new transportation corridors within the coastal high-

hazard areas except to provide necessary hurricane evacuation.

**COASTAL INFRASTRUCTURE LEVELS OF SERVICE**

**OBJECTIVE B: LEVEL OF SERVICE STANDARDS SHALL BE ESTABLISHED FOR THE COASTAL ZONE AND SPECIAL DEVELOPMENT STANDARDS FOR THE COASTAL HIGH-HAZARD ZONE.**

**POLICY 1:** Level of service standards for infrastructure in the coastal zone shall be those standards adopted elsewhere in the Comprehensive Plan and will be applied whenever permits or development orders are requested.

**POLICY 2:** New or improved coastal facilities shall provide the following special development standards, by category and measure.

Category 1: New Sanitary Sewage Facilities in the Hurricane Flood Zone shall be protected against inflow and infiltration and damage to equipment and electrical service.

Category 2: Evacuation roadways within the Coastal Zone should be able to remove evacuation traffic in a design period of 8 hours.

Category 3: New septic tanks within the hurricane flood zone shall be fitted with back flow preventors.

Category 4: New potable water facilities in the Hurricane Flood Zone shall be protected against inflow and infiltration and damage to equipment and electrical service.

Category 5: Sufficient valving shall be installed in water mains to isolate segments of the system in case of damage.

Category 6: Package sewage treatment plants shall be prohibited unless retention areas are adequate to hold all pollution run-off and overflow on the sewage treatment site.

**POLICY 3:** Infrastructure phasing will be according to the following priorities:

| <u>Priority</u> | <u>Type of Infrastructure</u> |
|-----------------|-------------------------------|
| 1               | Water Dependent               |
| 2               | Water Related                 |
| 3               | All Other Uses                |

**ADOPTION OF A POST-DISASTER REDEVELOPMENT PLAN**

**OBJECTIVE C:** DESIGNATE A DISASTER PREPAREDNESS OFFICIAL, WHO WILL PREPARE AND PRESENT FOR ADOPTION BY 1992 A POST-DISASTER REDEVELOPMENT PLAN.

**POLICY 1:** The Hernando County disaster preparedness official shall prepare a post-disaster redevelopment plan. This plan will:

- a. Be submitted to the Planning Department for review and comment;
- b. Establish residential emergency housing and relocation as a top priority following a disaster;
- c. Establish damage assessment procedures and reconstruction design criteria which assure that redevelopment protects lives and property from future loss;
- d. Discourage substantial long-term repair and redevelopment to non-conforming structures under the guise of repair and clean-up to protect public health and safety;
- e. Address policies regarding the removal, relocation or structural modification of damaged infrastructure and unsafe structures;
- f. Limit public redevelopment to water-dependent uses;
- g. Incorporate the recommendations of interagency hazard mitigation reports; and
- h. Be reviewed, revised as necessary, and adopted by the local governing body.

**CONSTRUCTION CONSTRAINTS**

**OBJECTIVE D:** REVISE LOCAL ORDINANCES AS NECESSARY TO ESTABLISH LEVELS OF WIND AND FLOODS AND NEW CONSTRUCTION MUST WITHSTAND TO ENCOURAGE NON-WATER-DEPENDENT USES TO LOCATE OUTSIDE THE COASTAL HIGH HAZARD AREA.

**POLICY 1:** By 1991, Hernando County will review, revise as necessary, and enforce the flood plain ordinance

and Building Code as they relate to activities in the Coastal Zone.

#### SALTWATER/FRESHWATER INTERFACES

**OBJECTIVE E:** BY 1994, ESTABLISH AN INTEGRATED PROGRAMMATIC RESPONSE TO LIMIT THE INLAND EXTENSION OF THE SALTWATER/FRESHWATER INTERFACE BEYOND ITS 1994 GENERALIZED LOCATION.

**POLICY 1:** New subdivisions in the coastal zone should utilize water supply sources located inland from the coastal zone.

**POLICY 2:** Construction and/or deepening (as opposed to maintaining) of canals, channels and ditches to or into saltwater shall be discouraged.

**POLICY 3:** The Southwest Florida Water Management District's Regional Observation and Monitoring Program (ROMP) and Quality of Water Improvement Program (QWIP) should be continued.

**POLICY 4:** New coastal mining operations will be discouraged where groundwater tables would be lowered.

**POLICY 5:** Sanitary landfills will be prohibited in the Coastal Zone.

**GOAL 5.05:** PROTECT THE COASTAL AREA IN WHICH WATER-DEPENDENT COMMERCIAL AND RECREATIONAL USES COEXIST WITH MARINE RESOURCES.

#### STANDARDS FOR PRIORITIZING SHORELINE USES

**OBJECTIVE A:** PROVIDE CRITERIA OR STANDARDS FOR PRIORITIZING SHORELINE USES, GIVING PRIORITY TO COMMERCIAL AND RECREATIONAL FISHING AND OTHER WATER-DEPENDENT USES, WHEN NOT IN CONFLICT WITH PROTECTION OF MARINE RESOURCES.

**POLICY 1:** By 1990, develop a compatibility matrix which indicates which uses are permitted, prohibited, and conditionally allowed.

**POLICY 2:** Amend Hernando County Ordinances and/or review procedures to include the review criteria in the compatibility matrix from Policy 1 for proposed shoreline uses.

**POLICY 3:** Priorities for shoreline use are:

Priority #

Use

|   |                          |
|---|--------------------------|
| 1 | Public, Water Dependent  |
| 2 | Private, Water Dependent |
| 3 | Public, Water Related    |

- POLICY 4:** All water-related use must be incidental to a water-dependent use on the same parcel and under the same ownership in order to be considered for shoreline permitting.
- POLICY 5:** Shoreline development shall conform to local flood plain, zoning and construction ordinances and codes, as adopted by Hernando County. These standards will be more strict than inland development standards, for purposes of environmental protection as well as protection of property and lives.
- POLICY 6:** Proposed marinas will only be approved if they are found to:
- a. Be compatible with adjoining land uses;
  - b. Have adequate upland support services, including fire, ambulance, potable water;
  - c. Have a hurricane contingency plan approved by Hernando County;
  - d. Protect ambient water quality;
  - e. Have access to an existing channel; and
  - f. Have a county-approved plan to assure clean up of spills of fuel, solvents or other environmental hazards.

**GOAL 5.06:** PROVIDE FOR PROTECTION, PRESERVATION, OR SENSITIVE REUSE OF HISTORIC RESOURCES AND SCENIC VIEWS.

PROTECTION OF HISTORICALLY, ARCHITECTURALLY, OR ARCHAEOLOGICALLY SIGNIFICANT AREAS

**OBJECTIVE A:** INDIVIDUAL SITES AND AREAS DESIGNATED BY FEDERAL, STATE, OR LOCAL GOVERNMENTS AS EITHER HISTORICALLY, ARCHITECTURALLY, OR ARCHAEOLOGICALLY SIGNIFICANT (i.e. HISTORIC RESOURCES) SHALL BE CONSERVED, PROTECTED, AND, WHERE POSSIBLE, ENHANCED.

**POLICY 1:** By 1991, a process shall be established to identify, locate, and map areas and sites of historic resources.



**POLICY 2:** All identified sites shall be referred to the Florida Bureau of Archives, History and Records Management for classification as to significance of site.

**POLICY 3:** By 1991, the Hernando County Zoning Ordinance shall be amended to include regulations which will protect the integrity of sites identified as significant historic resources. Specific performance standards shall include at a minimum, but may not be limited to:

- a. No existing archaeological sites shall be excavated, scraped, leveled, or altered other than by a professional archaeologist utilizing acceptable techniques;
- b. An archaeological survey may be required as a part of development reviews;
- c. All known or potential archaeological sites shall be surveyed for significance. The County may require preservation of such sites and encourage dedication to the public;
- d. If evidence of historical or archaeological value is exposed through road construction or site preparation, work on that location will be temporarily suspended until evaluated by the County.

**POLICY 4:** Other specific review procedures may be developed to identify and protect significant historic resources during the land development process.

**POLICY 5:** Areas surrounding identified sites of historic resources shall be protected against encroachment of incompatible activities and land uses.

**POLICY 6:** Public acquisition of the Bayport Hotel Site and the Union Cemetery Site at Bayport shall be encouraged.

**MAINTENANCE OF SALT MARSHES, ISLANDS, AND OPEN WATERS**

**OBJECTIVE B:** ASSURE THAT THE ABILITY OF RESIDENTS AND VISITORS TO ENJOY THE VIEWING OF THE SALT MARSHES, ISLANDS AND OPEN WATERS IS MAINTAINED.

**POLICY 1:** Within the designated "V-Zone" the County will prohibit all off-premise advertising which will obstruct the viewing of salt marshes, islands, and open waters.

- POLICY 2:** By 1991, the County will identify the scenic vistas located within the coastal zone.
- POLICY 3:** The County will encourage the maintenance of scenic vistas by regulating lot cover, signs, building heights, fences and other structures which have the potential to block views in the coastal zone.
- POLICY 4:** The County supports, and may provide the construction of scenic overlooks along coastal public roads.
- POLICY 5:** New development proposals in the coastal zone will be reviewed for impacts upon scenic beauty and recreation.
- GOAL 5.07:** TO PRESERVE AND PROTECT THE RIGHT OF PUBLIC ACCESS TO BEACHES AND COASTAL WATERS.

**PROTECTION OF COASTAL ACCESS AREAS**

- OBJECTIVE A:** ACQUIRE, PROTECT, AND ENHANCE VIABLE COASTAL ACCESS AREAS.
- POLICY 1:** By 1991, the County shall evaluate the need for improvements at Pine Island Park (Alfred A. McKethan Park) including improvements for reduction or control of erosion.
- POLICY 2:** The County shall make the improvements as identified in Policy 1 to the extent that they are economically or otherwise feasible.
- POLICY 3:** Based upon among other criteria, post disaster redevelopment and hazard reduction considerations, the County shall evaluate the conversion of some or all private ownerships on Pine Island and Bayport to public ownership. Such conversion would be accomplished by:
- a. Acquiring, when feasible, undeveloped land at fair market value. Emphasis will be on the southern end of Pine Island and Battery Point at Bayport.
  - b. Acquiring, when feasible, private residences following any disaster which renders a structure structurally unsound or damaged in excess of 50% of value, with compensation at fair market value.

**POLICY 4:** Additional parking at Pine Island and Bayport will be provided only to the extent that water-dependent access and use is not substantially adversely affected.

**POLICY 5:** Hernando County will enforce the public access requirements of the Coastal Zone Protection Act of 1985.

**CONSERVATION ELEMENT**  
**GOALS, OBJECTIVES AND POLICIES**

## Conservation Element

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**GOAL 6.01: PROTECT WILDLIFE AND CONSERVE, APPROPRIATELY USE, AND PROTECT WILDLIFE HABITATS.**

**PROTECTION OF SIGNIFICANT HABITAT AREAS**

**OBJECTIVE A: BY THE DEADLINE ESTABLISHED BY STATE STATUTE, THE COUNTY WILL ESTABLISH IMPLEMENTING PROCEDURES TO PROTECT SIGNIFICANT HABITAT AREAS REQUIRED TO SUPPORT SPECIES OF SPECIAL CONCERN, THREATENED OR ENDANGERED SPECIES LISTED IN RULE 27.003-005, F.A.C. AND THOSE CONSIDERED BY HERNANDO COUNTY TO BE OF PARTICULAR IMPORTANCE.**

**POLICY 1: Map by separate designation the prime habitat areas of species of special concern, threatened species and endangered species as data is available.**

**POLICY 2: Incorporate federal guidelines for eagle protection zones into County development regulations.**

**POLICY 3: The County shall assist the FG&FWFC in the retention of sufficient habitat in the coastal zone to support a Florida Black Bear population, through education, Land Development Regulation and support of acquisition.**

**POLICY 4: Place identified critical habitat areas into the protection plan in Policy 2 under Objective C.**

**POLICY 5: Revise development regulations to allow for density clustering and the designation of significant habitat areas for open space/protection within a development plan.**

**MAINTENANCE OF SALTWATER AND FRESHWATER MARINE HABITATS**

**OBJECTIVE B: MAINTAIN OR INCREASE THE AMOUNT OF SALTWATER AND FRESHWATER MARINE HABITAT AND LITTORAL ZONES WHICH SUPPORT MARINE LIFE.**

**POLICY 1: Enact marine use restrictions sufficient to protect rare, threatened and endangered species, including the Manatee.**

**POLICY 2: In new developments require the placement of conservation easements on hydric soils.**

**POLICY 3: Revise development regulations to mitigate for any freshwater marine habitat and littoral zones to be disturbed as part of development.**

**POLICY 4:** Provide developer incentives through land use flexibility for the provision of buffer zones along any water bodies.

**IDENTIFICATION AND PRESERVATION OF ENVIRONMENTALLY SENSITIVE LANDS AND UNIQUE NATURAL VEGETATION COMMUNITIES**

**OBJECTIVE C:** IDENTIFY AND PRESERVE ENVIRONMENTALLY SENSITIVE LANDS AND UNIQUE NATURAL VEGETATIVE COMMUNITIES WHERE POSSIBLE THROUGH LAND ACQUISITION, MANAGEMENT AGREEMENTS, OR INTER-AGENCY COOPERATION IN THE MANNER THAT FURTHERS THE GOALS AND OBJECTIVES IN HERNANDO COUNTY'S CONSERVATION ELEMENT.

**POLICY 1:** Prepare an annual report identifying environmentally sensitive lands and unique natural vegetative communities including a prioritization of acquisition by applicable criteria.

**POLICY 2:** By 1991, prepare a protection plan for these vegetative communities addressing optimal preservation areas, acquisition techniques and funding.

**POLICY 3:** As part of the protection plan, provide a method through which private developers could increase density or decrease on-site open space by providing funds or land for natural preservation areas.

**POLICY 4:** By 1991, revise land development approval criteria to promote density clustering and protection of unique natural vegetative communities.

**POLICY 5:** Formally request that the virgin (or big tree) stand of cypress known as "Richloam Virgin Cypress Swamp" and located within the Withlacoochee State Forest be administratively designated as "Natural Area" by the Withlacoochee State Forest; the intent of the designation will be to preserve this virgin cypress stand in perpetuity for its natural values.

**POLICY 6:** Formally request that the big tree stand known as the "Indian House Swamp Hammock" and located within the Withlacoochee State Forest be administratively designated a "Natural Area" by the Withlacoochee State Forest; the intent of the designation will be to preserve this big tree



hammock in perpetuity for its natural and cultural and prehistorical values.

- POLICY 7:** Formally request that the Indian House Swamp Hammock be managed in a manner conducive to preserving in perpetuity the small population of *Asplenium auritum* that occurs within the hammock.
- POLICY 8:** Formally request that the owners of the Big Pine Recreation Area (U.S. Fish and Wildlife Service or University of Florida) complete a natural area management study to determine how to best return this virgin stand of Longleaf Pine and Oak to a state of land health.
- POLICY 9:** Seek assistance from the State of Florida and/or the Nature Conservancy in acquiring sufficient lands within the Annutteliga Hammock Natural Area for the purpose of preserving the numerous endangered and threatened plant species that occur in this hammock; other values for which preservation management for this tract(s) will prove beneficial include analogous natural values as well as the preservation of associated biological, archaeological, and recreational resources.
- POLICY 10:** Formally request guidance from the State of Florida and/or the Nature Conservancy on how to best preserve the large aquatic caves and their endangered invertebrate species that occur in the county.

#### ESTABLISHMENT OF CONSERVATION AREAS

- OBJECTIVE D:** ESTABLISH CONSERVATION AREAS IN THE WEEKI WACHEE SWAMP AND FLOODWAYS OF THE WITHLACOOCHEE RIVER.
- POLICY 1:** Identify wetlands contiguous to the Gulf of Mexico and upland hammocks within the areas known as the Weeki Wachee Swamp and Chassahowitzka Swamp.
- POLICY 2:** Petition the CARL program for additional purchases of properties identified in Policy 1 under Objective D to be added to the Chassahowitzka Wildlife Management area.
- POLICY 3:** Identify the contiguous wetlands and floodways of the Withlacoochee River through mapping of hydric soils and Flood Insurance Rate Map flood areas and SWFWMD mapping.

- POLICY 4:** Petition SWFWMD and the State of Florida for protection and/or purchase of properties identified in Policy 3 under Objective D, through the Save Our Rivers program or other applicable processes.
- POLICY 5:** Establish a conservation future land use designation for the above areas based upon factors including contiguous wetlands, flooding, scenic views, valuable or unique habitat and passive recreational value.
- POLICY 6:** For those areas located within the Weeki Wachee and Withlacoochee River Protection Areas as mapped in the Future Land Use Element, Land Development Regulations shall be developed which include but are not limited to the following concepts:
- a. Preservation of on-site natural vegetation adjacent to the Weeki Wachee or Withlacoochee Rivers,
  - b. Minimum building setbacks from the banks of the Weeki Wachee or Withlacoochee Rivers, and
  - c. On-site drainage design to prevent the flow of untreated stormwater runoff from entering the Weeki Wachee or Withlacoochee Rivers.

**COOPERATION WITH CITRUS AND PASCO COUNTIES AND THE CITY OF WEEKI WACHEE**

- OBJECTIVE E:** COOPERATE WITH CITRUS AND PASCO COUNTIES AND THE CITY OF WEEKI WACHEE TO CONSERVE, PROTECT AND APPROPRIATELY USE UNIQUE VEGETATIVE COMMUNITIES LOCATED WITHIN MORE THAN ONE LOCAL JURISDICTION.
- POLICY 1:** By 1990, arrange a meeting with Citrus County, Florida Game and Freshwater Fish Commission, and the USFWS regarding the management, protection, and use of the Chassahowitzka National Wildlife Refuge.
- POLICY 2:** By 1990, arrange a meeting with the FG&FWFC and the Division of Forestry regarding the management, protection, and use of CARL lands.
- POLICY 3:** By 1990, arrange a meeting with Pasco County on the protection and use of Aripeka Bay.
- POLICY 4:** By 1990, arrange a meeting with the City of Weeki Wachee for the purpose of reviewing and revising agreement on the management, protection and use of the Weeki Wachee River and estuary.

**GOAL 6.02: CONSERVE, APPROPRIATELY USE AND PROTECT THE QUALITY AND QUANTITY OF GROUNDWATER AND SURFACE WATERS.**

**PROTECTION OF THE GROUNDWATER AQUIFER**

**OBJECTIVE A: PROTECT THE GROUNDWATER AQUIFER FROM POLLUTION WHICH WOULD ADVERSELY IMPACT WATER QUALITY.**

**POLICY 1:** Coordinate with SWFWMD and DER the identification of aquifer quality, prime recharge areas, sinkholes and pollution sources.

**POLICY 2:** Revise and/or enact Land Development Regulations as necessary to protect recharge areas and water withdrawal points by limiting or restricting incompatible land uses.

**POLICY 3:** Stormwater management systems shall be designed to minimize the impacts of stormwater runoff on groundwater, including quality and quantity of the runoff.

**POLICY 4:** Stormwater management systems should be designed to utilize wetlands which provide a natural filtering of pollutants in accordance with the Florida Administrative Code.

**POLICY 5:** Drainage wells shall not be used for disposal of stormwater.

**POLICY 6:** Any solid waste disposal facilities shall be located, constructed, and maintained in a manner to minimize any contaminations of groundwater from leachate.

**POLICY 7:** The County, through Land Development Regulations, may require advanced sewage treatment in high recharge areas.

**POLICY 8:** The County shall require that all abandoned wells be capped and sealed in accordance with applicable regulations to prevent contamination of groundwater resources.

**PROTECTION OF WATER LEVELS AND WATER QUALITY**

**OBJECTIVE B: PROTECT THE WATER LEVELS AND WATER QUALITY OF LAKES AND RIVERS.**

**POLICY 1:**

By the deadline established by state statute, the County shall adopt and implement a stormwater management ordinance which includes the following criteria:

- a. buffer zones adjacent to rivers to preserve vegetation which provides natural filtration of stormwater runoff;
- b. treatment of stormwater prior to entrance into surface water bodies in order to minimize post-development pollutant loads;
- c. inclusion of natural water bodies and wetlands into the drainage system in order to maintain water levels; and
- d. best management practices for agricultural and silvicultural land uses which drain to rivers and lakes, consistent with state and federal recommended standards, to reduce pesticide and fertilizer runoff and soil erosion.

**POLICY 2:**

By the deadline established by state statute, the County shall adopt and implement regulations to control erosion and sedimentation from new development to prevent siltation and turbidity in lakes and rivers and shall address the following:

- a. natural topography and ground cover should be retained within an established setback line;
- b. for development adjacent to rivers and lakes, approved silt screens may be required between the construction site and water body to prevent erosion and siltation;
- c. during or immediately after construction, sufficient vegetation shall be retained or established with suitable vegetation to minimize erosion; and
- d. littoral shelves may be established where disturbance takes place along shorelines.

**POLICY 3:**

Protect the riverine areas from degradation by limiting the size of boats and the size of motors allowed to be used therein.

**POLICY 4:**

Protect the riverine areas from degradation by designating "no-wake" zones in highly sensitive areas.

## PROTECTION OF WATERS WHICH FLOW INTO ESTUARIES

- OBJECTIVE C: PROTECT THE QUALITY AND QUANTITY OF WATERS WHICH FLOW INTO ESTUARIES.**
- POLICY 1:** Identify drainage basins which flow directly or through natural springs and their discharge courses into the Gulf of Mexico.
- POLICY 2:** Evaluate any development proposal for its effect on the quantity and quality of surface waters which flow into the Gulf of Mexico, including stormwater runoff, erosion and sedimentation, and septic tank discharge.
- POLICY 3:** Limit the use of septic systems in areas subject to periodic flooding.
- POLICY 4:** Limit the use of any structure which constricts the flow of surface water into the Gulf of Mexico.
- POLICY 5:** In order to reduce non-point source pollutant loadings in basins draining to the Gulf of Mexico, stormwater management design shall require adequate treatment of the first one inch of runoff.
- POLICY 6:** Facilities which are classified as point source pollutants shall not discharge untreated pollutants into streams or rivers which flow into the Gulf of Mexico.
- POLICY 7:** Water-related construction or dredging activities shall be properly managed so as to minimize the impact upon coastal waters or surface waters which flow to the Gulf of Mexico.
- GOAL 6.03: PROTECT AIR QUALITY FROM DEGRADATION.**

## COUNTY PROCEDURES FOR AIR POLLUTION SOURCES

- OBJECTIVE A: ESTABLISH COUNTY PROCEDURES FOR REVIEWING AND MITIGATING POTENTIAL AIR POLLUTION SOURCES.**
- POLICY 1:** Incorporate in the Hernando County pollution control ordinance, and require compliance with, the FDER air pollution permitting rules and emission limits.
- POLICY 2:** Prohibit the introduction of new non-vehicular air pollution sources, and the modification of

existing air pollution sources, which would degrade ambient air quality below FDER standards. This policy applies to those activities which are regulated by FDER.

**POLICY 3:** The County may review applicable air pollution permits, require appropriate testing of exhaust stacks and similar emission sources, oversee and/or enforce pertinent County and State regulations regarding open burning, and inform the public of air pollution issues.

**POLICY 4:** Review land use development applications for any identifiable air pollution sources and consider the extent of such pollution in the decision to approve.

**GOAL 6.04:** CONSERVE, APPROPRIATELY USE AND PROTECT THE QUALITY AND QUANTITY OF WETLANDS AS DESIGNATED BY SWFWMD AND DER.

#### INCOMPATIBLE LAND USE ACTIVITIES IN WETLANDS

**OBJECTIVE A:** RESTRICT INCOMPATIBLE LAND USE ACTIVITIES IN WETLANDS TO THOSE WHICH DO NOT SIGNIFICANTLY IMPACT THE QUALITY AND FUNCTION OF THE WETLAND.

**POLICY 1:** Generally identify wetlands in the Future Land Use Plan through the mapping of hydric soils. For the purpose of this Plan, hydric soils are defined as wetlands.

**POLICY 2:** Restrict the disturbance of wetlands through coordination with appropriate state and federal agencies, requiring mitigation for any filling or dredging activities allowed.

**POLICY 3:** Incorporate within the stormwater management ordinance, criteria which promote the use of natural wetlands after adequate treatment of development runoff.

**POLICY 4:** In wetland soils, there shall be applied a density restriction of one residential unit per forty acres, or as otherwise consistent with the quarter/quarter land management concept. Regulations to implement this policy shall take into account, among other things, existing hardships caused by parcel size.

**POLICY 5:** Any owner of property designated as hydric soils (wetlands) on the Soils Map Series may initiate and conduct a site specific verification of the location of hydric soils on the property by a qualified soil scientist. The County may request the Soil Conservation Service to provide site specific verification of the location of hydric soils.

**POLICY 6:** Density credits may be granted to the owner of wetlands (hydric soils) property within a range from one unit per forty (40) acres to one (1) unit per ten (10) acres, depending upon an analysis of the following characteristics of the wetlands property: vegetative type, location (Weeki Wachee River Protection Area, Withlacoochee River Protection Area, or other inland wetlands), flooding frequency, and size of contiguous wetlands (acreage).

#### USES OF WETLANDS

**OBJECTIVE B:** ENCOURAGE THE DEVELOPMENT OF PASSIVE AND ACTIVE USES OF WETLANDS SUCH AS FISHING, CANOEING, HIKING, NATURE STUDY, HUNTING, CAMPING, AND PICNICKING.

**POLICY 1:** Work with state and federal governmental agencies to establish resource based recreation and access facilities in the Chassahowitzka Wildlife Refuge.

**POLICY 2:** Non-urban land uses, including but not limited to the following uses: fish camps, hunting camps, wildlife habitats, recreation, open space, filtration of tertiary or advanced secondary treated wastewater, environmentally sound forest management or other environmentally sound agricultural and silvicultural activities, may be permitted uses of wetlands. The appropriate non-urban use may be identified through analysis of the following characteristics of the wetlands property: vegetative type, location (Weeki Wachee River Protection Area, Withlacoochee River Protection Area, or other inland wetlands), flooding frequency and size of contiguous wetlands (acreage).

**POLICY 3:** Limit the intensity of facilities to maintain a balance between the natural functions of the wetlands and their use for recreational activities.

**GOAL 6.05: CONSERVE, APPROPRIATELY USE AND PROTECT MINERAL RESOURCES, SOILS AND TREES.**

**ACCESSIBILITY TO SIGNIFICANT HARD LIMEROCK DEPOSITS**

- OBJECTIVE A: MAINTAIN ACCESSIBILITY TO SIGNIFICANT HARD LIMEROCK DEPOSITS WITHIN HERNANDO COUNTY.**
- POLICY 1:** Map economically feasible hard limerock resources.
- POLICY 2:** In areas identified under Policy 1, require consideration of hard limerock deposits prior to more intensive land uses being allowed.
- POLICY 3:** To promote Objective A under Goal 6.05, provide for the transfer of development rights in areas with economically feasible hard limerock deposits.

**PRIME AND UNIQUE AGRICULTURAL SOILS**

- OBJECTIVE B: RETAIN SIGNIFICANT AREAS OF PRIME AND UNIQUE AGRICULTURAL SOILS IN AN AGRICULTURAL SETTING.**
- POLICY 1:** Map prime and unique agricultural soils.
- POLICY 2:** In areas identified under Policy 1, require consideration of prime and unique soils prior to more intensive land uses being allowed.
- POLICY 3:** To promote Objective B under Goal 6.05, provide for the transfer of development rights in areas with prime and unique agricultural soils.

**PROTECTION AND CONSERVATION OF HIGHLY ERODIBLE LANDS**

- OBJECTIVE C: PROTECT AND CONSERVE HIGHLY ERODIBLE LANDS AS DEFINED BY U.S. SOIL CONSERVATION SERVICE.**
- POLICY 1:** Agricultural operations shall be encouraged to use best management practices, including contour planting, no-till planting, crop rotation, and grassing of waterways. The Gulf Soil and Water Conservation District will be the lead agency to provide the best management practices information.
- POLICY 2:** The County shall establish criteria to review a development's impact on soil erosion. Methods to be considered include construction phasing, limiting site clearance, retention of existing vegetation, and timely revegetation of cleared areas.



**POLICY 3:** The mining ordinance shall be revised to incorporate regulations to minimize soil erosion from mined lands. Methods may include timely reclamation, modification of steep slopes, and revegetation of cleared areas.

#### FORESTS AND TREE COVER

**OBJECTIVE D:** RETAIN OR RE-ESTABLISH FORESTS AND TREE COVER.

**POLICY 1:** Promote silviculture in appropriate areas through low-intensity land use designations and property tax incentives.

**POLICY 2:** Enact a landscape ordinance protecting trees of DBH of 18" or greater and requiring minimum tree retention or re-establishment criteria.

**POLICY 3:** Allow flexibility of land use standards where the developer is attempting to preserve natural tree areas.

**POLICY 4:** The County shall develop a program to plant and manage trees along streets and other public lands where ever practical, thereby adding to the aesthetic appeal of urbanizing areas and providing habitat for urban wildlife. (The Division of Forestry may be consulted for technical assistance).

#### PROTECTION OF CANOPY ROADS

**OBJECTIVE E:** IDENTIFY AND PROTECT CANOPY ROAD SEGMENTS.

**POLICY 1:** Identify and map segments of roads which are characterized by rows of trees bordering both sides of the road corridor of sufficient dimensions and density to create natural canopy coverage over the road corridor.

**POLICY 2:** Designate canopy tree protection zones of 50' on each side of the centerline of canopy roadways and establish standards and conditions for facilities and activities within the zone which may have an adverse impact on the trees, including the installation of roadway, utility, and drainage improvements.

**POLICY 3:** Establish standards for access from private property to canopy roadways.

**POLICY 4:** Establish Land Development Regulations which help ensure the protection of trees within designated canopy tree protection zones from construction activities on lands adjacent to them, including the adverse effects from the disposal of solvents, materials, concrete, and mortar, the placement of construction equipment, and the depositing of soils for the purpose of permanent grade changes and other similar activities.

**GOAL 6.06:** CONSERVE, APPROPRIATELY USE AND PROTECT HISTORICAL AND ARCHAEOLOGICAL RESOURCES.

PROTECTION OF HISTORICAL AND ARCHAEOLOGICAL RESOURCES

**OBJECTIVE A:** PROTECT SIGNIFICANT HISTORICAL AND ARCHAEOLOGICAL RESOURCES FROM DESTRUCTION.

**POLICY 1:** Map known historical and archaeological sites for use in County land use and site review decisions.

**POLICY 2:** In order to minimize disruption of known sites, do not disseminate historical/archaeological site locations unless sites are adequately protected.

**POLICY 3:** In areas designated by the Florida Division of Archives, History and Records Management as having high propensity for archaeological sites, the County may require the developer to provide an archaeological site study as part of a development application submittal.

**POLICY 4:** A historic designation shall be considered for buildings, houses or areas properly reviewed and identified as such by the Hernando County Historic Society.

**POLICY 5:** In historic designated areas, flexibility shall be provided in land use ordinances and building codes to promote the retention of historic features.

**GOAL 6.07:** GROWTH IN HARMONY WITH NATURAL CONDITIONS.

DEVELOPMENT COMPATIBLE WITH THE NATURAL SYSTEM

**OBJECTIVE A:** DEVELOPMENT SHALL BE COMPATIBLE WITH THE ABILITY OF THE NATURAL SYSTEMS TO SUPPORT THE INTENSITY OF DEVELOPMENT.

**POLICY 1:** Minimum lot sizes for septic fields may be further restricted from the minimum 1/2 acre in prime

aquifer recharge areas, sinkhole areas, areas adjacent to lakes or rivers or areas where soils have severe limitations (SCS).

- POLICY 2:** Development in flood-prone areas shall generally be less intensive and shall meet the standards established in the County flood plain ordinance.
- POLICY 3:** The flood plain ordinance shall minimize development impact on flood plains, including storage capacity and increase or decrease in the natural flow of floodwater.
- POLICY 4:** Commercial and industrial development shall provide sufficient treatment of by-products to prevent contamination of groundwater and surface water resources.
- POLICY 5:** Appropriate regulations shall be established to protect habitat important to threatened or endangered species.

**GOAL 6.08: ALL HAZARDOUS MATERIALS SHALL BE PROPERLY MANAGED.**

**REGULATION OF HAZARDOUS MATERIALS AND WASTE POLLUTION SOURCES**

- OBJECTIVE A:** HERNANDO COUNTY SHALL PROMOTE AND MONITOR THE REGULATION OF HAZARDOUS MATERIALS AND WASTE IN COOPERATION WITH PROGRAMS ADMINISTERED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (FDER).
- POLICY 1:** The County shall adopt right-to-know regulations to be implemented through a county-wide hazardous materials registration program.
- POLICY 2:** The County shall encourage compliance with all Federal (EPA and OSHA) and State (FDER Chapter 17-30, Hazardous Waste, F.A.C.) regulations pertaining to hazardous materials and waste, including underground storage tanks, and may adopt where deemed necessary, additional county regulations.
- POLICY 3:** The County shall be responsible for: monitoring enforcement of pertinent FDER, U.S. EPA, and related hazardous materials and waste regulations; monitoring hazardous materials and waste, including assembling and maintaining records or other documentation regarding the quantity, type, location, possession, use, storage and disposal of hazardous materials within the County; conducting

appropriate tests and analysis; investigation, documentation, and reporting on complaints or alleged violations pertaining to hazardous materials or waste; and informing the public on hazardous materials and waste issues.

**POLICY 4:**

The County shall provide for review of all non-residential development proposals within the coastal zone that entail the storage, handling, use or disposal of hazardous or toxic materials and/or waste to provide that each proposed development activity will not materially impair the permitted uses of or materially degrade the county's coastal waters (classified by FDER as "Class III Waters - Recreation, Propagation and Protection of Fish and Wildlife"), and to prevent overall environmental degradation of the fragile coastal estuarine and shallow marine ecosystems. This policy applies to the High Hazard Area and other lands fronting on waters with direct access to the Gulf as designated in the revised Coastal Management Element.

**RECREATION AND OPEN SPACE ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

## Recreation and Open Space Element

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**GOAL 7.01: PROVIDE A SYSTEM OF PARKS AND RECREATION WHICH AFFORDS EACH CITIZEN AND VISITOR TO HERNANDO COUNTY WITH THE OPPORTUNITY TO ENGAGE IN A FULL RANGE OF RECREATIONAL ACTIVITIES.**

**CLASSIFICATION OF RECREATION AREAS**

**OBJECTIVE A: CLASSIFY RECREATION AREAS BY SERVICE AREA AND INTENSITY OF USAGE.**

**POLICY 1:** Recreation areas in Hernando County shall be classified into mini-park/tot lot, neighborhood park, community park, district park, and regional park.

**POLICY 2:** Classify existing and proposed parks and establish an intensity of usage and list of proposed facilities.

**POLICY 3:** The provision and maintenance of mini-park/tot lot and neighborhood parks will normally be the responsibility of private developers, neighborhood organizations, or community groups.

**POLICY 4:** The provision and maintenance of regional parks will normally be the responsibility of the state and federal governments.

**POLICY 5:** Hernando County shall be responsible for the provision of community parks and district parks.

**STANDARDS FOR DISTRICT PARKS**

**OBJECTIVE B: HERNANDO COUNTY SHALL ESTABLISH STANDARDS FOR DISTRICT PARKS.**

**POLICY 1:** The standard district park will normally include the following facilities: activity building, lighted tennis courts, lighted basketball courts, lighted softball fields, lighted soccer field, lighted handball courts, lighted shuffleboard courts, horseshoe pits, swimming pool, playground area and picnic area, jogging trail, and parking lot.

**POLICY 2:** Hernando County shall utilize acreage standards for the planning of user-oriented recreation facilities. Land requirements for such facilities shall be established as needed by the local governing body utilizing best available information.

## RESIDENTIAL DEVELOPMENT RECREATION FACILITIES

**OBJECTIVE C:** BY 1991, RECREATIONAL FACILITY STANDARDS SHALL BE DEVELOPED FOR RESIDENTIAL DEVELOPMENTS.

**POLICY 1:** Identification of community and/or district park sites should be encouraged in larger proposed development plans, particularly where significant numbers of dwelling units are included.

**POLICY 2:** The provision of acceptable sites and or facilities for community or district parks shall be credited against County impact fees.

**POLICY 3:** Mini-park/tot lots or neighborhood parks and other open space areas in residential developments shall be maintained by the developer, homeowners association, municipal service taxing unit, or park districts as authorized by the local governing body.

## COORDINATION WITH OTHER GOVERNMENTAL ENTITIES AND THE PRIVATE SECTOR

**OBJECTIVE D:** THE COUNTY SHALL COORDINATE THE PROVISION OF PUBLIC RECREATION FACILITIES AND PROGRAMS WITH THOSE PROVIDED BY OTHER GOVERNMENTAL ENTITIES AND THE PRIVATE SECTOR.

**POLICY 1:** The County shall compile and maintain information on all non-County recreation facilities and programs.

**POLICY 2:** The planning of County facilities and programs shall consider the availability of similar non-County facilities and programs to avoid duplication and to achieve efficiency in the use of public resources.

**POLICY 3:** The County shall support the efforts of non-County providers of recreation facilities and programs including the private sector, non-profit organizations, the City of Brooksville, Hernando County School System, Pasco-Hernando Community College, the State of Florida, and the Federal government.

**POLICY 4:** The County shall coordinate with the non-County providers of recreation services toward the joint use of facilities.

**POLICY 5:** The County should enter into an intergovernmental agreement with the Hernando County School System



and Pasco-Hernando Community College for the joint use of school recreation facilities.

**FACILITIES TO ACCOMMODATE THE SPECIAL NEEDS OF PHYSICALLY AND MENTALLY IMPAIRED RESIDENTS**

**OBJECTIVE E: PROVIDE FACILITIES TO ACCOMMODATE THE SPECIAL NEEDS OF PHYSICALLY AND MENTALLY IMPAIRED RESIDENTS OF HERNANDO COUNTY.**

**POLICY 1:** The County shall consider handicap access needs in the design and construction of all new publicly owned recreation facilities.

**POLICY 2:** Where economically and otherwise feasible, existing publicly owned facilities shall be modified to permit handicap access.

**POLICY 3:** The County shall determine the need for recreation programs for the mentally impaired and assess whether existing County and non-County recreation programs meet the identified need.

**GOAL 7.02: DEVELOP A SYSTEM OF PARKS AND RECREATION WHICH MEETS THE NEEDS OF EXISTING AND FUTURE RESIDENTS OF HERNANDO COUNTY.**

**PARKS AND RECREATION SYSTEM STANDARDS**

**OBJECTIVE A: PREPARE STANDARDS WHICH DESCRIBE THE MAJOR COMPONENTS OF THE PARKS AND RECREATION SYSTEM.**

**POLICY 1:** Recreation facilities in Hernando County shall be classified into user-oriented and resource-based categories.

**POLICY 2:** Standards of unit facilities per unit of population shall be prepared and adopted for user-oriented and resource-based facilities.

**POLICY 3:** Recreation standards shall be reviewed every two years and revised to maintain consistency with changing local conditions.

**POLICY 4:** A recreation user survey shall be conducted during or before 1990 to determine participation rates in user-oriented and resource-based facilities and to assess resident interest in specific recreation facilities.

## DISTRICT AND COMMUNITY PARKS

**OBJECTIVE B: THE COUNTY SHALL DEVELOP A SYSTEM OF DISTRICT PARKS AND COMMUNITY PARKS, PROVIDING USER-ORIENTED RECREATION FACILITIES.**

**POLICY 1:** At least one district park or one community park shall be located in each of the impact fee park districts by 1998.

**POLICY 2:** District parks and community parks shall be located to provide reasonable access to all residents of an individual district.

**POLICY 3:** The County shall establish and annually update an improvement phasing program to construct the facilities in district parks.

**POLICY 4:** District parks should contain a minimum of 40 acres.

**POLICY 5:** Community parks should contain a minimum of 20 acres.

## PUBLICLY OWNED RESOURCES

**OBJECTIVE C: COMBINE PUBLICLY OWNED RESOURCES TO MEET RECREATION NEEDS.**

**POLICY 1:** The County shall cooperate with the Hernando County School System and Pasco-Hernando Community College to help encourage the placement of user-oriented recreation facilities on existing and new school sites.

**POLICY 2:** The County shall encourage the State of Florida and Federal government to construct additional resource-based facilities in the regional parks controlled by these governments.

## RESOURCE-BASED RECREATIONAL FACILITIES

**OBJECTIVE D: PROVIDE RESOURCE-BASED RECREATION FACILITIES ON NATURAL RESOURCE LAND HOLDINGS OF THE FEDERAL, STATE, AND COUNTY GOVERNMENTS.**

**POLICY 1:** The County should provide additional or expanded resource-based facilities in the Coastal Zone parks of Pine Island, Bayport, Jenkins Creek, and Rogers Park. Other resource-based facilities may be provided at the Istachatta-Nobleton Park, along the Withlacoochee and Weeki Wachee Rivers or adjacent to other surface water bodies.

**POLICY 2:** The County shall coordinate with the appropriate State and Federal agencies to help encourage the provision of resource-based recreation facilities on State and Federal lands, consistent with the needs identified in this element.

**BOAT RAMPS**

**OBJECTIVE B:** THE COUNTY SHOULD ENHANCE AND MAINTAIN EXISTING PUBLIC BOAT RAMPS, PROVIDE ADDITIONAL FACILITIES TO MEET ANTICIPATED DEMAND AND ENCOURAGE THE CONSTRUCTION OF PRIVATE FACILITIES IN APPROPRIATE LOCATIONS.

**POLICY 1:** The County should provide, in the Coastal Zone, one additional boat ramp by the year 2000 and 3 additional ramps by the year 2010.

**POLICY 2:** Boat ramp construction and expansion should be directed to popular boating areas such as Bayport, Rogers Park, and Hernando Beach.

**POLICY 3:** The placement of boat ramps, both freshwater and saltwater, should be done in a way which minimizes negative impacts to the environment.

**POLICY 4:** Private boat ramps should be encouraged and allowed where environmental and safety impacts are not significant.

**POLICY 5:** A minimum of 1 acre should be allocated for each publicly owned boat ramp facility to provide for ample parking of trailers and cars, and the provision of other facilities such as restrooms, potable water, docks, and lighting.

**GOAL 7.03:** ENACT AN IMPACT FEE ORDINANCE: FUNDS OBTAINED WILL BE USED FOR LAND ACQUISITION AND RECREATION IMPROVEMENTS. OTHER FUNDING SOURCES SHOULD BE EVALUATED.

**PARKS LEVEL OF SERVICE (LOS) STANDARDS**

**OBJECTIVE A:** TO MAINTAIN THE CURRENT LEVEL OF PARKS AND OPEN SPACE STANDARDS AT 4.00 ACRES PER ONE THOUSAND (1,000) PEAK (SEASONAL) POPULATION.

**POLICY 1:** Hernando County shall expand its park system, when necessary, to maintain parks and open space standards of 4.00 acres per thousand population. This standard is further subdivided into two

categories: 2.00 acres per thousand shall be the standard for user-oriented park facilities; 2.00 acres per thousand shall be utilized for open space.

**POLICY 2:** New developments will be required to provide for the local recreation needs of their residents; however, these recreation needs will not be funded by impact fees.

**POLICY 3:** Hernando County may require recreation sites to be dedicated by new developments; the County should only accept usable park sites.

#### **PARKS IMPACT FEES**

**OBJECTIVE B:** LAND DEVELOPMENT SHALL BEAR A PROPORTIONATE SHARE OF THE COST OF THE PROVISION OF THE NEW OR EXPANDED PARK CAPITAL FACILITIES REQUIRED BY SUCH DEVELOPMENT CONSISTENT WITH THE ESTABLISHED LEVEL OF SERVICE FOR PARKS.

**POLICY 1:** Land development should not be permitted unless adequate recreational facilities exist or are ensured.

**POLICY 2:** The imposition of impact fees and dedication requirements are two of the preferred methods of regulating land development in order to ensure that it bears a proportionate share of the cost of park capital facilities necessary to accommodate the development and to promote and protect the public health, safety, and general welfare.

**POLICY 3:** Credits of up to 50% of the parks impact fee may be given for recreational facilities provided to the County by the fee-payer only if recreational facilities serve the same purposes and function as set forth for community and district parks in the Hernando County Comprehensive Plan.

**POLICY 4:** Correction of existing recreational facility deficiencies shall be funded through mechanisms other than impact fees.

#### **LAND ACQUISITION THROUGH GRANTS**

**OBJECTIVE C:** ACQUIRE LANDS AND DEVELOP FACILITIES FOR THE RECREATION AND OPEN SPACE USES FROM GRANTS AND OTHER SOURCES.

**POLICY 1:** The County shall identify and evaluate specific State of Florida and Federal Government grant

programs to determine applicability to specific County projects. If determined feasible, applications should be made.

- POLICY 2:** The County shall identify and evaluate corporate foundations as potential sources of grant money.
- POLICY 3:** Community organizations shall be encouraged to participate in the development of parks through volunteer "adopt-a-park" or other similar programs.
- POLICY 4:** The County shall charge users of County facilities a reasonable fee to help defray the cost of maintenance and operation of, and improvements to recreation sites.
- GOAL 7.04:** ENSURE THAT OPEN SPACE IS ADEQUATE TO PROVIDE FOR GOOD ENVIRONMENTAL QUALITY AND AN AESTHETICALLY ATTRACTIVE COUNTY.

#### NATURAL OPEN SPACES

- OBJECTIVE A:** MAINTAIN THE LAND HOLDINGS OF THE STATE OF FLORIDA AND THE FEDERAL GOVERNMENT IN HERNANDO COUNTY AS NATURAL OPEN SPACES.
- POLICY 1:** The County shall coordinate with the State of Florida, Division of Forestry, and Game and Freshwater Fish Commission to help ensure that the Withlacoochee State Forest lands, Chinsegut Hill Nature Center and Chassahowitzka Wildlife Management Areas are managed as natural resources, with limited intensive development.
- POLICY 2:** The County shall coordinate with the U.S. Fish and Wildlife Service to help ensure that the Chassahowitzka and Chinsegut National Wildlife Refuges are maintained as natural open areas, providing limited opportunities for resource-based uses.

#### ADDITIONAL PURCHASE OF OPEN SPACE LANDS

- OBJECTIVE B:** ENCOURAGE THE ADDITIONAL PURCHASE OF OPEN SPACE LANDS BY THE STATE OF FLORIDA AND SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT.
- POLICY 1:** Continue to resubmit an application for public purchase of the Chassahowitzka and Weeki Wachee coastal wetlands through the Conservation and Recreation Lands (CARL) Program.

**POLICY 2:** Promote the SWFWMD purchase of Weeki Wachee riverine and estuarine lands through the Save Our Rivers (SOR) Program by attending meetings, following up on meeting activities, and soliciting endorsements.

**POLICY 3:** Acquisition priority should be given to land and water areas which will maintain ecologically intact systems and protect the habitats of listed endangered vegetative and wildlife species.

#### OPEN SPACES FROM PUBLIC AGENCIES AND PRIVATE ENTERPRISES

**OBJECTIVE C:** ENSURE THAT BOTH PUBLIC AGENCIES AND PRIVATE ENTERPRISES PROVIDE SUFFICIENT OPEN SPACES.

**POLICY 1:** Adopt Land Development Regulations which require appropriate amounts of open space on developed sites for aesthetic enjoyment and the separation of uses.

#### SCENIC PRESERVATION

**OBJECTIVE D:** ESTABLISH REGULATIONS WHICH PROTECT THE SCENIC VIEWS ALONG PUBLIC ROAD RIGHTS-OF-WAY.

**POLICY 1:** By 1991, the County shall enact regulations which designate specific road rights-of-way or portions thereof as scenic routes, and control the placement of signs along them.

**POLICY 2:** Designated scenic routes could include County rights-of-way adjacent to coastal wetlands, the Gulf of Mexico, rivers, lakes, historical or archaeologically significant sites and other similar areas.

**POLICY 3:** The County shall consider the aesthetic effect of the location and placement of public signs along designated scenic routes.

**GOAL 7.05:** ENSURE ACCESS TO PUBLICLY OWNED RECREATION SITES, INCLUDING WHERE PRESENT, BEACHES AND SHORES.

#### PUBLIC ACCESS

**OBJECTIVE A:** ALL PUBLICLY OWNED RECREATION FACILITIES SHALL HAVE MULTI-MODAL ACCESS FACILITIES AS APPROPRIATE.

- POLICY 1: Community or district parks shall have adequate and safe vehicular and bicycle access, and safe pedestrian access when located in a built-up area.
- POLICY 2: Public parks and recreational facilities shall be designed and constructed with access-ways which are compatible with the character and quality of natural resources found onsite.
- POLICY 3: Parking spaces and bicycle racks shall be provided at public parks and recreational facilities consistent with public needs.
- POLICY 4: Additional public access points and boat/canoe launching facilities should be provided along the Weeki Wachee and Withlacoochee Rivers.
- POLICY 5: The County shall provide barrier-free access to all user oriented public recreation facilities.
- POLICY 6: Neighborhood parks should emphasize pedestrian access, with vehicular accessibility given less emphasis.
- POLICY 7: Access facilities may be constructed before enhancement facilities, so that some public use can be made of the resource even without substantial internal improvement.
- POLICY 8: The quantity and quality of public beach and shoreline access shall be maintained and, where possible, improved and increased.

**INTERGOVERNMENTAL COORDINATION ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**



## Intergovernmental Coordination Element

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**GOAL 8.01: COORDINATE THE HERNANDO COUNTY COMPREHENSIVE PLAN AND THE IMPLEMENTING LAND DEVELOPMENT REGULATIONS WITH THE COMPREHENSIVE PLANS AND/OR REGULATIONS OF THE CITY OF BROOKSVILLE, CITY OF WEEKI WACHEE, HERNANDO COUNTY SCHOOL BOARD, ADJACENT COUNTIES, AND REGIONAL, STATE AND FEDERAL AGENCIES.**

**COORDINATION BETWEEN HERNANDO COUNTY AND OTHER LEVELS OF GOVERNMENT**

**OBJECTIVE A: BY 1991, ESTABLISH A PROGRAM OF ONGOING COORDINATION BETWEEN HERNANDO COUNTY AND OTHER APPLICABLE LEVELS OF GOVERNMENT.**

**POLICY 1:** Agency coordination shall be the responsibility of the County Administrator, who shall establish the method of coordination. Coordination methods may consist of the appointment of liaison personnel, formal or informal meetings, and review of coordinating agency plans, regulations, or proposed program changes which may affect Hernando County.

**POLICY 2:** A formal method of communication shall be established within the County government to disseminate information, on a timely basis, about coordination activities.

**POLICY 3:** The County shall establish formal liaison personnel to be responsible for ongoing coordination with SWFWMD, WRPC, DER, FDOT, DCA, Hernando County School District, the Cities of Brooksville and Weeki Wachee, and Pasco, Citrus, and Sumter Counties. Each liaison person shall be responsible for disseminating information about their specific agency to the appropriate county departments.

**POLICY 4:** The County shall utilize the informal mediation process provided by the Withlacoochee Regional Planning Council for resolving conflicts with other local governments that cannot be solved through direct intergovernmental coordination.

**CONTACT WITH STATE AND FEDERAL AGENCIES**

**OBJECTIVE B: BY 1993, HERNANDO COUNTY SHALL SEEK TO FORMALIZE COORDINATION AND COOPERATION MECHANISMS THROUGH CONTRACTS, MEMORANDA OF UNDERSTANDING FORMAL RESOLUTION, INTERLOCAL AGREEMENTS, OR OTHER MEANS WITH STATE AND FEDERAL AGENCIES WHOSE ACTIVITIES DIRECTLY AFFECT HERNANDO COUNTY.**

- POLICY 1:** Transmit copies of the Hernando County Comprehensive Plan to appropriate federal and state agencies to increase awareness of local planning.
- POLICY 2:** Establish channels for continuing communication and notification of programs or activities.
- POLICY 3:** Review agency plans and programs to determine the appropriate level of interaction.

**COORDINATION MECHANISMS WITH THE CITIES OF BROOKSVILLE AND WEEKI WACHEE**

**OBJECTIVE C:** BY 1993, HERNANDO COUNTY SHALL REVIEW EXISTING INTERGOVERNMENTAL COORDINATION MECHANISMS WITH THE CITIES OF BROOKSVILLE AND WEEKI WACHEE. WHERE NECESSARY TO FACILITATE IMPROVED COORDINATION, HERNANDO COUNTY SHALL AMEND EXISTING INTERLOCAL AGREEMENTS AND/OR ESTABLISH NEW AGREEMENTS.

- POLICY 1:** When warranted, enter into interlocal agreements and cooperative efforts to address mutual problems and needs.
- POLICY 2:** Solicit reciprocal agreements with the cities allowing for review and comment opportunities for issues and activities which may have impacts across municipal boundaries.
- POLICY 3:** Joint planning efforts shall be developed with the cities to review impact of proposed annexations and help resolve issues of mutual concern.
- POLICY 4:** The County shall review copies of the Cities' comprehensive plans, and participate in the review of any amendments to help ensure coordination of issues of mutual concern.
- POLICY 5:** Provide copies of Hernando County's Comprehensive Plan to the cities for their review and to promote awareness of adopted positions on specific issues.
- POLICY 6:** Establish a staff level coordinating mechanism with the City of Brooksville and the City of Weeki Wachee to provide a process for review of issues which impact common boundary areas or affect the general interests of each entity.
- POLICY 7:** The County shall coordinate the review of all proposed development with the City of Brooksville

when it is located in unincorporated portions of the Brooksville sewer and water service area.

COORDINATION PROCESS WITH EACH ADJACENT COUNTY

**OBJECTIVE D:** BY 1993, HERNANDO COUNTY SHALL ESTABLISH FORMAL NOTIFICATION AND SEEK COORDINATED REVIEW PROCEDURES TO ASSURE COMPATIBLE LAND USE DEVELOPMENT ALONG COMMON BOUNDARIES WITH THE ADJACENT COUNTIES OF CITRUS, SUMTER AND PASCO.

**POLICY 1:** Establish a staff level coordinating mechanism with each adjacent county in order to provide a process for review of issues which impact common boundary areas or affect the general interests of both counties. Emphasis shall be given to Pasco County due to its membership in a separate regional planning council and a separate water supply authority from Hernando County.

**POLICY 2:** Provide copies of Hernando County's Comprehensive Plan and implementation ordinances to adjacent counties and obtain copies of their comprehensive plan and implementation ordinances for reference and awareness of mutual issues.

**POLICY 3:** Establish reciprocal agreements with adjacent counties to allow a process of review and comment for issues of mutual concern. Opportunities for review should include, but not be limited to, comprehensive plan amendments and land developments, streets and highways, water consumption, pollution sources, and the use of natural resources such as wetlands, estuaries, rivers, and state forest properties.

COORDINATION PROCESS WITH THE HERNANDO SCHOOL SYSTEM

**OBJECTIVE E:** BY 1993, HERNANDO COUNTY SHALL SEEK TO ESTABLISH FORMAL COORDINATION MECHANISMS WITH THE HERNANDO COUNTY SCHOOL BOARD AND PASCO-HERNANDO COMMUNITY COLLEGE.

**POLICY 1:** Designate a liaison to facilitate direct contact among the school system, Pasco-Hernando Community College, and County and request the school system and Pasco-Hernando Community College to do the same.

**POLICY 2:** Establish a reciprocal agreement which allows for the planning and utilization of shared facilities,

including recreation facilities, auditorium, and multi-purpose buildings.

**POLICY 3:** Potential school sites identified by the Hernando County School Board and contained in the future land use map shall be considered for protection during the development review process, including the use of buffers and other methods to reduce the effects of incompatible land uses.

**POLICY 4:** The County shall coordinate with the school system during the review of developments of regional impact to obtain the dedication of sites for school purposes.

**COORDINATION WITH THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT ACTIVITIES**

**OBJECTIVE F:** BY 1993, HERNANDO COUNTY SHALL SEEK TO ESTABLISH FORMAL COORDINATION MECHANISMS WITH SWFWMD.

**POLICY 1:** Coordinate with SWFWMD in the preparation of studies involving Hernando County. These may include localized drainage problems, groundwater protection, and water conservation.

**POLICY 2:** Coordinate with SWFWMD on the development of acquisition projects including lands adjacent to the Weeki Wachee and Withlacoochee Rivers, to be funded through the Save Our Rivers program.

**COORDINATION OF LEVEL OF SERVICE FOR PUBLIC FACILITIES**

**OBJECTIVE G:** BY 1991, HERNANDO COUNTY SHALL REVIEW LEVEL OF SERVICE STANDARDS FOR PUBLIC FACILITIES WITH STATE, REGIONAL OR LOCAL ENTITIES HAVING OPERATIONAL AND/OR MAINTENANCE RESPONSIBILITIES FOR SUCH FACILITIES, TO SEEK CONSISTENCY THEREOF WITH THE LEVEL OF SERVICE STANDARDS ADOPTED IN THE HERNANDO COUNTY COMPREHENSIVE PLAN.

**POLICY 1:** Provide a listing of Hernando County's level of service standards for public facilities, distribute this list to the Cities of Brooksville and Weeki Wachee and other pertinent governmental entities, and obtain copies of their level of service standards.

**POLICY 2:** Hernando County shall coordinate with the Florida Department of Transportation/District 7 on issues which affect state roadways in Hernando County.

**CAPITAL IMPROVEMENTS ELEMENT  
GOALS, OBJECTIVES, AND POLICIES**

## Capital Improvements Element

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**GOAL 9.01:** HERNANDO COUNTY SHALL UNDERTAKE ACTIONS NECESSARY TO ADEQUATELY PROVIDE NEEDED PUBLIC FACILITIES TO ALL RESIDENTS WITHIN ITS JURISDICTION IN A MANNER WHICH PROTECTS PUBLIC AND PRIVATE INVESTMENTS IN EXISTING FACILITIES, MAXIMIZES THE USE AND VALUE OF EXISTING FACILITIES, AND DISCOURAGES URBAN SPRAWL.

DEVELOPMENT OF 5-YEAR SCHEDULE OF CAPITAL IMPROVEMENTS

**OBJECTIVE A:** CAPITAL IMPROVEMENTS WILL BE PROVIDED TO CORRECT EXISTING DEFICIENCIES, TO ACCOMMODATE ANTICIPATED FUTURE GROWTH, AND TO REPLACE WORNOUT OR OBSOLETE FACILITIES, AS INDICATED IN THE 5-YEAR SCHEDULE OF IMPROVEMENTS OF THIS ELEMENT. THOSE IMPROVEMENTS IDENTIFIED AS DEFICIENCIES WILL BE FINANCED OUT OF THE APPROPRIATE FUND, NOT TO INCLUDE IMPACT FEES.

**POLICY 1:** Hernando County shall include all projects identified in the individual elements of this plan within a Capital Improvement Plan covering, at least, a 5-year period. This Capital Improvement Program shall be the basis for annual capital budgets.

**POLICY 2:** Hernando County shall, as a matter of priority, schedule and fund all capital improvement projects identified as deficiencies in the 5-Year Schedule of Improvements out of the appropriate funds, not to include impact fees.

**POLICY 3:** Hernando County shall annually review and update the 5-Year Schedule of Improvements (see Table II-A.1) and shall use this schedule as the basis for the Capital Improvement Program, annual capital budgets, and reviewing proposed plan revisions or amendments.

**POLICY 4:** Hernando County shall not schedule capital improvement projects that will cause estimated annual capital expenditures to exceed conservative estimates of revenue. In addition, Hernando County shall neither schedule projects nor accept facilities for which there are insufficient annual operating or maintenance monies.

**POLICY 5:** Selection of projects for inclusion in the 5-Year Schedule of Improvements and the Capital Improvement Program shall be according to the following priorities:



- a. The project is needed to protect public health and safety, or to fulfill the County's legal commitment to provide facilities and services.
- b. The project preserves or achieves full use of existing assets, thus maintaining or achieving adopted levels of service.
- c. The project corrects an existing service level deficiency.
- d. The project significantly reduces the cost of providing a new or existing service.
- e. The project corrects service level deficiencies resulting from new growth:
  - 1. First priority under this criterion shall be for projects that provide service to developed areas lacking full service, or to promote in-fill development;
  - 2. Second priority under this criterion shall be for projects that are part of a planned comprehensive expansion of facilities and services to serve projected growth areas.
- f. The project results in an increase in level of service or represents a new service.

**POLICY 6:**

Selection of projects for inclusion in the 5-Year Schedule of Improvements shall be evaluated against the facility plans of the Water Management District and other State agencies. Evaluation of projects shall include consideration of their effect on the relevant agency or district plans and they shall be ranked according to the following priorities:

- a. The project is required by agency or district plans;
- b. The project complies with, but is not required by, agency or district plans;
- c. The project is not relevant to agency or district plans.

**POLICY 7:**

Selection of projects for inclusion in the 5-Year Schedule of Improvements shall also be evaluated according to project consistency with the

individual elements of the Hernando County Comprehensive Plan and ranked according to the following priorities:

- a. The project is required by the Comprehensive Plan;
- b. The project complies with, but is not required by, the Comprehensive Plan;
- c. The project is not relevant to the Comprehensive Plan.

**PUBLIC EXPENDITURES IN THE HIGH HAZARD COASTAL AREAS**

**OBJECTIVE B: PUBLIC EXPENDITURES THAT SUBSIDIZE OR OTHERWISE ENCOURAGE DEVELOPMENT IN HIGH HAZARD COASTAL AREAS WILL BE LIMITED TO THOSE IMPROVEMENTS INCLUDED IN THE COASTAL MANAGEMENT ELEMENT.**

**POLICY 1:** Hernando County may expend funds in high hazard coastal areas for the replacement and renewal of existing public facilities in such areas.

**ADEQUATE CAPITAL FACILITIES TO MAINTAIN LEVEL OF SERVICE STANDARDS**

**OBJECTIVE C: FUTURE DEVELOPMENT WILL NOT BE PERMITTED BY HERNANDO COUNTY UNLESS ADEQUATE CAPITAL FACILITIES EXIST OR ARE ASSURED IN ORDER TO MAINTAIN LEVEL OF SERVICE STANDARDS AS MANDATED BY OTHER ELEMENTS OF THE PLAN.**

**POLICY 1:** Future development shall bear a proportionate share of the cost of providing the new or expanded capital facilities required to accommodate new development.

**POLICY 2:** The imposition of impact fees and dedication requirements are two of the preferred methods of regulating land development in order to ensure that future development bears a proportionate share of the costs of capital facilities necessary to accommodate future development at adopted levels of service.

**POLICY 3:** Hernando County shall regularly review its adopted impact fees to ensure that future development bears its proportionate share of capital facilities costs.

**POLICY 4:** Upon the identification of capital projects for the Solid Waste and Drainage Elements, Hernando County shall consider the use of impact fees for

these services so that future development bears a proportionate share of the cost of capital facilities necessary to accommodate new development at adopted levels of service.

#### MANAGEMENT OF FISCAL RESOURCES

**OBJECTIVE D: HERNANDO COUNTY WILL MANAGE ITS FISCAL RESOURCES TO ENSURE THE TIMELY PROVISION OF NEEDED CAPITAL IMPROVEMENTS FOR PREVIOUSLY ISSUED DEVELOPMENT ORDERS AND FOR FUTURE DEVELOPMENT AND REDEVELOPMENT.**

**POLICY 1:** Prior to the issuance of building permits, Hernando County shall ensure the provision of all public facilities needed to service the development requesting the permits.

**POLICY 2:** Hernando County shall provide for the availability of public facilities to serve developments for which development orders were issued prior to the adoption of this Comprehensive Plan.

**POLICY 3:** Hernando County shall develop and adopt a Capital Improvement Program, covering at least a 5-year period, and an annual capital budget that implements the Capital Improvement Program and that is consistent with this Capital Improvements Element.

**POLICY 4:** Hernando County shall undertake all reasonable efforts to secure grants or private funds wherever available to finance the provision of capital improvements.

**POLICY 5:** Hernando County shall limit the maximum ratio of outstanding general obligation indebtedness to no more than 15% of the property tax base and limit the annual debt payment for all revenue bonds to that which can be reasonably supported by the stream of revenue.

**POLICY 6:** Where possible, Hernando County will use self-supporting revenue, special assessments, or other self-supporting bonds, instead of general obligation bonds, to finance capital projects. When Hernando County finances projects through the issuance of bonds, it will pay back the bonds within a period not to exceed the estimated useful life of the facility.

## ISSUANCE OF DEVELOPMENT ORDERS AND PERMITS

**OBJECTIVE E:** DECISIONS REGARDING THE ISSUANCE OF DEVELOPMENT ORDERS AND PERMITS WILL BE BASED UPON COORDINATION OF THE DEVELOPMENT REQUIREMENTS INCLUDED IN THIS PLAN, THE LAND DEVELOPMENT REGULATIONS, AND THE AVAILABILITY OF NECESSARY PUBLIC FACILITIES NEEDED TO SUPPORT SUCH DEVELOPMENT AT THE TIME NEEDED.

**POLICY 1:** For purposes of public facility planning, the County shall use the following Level of Service Standards in reviewing impacts of new development and redevelopment upon public facilities:

- a. Roads. The level of service for County maintained roadways shall be "C" average daily traffic volumes, "D" for peak hour volumes. For State maintained roadways, the level of service shall be "D" for peak hour volumes. The interim level of service for designated backloged facilities shall be the level of service enumerated in Goal 2.04, Objective A, Policy 3.
- b. Parks. The level of service standard for parks is 4.00 acres of parks, recreation areas and open spaces per 1,000 population. This standard shall be further subdivided into two categories: 2.00 acres per 1,000 population shall be the standard for user-oriented park facilities; 2.00 acres per 1,000 shall be utilized for open space.
- c. Potable Water. This standard relates only to those units provided potable water service. The standard for service is 250 gallons per equivalent residential unit per day.
- d. Waste Water. This standard relates only to those units provided waste water service. The standard for service is 200 gallons per equivalent residential unit per day.
- e. Solid Waste. Until completion of the Solid Waste Master Plan, the interim standard for solid waste disposal shall be five pounds of solid waste per person per day.
- f. Drainage. Until standards are developed based upon a county-wide drainage plan, the interim level of service standard shall be: post development runoff shall be no greater

than pre-development runoff based on 25-year frequency, 24-hour duration; Rainfall Intensity curve-zone 8, Florida Department of Transportation (DOT) Drainage Manual, 1979.

- g. Aviation. The standard for aviation is the adequacy of the physical facilities to safely accommodate the projected levels of future air traffic.

**POLICY 2:** Hernando County shall adopt an adequate facilities ordinance and a Concurrence Management Program to ensure that, at the time a development permit is issued, adequate facility capacity is available or will be available to serve the development requesting the order or permit.

**POLICY 3:** Proposed plan amendments and requests for new development or redevelopment shall be evaluated according to the following guidelines as to whether the proposed action would:

- a. Conform with future land uses as shown on the future land use map of the Future Land Use Element, and conform to the public health and safety provisions as described in the Potable Water and Sanitary Sewer, Solid Waste, Drainage, Elements of the Comprehensive Plan;
- b. Generate public facility demands that will be met by capacity increases planned and set out in the 5-Year Schedule of Improvements;
- c. Exacerbate any existing or future capacity deficiencies as described in the Traffic Circulation, Potable Water and Sanitary Sewer, Solid Waste, Drainage, and Coastal Management Elements of the Comprehensive Plan;
- d. Contribute to a condition of public hazard as described in the Traffic Circulation, Potable Water and Sanitary Sewer, Solid Waste, Drainage, and Coastal Management Elements of the Comprehensive Plan;
- e. Decrease the economic feasibility of the Comprehensive Plan;
- f. Alter or otherwise diminish the level of service below the adopted levels of service; and

- g. Adversely affect plans and programs of state agencies, water management districts, the City of Brooksville, the City of Weeki Wachee or neighboring county's plans.

**SECTION B:  
REQUIREMENTS FOR CAPITAL IMPROVEMENTS IMPLEMENTATION**

## REQUIREMENTS FOR CAPITAL IMPROVEMENTS IMPLEMENTATION

### A. 5-YEAR SCHEDULE OF IMPROVEMENTS

The 5-Year Schedule of Improvements (see Table II-A.1) and Projected Costs and Revenues (see Table III-A.5) are the mechanisms by which Hernando County can effectively stage the timing, location, projected cost, and revenue sources for the capital improvements derived from the other comprehensive plan elements, in support of the Future Land Use Element. The 5-Year Schedule of Improvements and Projected Costs and Revenues have been used to document the economic feasibility of Hernando County's Comprehensive Plan.

### B. MONITORING AND EVALUATION

Any comprehensive plan is only as good as its ability to effect the development of land. The purpose of this Comprehensive Plan is to affect the location, timing and nature of future development so that public health, safety and welfare are protected. The several elements of this plan look forward to accommodating the growth that is anticipated at this time. This Capital Improvements Element sets out Hernando County's goals, objectives and policies as they relate to accommodating future development with necessary public facilities. However, no plan is either perfect or self enforcing. Therefore, the plan generally and the Capital Improvements Element specifically must be monitored and evaluated on a regular basis. The Capital Improvements Element will require continuous monitoring as conditions change. The Local Government Comprehensive Planning and Land Development Regulation Act requires that the CIE be reviewed on an annual basis. The ideal time to conduct this review is in conjunction with the annual operating budget.

The annual review will include the following considerations, and will include an examination of these considerations in order to determine their continued appropriateness:

1. An analysis of actual development as contrasted with projected development which shall provide necessary corrections or updates to those contained in the CIE;
2. Any corrections, updates, and modifications concerning costs, revenues, dedications of facilities, timing of public facilities;
3. Any corrections, updates, and modifications to the CIE resulting from any changes to the individual plan elements;



4. The County's ability to meet the 5-Year Schedule of Improvements and any corrections, updates or modifications;
5. The County's progress in eliminating deficiencies and in meeting the needs of future development;
6. The criteria used in evaluating the timing, location, or priority of county provided public facilities;
7. The County's effectiveness in maintaining the adopted level of service standards;
8. The effectiveness of the County's impact fees and dedication requirements in distributing proportionate shares of public facility costs;
9. The current and proposed indebtedness of the County and the fiscal implications of such indebtedness;
10. Efforts made to secure grants and donations and the results of those efforts;
11. The collections and disbursements of funds for capital improvements and available balances;
12. Capital improvements needed for the latter part of the planning period, for inclusion in the 5-Year Schedule of Improvements, in Projected Costs and Revenues, and in the Capital Improvement Program.

TABLE II-A.1

CONSOLIDATED 5-YEAR CAPITAL IMPROVEMENTS LIST  
 HERNANDO COUNTY  
 FY1989-90 - 1993-94

## WATER AND SEWER FACILITIES

|  | FY89-90   | FY90-91   | FY91-92   | FY92-93   | FY93-94   |
|--|-----------|-----------|-----------|-----------|-----------|
| Sub-Regional Waste-water<br>Treatment Plants             |           |           |           |           |           |
| SUB-TOTAL  | 4,560,000 | 3,420,000 | 940,000   | 5,275,000 | 1,800,000 |
| Interim Waste-water<br>Treatment Plants                  |           |           |           |           |           |
| SUB-TOTAL  | 0         | 350,000   | 0         | 0         | 0         |
| Waste-water Collection<br>and Transmission<br>Facilities |           |           |           |           |           |
| SUB-TOTAL  | 476,325   | 1,442,000 | 476,300   | 200,000   | 350,000   |
| Wellfields   | 2,602,300 | 934,500   | 800,000   | 800,000   | 1,100,000 |
| Water Storage  | 860,000   | 0         | 675,000   | 675,000   | 550,000   |
| Water Transmission                                       | 585,700   | 597,000   | 1,177,000 | 743,000   | 860,000   |
| TOTALS   | 9,084,325 | 6,743,500 | 4,068,300 | 7,693,000 | 4,660,000 |

TRANSPORTATION - ROAD

|                              | FY89-90   | FY90-91   | FY91-92 | FY92-93   | FY93-94   |
|------------------------------|-----------|-----------|---------|-----------|-----------|
| County Line Road             |           |           |         |           |           |
| R/W Acquisition              |           | 212,000   | 212,000 | 212,000   | 212,000   |
| Design                       |           |           |         |           | 250,000   |
| Spring Hill Drive -          |           |           |         |           |           |
| Deltona - Mariner            |           |           |         |           |           |
| Design                       | 150,000   |           |         |           |           |
| Construction                 |           | 1,000,000 |         |           |           |
| Spring Hill Drive -          |           |           |         |           |           |
| Industrial Park - Mariner    |           |           |         |           |           |
| Design                       |           | 200,000   |         |           |           |
| Construction                 |           |           |         | 1,900,000 |           |
| Mariner Blvd -               |           |           |         |           |           |
| Spring Hill Dr - Northcliff  |           |           |         |           |           |
| Construction                 | 1,700,000 |           |         |           |           |
| Mariner Blvd -               |           |           |         |           |           |
| Northcliff - SR 50           |           |           |         |           |           |
| Design                       |           |           | 170,000 |           |           |
| Construction                 |           |           |         |           | 1,200,000 |
| Deltona                      |           |           |         |           |           |
| Design                       |           | 150,000   |         |           |           |
| Construction                 |           |           | 550,000 |           |           |
| C.R. 491                     |           |           |         |           |           |
| R/W Acquisition              |           | 50,000    |         |           |           |
| Design                       |           |           | 50,000  |           |           |
| Construction                 |           |           |         | 500,000   |           |
| C.R. 476                     |           |           |         |           |           |
| R/W Acquisition              |           | 11,000    |         |           |           |
| Design                       |           |           | 10,000  |           |           |
| Construction                 |           |           |         | 75,000    |           |
| C.R. 576                     |           |           |         |           |           |
| R/W Acquisition              |           |           |         |           |           |
| Construction                 | 130,000   |           |         |           |           |
| C.R. 541                     |           |           |         |           |           |
| R/W Acquisition              |           |           |         |           | 90,000    |
| Forest Hill                  |           |           |         |           |           |
| Reconstruction               |           |           |         | 100,000   |           |
| Northcliff/Mariner Blvd.     |           |           |         |           |           |
| Traffic Light/Inter-         |           |           |         |           |           |
| section Improvements         | 150,000   |           |         |           |           |
| U.S. 41/Wiscon               |           |           |         |           |           |
| Traffic Light/Inter-         |           |           |         |           |           |
| section Improvements         | 26,000    |           |         |           |           |
| California/S.R. 50           |           |           |         |           |           |
| Traffic Light                |           | 26,000    |         |           |           |
| S.R. 50/Mondon Hill/C.R. 541 |           |           |         |           |           |
| Traffic Light                | 26,000    |           |         |           |           |
| TOTALS                       | 2,182,000 | 1,649,000 | 992,000 | 2,787,000 | 3,252,000 |

AIRPORT & INDUSTRIAL COMPLEX

|   | FY89-90 | FY90-91 | FY91-92 | FY92-93 | FY93-94 |
|---|---------|---------|---------|---------|---------|
| Construct Landing Direction Indicator, Segmented Circle & Additional Lighted Signs                      |         |         | 15,000  |         |         |
| Pave North General Aviation Development Area & Install Security Fencing                                 | 100,000 |         |         |         |         |
| Rehabilitate Taxiways A & A1  |         | 250,000 |         |         |         |
| Install Automated Weather Observation System  |         | 60,000  |         |         |         |
| Construct New Airfield Electrical Vault & Back-up Generating Equipment                                  |         | 125,000 |         |         |         |
| Construct New General Aviation Apron & Access Taxiway   |         |         |         |         | 280,000 |
| Install Precision Instrument Landing System   | 70,000  | 380,000 |         |         |         |
| Install High Intensity Runway Lighting & Medium Intensity Approach Lighting System                      |         | 400,000 |         |         |         |
| Overlay of Taxiway 'B' & Connectors   |         |         |         | 250,000 |         |
| Installation of Visual Approach Descent Indicators  |         |         |         | 50,000  |         |
| Installation of Runway End Identifier Lights  |         |         |         |         | 18,000  |
| Construct Taxiway 'A-7'   |         |         |         | 100,000 |         |
| Construct Additional General Aviation Apron   |         |         |         |         | 300,000 |
| Install Security Fencing & Gates  |         |         | 150,000 |         |         |
| Reconstruct, Pave & Mark T-Hangar Pavement Areas, Install Security Lighting, Slurry Seal Existing Apron |         | 200,000 |         |         |         |
| Land Acquisition for Approach Lighting & Marker Beacons   |         | 50,000  |         |         |         |

|   |                |                  |                |                  |                  |
|---|----------------|------------------|----------------|------------------|------------------|
| Construct Airport Rescue & Firefighting Station & Access Road |                |                  |                |                  | 500,000          |
| Construct Air Traffic Control Tower                           |                |                  | 1,000,000      |                  |                  |
| Construct Hangar  | 100,000        |                  |                |                  | 100,000          |
| Roads & Drainage - Unit II                                    |                |                  |                |                  |                  |
| Engineering   | 25,000         |                  |                |                  |                  |
| Construction  | 100,000        |                  |                |                  |                  |
| Master Drainage Plan  |                |                  |                |                  |                  |
| Engineering   | 50,000         | 50,000           |                |                  |                  |
| Taxiway B Southwest   | 500,000        |                  |                |                  |                  |
| Acquire Easement for Approach Lighting System                 | 5,000          |                  |                |                  |                  |
| Environmental Study for Instrument Landing System             | 20,000         |                  |                |                  |                  |
| <b>TOTALS</b>   | <b>870,000</b> | <b>1,615,000</b> | <b>165,000</b> | <b>1,400,000</b> | <b>1,198,000</b> |

PARKS AND RECREATION

|  | FY89-90 | FY90-91 | FY91-92 | FY92-93 | FY93-94 |
|--|---------|---------|---------|---------|---------|
| PROJECT: Pine Island Environmental Study         | 50,000  |         |         |         |         |
| SUB-TOTAL  | 50,000  | 0       | 0       | 0       | 0       |
| PROJECT: Bayport                                 |         |         |         |         |         |
| Permitting and Design of Sea Wall                | 2,500   |         |         |         |         |
| Construction of Sea Wall                         | 47,500  |         |         |         |         |
| Construction of Shelters                         | 21,000  | 21,000  |         |         |         |
| Parking Lot and Road Resurfacing                 |         |         | 25,000  | 25,000  |         |
| SUB-TOTAL  | 71,000  | 21,000  | 25,000  | 25,000  | 0       |
| PROJECT: Jenkins Creek                           |         |         |         |         |         |
| Construction of Sewer System                     | 50,000  |         |         |         |         |
| Road and Parking Lot Improvements                |         | 50,000  | 25,000  | 25,000  | 55,000  |
| Recreation Facilities                            |         | 30,000  | 25,000  | 25,000  |         |
| Concessions and Restrooms                        |         |         | 40,000  | 40,000  |         |
| Electrical & Lighting                            |         | 10,000  | 10,000  | 10,000  |         |
| Park Signs                                       | 2,500   |         |         |         |         |
| Park Security Housing                            |         |         |         | 30,000  |         |
| SUB-TOTAL  | 52,500  | 90,000  | 100,000 | 110,000 | 55,000  |
| PROJECT: Delta Woods                             |         |         |         |         |         |
| Bleachers  | 20,000  |         |         |         |         |
| Landscaping                                      |         |         | 35,000  | 16,000  |         |
| Picnic Areas                                     | 14,000  | 14,000  | 14,000  |         |         |
| Concession Facility, Restrooms and Storage Areas | 45,000  |         |         |         |         |
| Lighting   | 10,000  | 75,000  | 75,000  |         |         |
| SUB-TOTAL  | 89,000  | 89,000  | 124,000 | 16,000  | 0       |
| PROJECT: Kennedy Park                            |         |         |         |         |         |
| Sprinkler System                                 |         | 10,000  |         |         |         |
| Lighting of Baseball Field                       |         | 20,000  | 5,000   |         |         |
| Press Box  | 12,834  |         |         |         |         |
| Parking Lot and Road Resurfacing                 |         |         |         |         | 35,000  |
| Playground Equipment                             |         | 10,000  |         |         | 10,000  |
| SUB-TOTAL  | 12,834  | 40,000  | 5,000   | 0       | 45,000  |

|                       |         |         |         |         |         |
|-----------------------|---------|---------|---------|---------|---------|
| PROJECT: Nobleton -   |         |         |         |         |         |
| Wayside Park          |         |         |         |         |         |
| Parking Lot and Road  |         |         |         |         |         |
| Construction          | 15,000  |         |         |         |         |
| Picnic Areas          | 14,000  | 14,000  |         | 7,000   | 7,000   |
| Restroom Facility     | 30,000  |         |         |         |         |
| Landscaping           | 10,000  | 5,000   |         |         |         |
| Fencing               | 5,000   | 5,000   |         |         |         |
| Playground Equipment  | 5,000   | 5,000   |         |         |         |
| Lighting              | 2,500   | 2,500   | 2,500   |         |         |
| SUB-TOTAL             | 81,500  | 31,500  | 2,500   | 7,000   | 7,000   |
| PROJECT: New District |         |         |         |         |         |
| Park - 1              |         |         |         |         |         |
| Land Acquisition      |         |         |         | 80,000  |         |
| Park Design           |         |         |         |         | 15,000  |
| SUB-TOTAL             | 0       | 0       | 0       | 80,000  | 15,000  |
| PROJECT: New District |         |         |         |         |         |
| Park - 2              |         |         |         |         |         |
| Land Acquisition      | 160,000 |         |         |         |         |
| Park Design           | 15,000  |         |         |         |         |
| Tennis Court          |         | 40,000  |         | 40,000  | 40,000  |
| Multi-purpose Fields  |         | 50,000  |         | 50,000  |         |
| Softball Fields       |         | 60,000  |         |         | 80,000  |
| Activity Center       |         |         |         | 200,000 |         |
| Landscaping           |         | 20,000  |         | 20,000  | 40,000  |
| Multi-purpose Court   |         | 32,000  |         |         | 35,000  |
| Lights                |         |         |         | 50,000  | 25,000  |
| Play Equipment        |         |         | 16,000  | 30,000  | 16,000  |
| Horse Shoes           |         |         |         | 16,000  |         |
| Pool                  |         |         | 500,000 |         |         |
| Handball              |         |         |         | 25,000  | 25,000  |
| SUB-TOTAL             | 175,000 | 202,000 | 516,000 | 431,000 | 261,000 |
| PROJECT: New District |         |         |         |         |         |
| Park - 4              |         |         |         |         |         |
| Land Acquisition      |         |         |         |         | 160,000 |
| SUB-TOTAL             | 0       | 0       | 0       | 0       | 160,000 |
| TOTALS                | 531,834 | 473,500 | 772,500 | 689,000 | 543,000 |

TABLE III-A.5

PROJECTED COSTS AND REVENUES  
 CAPITAL IMPROVEMENTS  
 HERNANDO COUNTY  
 FY1989-90 - 1993-94  
 1983 - 100

WATER AND SEWER FACILITIES

|   | FUNDING SOURCE |           |                       |       |         |
|---|----------------|-----------|-----------------------|-------|---------|
|   | BONDS          | DEVELOPER | CONNECTION<br>CHARGES | OTHER | GENERAL |
| Sub-Regional Waste-water<br>Treatment Plants          |                |           |                       |       |         |
| SUB-TOTAL   | 9,817,500      | 2,335,000 | 3,842,500             | 0     | 0       |
| Interim Waste-water<br>Treatment Plants               |                |           |                       |       |         |
| SUB-TOTAL   | 0              | 350,000   | 0                     | 0     | 0       |
| Waste-water Collection and<br>Transmission Facilities |                |           |                       |       |         |
| SUB-TOTAL   | 1,600,800      | 816,325   | 527,500               | 0     | 0       |
| Wellfields  | 3,921,800      | 400,000   | 1,915,000             | 0     | 0       |
| Water Storage   | 862,500        | 1,722,500 | 175,000               | 0     | 0       |
| Water Transmission                                    | 2,183,050      | 1,024,650 | 755,000               | 0     | 0       |
| TOTALS  | 18,385,650     | 6,648,475 | 7,215,000             | 0     | 0       |



TRANSPORTATION - ROADS

|                             | -----FUNDING SOURCE----- |           |            |               |
|-----------------------------|--------------------------|-----------|------------|---------------|
|                             | BONDS                    | DEVELOPER | IMPACT FEE | OTHER GENERAL |
| County Line Road            |                          |           |            |               |
| R/W Acquisition             |                          |           | 848,000    |               |
| Design                      |                          |           | 250,000    |               |
| SUB-TOTAL                   |                          |           | 1,098,000  |               |
| Spring Hill Drive -         |                          |           |            |               |
| Deltona - Mariner           |                          |           |            |               |
| Design                      |                          |           | 150,000    |               |
| Construction                |                          |           | 1,000,000  |               |
| SUB-TOTAL                   |                          |           | 1,150,000  |               |
| Spring Hill Drive -         |                          |           |            |               |
| Industrial Park - Mariner   |                          |           |            |               |
| Design                      |                          |           | 200,000    |               |
| Construction                |                          |           | 1,900,000  |               |
| SUB-TOTAL                   |                          |           | 2,100,000  |               |
| Mariner Blvd -              |                          |           |            |               |
| Spring Hill Dr - Northcliff |                          |           |            |               |
| Construction                |                          |           | 1,700,000  |               |
| SUB-TOTAL                   |                          |           | 1,700,000  |               |
| Mariner Blvd -              |                          |           |            |               |
| Northcliff - SR 50          |                          |           |            |               |
| Design                      |                          |           | 170,000    |               |
| Construction                |                          |           | 1,200,000  |               |
| SUB-TOTAL                   |                          |           | 1,370,000  |               |
| Deltona                     |                          |           |            |               |
| Design                      |                          |           | 150,000    |               |
| Construction                |                          |           | 550,000    |               |
| SUB-TOTAL                   |                          |           | 700,000    |               |
| C.R. 491                    |                          |           |            |               |
| R/W Acquisition             |                          |           | 50,000     |               |
| Design                      |                          |           | 50,000     |               |
| Construction                |                          |           | 500,000    |               |
| SUB-TOTAL                   |                          |           | 600,000    |               |
| C.R. 476                    |                          |           |            |               |
| R/W Acquisition             |                          |           | 11,000     |               |
| Design                      |                          |           | 10,000     |               |
| Construction                |                          |           | 75,000     |               |
| SUB-TOTAL                   |                          |           | 96,000     |               |
| C.R. 576                    |                          |           |            |               |
| R/W Acquisition             |                          |           |            | 130,000       |
| Construction                | 1,290,000                |           | 210,000    |               |
| SUB-TOTAL                   | 1,290,000                |           | 210,000    | 130,000       |

|                              |           |   |           |         |   |
|------------------------------|-----------|---|-----------|---------|---|
| C.R. 541                     |           |   |           |         |   |
| R/W Acquisition              |           |   |           | 90,000  |   |
| SUB-TOTAL                    |           |   |           | 90,000  |   |
| Forest Hill                  |           |   |           |         |   |
| Reconstruction               |           |   |           | 100,000 |   |
| SUB-TOTAL                    |           |   |           | 100,000 |   |
| Northcliff/Mariner Blvd.     |           |   |           |         |   |
| Traffic Light/Intersection   |           |   |           |         |   |
| Improvements                 |           |   |           | 150,000 |   |
| SUB-TOTAL                    |           |   |           | 150,000 |   |
| U.S. 41/Wiscon               |           |   |           |         |   |
| Traffic Light Intersection   |           |   |           |         |   |
| Improvements                 |           |   |           | 26,000  |   |
| SUB-TOTAL                    |           |   |           | 26,000  |   |
| California/S.R. 50           |           |   |           |         |   |
| Traffic Light                |           |   |           | 26,000  |   |
| SUB-TOTAL                    |           |   |           | 26,000  |   |
| S.R. 50/Mendon Hill/C.R. 541 |           |   |           |         |   |
| Traffic Light                |           |   |           | 26,000  |   |
| SUB-TOTAL                    |           |   |           | 26,000  |   |
| TOTALS                       | 1,290,000 | 0 | 9,442,000 | 130,000 | 0 |

AIRPORT & INDUSTRIAL

|   | -----FUNDING SOURCE----- |           |            |         |         |
|---|--------------------------|-----------|------------|---------|---------|
|   | BONDS                    | DEVELOPER | IMPACT FEE | OTHER   | GENERAL |
| Construct Landing Direction Indicator, Segmented Circle & Additional Lighted Sign                       |                          |           |            | 7,500   | 7,500   |
| Pave North General Aviation Development Area & Install Security Fencing                                 |                          |           |            | 100,000 |         |
| Rehabilitate Taxiways A & A1  |                          |           |            | 250,000 |         |
| Install Automated Weather Observation System  |                          |           |            | 60,000  |         |
| Construct New Airfield Electrical Vault & Back-up Generating Equipment                                  |                          |           |            | 125,000 |         |
| Construct New General Aviation Apron & Access Taxiway   |                          |           |            | 280,000 |         |
| Install Precision Instrument Landing System   |                          |           |            | 260,000 | 190,000 |
| Install High Intensity Runway Lighting & Medium Intensity Approach Lighting System                      |                          |           |            | 400,000 |         |
| Overlay of Taxiway 'B' & Connectors   |                          |           |            | 250,000 |         |
| Installation of Visual Approach Descent Indicators  |                          |           |            | 50,000  |         |
| Installation of Runway End Identifier Lights  |                          |           |            | 18,000  |         |
| Construct Taxiway 'A-2'   |                          |           |            | 100,000 |         |
| Construct Additional General Aviation Apron   |                          |           |            | 300,000 |         |
| Install Security Fencing & Gates  |                          |           |            | 150,000 |         |
| Reconstruct, Pave & Mark T-Hangar Pavement Areas, Install Security Lighting, Slurry Seal Existing Apron |                          |           |            | 200,000 |         |
| Land Acquisition for Approach Lighting & Marker Beacons   |                          |           |            | 25,000  | 25,000  |

|   |           |   |         |           |
|---|-----------|---|---------|-----------|
| Construct Airport Rescue &<br>Firefighting Station<br>& Access Road | 500,000   |   |         |           |
| Construct Air Traffic<br>Control Tower                              | 1,000,000 |   |         |           |
| Construct Hangar  | 200,000   |   |         |           |
| Roads and Drainage - Unit II  |           |   |         |           |
| Engineering   |           |   | 25,000  |           |
| Construction  |           |   | 100,000 |           |
| Master Drainage Plan  |           |   |         |           |
| Engineering   | 50,000    |   | 50,000  |           |
| Taxiway B Southwest<br>Easement for Approach                        | 500,000   |   |         |           |
| Lighting  | 5,000     |   |         |           |
| Environmental Study for<br>Instrument Landing System                | 20,000    |   |         |           |
| TOTALS  | 0         | 0 | 0       | 4,850,500 |
|   |           |   |         | 397,500   |

PARKS AND RECREATION

|   | FUNDING SOURCE |           |            |         |         |
|---|----------------|-----------|------------|---------|---------|
|   | BONDS          | DEVELOPER | IMPACT FEE | OTHER   | GENERAL |
| PROJECT: Pine Island<br>Environmental Study               |                |           |            |         | 50,000  |
| SUB-TOTAL   | 0              | 0         | 0          | 0       | 50,000  |
| PROJECT: Bayport<br>Permitting and Design<br>of Sea Wall  |                |           |            |         | 2,500   |
| Construction of Sea Wall                                  |                |           |            |         | 47,500  |
| Construction of Shelters                                  |                |           | 21,000     |         | 21,000  |
| Parking Lot and Road<br>Resurfacing                       |                |           |            |         | 50,000  |
| SUB-TOTAL   | 0              | 0         | 21,000     | 0       | 121,000 |
| PROJECT: Jenkins Creek<br>Construction of Sewer<br>System |                |           | 50,000     |         |         |
| Road and Parking Lot<br>Improvements                      |                |           | 105,000    |         | 50,000  |
| Recreation Facilities                                     |                |           |            | 80,000  |         |
| Concessions & Restrooms                                   |                |           |            | 80,000  |         |
| Electrical and Lighting                                   |                |           |            | 30,000  |         |
| Park Signs  |                |           | 2,500      |         |         |
| Park Security Housing                                     |                |           | 30,000     |         |         |
| SUB-TOTAL   | 0              | 0         | 187,500    | 190,000 | 50,000  |
| PROJECT: Delta Woods<br>Bleachers                         |                |           | 20,000     |         |         |
| Landscaping   |                |           | 51,000     |         |         |
| Picnic Areas  |                |           | 42,000     |         |         |
| Concession Facility,<br>Restrooms and Storage<br>Area     |                |           | 45,000     |         |         |
| Lighting  |                |           | 160,000    |         |         |
| SUB-TOTAL   | 0              | 0         | 318,000    | 0       | 0       |
| PROJECT: Kennedy Park<br>Sprinkler System                 |                |           | 10,000     |         |         |
| Lighting of Baseball Field                                |                |           | 25,000     |         |         |
| Press Box   |                |           |            |         | 12,834  |
| Parking Lot and Road<br>Resurfacing                       |                |           |            |         | 35,000  |
| Playground Equipment                                      |                |           | 20,000     |         |         |
| SUB-TOTAL   | 0              | 0         | 55,000     | 0       | 47,834  |

|                              |   |   |           |         |         |
|------------------------------|---|---|-----------|---------|---------|
| PROJECT: Hobbleton - Wayside |   |   |           |         |         |
| Park                         |   |   |           |         |         |
| Parking Lot and Road         |   |   |           |         |         |
| Construction                 |   |   | 15,000    |         |         |
| Picnic Area                  |   |   | 42,000    |         |         |
| Restroom Facility            |   |   |           |         | 30,000  |
| Landscaping                  |   |   | 15,000    |         |         |
| Fencing                      |   |   | 10,000    |         |         |
| Playground Equipment         |   |   | 10,000    |         |         |
| Lighting                     |   |   | 7,500     |         |         |
| SUB-TOTAL                    | 0 | 0 | 99,500    | 0       | 30,000  |
| PROJECT: New District        |   |   |           |         |         |
| Park - 1                     |   |   |           |         |         |
| Land Acquisition             |   |   | 80,000    |         |         |
| Park Design                  |   |   | 15,000    |         |         |
| SUB-TOTAL                    | 0 | 0 | 95,000    | 0       | 0       |
| PROJECT: New District        |   |   |           |         |         |
| Park - 2                     |   |   |           |         |         |
| Land Acquisition             |   |   | 160,000   |         |         |
| Park Design                  |   |   | 15,000    |         |         |
| Tennis Courts                |   |   | 120,000   |         |         |
| Multi-purpose Fields         |   |   | 100,000   |         |         |
| Softball Field               |   |   | 140,000   |         |         |
| Activity Center              |   |   | 200,000   |         |         |
| Landscaping                  |   |   | 80,000    |         |         |
| Multi-purpose Court          |   |   | 35,000    |         | 32,000  |
| Lights                       |   |   | 75,000    |         |         |
| Play Equipment               |   |   | 30,000    |         | 32,000  |
| Horse Shoes                  |   |   |           |         | 16,000  |
| Pool                         |   |   | 500,000   |         |         |
| Handball                     |   |   | 50,000    |         |         |
| SUB-TOTAL                    | 0 | 0 | 1,505,000 | 0       | 80,000  |
| PROJECT: New District        |   |   |           |         |         |
| Park - 4                     |   |   |           |         |         |
| Land Acquisition             |   |   | 160,000   |         |         |
| SUB-TOTAL                    | 0 | 0 | 160,000   | 0       | 0       |
| TOTALS                       | 0 | 0 | 2,441,000 | 190,000 | 378,834 |

----- FUNDING SOURCE -----

|                      | BONDS      | DEVELOPER | IMPACT FEE | OTHER     | GENERAL |
|----------------------|------------|-----------|------------|-----------|---------|
| WATER & SEWER        | 18,385,650 | 6,648,475 | 7,215,000  | 0         | 0       |
| ROADS                | 1,290,000  | 0         | 9,442,000  | 130,000   | 0       |
| AIRPORT & INDUSTRIAL | 0          | 0         | 0          | 4,850,500 | 397,500 |
| PARKS & RECREATION   | 0          | 0         | 2,441,500  | 190,000   | 378,834 |
| TOTAL                | 19,675,650 | 6,648,475 | 19,098,000 | 5,170,500 | 776,334 |

**SECTION C:  
PROCEDURES FOR MONITORING AND EVALUATION**



**MONITORING AND EVALUATION  
HERNANDO COUNTY COMPREHENSIVE PLAN**

**I. INTRODUCTION**

The monitoring and evaluation of the Comprehensive Plan is an important phase of the planning process. Periodic review of the Comprehensive Plan is necessary due to the dynamic nature of Hernando County and the planning process itself. The County will continue to experience population growth and land development which will necessitate periodic updating of data contained in the technical support documents of this Plan. In addition, changing community conditions and values require that goals, objectives and policies be reviewed and revised to reflect current trends and needs.

**II. REQUIREMENTS OF STATUTE AND RULE**

The Florida Statutes and the Florida Administrative Code both provide guidance as to how a community must review and evaluate its comprehensive plan. In conformance with the mandates of Section 163.3191 F.S. and Rule 9J-5.005 F.A.C., the Local Planning Agency must adopt formal procedures for plan evaluation. Chapter 163 F.S. requires...

...the local planning agency shall prepare periodic reports on the comprehensive plan, which shall be sent to the [Department of Community Affairs] at least once every five years after the adoption of the comprehensive plan or elements thereof...The report shall present an assessment and evaluation of the success or failure of the comprehensive plan using appropriate statements (using words, maps, illustrations, or other forms) related to the:

- (a) major problems of development, physical deterioration, and the location of land uses and the social and economic effects of such uses in the area;
- (b) conditions of each element in the comprehensive plan at the time of adoption and at the date of the report;
- (c) comprehensive plan objectives as compared with the actual results at the date of the report; and
- (d) The extent to which unanticipated and unforeseen problems and opportunities

occurred between the date of adoption and the date of the report.

The report shall also suggest changes needed to update the comprehensive plan or elements or portions thereof including reformulated objectives, policies, and standards.

Action on the report constitutes an amendment to the Comprehensive Plan or portion of an element thereof. The governing body may adopt the report with changes or amendment after taking the steps required by Section 163.3187 F.S. The adoption of the report amends the Comprehensive Plan or element or portion thereof to the extent specified in the report required by this section.

Rule 9J-5.005 F.A.C. furthers the requirements of Chapter 163. The requirements for evaluating comprehensive plans pursuant to Rule 9J-5.005 F.A.C. are as follows:

For the purpose of evaluating and appraising the implementation of the comprehensive plan, each comprehensive plan...shall contain a section identifying five-year monitoring, updating and evaluation procedures to be followed in the preparation of the required five-year evaluation and appraisal reports. That section shall address:

- (a) Citizen participation in the process;
- (b) Updating appropriate baseline data and measurable objectives to be accomplished in the first five-year period, describing the degree to which the goals, objectives and policies needed to correct discovered problems; and
- (c) Accomplishments in the first five-year period, describing the degree to which the goals, objectives and policies have been successfully reached;
- (d) Obstacles or problems which resulted in underachievement of goals, objectives, or policies;
- (e) New or modified goals, objectives, or policies needed to correct discovered problems; and

- (f) A means of ensuring continuous monitoring and evaluation of the plan during the five-year period.

### III. MONITORING/EVALUATION PRODUCTS

The monitoring and evaluation of the Comprehensive Plan must be an ongoing process. To keep the Comprehensive Plan a current document, the Local Planning Agency will consider the evaluation of the Comprehensive Plan on an annual basis. After the revision and adoption by the Local Planning Agency, the Board of County Commissioners will review the Local Planning Agency's annual report and include those recommended Plan changes the Board approves in the twice a year plan amendment package.

The annual report to be reviewed by the Local Planning Agency will consist of three parts. Part One will update information/baseline data included in the plan narrative. Given the length of the Plan document, only portions of the Plan narrative will be updated in any given year. Table ME-1 indicates the calendar year when the baseline data will be updated. Part Two identifies goals, objectives and policies to be achieved during the current calendar year as well as a portion of the goals, objectives and policies of an ongoing nature to be monitored. Further, this section will identify in a quantitative manner to what extent these goals, objectives and policies have been implemented/achieved and identify difficulties encountered in their achievement. Part Three of the report will recommend specific changes, additions or deletions to goals, objectives and policies.

**TABLE ME - 1  
BASELINE DATA UPDATING SCHEDULE**

| <u>Element</u>                       | <u>1990</u> | <u>1991</u> | <u>1992</u> | <u>1993</u> | <u>1994</u> |
|--------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Future Land Use                      |             |             |             |             | X           |
| Traffic Circulation                  |             |             |             |             | X           |
| Mass Transit                         |             |             | X           |             |             |
| Aviation, Ports and other facilities |             |             | X           |             |             |
| Housing                              |             | X           |             |             |             |
| Infrastructure Sub-elements          |             |             |             |             |             |
| Sanitary Sewer                       |             |             |             | X           |             |
| Potable Water                        |             |             |             | X           |             |
| Solid Waste                          | X           |             |             |             |             |
| Drainage/Recharge                    |             | X           |             |             |             |
| Coastal Management                   |             |             | X           |             |             |
| Conservation                         |             |             | X           |             |             |
| Recreation/Open Space                |             |             |             |             | X           |
| Intergovernmental Coordination       |             |             |             |             | X           |
| Capital Improvements                 | X           | X           | X           | X           | X           |

During the fifth year following the adoption of the Comprehensive Plan, an Evaluation and Appraisal Report (EAR) will be prepared instead of an annual report. The EAR will meet the content requirements specified in Section 163.3191 F.S. Like the annual reports, the EAR will be recommended by the Local Planning Agency to the Board of County Commissioners. Additions, deletions and other changes to the goals, objectives and policies adopted by the Board as part of the EAR will be adopted as part of the twice a year plan amendment process.

The structure of the Evaluation and Appraisal Report will follow the requirements outlined in Section 163.3191 F.S. These generalized requirements will be adapted to local conditions. The report will be organized into three main parts.

Part One of the Evaluation and Appraisal Report will identify and discuss the major factors which have influenced the patterns of growth and development in Hernando County over the previous five years. These factors may include the location of large-scale development which has a County-wide impact, changes in the state or national economy influencing local conditions and social changes in the County's demographic patterns.

Part Two will chronicle changes which have occurred in the County in the past five year on an element-by-element basis. Trends and conditions identified in this section of the report differ from those discussed in Part One in that these topics will be more narrowly defined than those identified

in Part One. In addition, this discussion of trends and conditions in Part Two will specifically relate to the topic of each element. In this manner the condition of the elements' narrative at the time of adoption and on the date of the report can be evaluated. This section of the report will also identify problems and opportunities unanticipated at the time of the Plan's adoption which influenced the implementation of the Plan. Revisions to the baseline data and other sections of the Plan's narrative will be made in the final section of Part Two.

Part Three of the report will evaluate the effectiveness of the goals, objectives and policies in each element in guiding the County's growth and development. Where implementation fell short of the desired outcomes identified in the Plan's goals, objectives and policies, complicating conditions will be identified. Proposed changes, deletions and additions to the adopted goals, objectives or policies will be recommended in the final section of Part Three.

Section Six of this document contains worksheets for use in the preparation of annual reports and the five-year EAR.

#### IV. PUBLIC PARTICIPATION

All meetings of the Local Planning Agency and the Board of County Commissioners will be held in accordance with the Administrative Procedures Act and the Government in the Sunshine Law. The guidelines established in these statutes provide that all reports generated by the Local Planning Agency and the Board of County Commissioners will be available at the Office of Department of Planning and Development for review and may be purchased for the cost of reproduction. These statutes also require that all public hearings be held in accordance with requirements set forth by the Legislature. Finally, Hernando County will follow all legal requirements providing for citizen involvement in the planning process as stated in Section 9J-004 F.A.C., which includes the following:

- (a) Provisions to assure that real property owners are put on notice, through advertisement in a newspaper of general circulation in the area or other method adopted by the local government, of official actions that will affect the use of their property;
- (b) Provisions for notice to keep the general public informed;

- (c) Provisions to assure that there are opportunities for the public to provide written comments;
- (d) Provisions to assure that the required public hearings are held; and
- (e) Provisions to assure the consideration of and response to public comments.

**V. JUDICIAL AND ADMINISTRATIVE REVIEW**

It is the intent and direction of the Board of County Commissioners that all judicial or administrative interpretations and reviews of this Comprehensive Plan and determination of consistency herewith shall be the "fairly debatable" standard of review.

**VI. WORKSHEETS**

To assist in the monitoring/evaluation of the comprehensive plan, the following worksheets have been developed.

Current Date:

MONITORING/EVALUATION WORKSHEET  
BASELINE DATA REVISION

Element:

Section/  
Page No.

Existing Plan Data

Recommended  
Change

Current date:

MONITORING/EVALUATION WORKSHEET  
GOALS/OBJECTIVES/POLICIES REVIEW

Element:

Goal/Objective/Policy Number:

Goal/Objective/Policy as Currently Stated:

Planning Period to be Accomplished:

1st period [ ]      2nd period [ ]      Ongoing Implementation [ ]

Degree to Which Accomplished:

Complicating/Mitigating Factors:

Suggested Modification (if any):

-----  
Current date:

MONITORING/EVALUATION WORKSHEET  
GOALS/OBJECTIVES/POLICIES REVIEW

Element:

Goal/Objective/Policy Number:

Goal/Objective/Policy as Currently Stated:

Planning Period to be Accomplished:

1st period [ ]      2nd period [ ]      Ongoing Implementation [ ]

Degree to Which Accomplished:

Complicating/Mitigating Factors:

Suggested Modification (if any):



**SECTION D:  
FUTURE LAND USE MAP MAPPING CRITERIA AND  
LAND USES ALLOWED**

**FUTURE LAND USE MAP MAPPING CRITERIA AND  
LAND USES ALLOWED**

**A. MAPPING CRITERIA AND BASIC STANDARDS FOR  
FUTURE LAND USE MAP CATEGORIES**

**CONSERVATION**

- Mapping Criteria. This classification includes state forests, wetlands, riverine protection zones, privately owned isolated uplands in the Coastal Zone and publicly and quasi-publicly owned properties which have been designated for conservation.
- Purpose. To retain forests, protect wetlands and retain areas of wildlife and marine habitat.
- Land Uses Allowed. Timbering (with a management plan), limited resource-oriented recreational activities and up to one residential unit per forty acres, or as otherwise consistent with the quarter-quarter land management concept.

**Additional Clarification**

1. Wetlands are mapped from available Soil Conservation Service hydric soils mapping. Due to the mapping scale, small areas of wetlands or isolated uplands (generally less than 20 acres) may not be shown on the Future Land Use Map.
2. Exact determination of wetlands shall be the wetland jurisdictional limits of the applicable environmental agencies (DER, SWFWMD, COE, DNR), with the wetland area being treated as "conservation" in the land use approval process.
3. Any jurisdictional wetlands approved for dredge and fill by the appropriate environmental agency shall no longer be considered as wetlands for the purpose of County land use approvals.
4. Within the Coastal Zone, any unmapped uplands within the conservation designation which have direct access to the County roadway network shall be considered to have a residential designation, which potentially allows all of the land uses specified therein.

**AG/RURAL RESIDENTIAL**

- Mapping Criteria. This classification includes portions of the County generally in agricultural use, but expected to exhibit development pressures prior to

the horizon year of the plan. The character of the expected development will be rural in nature, not requiring extensive urban services.

- Purpose. The continuation of agricultural pursuits while accommodating the expected conversion of land to low density residential uses.
- Land Use Allowed. Agriculture, agricultural commercial, recreation, residential development with lots a minimum of 1.2 acres to 5 acres depending upon physical limitations, access, infrastructure, location, and adjacent property land use. Density shall not be greater than 1 unit per 5 acres unless appropriate performance standards are met.

#### Additional Clarification

1. This designation recognizes the need for the coexistence of agricultural activities with emerging low density residential uses in specific areas of the County.
2. The range of residential density allowed will be conditioned on site specific criteria which attempts to maintain an orderly progression of intensity from development nodes.
3. Appropriate buffers shall be established between high intensity agricultural uses and low density residential areas to protect the use and enjoyment of land by each separate user.
4. Multiple zoning districts will be established for the range of allowed densities. Specific densities will be based on performance criteria established in the land development regulations.
5. Lot sizes, a minimum of 1.0 acre, may be allowed for planned development projects if additional open space or recreational land is provided beyond County minimum standards.
6. Residential development with density greater than that allowed above shall require a Comprehensive Plan amendment.

#### RURAL RESIDENTIAL/AG

- Mapping Criteria. This classification includes areas not primarily in agricultural use, but outside the anticipated residential growth patterns and without urban service facilities. Also included in this classification are properties with physical limitations (flood plains, sinkholes, etc.) and properties

transitional to major conservation areas in the Coastal Zone.

- Purpose. To retain the rural nature of a significant portion of the County and limit residential density outside of recognized growth or public infrastructure corridors.
- Land Uses Allowed. 1) Recreation, Agricultural Commercial, and residential development from 1 unit per acre to 1 unit per 5 acres depending upon physical limitations, access, infrastructure, location and adjacent property land use. 2) Agricultural pursuant to performance standards. 3) Residential (in excess of one unit per acre) up to 1,320 feet into the rural residential/ag district where it lies contiguous to a residential classification, pursuant to performance standards.

#### Additional Clarification

1. Significant amounts of agricultural activities exist within areas designated as rural residential/ag. Since the demarcation line between the agriculture/rural residential and rural residential/ag future land use areas are difficult to establish, new agriculture land use approvals would be allowed without a comprehensive plan amendment within 1,320 feet of the joint demarcation line, provided that it does not detrimentally impact any rural residential tendencies.
2. Residential (in excess of one unit per acre) up to 1,320 feet within the rural residential/agriculture classification without a comprehensive plan amendment should be allowed only where it lies contiguous to a residential classification, the owner can ensure the provision of appropriate infrastructure and services, and it does not detrimentally impact the established rural residential nature of the area.

#### RESIDENTIAL

- Mapping Criteria. This classification covers existing and perceived growth corridors, where physical development limitations are few, access is good and infrastructure is being provided or is planned in the County's long-range facility plans. The residential classification has been shown in those corridors except where more specific utilization such as commercial, industrial, multi-family, education, etc. has been designated.
- Purpose. To channel intensive residential growth to those portions of the County which are not designated for protection or utilization of natural resources (i.e. mining, floodplain, agriculture, wetlands,

wildlife habitat) and are within the County's proposed plans for infrastructure expansion.

- Land Use Allowed. Single family residential densities from 1 unit/acre to 5.4 units/acre, resort residential and ancillary land uses such as recreation, churches, and community centers. Land uses which can be located in this classification with performance standards being met include multi-family housing, rural residential, neighborhood commercial, schools and minor public facilities.

#### Additional Clarification

1. Rural residential/ag land use densities and uses will be allowed in this classification without a comprehensive plan amendment. Greater restrictions, may be placed on any agricultural activities or animal maintenance than in the rural residential/ag land use areas.
2. The general performance standards required for the location of neighborhood commercial are established in Goal 1.01, Objective # K. More specific standards may be delineated in the land use regulations.

#### COMMERCIAL

- Mapping Criteria. This classification consists of existing commercial zoning, areas approved for commercial activity, projected infill, extension of commercial along major state and U.S. highways and commercial clusters at the intersection of major collectors and arterials.
- Purpose. To provide locations for the provision of commercial services along major roads in residential growth corridors.
- Land Use Allowed. Commercial activity with an intensity ranging from neighborhood commercial to regional commercial centers. Other land uses allowed include recreation, offices, hotels and minor public facilities. Residential units may be allowed.

#### MINING

- Mapping Criteria. This classification consists of the area north of S.R. 50 within the outer boundaries of existing mining zoned properties.
- Purpose. To allow for the extraction of mineral resources where impact on major residential areas will be minimal.

- Land Use Allowed. Mining and ancillary mining activities, and agriculture.

#### RECREATION

- Mapping Criteria. This classification consists of those areas, public or private, which are designated for community (not neighborhood) recreation purposes.
- Purpose. To provide sufficient lands for the recreation needs of residents and visitors, in locations containing natural features (resource oriented) or convenient to residents (user-oriented).
- Land Uses Allowed. Private or public recreation uses, including recreational lodgings, ancillary commercial activity and housing for security purposes.

#### INDUSTRIAL

- Mapping Criteria. This classification consists of existing industrial zoned properties and areas proposed for industrial use due to their proximity to major transportation network (airport, expressway interchange, railroad, truck bypass, U.S. highways).
- Purpose. To provide for a clustering of industrial activity at locations in high tenant demand and with sufficient infrastructure, which do not significantly impact surrounding land uses.
- Land Uses Allowed. Industrial uses, ancillary commercial activities, minor public facilities, and ancillary residential.

#### PUBLIC FACILITY

- Mapping Criteria. This classification includes but is not limited to the following existing and proposed major public facilities: wellfields, sewage treatment plants, solid waste disposal sites, towers, power transmission lines, and power plants.
- Purpose. To identify areas within the County where major public facilities are to be located.
- Land Uses Allowed. The public facilities listed under mapping criteria and limited recreation and agricultural uses by special designation where compatible with adjacent land uses.

## EDUCATION

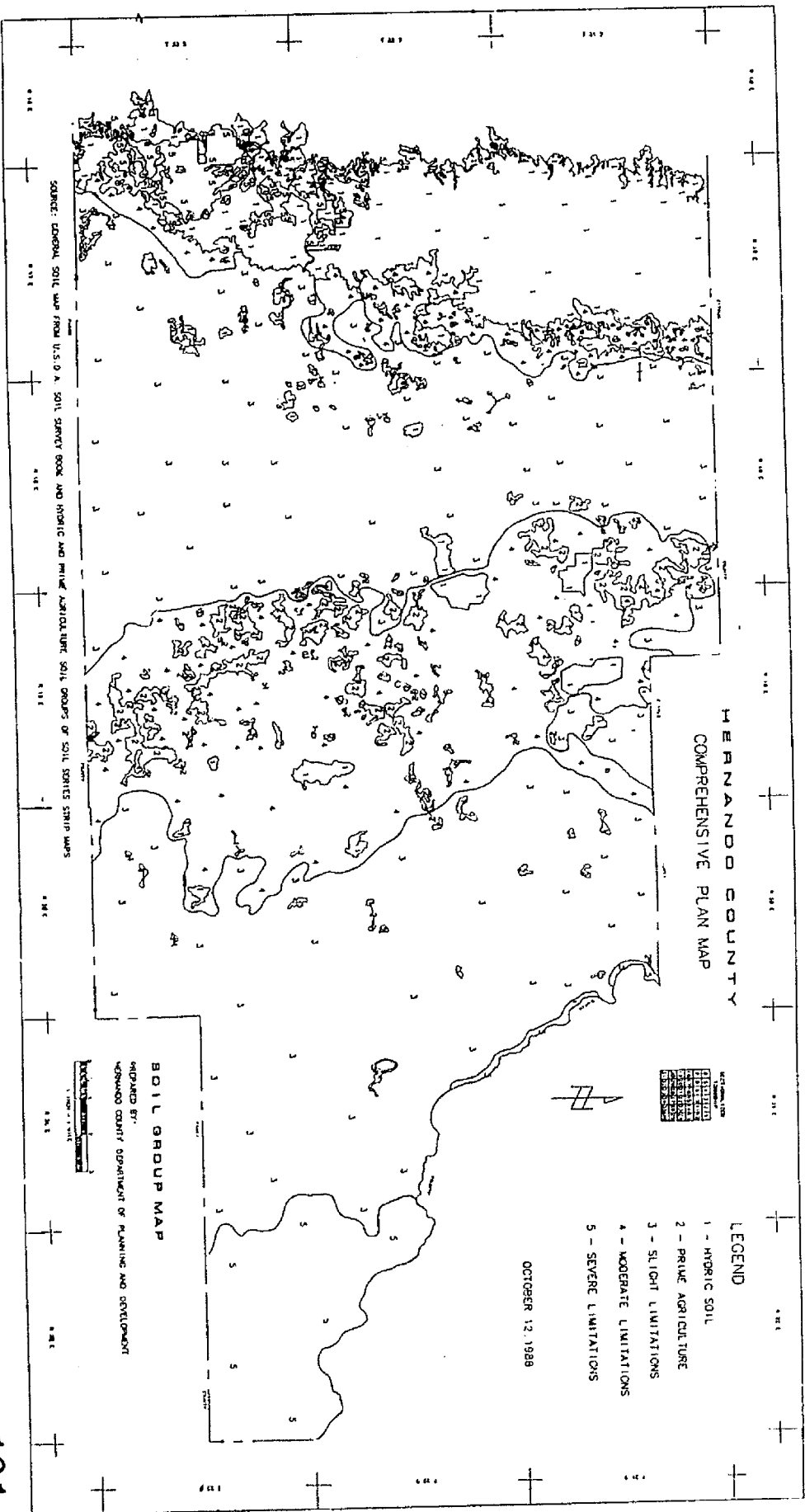
- Mapping Criteria. This classification includes existing and proposed school sites as identified by the Hernando County School Board.
- Purpose. To identify areas within the County where schools are to be located.
- Land Uses Allowed. Schools and ancillary activities such as recreation facilities, offices and housing for security purposes.

## PLANNED DEVELOPMENT

- Mapping Criteria. This classification is being utilized for three specific areas within the County where a mixture of land uses is envisioned, but the locations of each land use will have to be determined in a master planning process. One site is the tip of the Bayport Peninsula adjacent to the Gulf of Mexico. The second site consists of major tracts of land at the SR 50 interchange with I-75. The third site is the Hernando County Airport and surrounding designated lands.
- Purpose. To allow for a mix of land uses in locations where master planning and public/private coordination is particularly important.
- Land Uses Allowed. In the I-75/SR 50 area the proposed mix of land uses include industrial, commercial residential and public facility with more description and policies being provided under Goal 1.07, Objective B. In the Bayport area, the proposed mix of land uses include recreation, multi-family, commercial and residential with more description and policies being provided under Goal 1.07, Objective A. In the airport area, the proposed mix of land uses include aviation, aviation related activities, industrial uses, and other uses not incompatible with the airport. More description and policies are provided under Goal 1.07, Objective C.

**SECTION B:  
MAPS SHOWING FUTURE CONDITIONS**





HERNANDO COUNTY  
COMPREHENSIVE PLAN MAP

DATE: 10/12/89  
BY: [Signature]  
FOR: [Signature]

- LEGEND
- 1 - HYDRIC SOIL
  - 2 - PRIME AGRICULTURE
  - 3 - SLIGHT LIMITATIONS
  - 4 - MODERATE LIMITATIONS
  - 5 - SEVERE LIMITATIONS

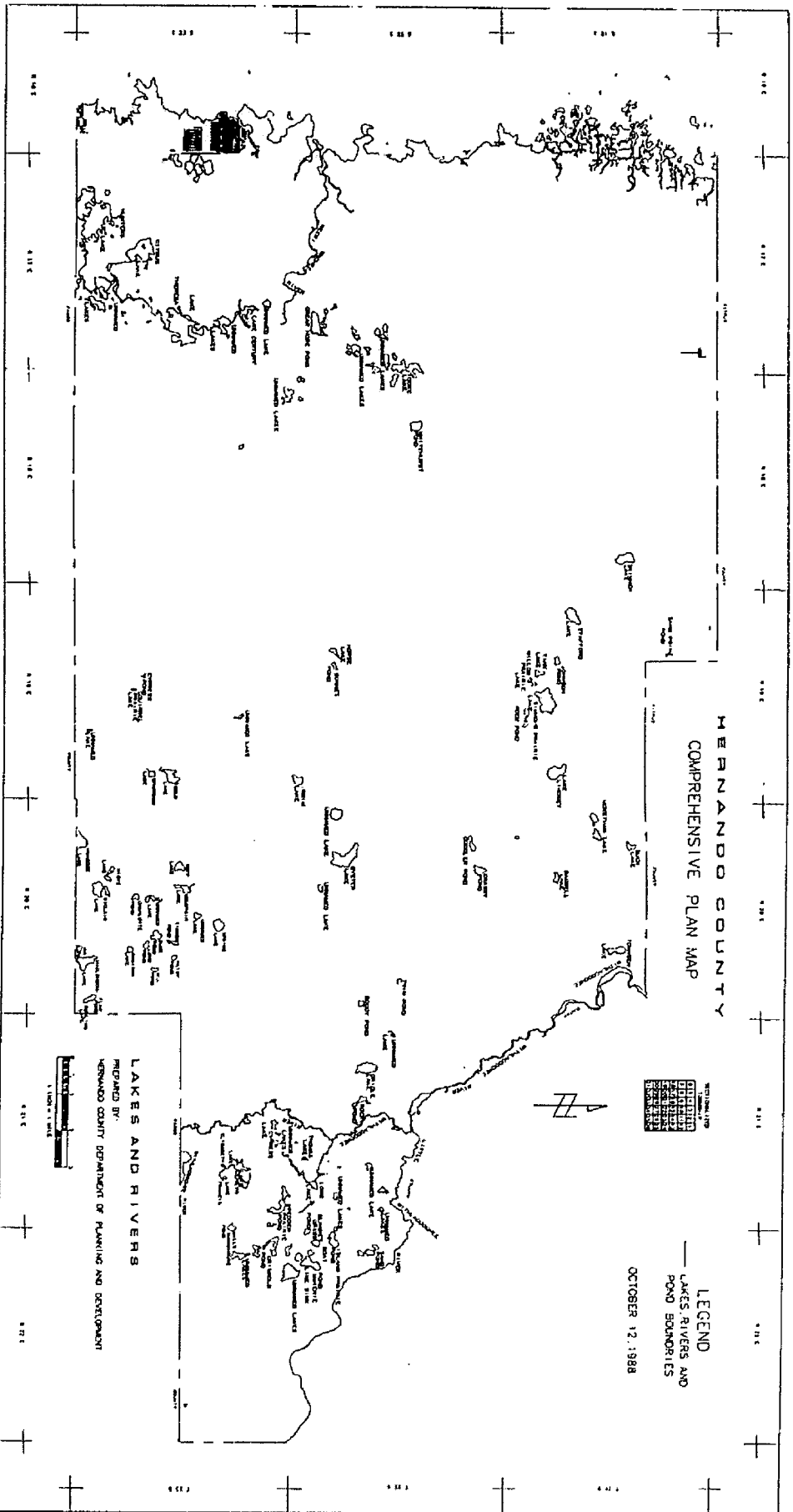


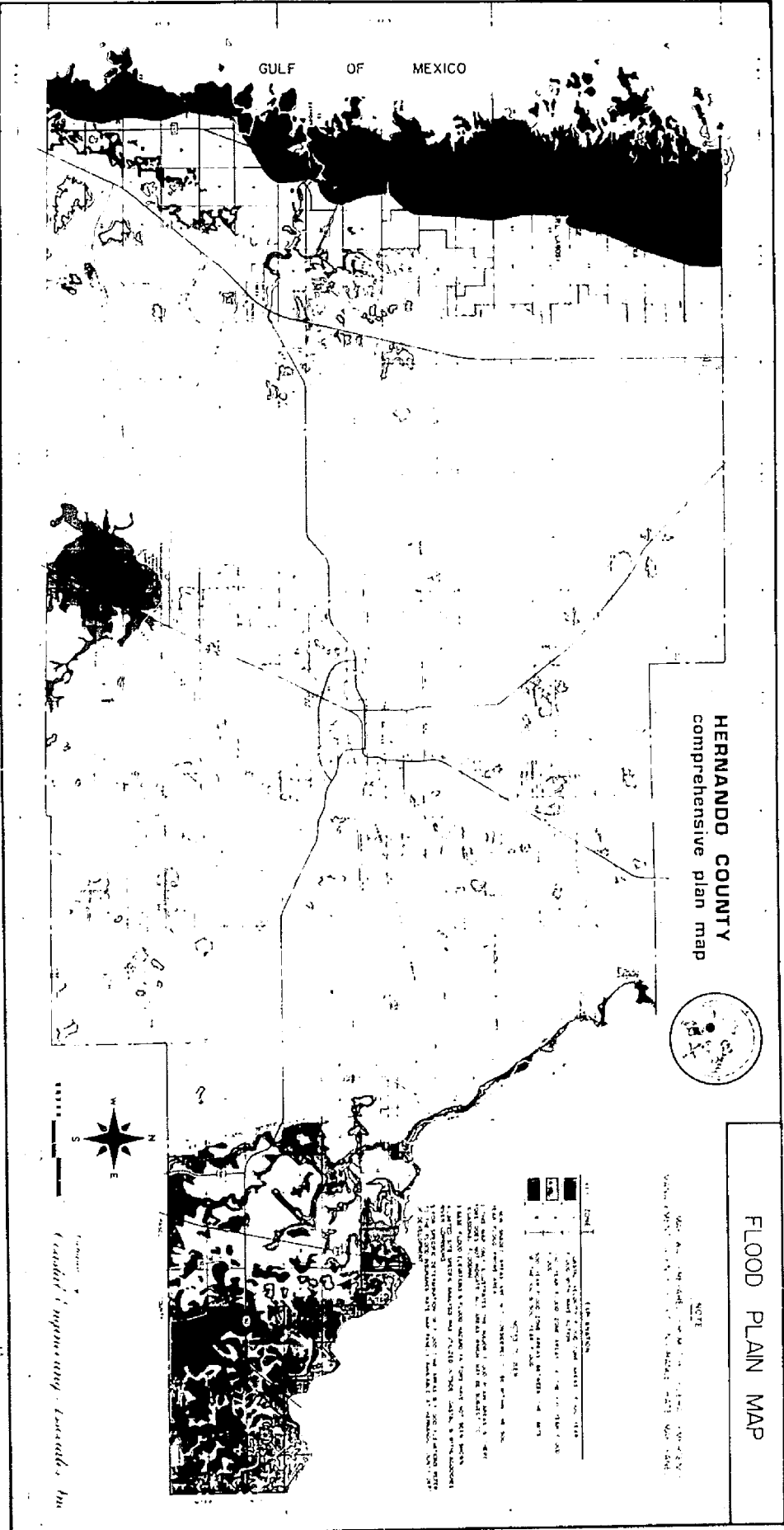
OCTOBER 12, 1989

SOURCE: GENERAL SOIL MAP FROM U.S.D.A. SOIL SERVICE BOOK AND HYDRIC AND PRIME AGRICULTURE SOIL GROUPS OF SOIL SERVICE STRIP MAPS

**SOIL GROUP MAP**  
PREPARED BY:  
HERNANDO COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT

1" = 1 MILE





**HERNANDO COUNTY**  
 comprehensive plan map



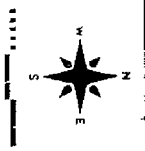
**FLOOD PLAIN MAP**

NOTE

This map is based on the 100-year flood return period. Flood hazard areas are subject to change. The map is based on the 100-year flood return period. The map is based on the 100-year flood return period.

LEGEND

|                        |                    |
|------------------------|--------------------|
| 1. Flood Hazard Areas  | (Shaded)           |
| 2. Flood Hazard Areas  | (Hatched)          |
| 3. Flood Hazard Areas  | (Dotted)           |
| 4. Flood Hazard Areas  | (Cross-hatched)    |
| 5. Flood Hazard Areas  | (Diagonal lines)   |
| 6. Flood Hazard Areas  | (Horizontal lines) |
| 7. Flood Hazard Areas  | (Vertical lines)   |
| 8. Flood Hazard Areas  | (Wavy lines)       |
| 9. Flood Hazard Areas  | (Stippled)         |
| 10. Flood Hazard Areas | (Solid black)      |



*Florida Department of Transportation*



# WITHLACOCHEE RIVER PROTECTION AREA

## WETLAND SOILS




### & FLOOD ZONE

T 21 S

T 22 S

T 23 S

#### LEGEND

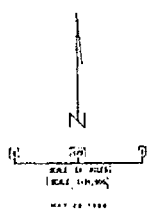
-  WETLAND SOILS
-  100 YEAR RIVERINE FLOOD ZONE
-  BASE FLOOD ELEVATION LINES

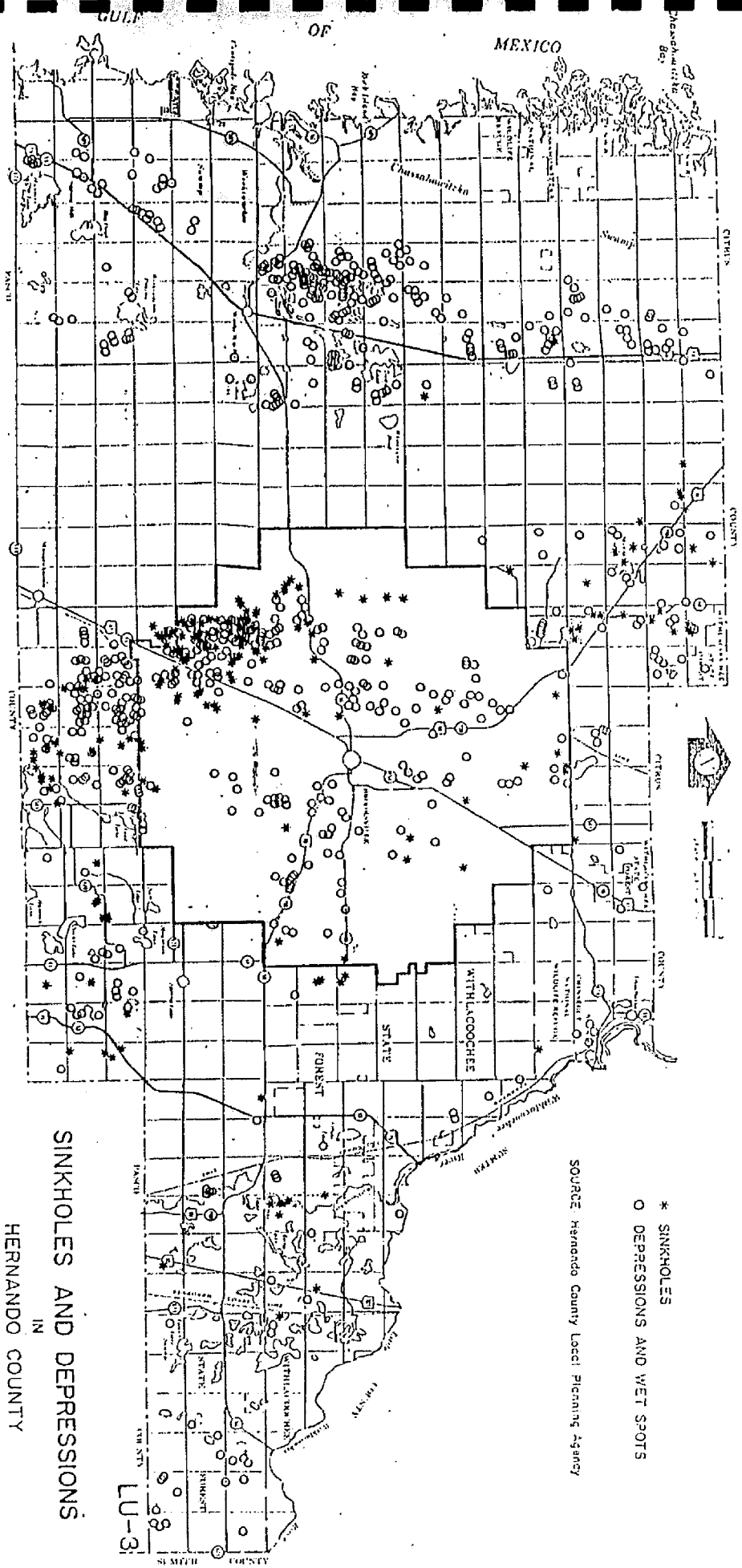
**WETLAND SOILS:** The soils shown upon this map are those soils identified in the National Engineering Survey No. 2, Soil Conservation Service, North Carolina, Raleigh, North Carolina, 1964, and the National Engineering Survey No. 2, Soil Conservation Service, Raleigh, North Carolina, 1964, and the National Engineering Survey No. 2, Soil Conservation Service, Raleigh, North Carolina, 1964.

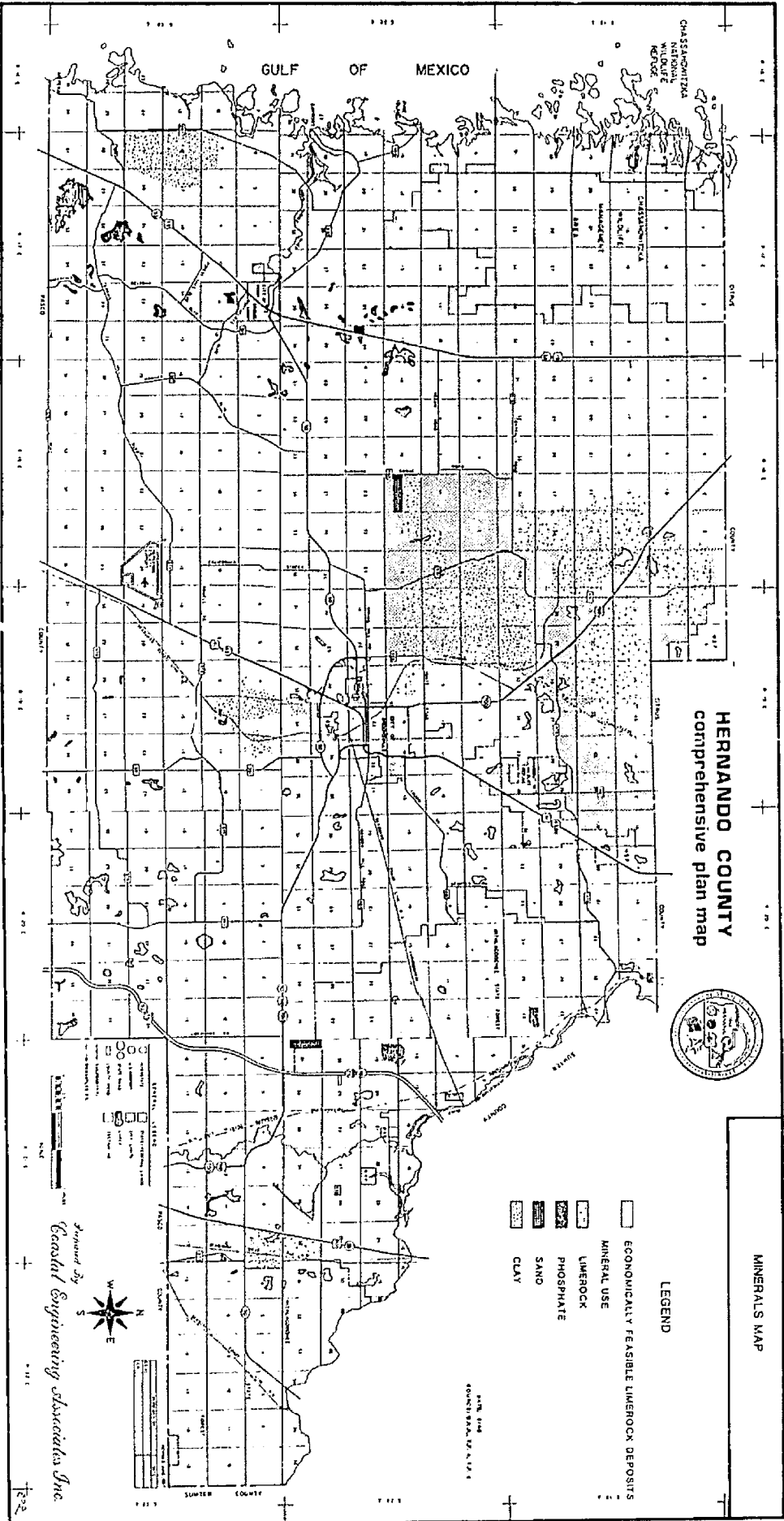
**FLOOD ZONE:** Information obtained from the Federal Emergency Management Agency (FEMA) - Flood Insurance Rate Map of 1974.

WITHLACOCHEE STATE FOREST

Prepared by  
Coastal Engineering Associates, Inc.







R 16 E

R 17 E

T 21 S

T 22 S

T 23 S

MEXICO

OF

GULF

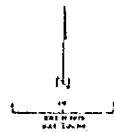
CHASSAHOVITZKA NATIONAL WILDLIFE REFUGE

### HERNANDO COUNTY COASTAL ZONE

COASTAL FEATURES MAP:

- REACHES, SHORES, BAYS, CHANNELS
- RIVERS, KEYS & POINTS

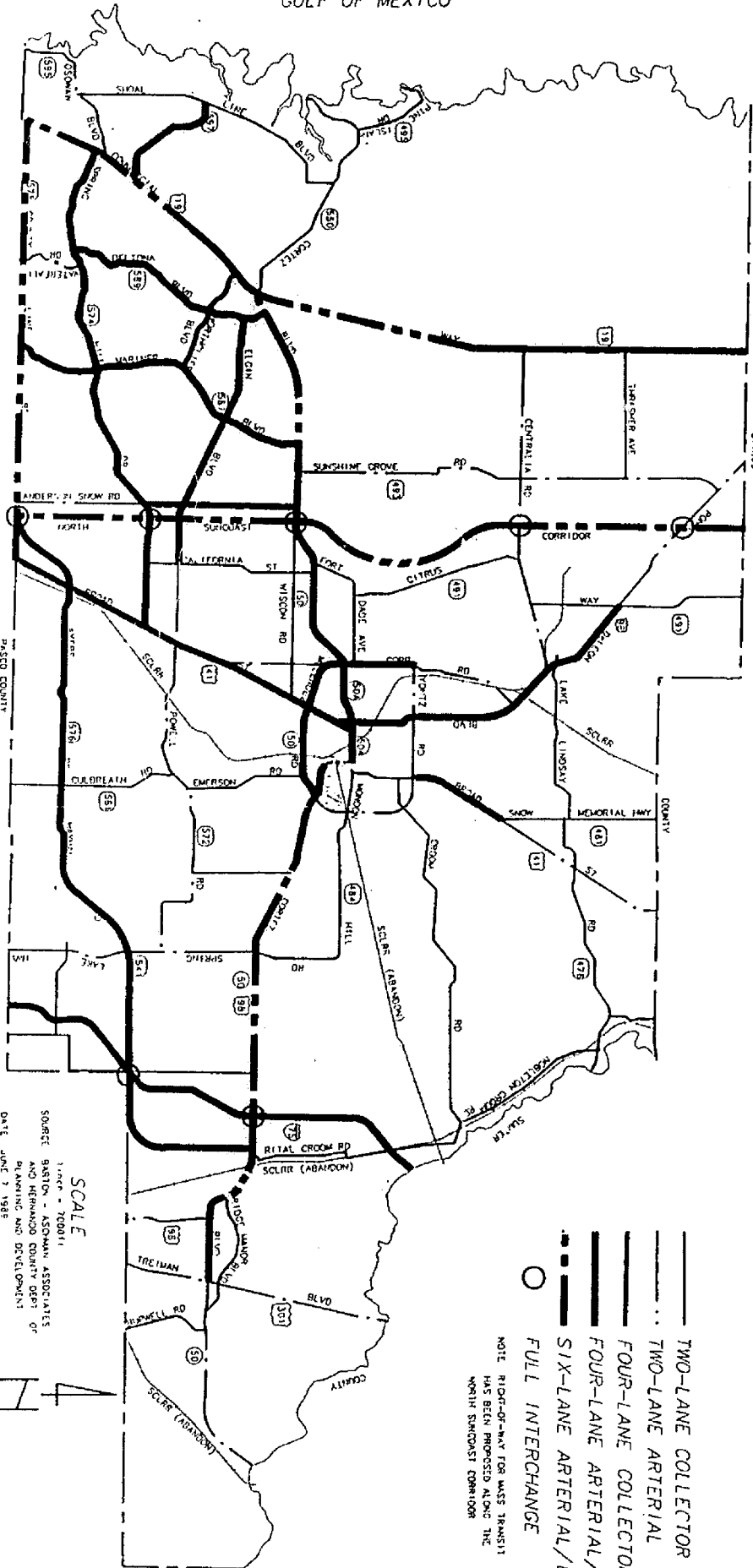
Prepared by  
Coastal Engineering Associates, Inc.





# HERNANDO COUNTY

## 2010 ROADWAY SYSTEM



- TWO-LANE COLLECTOR
- - - TWO-LANE ARTERIAL
- ==== FOUR-LANE COLLECTOR
- ==== FOUR-LANE ARTERIAL/EXP
- ==== SIX-LANE ARTERIAL/EXP
- FULL INTERCHANGE

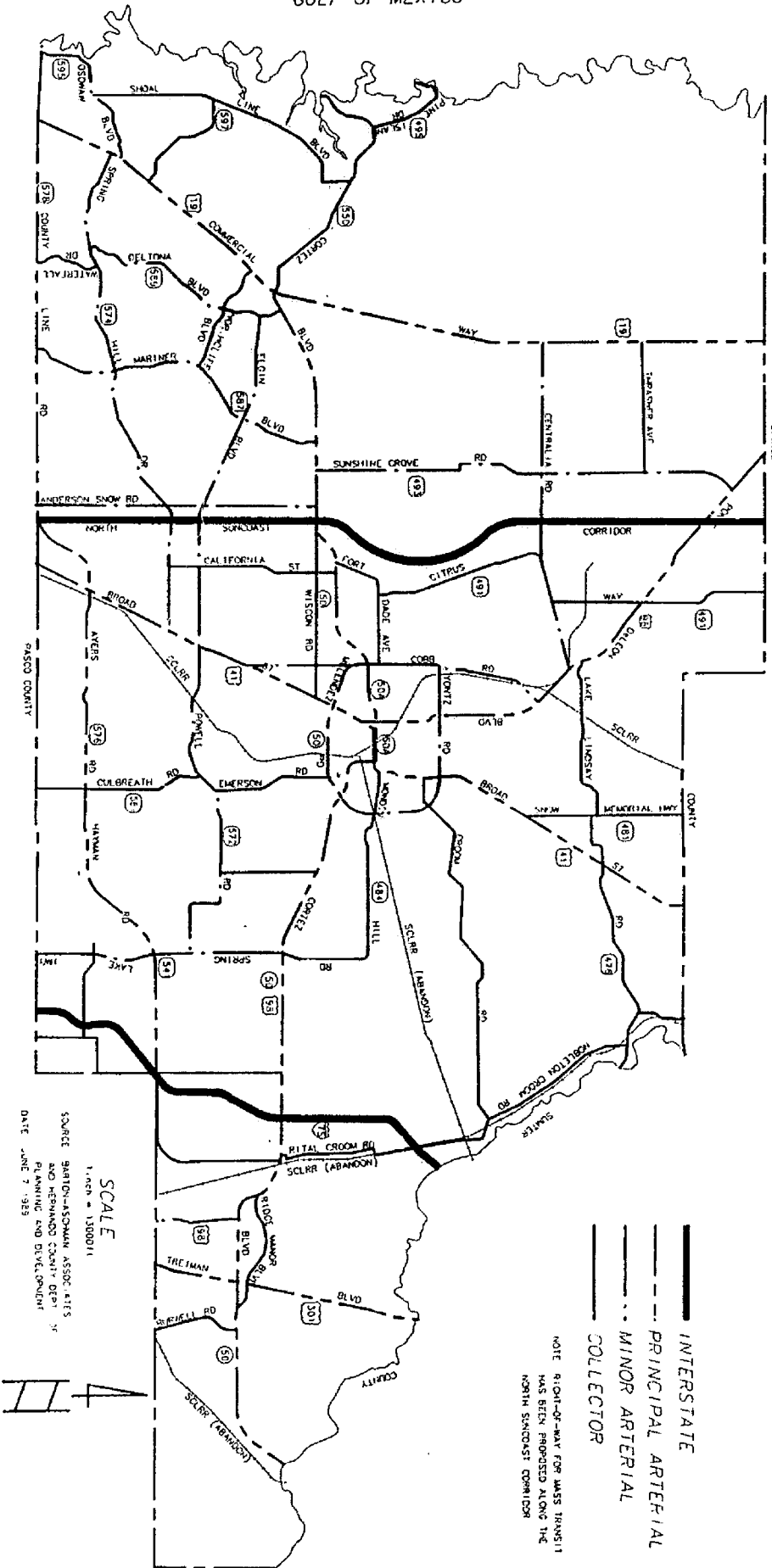
NOTE: RIGHT-OF-WAY FOR MASS TRANSIT HAS BEEN PROPOSED ALONG THE NORTH SUNGLOST CORRIDOR

SCALE  
1:10000  
SOURCE: BARTON - ASSOCIATES  
AND HERNANDO COUNTY DEPT. OF  
PLANNING AND DEVELOPMENT  
DATE: JUNE 7, 1988



# HERNANDO COUNTY

FUTURE ROADWAY FUNCTIONAL CLASSIFICATION



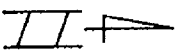
- INTERSTATE
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- COLLECTOR

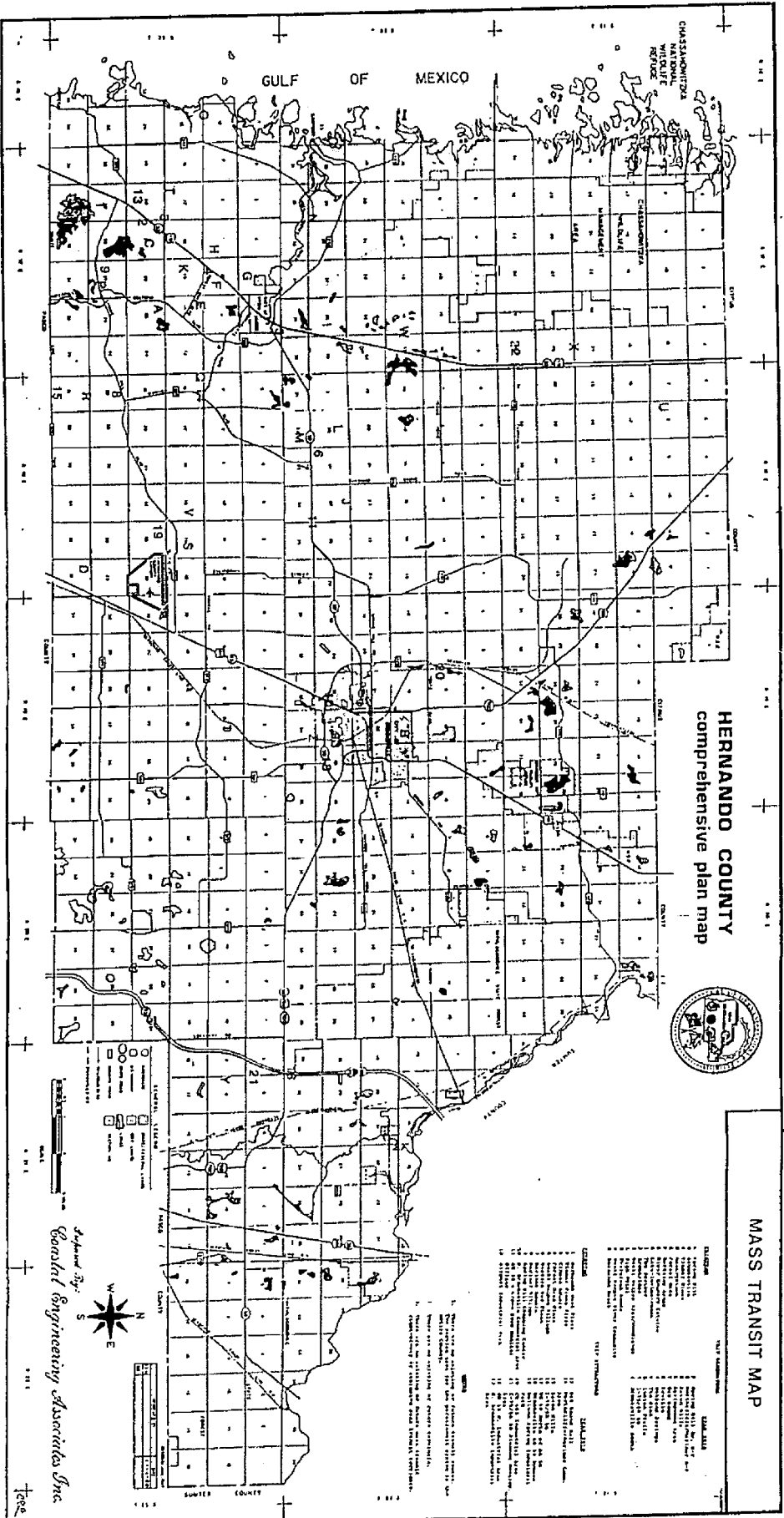
NOTE: RIGHT-OF-WAY FOR MASS TRANSIT HAS BEEN PROPOSED ALONG THE NORTH SUNCOAST CORRIDOR

SCALE  
1 inch = 13000 ft

SOURCE: SHATON-ASSMAN ASSOCIATES  
AND HERNANDO COUNTY DEPT. OF  
PLANNING AND DEVELOPMENT

DATE: JUNE 7, 1985





**HERNANDO COUNTY**  
comprehensive plan map

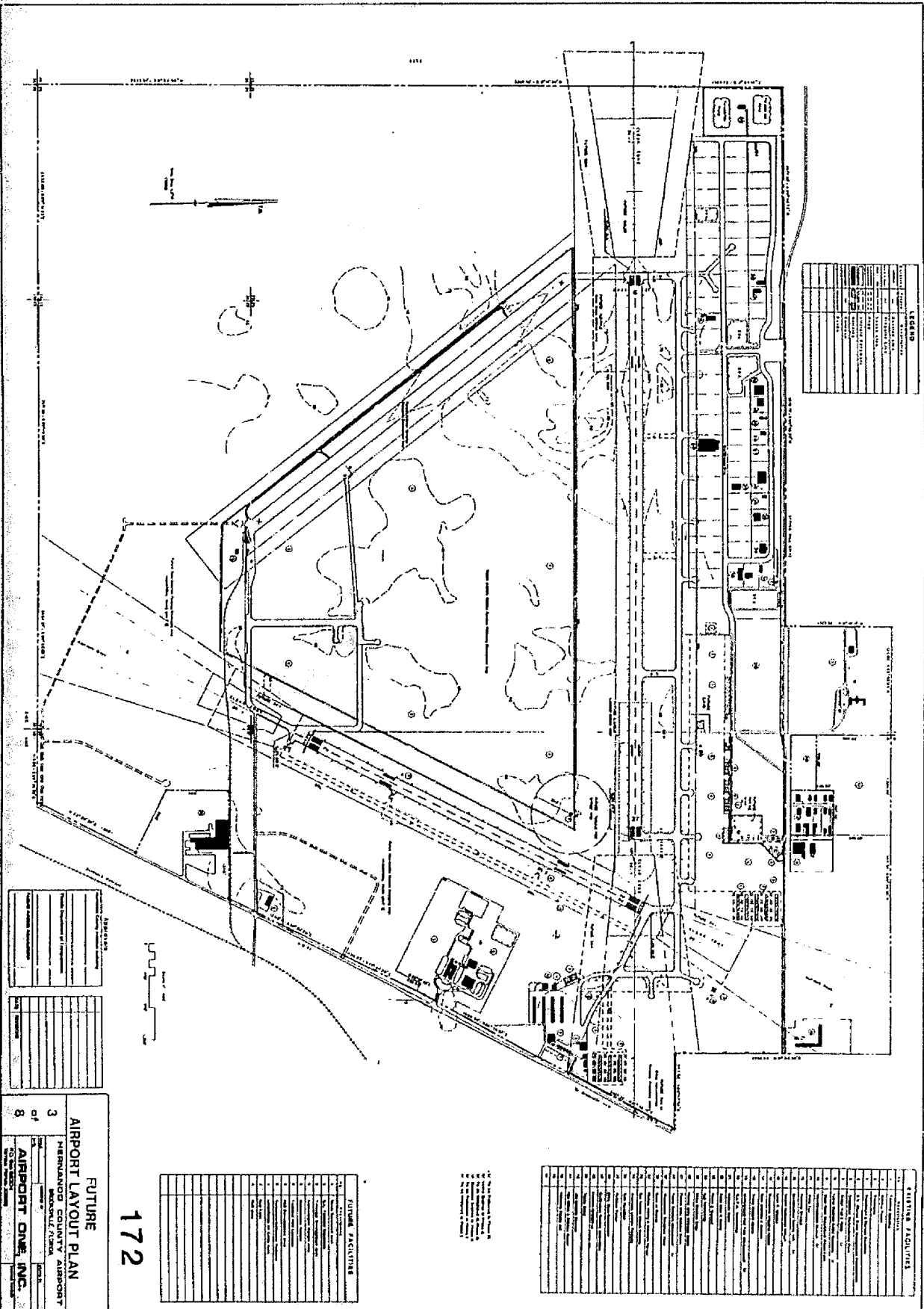


**MASS TRANSIT MAP**

- LEGEND**
- 1. Major Transit Corridor
  - 2. Transit Corridor
  - 3. Transit Station
  - 4. Transit Stop
  - 5. Transit Route
  - 6. Transit Area
  - 7. Transit Zone
  - 8. Transit District
  - 9. Transit Sector
  - 10. Transit Subsector
  - 11. Transit Microsector
  - 12. Transit Node
  - 13. Transit Hub
  - 14. Transit Center
  - 15. Transit Terminal
  - 16. Transit Station
  - 17. Transit Stop
  - 18. Transit Route
  - 19. Transit Area
  - 20. Transit Zone
  - 21. Transit District
  - 22. Transit Sector
  - 23. Transit Subsector
  - 24. Transit Microsector
  - 25. Transit Node
  - 26. Transit Hub
  - 27. Transit Center
  - 28. Transit Terminal

- LEGEND**
- 1. Major Road
  - 2. Road
  - 3. Street
  - 4. Alley
  - 5. Canal
  - 6. Waterway
  - 7. River
  - 8. Lake
  - 9. Bay
  - 10. Gulf of Mexico
  - 11. Airport
  - 12. Port
  - 13. Station
  - 14. Stop
  - 15. Route
  - 16. Area
  - 17. Zone
  - 18. District
  - 19. Sector
  - 20. Subsector
  - 21. Microsector
  - 22. Node
  - 23. Hub
  - 24. Center
  - 25. Terminal

*Prepared by:*  
**Beard Engineering Associates Inc.**



**LEGEND**

|     |                         |
|-----|-------------------------|
| 1   | EXISTING BUILDING       |
| 2   | EXISTING DRIVE          |
| 3   | EXISTING PAVEMENT       |
| 4   | EXISTING CURB           |
| 5   | EXISTING FENCE          |
| 6   | EXISTING UTILITY        |
| 7   | EXISTING TREE           |
| 8   | EXISTING SHrub          |
| 9   | EXISTING SAND           |
| 10  | EXISTING GRAVEL         |
| 11  | EXISTING ASPHALT        |
| 12  | EXISTING CONCRETE       |
| 13  | EXISTING GRADE          |
| 14  | EXISTING ELEVATION      |
| 15  | EXISTING DRAINAGE       |
| 16  | EXISTING FLOODPLAIN     |
| 17  | EXISTING WETLAND        |
| 18  | EXISTING WOODLAND       |
| 19  | EXISTING POND           |
| 20  | EXISTING STREAM         |
| 21  | EXISTING ROAD           |
| 22  | EXISTING RAILROAD       |
| 23  | EXISTING POWER LINE     |
| 24  | EXISTING TELEPHONE LINE |
| 25  | EXISTING WATER MAIN     |
| 26  | EXISTING SEWER MAIN     |
| 27  | EXISTING GAS MAIN       |
| 28  | EXISTING CABLE          |
| 29  | EXISTING SIGN           |
| 30  | EXISTING LIGHT          |
| 31  | EXISTING FURNITURE      |
| 32  | EXISTING LANDSCAPE      |
| 33  | EXISTING PLANTING       |
| 34  | EXISTING TREES          |
| 35  | EXISTING SHRUBS         |
| 36  | EXISTING GRASS          |
| 37  | EXISTING SOIL           |
| 38  | EXISTING ROCK           |
| 39  | EXISTING SAND           |
| 40  | EXISTING GRAVEL         |
| 41  | EXISTING ASPHALT        |
| 42  | EXISTING CONCRETE       |
| 43  | EXISTING GRADE          |
| 44  | EXISTING ELEVATION      |
| 45  | EXISTING DRAINAGE       |
| 46  | EXISTING FLOODPLAIN     |
| 47  | EXISTING WETLAND        |
| 48  | EXISTING WOODLAND       |
| 49  | EXISTING POND           |
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| 53  | EXISTING POWER LINE     |
| 54  | EXISTING TELEPHONE LINE |
| 55  | EXISTING WATER MAIN     |
| 56  | EXISTING SEWER MAIN     |
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| 58  | EXISTING CABLE          |
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| 70  | EXISTING GRAVEL         |
| 71  | EXISTING ASPHALT        |
| 72  | EXISTING CONCRETE       |
| 73  | EXISTING GRADE          |
| 74  | EXISTING ELEVATION      |
| 75  | EXISTING DRAINAGE       |
| 76  | EXISTING FLOODPLAIN     |
| 77  | EXISTING WETLAND        |
| 78  | EXISTING WOODLAND       |
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| 80  | EXISTING STREAM         |
| 81  | EXISTING ROAD           |
| 82  | EXISTING RAILROAD       |
| 83  | EXISTING POWER LINE     |
| 84  | EXISTING TELEPHONE LINE |
| 85  | EXISTING WATER MAIN     |
| 86  | EXISTING SEWER MAIN     |
| 87  | EXISTING GAS MAIN       |
| 88  | EXISTING CABLE          |
| 89  | EXISTING SIGN           |
| 90  | EXISTING LIGHT          |
| 91  | EXISTING FURNITURE      |
| 92  | EXISTING LANDSCAPE      |
| 93  | EXISTING PLANTING       |
| 94  | EXISTING TREES          |
| 95  | EXISTING SHRUBS         |
| 96  | EXISTING GRASS          |
| 97  | EXISTING SOIL           |
| 98  | EXISTING ROCK           |
| 99  | EXISTING SAND           |
| 100 | EXISTING GRAVEL         |

**EXISTING FACILITIES**

|    |                       |
|----|-----------------------|
| 1  | Terminal Building     |
| 2  | Control Tower         |
| 3  | Hangar                |
| 4  | Office Building       |
| 5  | Warehouse             |
| 6  | Garage                |
| 7  | Storage Building      |
| 8  | Restroom              |
| 9  | Waiting Area          |
| 10 | Security Checkpoint   |
| 11 | Baggage Claim         |
| 12 | Customs               |
| 13 | Immigration           |
| 14 | Information Kiosk     |
| 15 | First Aid Station     |
| 16 | Police Station        |
| 17 | Fire Station          |
| 18 | Medical Clinic        |
| 19 | Pharmacy              |
| 20 | Food Court            |
| 21 | Retail Store          |
| 22 | Car Rental            |
| 23 | Limousine Service     |
| 24 | Taxi Stand            |
| 25 | Public Transportation |
| 26 | Hotel                 |
| 27 | Restaurant            |
| 28 | Bar                   |
| 29 | Cafe                  |
| 30 | Gift Shop             |
| 31 | Bookstore             |
| 32 | Art Gallery           |
| 33 | Museum                |
| 34 | Theater               |
| 35 | Concert Hall          |
| 36 | Exhibition Space      |
| 37 | Conference Room       |
| 38 | Meeting Room          |
| 39 | Classroom             |
| 40 | Laboratory            |
| 41 | Library               |
| 42 | Archives              |
| 43 | Planetarium           |
| 44 | Observatory           |
| 45 | Planetarium           |
| 46 | Observatory           |
| 47 | Planetarium           |
| 48 | Observatory           |
| 49 | Planetarium           |
| 50 | Observatory           |

**FUTURE FACILITIES**

|    |                           |
|----|---------------------------|
| 1  | Runway                    |
| 2  | Taxiway                   |
| 3  | Apron                     |
| 4  | Perimeter Fencing         |
| 5  | Security Wall             |
| 6  | Access Road               |
| 7  | Drainage System           |
| 8  | Lighting System           |
| 9  | Signage                   |
| 10 | Landscaping               |
| 11 | Planting                  |
| 12 | Soil Remediation          |
| 13 | Rock Removal              |
| 14 | Sand Removal              |
| 15 | Gravel Removal            |
| 16 | Asphalt Removal           |
| 17 | Concrete Removal          |
| 18 | Grade Adjustment          |
| 19 | Elevation Change          |
| 20 | Drainage Improvement      |
| 21 | Floodplain Control        |
| 22 | Wetland Restoration       |
| 23 | Woodland Management       |
| 24 | Pond Dredging             |
| 25 | Stream Channelization     |
| 26 | Road Widening             |
| 27 | Railroad Relocation       |
| 28 | Power Line Relocation     |
| 29 | Telephone Line Relocation |
| 30 | Water Main Relocation     |
| 31 | Sewer Main Relocation     |
| 32 | Gas Main Relocation       |
| 33 | Cable Relocation          |
| 34 | Sign Relocation           |
| 35 | Light Relocation          |
| 36 | Furniture Relocation      |
| 37 | Landscaping Relocation    |
| 38 | Planting Relocation       |
| 39 | Trees Relocation          |
| 40 | Shrubs Relocation         |
| 41 | Grass Relocation          |
| 42 | Soil Relocation           |
| 43 | Rock Relocation           |
| 44 | Sand Relocation           |
| 45 | Gravel Relocation         |
| 46 | Asphalt Relocation        |
| 47 | Concrete Relocation       |
| 48 | Grade Relocation          |
| 49 | Elevation Relocation      |
| 50 | Drainage Relocation       |

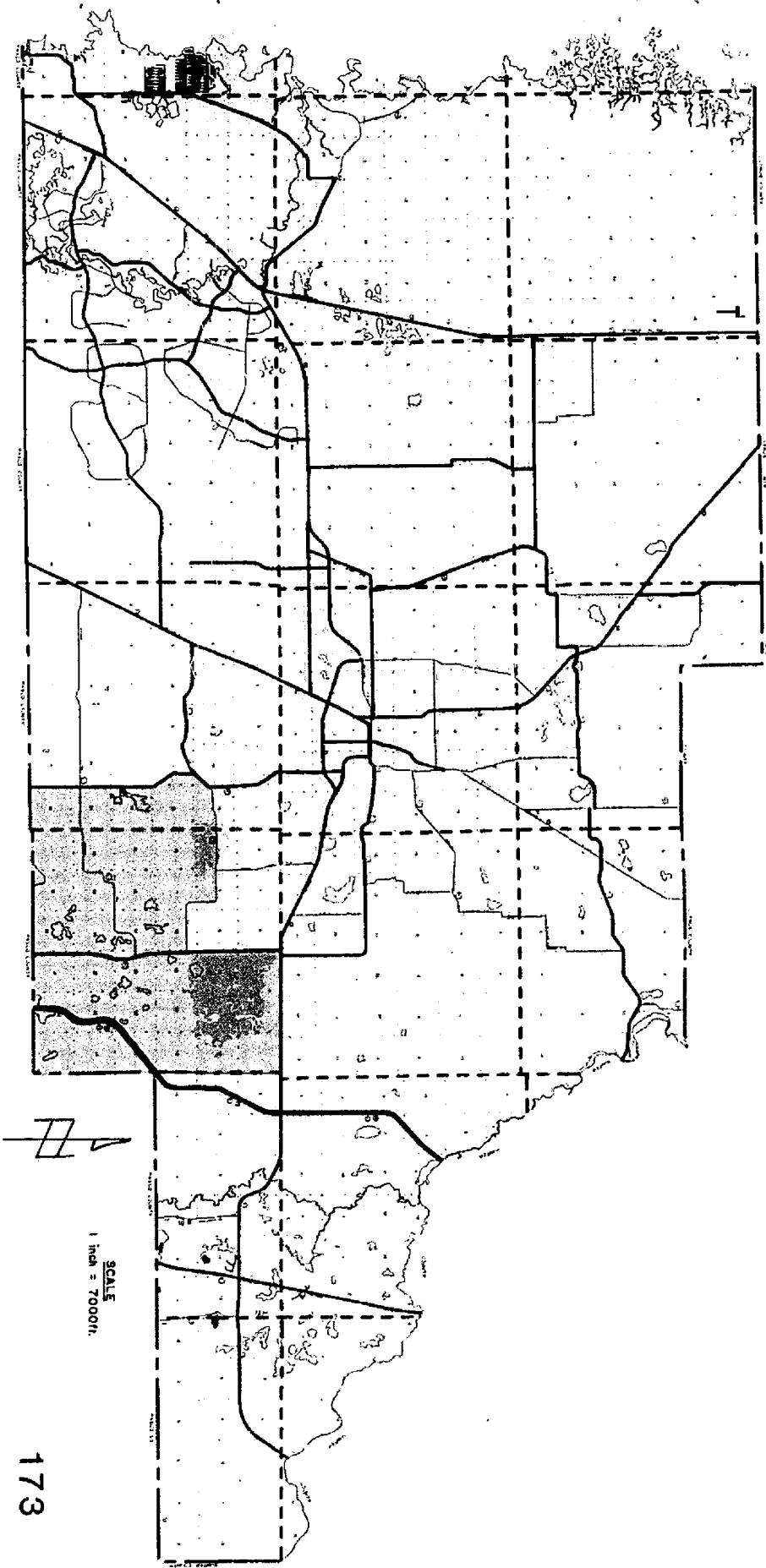
**ABBREVIATIONS**

|    |                           |
|----|---------------------------|
| 1  | Runway                    |
| 2  | Taxiway                   |
| 3  | Apron                     |
| 4  | Perimeter Fencing         |
| 5  | Security Wall             |
| 6  | Access Road               |
| 7  | Drainage System           |
| 8  | Lighting System           |
| 9  | Signage                   |
| 10 | Landscaping               |
| 11 | Planting                  |
| 12 | Soil Remediation          |
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| 46 | Asphalt Relocation        |
| 47 | Concrete Relocation       |
| 48 | Grade Relocation          |
| 49 | Elevation Relocation      |
| 50 | Drainage Relocation       |

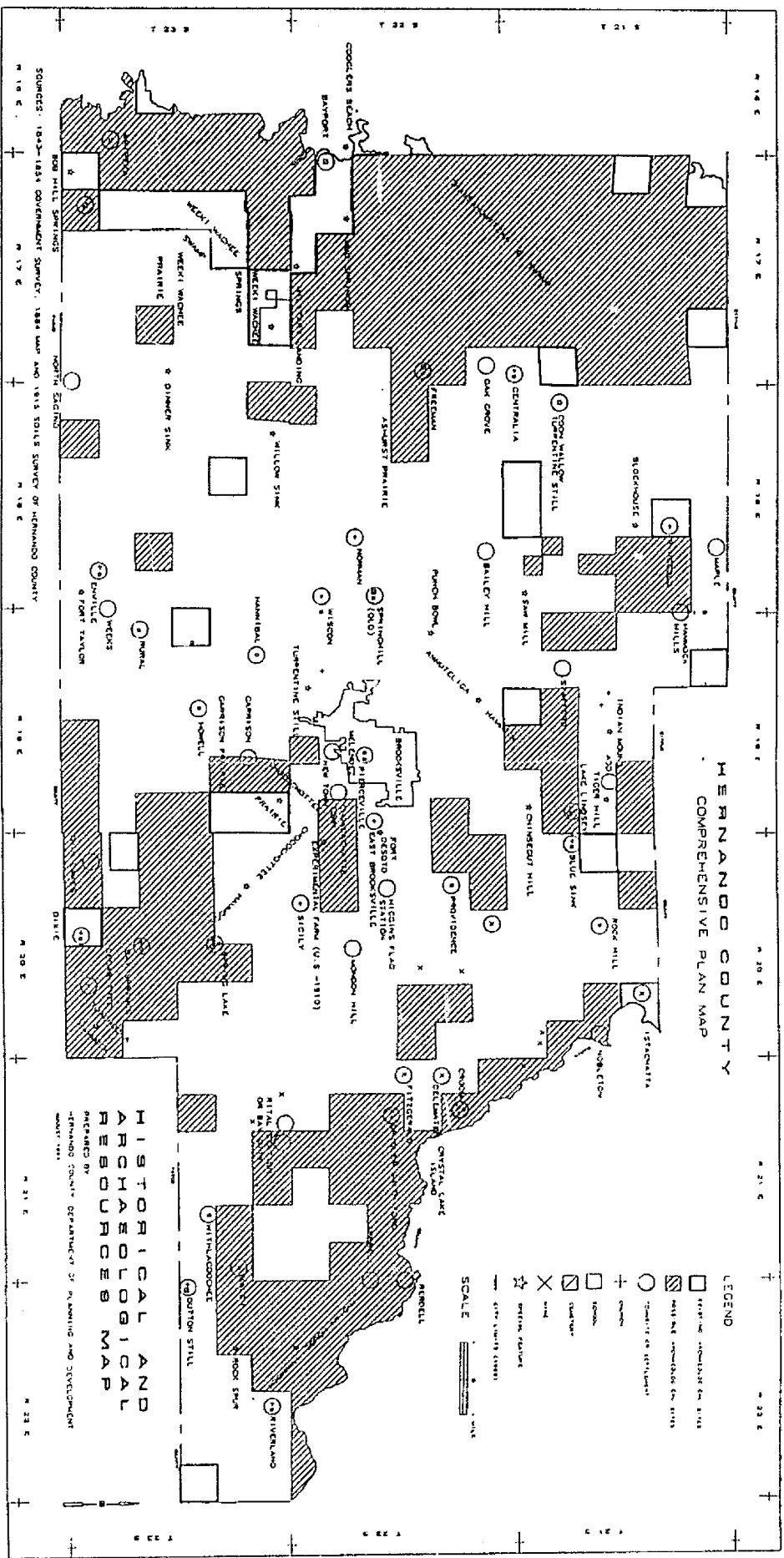
**FUTURE AIRPORT LAYOUT PLAN**  
 Merrimack County Airport  
 3 of 8  
**AIRPORT ONE, INC.**  
 172

# SOUTHEAST OVERLAY ZONE

PREPARED BY: HERNANDO COUNTY DEPARTMENT OF  
PLANNING AND DEVELOPMENT  
DATE: JUNE 7, 1995.



SCALE  
1 inch = 7000 ft.



HERNANDO COUNTY  
COMPREHENSIVE PLAN MAP

- LEGEND
- existing landmarks on site
  - ▨ existing landmarks on site
  - "remains of structure"
  - ⊕ mound
  - house
  - ▣ building
  - ✕ well
  - ☆ spring feature
  - river, stream, canal

SCALE 1" = 1 MILE

HISTORICAL AND  
ARCHAEOLOGICAL  
RESOURCES MAP  
PREPARED BY  
HERNANDO COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT  
MAY 1988

SOURCES: 1843-1845 GOVERNMENT SURVEY, 1884 MAP AND 1915 TOLLS SURVEY OF HERNANDO COUNTY



**ROD L. POMP CORPORATION**

*Res'd (Conrock) Ex-1*

- PLANNING
- ENGINEERING
- DESIGN
- SERVICES

# **CONROCK UTILITIES**

## **FEASIBILITY STUDY WATER SUPPLY SYSTEM**

**Hernando County, Florida**

FEASIBILITY STUDY

CONROCK UTILITIES POTABLE WATER SUPPLY SYSTEM

HERNANDO COUNTY, FLORIDA

Project No. 88022

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FEASIBILITY STUDY

CONROCK UTILITIES:  
POTABLE WATER SUPPLY SYSTEM

LIST OF FIGURES

| <u>FIGURE NO.</u> | <u>TITLE</u>                                     |
|-------------------|--|
| III - 1           | Location of County                               |
| III - 2           | Service Area                                     |
| III - 3           | Major Subdivision - East<br>Central Service Area |
| IV - 1            | Proposed Water System                            |

FEASIBILITY STUDY

CONROCK UTILITIES  
POTABLE WATER SUPPLY SYSTEM

| <u>TABLE NO.</u> | <u>TITLE</u>  | <u>PAGE NO.</u> |
|------------------|---|-----------------|
| I - 1            | Unit Water Cost   | I - 4           |
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## SECTION I

### SUMMARY

This feasibility study was initiated at the request of Mark Williams, Trustee for S. A. Williams Trust and the proposed Conrock Utility Company, for the purpose of a proposed Potable Water Supply System, located in Hernando County, Florida.

The East Central Service Area is being created to service future needs anticipated and project by current growth patterns of Hernando County. It is intended, that this study will illustrate the feasibility of providing water for the area from a regional water supply facility. As a general purpose, this study is intended to form the basis of financial procedures for funding the project and establishing concepts for detailed hydrologic investigations and engineering design.

Population and water demand projections for the East Central Service Area are shown on the Master Plan. Population is expected to increase from approximately 5594 to 9368 by the year 2000. Water demand in the Service Area is expected to increase for the present 1.4 MGD average to daily demand to 2.3 MGD by the year 2000.

The impact of this report is directed to a area defined as the "East Central Regional Area", currently being served by small or site developed water systems. The water demand in the East Central Area is projected from a current level 1.3 MGD to 2.3

MGD in the year 2000. The need for a water supply is clearly indicated.

In this Proposed Plan, it is recommended that two existing wells, located on site, at the Hernando County site be used to facilitate the Water Supply System. Economic studies indicate that it will be cost effective to locate the treatment and storage facilities at the well site. Land is available at the existing site.

Total facility proposed for this project includes:

1. Two new 850 gpm wells, connecting piping and controls.
2. A new 500,000 gallon ground storage tank at the well field site.
3. Two 1,000 gpm high service pumps, standby engine, chlorination facilities and automatic controls, constituting what is referred to as treatment plant, also located at the well field site.
4. A 20 inch water transmission main from the water plant site to and along Mondon Hill Road to WPA Road.
5. A 12 inch water main along Cortez Boulevard (SR 50).

Three alternatives are being presented for consideration by Conrock Utilities. The alternatives relate to the division of the work as noted in the following descriptions:

Alternative No. I - The construction of well fields and interconnecting pipe, only.

Alternative No. II - The construction of the well fields and treatment facilities (including storage).

Alternative No. III - The construction of the well field, treatment facilities and the 20 inch water transmission to WPA Road, and throughout service area.

The project cost and the total funding requirements for the three alternatives were estimated as follows:

1. Commercial Finance

| For Alternative No.                  | <u>I</u> | <u>II</u> | <u>III</u>  |
|--------------------------------------|----------|-----------|-------------|
| Project Construction and Engineering | 409,400  | + 507,100 | + 3,380,900 |
| Total Funding Requirement            | 580,400  | + 645,100 | + 3,412,600 |

2. Industrial Bonds

| For Alternative No.                  | <u>I</u> | <u>II</u> | <u>III</u>  |
|--------------------------------------|----------|-----------|-------------|
| Project Construction and Engineering | 409,400  | + 570,100 | + 3,380,900 |
| Total Funding Requirement            | 580,400  | + 645,100 | + 3,412,600 |

Unit water cost were developed on the basis of revenues required to repay project loans and to defray operation and maintenance cost, using the several alternatives and financing

plans. Unit water cost will vary widely depending on the amount of water sold. For discussion purposes, unit water cost were developed on the basis of the sale of 0.50 MGD, 1.0 MGD and 2.0 MGD. A summary of theoretical unit water cost for all of these variables is given in the following table:

TABLE I-1 - UNIT WATER COSTS

| <u>Type of Loan</u>            | <u>Unit Cost of Water Per 1,000 Gallons</u> |           |            |
|--------------------------------|---|-----------|------------|
|                                | <u>I</u>                                    | <u>II</u> | <u>III</u> |
| <u>Alternative No.</u>         |   |           |            |
| <u>A. Commercial Financing</u> |   |           |            |
| For 0.5 MGD sales              | 0.74  | 1.40      | 1.70       |
| For 1.0 MGD                    | 0.33  | 0.67      | 0.81       |
| For 2.0 MGD                    | 0.22  | 0.44      | 0.53       |
| <u>B. Industrial Bonds</u>     |   |           |            |
| For 0.5 MGD sales              | 0.44  | 0.84      | 1.08       |
| For 1.0 MGD                    | 0.27  | 0.58      | 0.68       |
| For 2.0 MGD                    | 0.19  | 0.39      | 0.48       |

The following table clearly illustrates that the price of water depends on all of the variable, but hinges on the amount of water sold. Any project loans on bond issues will require security for the revenue stream in the form of a water purchase contract setting forth a guaranteed average daily purchase.

Specific conclusions and recommendations are included in Section VI. The recommendations are briefly summarized as follows:

1. Plan for a regional water supply concept.
2. Seek financial aid in the form of grants and loans.
3. Set a schedule for implementation of the project, with PSC concurrence.
4. Indicate preference for Alternative No. 1, based on the Engineering recommendations.
5. Take steps to initiate funding procedures.
6. Authorize permitting procedures and initiate testing of existing wells, design and construction.

This report has been compiled with the assistance of the following persons or agencies:

1. The Withlacoochee Regional Water Supply Authority, its staff and consultants.
2. The Hernando County governing body, and its staff.
3. The Southwest Florida Water Management District, and its staff.
4. The Florida Department of Environmental Regulations.



The cooperation and assistance from those noted has helped to make this report possible.

Respectfully submitted,

ROD L. POMP CORPORATION

SECTION II  
INTRODUCTION

A. PURPOSE AND SCOPE

The purpose of this study is to define a program of construction and operation of raw water supply facilities to serve a portion of the water needs of Hernando County's East Central Service Area.

The proposed facility would utilize two existing wells located on the Mondon Hill Road project site, where hydrologic, environmental and practical considerations have been found to be optional for project conditions.

As a general overall purpose, this study is intended to form the basis for financing procedures for funding the project and for establishing concepts for subsequent detailed design and permitting.

The scope of this study has been defined to include the following:

- Estimate operating and maintenance costs.
- Review alternative methods of funding in general.
- Estimate required revenues and possible user charges.
- Establish the fiscal feasibility of the project for funding purposes.
- Make specific recommendations for implementation of the project.

The preparation of this study has entailed:

- Collection of topographic, highway, ownership and other maps.
- Coordination with hydrological, legal and financial consultants.
- Application of hydraulic and engineering principals in preliminary sizing, routing, and selection of facilities.
- Preparation of preliminary estimates of cost, using current unit prices for construction.
- Preparation of preliminary estimates of cost of operation and maintenance.
- Selection of cost effective preferred alternatives.
- Consideration of relative merits of basic funding concepts.
- Analysis and application of contract terms.
- Organization and presentation of data and findings of this report.

## SECTION III

### WATER REQUIREMENTS

#### A. SERVICE AREA

The planning area is the East Central Service Area in Hernando County, Florida.

Hernando County is located on the west coast of Florida, approximately 38 miles north of Tampa and 60 miles west of Orlando. It is bounded by Citrus County to the North; Sumter County on the East; Pasco County on the South; and the Gulf of Mexico on the West. The geographic center of the county is located near the City of Brooksville. It is also the County seat and is the only major incorporated area in the County. The location of the County is shown on Figure III-1.

Hernando County is typically a rural County with forested areas, agricultural and wetlands representing more than two-thirds of the present land use. Ten percent of the present land use is residential. However, development is occurring in the Southwest and North Central County, with medium and high density residential, along with major transportation routes.

The East Central Service area is now experiencing growth due to the new proposed Growth Management Plan, as required by the

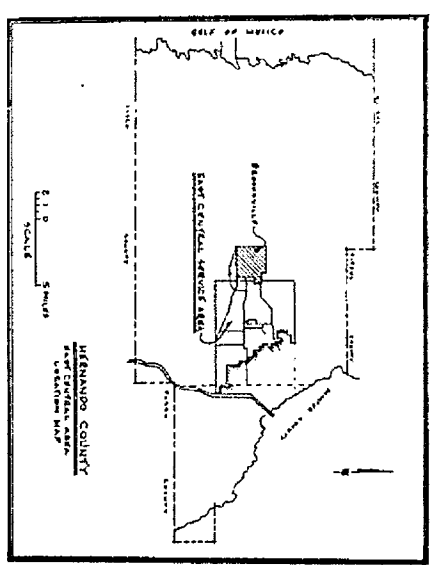
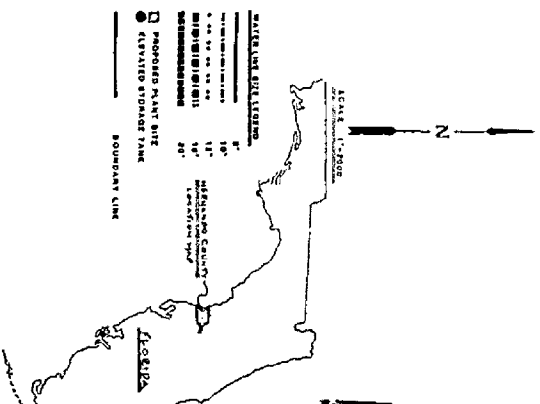
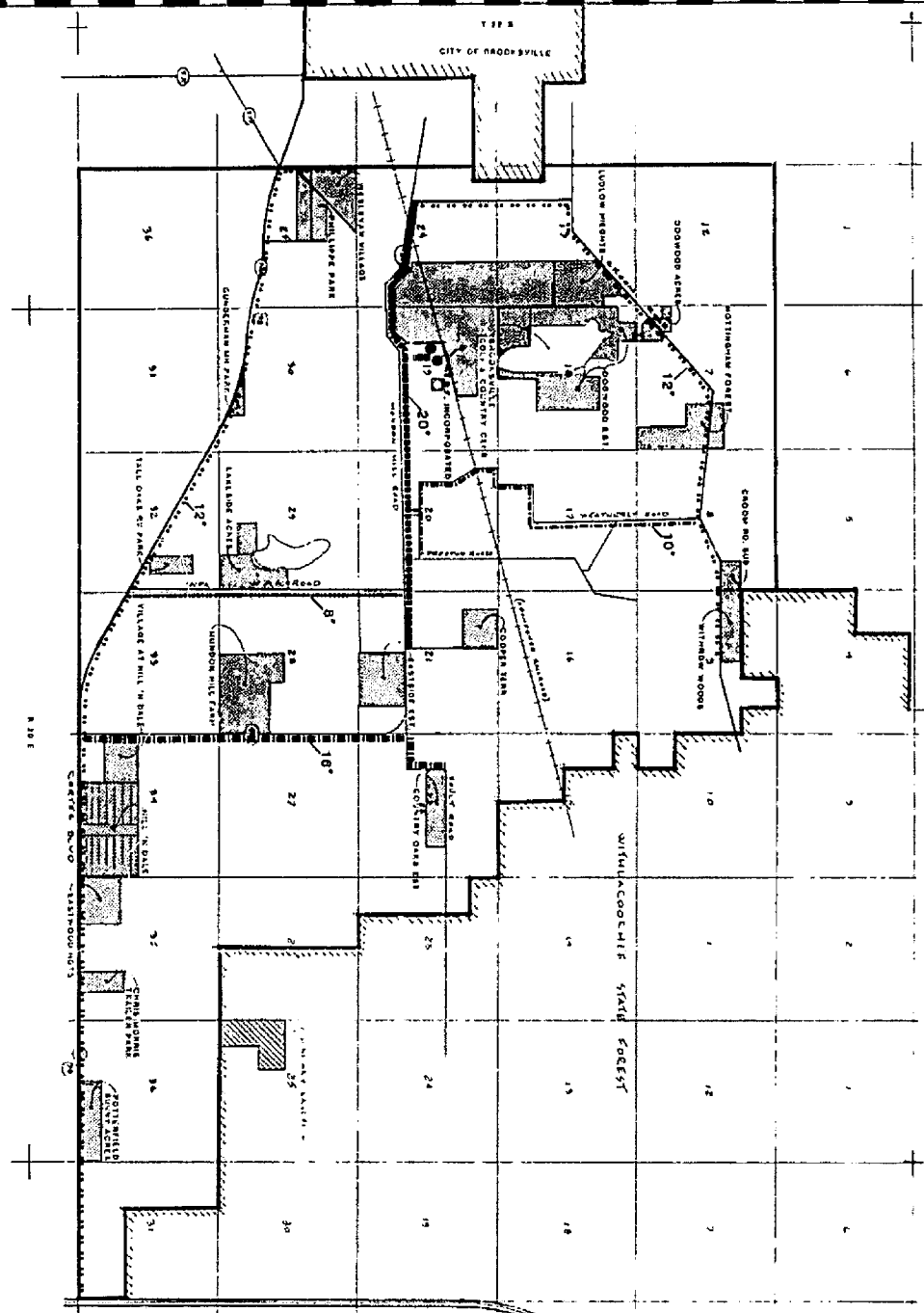
State of Florida. In this plan the East Central Area is being proposed for Regulated Residential Development having support facilities located along the major transportation route system.

The Residential Land Use is being concentrated in the eastern and western area of the East Central Service Area. The current residential development as it now exists is within one mile from Brooksville and contiguous to interstate I-75 and State Route 50 interchange. The economic base is primarily supported from the commercial and industrial area of Brooksville.

The East Central Service Area is located as shown on Figure III-2. This area comprises 25 square miles and contains 21 plotted subdivisions.

A summary of the subdivisions served or proposed to be served in the East Central Service Area shown in Table III-1. Major subdivisions are listed in Table III-2 and shown in Figure III-3.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36



- WATER LINE DUAL SYSTEM
- SEWER LINE
- PROPOSED PLANT SITE
- ELEVATED STORAGE TANK
- BOUNDARY LINE

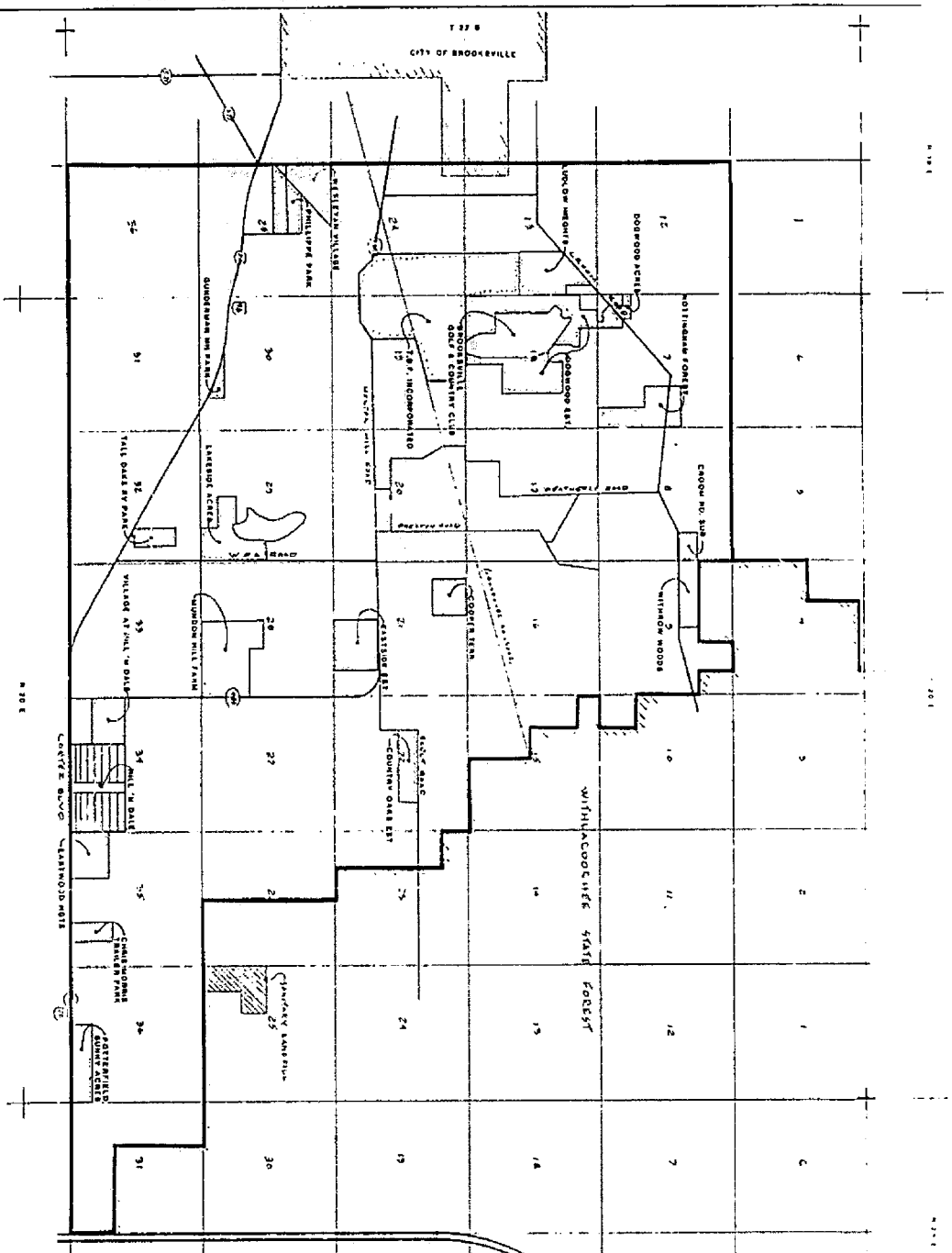
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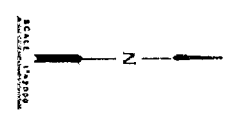
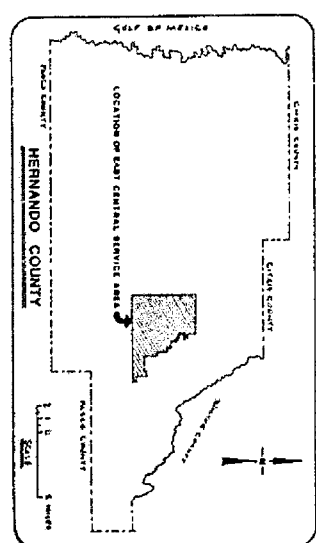
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11/1/71

CONROCK UTILITIES  
PROPOSED WATER SYSTEM  
EAST CENTRAL SERVICE AREA



**EAST CENTRAL SERVICE AREA  
25 SQUARE MILES**



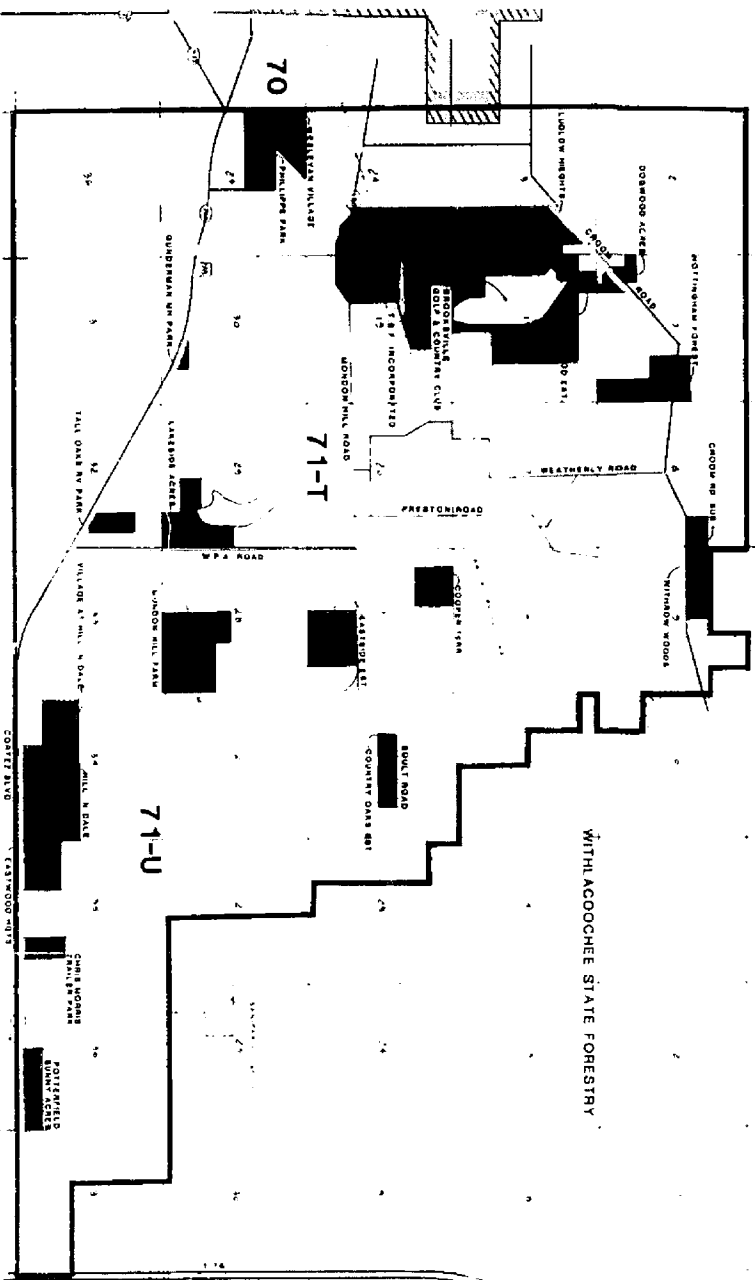
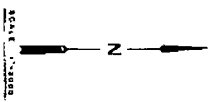
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DADE CITY, FLORIDA 33525-1177

REGISTERED & APPROVED  
PROFESSIONAL ENGINEERS  
FL CERTIFICATE # 24747

|         |                           |
|---------|---------------------------|
| OWNER   | CONDUCK UTILITIES         |
| PROJECT | EAST CENTRAL SERVICE AREA |
| DATE    | 11-2                      |



| MAJOR SUBDIVISION        | # OF LOTS | DENSITY |
|--------------------------|-----------|---------|
| CHINA BONA TALKER PARK   | 80        | 400     |
| COUNTRY OAKS ESTATE      | 80        | 72      |
| COOK MOSS SUBDIVISION    | 11        | 11      |
| DORRWOOD ESTATE          | 207       | 180     |
| EASTWOOD ESTATE          | 84        | 84      |
| EASTWOOD HEIGHTS         | 48        | 48      |
| HILL & DALE HOME PARK    | 31        | 31      |
| LANESWOOD ACRES          | 128       | 128     |
| LOWDOWN HEIGHTS          | 122       | 27      |
| MOTTERSWAY FOREST        | 46        | 46      |
| MOTTERSWAY FOREST        | 46        | 46      |
| POTTERSFIELD BUNNY ACRES | 71        | 71      |
| PRESTON PARK PARK        | 21        | 21      |
| TALL OAKS WAY PARK       | 12        | 12      |
| VILLAGER AT HILL & DALE  | 87        | 87      |
| 12.1 INCORPORATED        | 82        | 82      |
| VILLAGER AT HILL & DALE  | 82        | 82      |
| WELLSFARM VILLAGE        | 88        | 88      |
| WINDYWOOD                | 88        | 88      |
| WINDYWOOD                | 88        | 88      |

**COLOR LEGEND**

BLVD BOUNDARY LINE  
 YELLOW EXHIBITION DISTRICT  
 GREEN HOUSING DISTRICT  
 WHITE UNLAWFUL DEVELOPMENT

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 ENGINEERING  
 CONSTRUCTION MANAGEMENT  
 GRAPHICS & DESIGN SERVICES

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 212 SOUTH 10TH STREET, NORMAL, ALABAMA  
 36050 CITY, FLORIDA 36689 1112

EXAMINED & APPROVED  
 PROFESSIONAL ENGINEER  
 6487 CENTRAL AVENUE  
 TALLAHASSEE, FLORIDA 32310

CONROCK UTILITIES  
 11-3

CONROCK UTILITIES  
 11-3

FLORIDA COUNTY 1988 CENSUS STATISTICAL DISTRICTS

| TRACT NO. | TRACT AREA (AC) | TRACT PERCENT OF TOTAL | TRACT POPULATION | TRACT DENSITY |
|-----------|-----------------|------------------------|------------------|---------------|
| 70        | 5.18            | 1.74                   | 883              | 171           |
| 71-T      | 7.13            | 2.20                   | 188              | 26            |
| 71-U      | 1.61            | 0.51                   | 780              | 484           |
| TOTAL     | 13.92           | 4.25                   | 1751             | 125           |



TABLE NO. III-1  
EAST CENTRAL SERVICE AREA  
SUBDIVISIONS PROPOSED TO BE SERVED BY  
THE CONROCK UTILITY SYSTEM

| <u>Name</u>                        | <u>No. of Lots</u> |
|------------------------------------|--------------------|
| Chris Morris Trailer Park          | 80                 |
| Cooper Terrace                     | 416                |
| Country Oaks Estates               | 80                 |
| Crown Road Subdivision             | 11                 |
| Dogwood Acres                      | 10                 |
| Dogwood Estates                    | 207                |
| Eastwood Heights                   | 48                 |
| Eastside Estates                   | 56                 |
| Gunderman Mobile Home Park         | 28                 |
| Hill 'N Dale                       | 331                |
| Lakeside Acres                     | 135                |
| Ludlow Heights                     | 182                |
| Mundon Hill Farm                   | 188                |
| Nottingham Forest                  | 80                 |
| Potterfield Sunny Acres            | 32                 |
| Phillippe Park                     | 71                 |
| Tall Oaks RV Park                  | 131                |
| Village at Hill 'N Dale            | 85                 |
| Wesleyan Village                   | 48                 |
| Withrow Woods                      | 24                 |
| T.B.F., Incorporated (development) | 657                |
| <br>                               |                    |
| TOTAL DEVELOPED LOTS               | 2,840              |

TABLE III-2

MAJOR SUBDIVISIONS IN THE EAST CENTRAL  
SERVICE AREA

| <u>Subdivision Name</u>            | <u>No. of Lots</u> |
|------------------------------------|--------------------|
| Dogwood Estates                    | 207                |
| Dogwood Acres                      | 10                 |
| Nottingham Forest                  | 60                 |
| Hill 'N Dale                       | 331                |
| Eastside Estates                   | 58                 |
| Mundon Hill Farm                   | 188                |
| T.B.F., Incorporated (development) | 657                |

B. POPULATION AND WATER DEMAND

Population estimates and water demand projections were presented in the Master Water Plan for Hernando County. In Section IV of Hernando County Master Plan, projections were given for the six service areas. These numbers represented totals for the service areas, including population not served by other systems. In Section VII of Hernando County Master Plan, population and water demand projections were given for the specific areas served or proposed to be served.

Population projections were developed from U.S. Census population for enumeration districts and on Certificate of Occupancy issued within the districts in 1982, 1983 and 1984. The potential population was based on the total number of platted homesites using an average occupancy of 2.2 residents per housing unit.

Water demand projections were based on historical data in the County that indicated an average per capita use in residential areas of 109 gpcd. Maximum day consumption was estimated at 200 percent of the average daily usage.

Based on the above methods and criteria, the populations and water demand projections for the East Central areas were estimated as shown in Table III-3.

**TABLE III-3**  
**East Central Service Area**  
**Water Demand Projections \***

Total Service Area

| <u>Year</u> | <u>Population</u> | <u>Demand</u> |
|-------------|-------------------|---------------|
| 1986        | 5,594             | 1.4           |
| 1990        | 6,530             | 1.6           |
| 1995        | 7,983             | 1.9           |
| 2000        | 9,368             | 2.3           |
| 2010        | 11,809            | 2.9           |

Potential

\* The water demands shown are given in terms of average daily usage in MGD.

The above numbers indicate an average daily use for the East Central Service Area of 2.3 MGD in the year 2000. This translates into a maximum demand of 2.9 MGD. The stated

effective capacity is anticipated at 3.33 MGD. These numbers clearly indicate the need for additional water supply facilities, even if all of the present water supplies were acceptable. Data and information presented in the County's Master Plan pointed to the need for phasing out some of the water supply facilities do to functional obsolescence.

SECTION IV  
PROPOSED WATER FACILITIES

A. CRITERIA

In selection of a design period for preliminary design of proposed facilities, a balance must be struck between the uncertainties of long-range populations and the practical need to design facilities which will not require replacement or duplication in the foreseeable future. In this study, the year 2010 has been selected as the maximum for which any reasonable estimates can be made. Pipelines have been designed with consideration for the projected needs to the year 2010 because expansion of pipeline capacities is difficult. On the other hand, facilities such well fields, storage, treatment and pumping facilities are more readily expanded. Therefore, the preliminary design of these facilities has been based upon projected needs to the year 2000. The piping between wells has been designed for the ultimate expansion of the well field as proposed.

All proposed designs will be subject to final hydrologic analysis criteria in the following five water quality parameters, including iron, chloride, sulfate, total dissolved solids and hydrogen sulfide.

These parameters were assessed in terms of the maximum contaminant levels (MCL) established by the Safe Drinking Water Act and Chapter 17-22 F.A.C.

The anticipated quality of water from the proposed well should be similar to those wells serving the City of Brooksville where minimal treatment is needed. The treatment plant will consist of storage, chlorination, pumping and metering facilities only. Auxiliary engines, chlorination equipment and controls should be housed for protection. Provision should be made for future expansion of well field and treatment facilities.

Water pipelines will be designed to safely withstand maximum system pressure and will be constructed of standard construction materials for the water works industry. Valves and fittings will be designed for the same conditions as the pipe to which they are attached.

#### B. PRELIMINARY DESIGN

The preliminary design of water supply facilities, proposed for this project, is based on anticipated development located within the proposed East Central Service Area. The recommended well field site and the proposed route of the connecting water mains are such that a portion of the water main must be considered a water distribution main.

The proposed water supply differs from that shown in Hernando County's Master Plan, in that it is now proposed to provide a treatment plant and storage at the well field located nearer to the City of Brooksville. The water mains transmit from the well field and treatment plant north the Croom Road, east along Mundon Hill to SR 50, and west return to the plant site.

The schematic layout of the proposed water supply facilities is shown on the attached drawing.

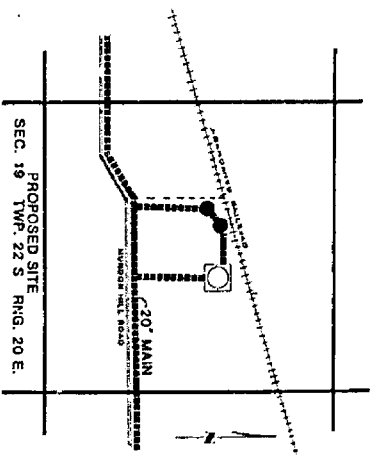
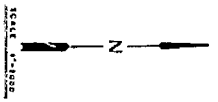
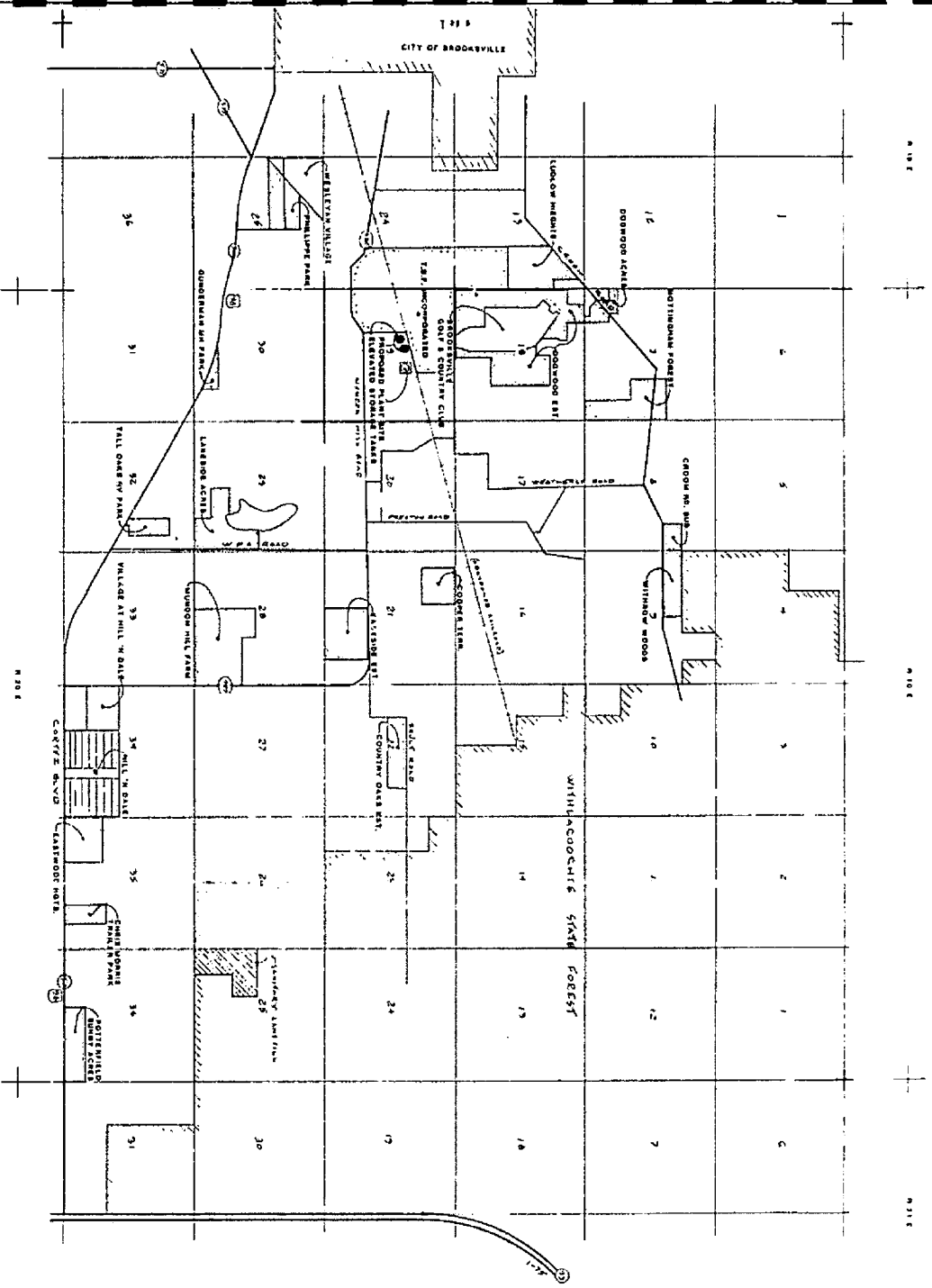
The components of the new facility are briefly described in Section I, page I-2 and I-3.

#### C. PRELIMINARY ESTIMATES

It should be clearly understood that the cost estimates which follow are preliminary, based on the conceptual design and construction criteria set forth in the preceding paragraphs of this Section. The estimates contain inflation allowances, based on current cost trends, intended to make them current through 1989, by which time construction bids can be received, if the proposed is diligently pursued and providing no obstacles are encountered. If bidding is delayed beyond March 1989, these estimates should be reviewed.

All estimates include an allowance for contingencies, engineering, surveillance of construction, right-of-way, and administration cost.





**PROPOSED WATER FACILITIES**



PLANNING  
ENGINEERING  
CONSTRUCTION MANAGEMENT  
CONTRACTING & DESIGN SERVICE



**ROD L. POMP CORPORATION**  
304-567-3085 OR 521-5610

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315 SOUTH 20<sup>TH</sup> STREET & HANCOCK AVENUE  
DADE CITY, FLORIDA 32827-1132



EXAMINED & APPROVED  
PROFESSIONAL ENGINEER  
IN CERTIFICATE #

CONROCK UTILITIES  
PROPOSED WATER FACILITIES  
W-1

TABLE IV-1  
PRELIMINARY COST ESTIMATE  
EAST CENTRAL SERVICE AREA  
HERNANDO COUNTY

A. WELL FIELD

|   |                  |
|---|------------------|
| 1. Well Pumps - 2 ea., 850 gpm                        | \$ 26,000.00     |
| 2. Well House Enclosures - 2 ea.                      | 22,000.00        |
| 3. Standby Engine for 1 well                          | 13,800.00        |
| 4. Automatic Switch over Equipment - 1 ea.            | 7,600.00         |
| 5. Meters and Telemetry Equipment                     | 31,400.00        |
| 6. Raw Water Mains                                    |                  |
| a. 16" Main - 1,100 ft.                               | 34,900.00        |
| b. 19" Main - 1,400 ft.                               | <u>56,000.00</u> |
| Subtotal  | \$ 191,700.00    |
| 7. Contingencies                                      | 24,000.00        |
| 8. Hydrologic Exploration, Testing                    | 122,000.00       |
| 9. Field Surveys                                      | 26,000.00        |
| 10. Engineering Design & Construction<br>Consultation | 31,400.00        |
| 11. Resident Construction Inspection                  | <u>14,300.00</u> |
| Subtotal - ENGINEERING AND CONSTRUCTION               | \$ 217,700.00    |
| 12. Other Start Up Costs                              |                  |
| a. Truck, tools and equipment                         | 46,000.00        |
| b. Land and Rights-of-way (est.)                      | 38,000.00        |
| c. Operating Capital - 3 mos.                         | <u>87,000.00</u> |
| Subtotal  | \$ 171,000.00    |
| TOTAL PROJECT FUNDING (A)                             | \$ 580,400.00    |

TABLE IV-1 (continued)  
PRELIMINARY COST ESTIMATE  
EAST CENTRAL SERVICE AREA  
HERNANDO COUNTY  
WATER SUPPLY FACILITIES

**B. WATER TREATMENT STORAGE AND PUMPING FACILITIES**

|     |   |                      |
|-----|---|----------------------|
| 1.  | Ground Storage Tank, (0.50 MG)<br>and Hydro-Tank    | \$ 278,000.00        |
| 2.  | High Service Pump & Chlor. Bldg.                    | 51,000.00            |
| 3.  | Auxiliary Engine for 1 H.S. Pump                    | 19,300.00            |
| 4.  | Automatic Switch Over Equipment (1 ea.)             | 7,200.00             |
| 5.  | High Service Pump Pressure Controls (2 ea)          | 6,000.00             |
| 6.  | High Service Pump - 2 ea. 1,000 gpm                 | 39,000.00            |
| 7.  | Chlorination Facilities and Enclosure               | 21,000.00            |
| 8.  | Meter and Accessories - 1 ea.                       | <u>13,000.00</u>     |
|     | Subtotal  | \$ 432,500.00        |
| 9.  | Contingencies                                       | \$ 47,000.00         |
| 10. | Field Surveys                                       | 18,900.00            |
| 11. | Engineering Design and Construction<br>Consultation | 41,000.00            |
| 12. | Resident Construction Inspection                    | 18,700.00            |
| 13. | Legal and Administrative                            | <u>12,000.00</u>     |
|     | Subtotal  | <u>\$ 137,600.00</u> |
|     | Subtotal-ENGINEERING AND CONSTRUCTION               | \$ 570,100.00        |

TABLE IV-1 (continued)  
PRELIMINARY COST ESTIMATE  
EAST CENTRAL SERVICE AREA  
HERNANDO COUNTY  
WATER SUPPLY FACILITIES

14. Other Start Up Costs:

|                             |              |
|-----------------------------|--------------|
| a. Tools and Equipment      | 8,000.00     |
| b. Land and Right-of-Way    | 21,000.00    |
| c. Operating Capital - 3 mo | 46,000.00    |
| Subtotal                    | \$ 75,000.00 |

TOTAL FUNDING REQUIREMENTS (B)           \$ 645,100.00

C. WATER TRANSMISSION MAINS

Part (1) - Treatment Plant to WPA Road

|                                    |               |
|------------------------------------|---------------|
| 1. Water Main - 20" - 12,000'      | \$ 360,000.00 |
| 2. Valve, Hydrants and Accessories | 27,000.00     |
| Subtotal                           | \$ 387,000.00 |

Part (2) \*\*\*\*\*

|   |               |
|---|---------------|
| 1. Water Main - 16" - WPA Road to Cortez<br>Boulevard - 11,000' | \$ 286,000.00 |
| 2. Valves, Hydrants and Accessories                             |               |
| 3. Jac. and Bore Mondon Hill Road at<br>Soul Road               | 9,700.00      |
| Subtotal  | \$ 295,700.00 |
| SUBTOTAL (Part 1 & 2)   | \$ 682,700.00 |

**TABLE IV-1 (continued)**  
**PRELIMINARY COST ESTIMATE**  
**EAST CENTRAL SERVICE AREA**  
**HERNANDO COUNTY**  
**WATER SUPPLY FACILITIES**

Part (3) \*\*\*\*\*

|   |                        |
|---|------------------------|
| 1. Water Main - 12" - I75 to West<br>Boundary of Section 25 - 80,700' | \$ 1,578,200.00        |
| 2. Valves, Hydrants and Accessories                                   | 78,000.00              |
| 3. Jack and Bore at 7 Locations along<br>Cortez Boulevard             | <u>43,000.00</u>       |
| Subtotal  | <u>\$ 1,699,200.00</u> |
| SUBTOTAL (Part 1, 2 & 3)  | \$ 2,381,900.00        |

Part (4) \*\*\*\*\*

|  |                      |
|--|----------------------|
| 1. Water Main - 12" from McEntyre to<br>Weatley Road - 30,000' | \$ 780,000.00        |
| 2. Valves, Hydrants and Accessories                            | 39,000.00            |
| 3. Jack and Bore at 5 Locations                                | 22,000.00            |
| 4. Contingencies   | 42,000.00            |
| 5. Field Surveys   | 28,000.00            |
| 6. Engineering Design and Construction<br>Consultation         | 52,000.00            |
| 7. Resident Construction Inspection                            | 21,000.00            |
| 8. Legal and Administrative                                    | <u>14,000.00</u>     |
| Subtotal   | <u>\$ 999,000.00</u> |
| Subtotal-ENGINEERING AND CONSTRUCTION<br>(Part 1, 2, 3 & 4)    | \$ 3,380,900.00      |

TABLE IV-1 (continued)  
PRELIMINARY COST ESTIMATE  
EAST CENTRAL SERVICE AREA  
HERNANDO COUNTY  
WATER SUPPLY FACILITIES

|                               |                        |
|-------------------------------|------------------------|
| 9. Other Start Up Cost:       |                        |
| a. Operating Capital - 3 mos. | 31,700.00              |
| <br>                          |                        |
| TOTAL FUNDING REQUIREMENT     | <u>\$ 3,412,800.00</u> |
| <br>                          |                        |
| GRAND TOTAL - PARTS A, B & C  | \$ 4,638,100.00        |

**TABLE IV-2**  
**COST SUMMARY**  
**PROJECT ALTERNATIVES**

**ALTERNATE NO. 1**

**Description: Well Field Only**

|                                       |                  |
|---------------------------------------|------------------|
| Construction and Engineering          | \$ 580,400.00    |
| Bond Insurance Premium                | 16,000.00        |
| Bond Counsel & Legal Fees             | 22,800.00        |
| Printing Official Statement and Bonds | 3,000.00         |
| Travel, Closing and Miscellaneous     | <u>6,000.00</u>  |
| Subtotal                              | \$ 628,200.00    |
| Interest During Construction          | \$ 73,000.00     |
| Debt Service Reserve                  | 29,000.00        |
| Underwriting Discount                 | <u>25,000.00</u> |
| TOTAL FUNDING AMOUNT                  | \$ 728,200.00    |
| Par Amount of Bonds                   | \$ 694,200.00    |
| Interest Earnings                     | <u>33,000.00</u> |
| TOTAL AMOUNT                          | \$ 728,200.00    |

**Assumptions:**

1. Thirty year insured bond @ 7.50 percent interest; only first three years bonds secured by user contracts.
2. Construction period of 18 months.
3. Debt service reserve = 1/2 year, P and I on Bonds.
4. Interest earning @ rate of 7.5 percent.
5. Underwriting discount @ 3.5 percent.

TABLE IV-2 (continued)

COST SUMMARY

PROJECT ALTERNATIVES

ALTERNATIVE NO. II

Description: Well Field, Treatment and Storage

|                                       |                  |
|---------------------------------------|------------------|
| Construction and Engineering          | \$1,225,500.00   |
| Bond Insurance Premium                | 33,700.00        |
| Bond Counsel & Legal Fees             | 48,000.00        |
| Printing Official Statement and Bonds | 8,000.00         |
| Travel, Closing and Miscellaneous     | <u>12,000.00</u> |
| Subtotal                              | \$1,325,200.00   |
| Interest During Construction          | \$ 154,000.00    |
| Debt Service Reserve                  | 61,000.00        |
| Underwriting Discount                 | <u>48,000.00</u> |
| TOTAL FUNDING AMOUNT                  | \$1,588,200.00   |
| Par Amount of Bonds                   | \$1,525,700.00   |
| Interest Earnings                     | <u>72,500.00</u> |
| TOTAL AMOUNT                          | \$1,588,200.00   |

Assumptions:

1. Thirty year insured bonds @ 7.5 percent interest; only first three years bonds secured by user contracts.
2. Construction period 18 months.
3. Debt Service Reserve = 1/2 year P and I on Bonds.
4. Interest Earnings @ 7.5 percent.
5. Underwriting Discount @ 3.5 percent.



TABLE IV-2 (continued)

COST SUMMARY

PROJECT ALTERNATIVES

ALTERNATIVE NO. III

Description: Well Field Treatment, Storage and Transmission

|                                       |                   |
|---------------------------------------|-------------------|
| Construction and Engineering          | \$4,638,100.00    |
| Bond Insurance Premium                | 128,000.00        |
| Bond Counsel & Legal Fees             | 182,000.00        |
| Printing Official Statement and Bonds | 9,000.00          |
| Travel, Closing and Miscellaneous     | <u>18,000.00</u>  |
| Subtotal                              | \$4,950,100.00    |
| Interest During Construction          | \$ 578,000.00     |
| Debt Service Reserve                  | 230,000.00        |
| Underwriting Discount                 | <u>180,000.00</u> |
| TOTAL FUNDING                         | \$5,963,100.00    |
| Par Amount of Bonds                   | \$5,498,100.00    |
| Interest Earnings                     | <u>477,000.00</u> |
| TOTAL AMOUNT                          | \$5,963,100.00    |

Assumptions:

1. Thirty year insured bonds @ 7.50 percent interest; only first three years bonds secured by user contracts.
2. Construction period 18 months.
3. Debt Service Reserve = 1/2 year, P and I on Bonds.
4. Interest Earning @ rate of 8.0 percent.
5. Underwriting Discount @ 3.0 percent.

D. OPERATION AND MAINTENANCE COSTS

Operation and maintenance costs were developed using data relating to the present Southwest Service Area annual cost and expense records from similar operations in Florida. Information relating specifically to the well fields, to treatment, storage and pumping, were extrapolated from the Hernando County water system audit and converted to unit cost utilized in preparing estimated operation and maintenance cost for this project.

It is recognized that Conrock Utilities have no vehicles, equipment or operating and maintenance personnel at this time. It may be economical for the Conrock Utility to contract for operation and maintenance services during its early years and until its gross operations warrant a full time staff.

Estimated operation and maintenance cost for the first year of operations are shown in Table IV-3.

**TABLE IV-3**  
**ESTIMATED OPERATION COSTS**  
**FIRST YEAR OF OPERATION**

Water Sold - M.G. per year

385

| <u>COST:</u>                  | I                   | II                  | III                 |
|-------------------------------|---------------------|---------------------|---------------------|
| Salaries and Benefits         | \$20,000.00         | \$30,000.00         | \$30,000.00         |
| Office Expenses               | 2,000.00            | 3,000.00            | 4,000.00            |
| System Maintenance and Repair | 3,000.00            | 8,000.00            | 11,000.00           |
| Vehicle Expense and Travel    | 3,000.00            | 3,500.00            | 7,500.00            |
| Telephone                     | 1,000.00            | 1,200.00            | 1,500.00            |
| Accounting and Billing        | 2,000.00            | 2,000.00            | 2,000.00            |
| Insurance                     | 3,000.00            | 8,000.00            | 9,000.00            |
| Professional Services         | 5,000.00            | 8,000.00            | 8,000.00            |
| Electric Power                | 18,500.00           | 44,000.00           | 44,000.00           |
| Chlorine                      | <u>-0-</u>          | <u>6,000.00</u>     | <u>6,000.00</u>     |
| <b>TOTAL OPERATING COST</b>   | <b>\$ 55,500.00</b> | <b>\$113,700.00</b> | <b>\$123,000.00</b> |

## SECTION V

### FINANCIAL CONSIDERATIONS

#### A. GENERAL

In general, water system facilities are mainly operated by public agencies and would be financed through a combination of several different means. They are as follows:

1. Issuance of general obligation bonds of the public agency, pledging to the bond-holder with full faith and credit of the public agency.
2. Issuance of water revenue bonds, pledging to the bond-holders a lien in net revenues.
3. Loans or grants from the Federal or State government.

In this area, Conrock Utilities, being a privately held corporation, only three (3) financial methods are known:

1. Loans by Financial Institutions.
2. Monies held by owners.
3. Industrial Bonds issued by a local governing authority.

In the case of Conrock Utilities, it is suggested that the Industrial Bond funding would be the most advantageous method of financing.

However, since Conrock Utilities is relatively new and has not been in the revenue producing operation to date, no funds have been accumulated for direct financing, either in total or

partially and may pose concerns to a local governmental indicating a reluctance in the issuance of any industrial bonds.

It may be possible for Conrock Utilities to obtain assistance from Commercial or Industrial Bonds, this avenue would require further research.

It is suggested that Conrock Utilities obtain services from a financial advisor to seek alternative methods of funding.

In this report, items listed as contingencies, included in Table V-1, are considered as safety factors necessary to ensure the solvency of the undertaking to present a service issue to prospective guarantees and purchasers of the bond issue.

Operation and maintenance costs and quantities of water sold are based on first year of operation, assuming start of operation commences in mid 1989.

For the purpose of this report, the quantity of water to be sold is purely a theoretical figure for derivation of illustrative unit water cost. The actual amount of water to be sold is a matter for negotiations, however, it is apparent that the sale price of water can vary widely depending on volume.

For the first illustration, an assumed number of 1.0 MGD was used for deriving unit costs. Other calculations were based on .05 MGD and 2.0 MGD. The resulting "Cost per 1,000 gallons" is

derived by dividing total revenue requirements by the projected quantity of water to be purchased. It is not intended that any contract for sale of water be based on such a unit price for water. This figure is shown to provide a means of comparison. The specific design of a system of fees and charges for use in contracts requires further analysis.

In order to amortize the project cost, it will be necessary that the purchasers of water from this system guarantee minimum annual payments sufficient to cover the fixed annual cost, including debt service, contingencies and those costs of operation and maintenance, which are independent of volume of water produced. It is recommended that a definition of these amounts be incorporated into any agreement for the purchase of water.

#### B. COMPARISONS

Several observations regarding the unit cost per 1,000 gallons, are note worthy. Since the fixed costs are independent of the amount of water sold and they represent by far the largest portion of the cost, the unit cost will decrease when water sales increase. The decrease in unit cost of water can occur as a result of increased water demand.

In the cost calculation provided in this study, the effects providing water outside of the service area has been ignored, since no major centralized distribution system currently exists for serving such customer.

It has been indicated in this report that Industrial Bonds maybe utilized. At this juncture, the availability of money or this interest rate and the procedure for acquiring such funds are unknown. However, in an effort to illustrate the positive effects of such funding, some trial calculations were made based on some assumed financing patterns.

TABLE V-1  
COMMERCIAL FINANCING  
PRELIMINARY ANALYSIS OF REQUIRED REVENUE  
FIRST YEAR OF OPERATION

| <u>Alternative Plan No.</u> | <u>I</u>      | <u>II</u>      | <u>III</u>     |
|-----------------------------|---------------|----------------|----------------|
| 1. Water Sold - (M.G.)/Yr.  | 365           | 365            | 365            |
| Project Funds Required      | \$628,200     | \$1,588,200    | \$5,983,100    |
| Par Amount of Bonds         | 694,200       | 1,525,700      | 5,486,100      |
| Annual Debt Service x 1.2   | 43,500        | 91,500         | 345,000        |
| Contingencies               | 8,000         | 16,000         | 28,000         |
| Annual O & M Cost           | <u>55,500</u> | <u>113,700</u> | <u>123,000</u> |
| Total Revenue Required      | \$107,000     | \$ 221,200     | \$ 496,000     |
| Cost per 1,000 gal.         | 0.29          | 0.60           | 1.59           |
| 2. Analysis With 0.50 MGD   |               |                |                |
| Water Cost                  |               |                |                |
| Per 1,000 gal.              | 0.21          | 0.44           | 0.99           |
| 3. Analysis With 2.0 MGD    |               |                |                |
| <u>Alternative Plan No.</u> | <u>I</u>      | <u>II</u>      | <u>III</u>     |
| Water Sold - (M.G.)/Yr.     | 730           | 730            | 730            |
| Project Funds Required      | \$628,200     | \$1,588,200    | \$5,983,100    |
| Par Amount of Bonds         | 694,200       | 1,525,700      | 5,486,100      |
| Annual Debt Service x 1.2   | 43,500        | 91,500         | 345,000        |
| Contingencies               | 8,000         | 16,000         | 28,000         |
| Annual O & M Cost           | <u>55,500</u> | <u>113,700</u> | <u>123,000</u> |
| Total Revenue Required      | \$107,000     | \$ 221,200     | \$ 496,000     |
| Cost per 1,000 gal.         | 0.14          | 0.30           | 0.67           |



C. SUMMARY

The foregoing Table I-1, illustrates the favorable effects on unit water rates of utilizing the lower Industrial Bond estimates of interest rates in the calculations.

## SECTION VI

### CONCLUSION AND RECOMMENDATIONS

#### A. CONCLUSIONS

As a result of the studies and analysis conducted in the preparation of this report, the Engineers and Hydrogeologists have reached the following conclusions:

1. The southwestern portion of Hernando County is beginning to experience rapid growth. Current population of this area is estimated at approximately 43,000 persons. This area is projected to increase to approximately 92,000 by the year 2000. This will create multiple population distribution, this will create the avenue for the East Central Service Area's base population growth.
2. The County presently serves only a minor portion of this area.
3. Previous investigations have resulted in recommendations that a regional water supply system be constructed for this area.
4. Studies by hydrologists for the County have shown that there is excellent ground water potential in this area of Hernando County.
5. The expected quality of water from the proposed well field site is very good, requiring almost no treatment other than chlorination.
6. Economic studies have shown that it will be more economical to provide chlorination and storage at the well field plant, than in pump raw water to another location.
7. The project costs for the new water supply development will total \$4,638,100.00. Funding cost may increase this total.

8. Grants or contributions in aid of construction may be possible and this may reduce total funding amounts.
9. Unit costs for water will vary depending on funding sources.
10. A regional water supply system is feasible in this area. A regional supply system should offer advantages in the development of the East Central Service Area, providing better economy, quality of service, better reliability, safeguards against degradation of the environment and better utilization of the ground water aquifer.

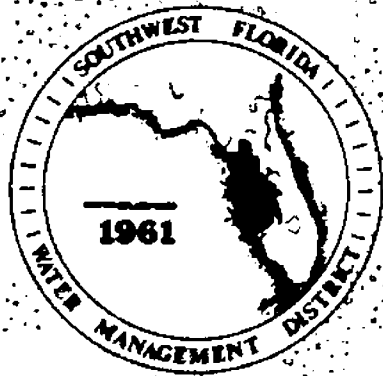
## B. RECOMMENDATIONS

As a result of this study and the conclusions, it is recommended that:

1. This study and report be accepted by the Conrock Utilities as a basis for planning to meet the water supply needs of the East Central Service Area of Hernando County.
2. That Conrock Utilities initiate action seeking commitment for a financial advisor and obtaining financial assistance in aid of the proposed development.
3. That Conrock Utilities, be assisted by its legal, financial, hydrologic and engineering consultants, prepare a schedule of activities leading to the financing, design and construction of a regional water supply for the East Central Service Area.
4. That Conrock Utilities, upon the completion of the proceeding actions, take action in obtaining local and state governmental authority permitting.
5. That Conrock Utilities initiate the required hydrologic exploration, testing and engineering for the proposed facility.

**GROUND-WATER  
RESOURCE  
AVAILABILITY  
INVENTORY:**

**HERNANDO  
COUNTY,  
FLORIDA**



*SOUTHWEST FLORIDA WATER  
MANAGEMENT DISTRICT  
MAY 1987*

**GROUND-WATER RESOURCE AVAILABILITY INVENTORY:  
HERNANDO COUNTY, FLORIDA**

**PREPARED BY: RESOURCE MANAGEMENT DEPARTMENT  
PLANNING DEPARTMENT  
RESOURCE REGULATION DEPARTMENT**

---

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT**

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**EXECUTIVE STAFF**

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DANIEL P. FERNANDEZ, General Council  
WILLIAM K. HENNESSEY, Deputy Executive Director  
PETER G. HUBBELL, Deputy Executive Director**

**MAY, 1987**

# SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT



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May 30, 1987

## EXECUTIVE SUMMARY

In response to increased local and national attention focusing on the availability and quality of our ground-water resources, the 1982 Florida Legislature directed each of Florida's five Water Management Districts to conduct a Ground-Water Basin Resource Availability Inventory "covering areas deemed appropriate by the Districts' Governing Boards." The completion of this Inventory in the Southwest Florida Water Management District is targeted for 1987, and will culminate with the completion of county Inventory reports for 13 of the 16 counties within the District's jurisdiction. The three other counties are to be done by other Water Management Districts. All 16 of these reports will be periodically updated to reflect additional data collection, analyses, and interpretations.

The county reports are divided into three sections. The first section includes an introduction, description of the purpose and scope, and a discussion of previous investigations. Section 2 contains a discussion of the hydrology and related inventory issues of the ground-water basin(s) within which the county is located. Section 3 contains a discussion of the hydrology and related inventory issues for the individual county.

This report contains a discussion of the hydrology and relevant Inventory issues for Hernando County, Florida, which is entirely within the Northern West-Central Florida Ground-Water Basin. The significant findings relative to the Inventory are summarized below.

### Findings:

- 1) Hernando County is located entirely within the Northern West-Central Florida Ground-Water Basin. This 4,500 square mile basin is bound on the north by potentiometric highs of the Upper Floridan aquifer near the cities of Keystone and Bronson, on the east by the Keystone and Green Swamp highs, on the south by the Green Swamp and Pasco highs, and on the west by the Gulf of Mexico.
- 2) For all practical purposes, the Basin is underlain by a single potable aquifer, the Upper Floridan. This aquifer varies in thickness from less than 600 feet in the coastal

- 9) Criteria for determining minimum seasonal surface and ground-water levels were established for the District in District Rules, Chapter 40D-8 in 1978. Lake management levels have been established for 27 of the approximately 50 eligible lakes in the Basin. Minimum ground-water levels are addressed on an individual basis through the District's consumptive use permitting process. Efforts are currently underway to establish minimum ground-water levels on a regional basis. This will be facilitated by the use of the previously mentioned Districtwide Inventory model.
- 10) Although areas suitable for water resource development will not be fully addressed until the entire Basin is mapped for degree of susceptibility to ground-water contamination, and the regional ground-water model is complete, recently completed studies indicate that much of the Basin is suitable for ground-water development. Specific to Hernando County, with the exception of coastal areas and floodplain areas of the Withlacoochee River, Hernando County is generally suitable for ground-water resource development.
- 11) Currently, most domestic class wastewater effluent within Hernando County is disposed of through the use of rapid infiltration basins and/or percolation/evaporation ponds. As larger central wastewater facilities are constructed to meet the needs of the growing population, wastewater reuse may provide a cost-effective disposal alternative which would also decrease potable water demand.
- 12) Although Hernando County does not have a major coastal well field, several public supply wells are located in coastal areas. These wells, as well as future similar wells, are or will be interconnected with the county's more inland wells and the entire supply system managed to prevent saltwater intrusion while providing an adequate supply of potable water to the county's residents.
- 13) Though an estimated 113 trillion gallons of potable water is stored in the Upper Floridan aquifer in the Basin, not all of this water is available for consumptive use. The amount of potable water available for consumptive use in the Basin is generally a function of the safe yield of the Upper Floridan aquifer. The safe yield of the Basin can be defined as the amount of ground water that can be withdrawn from the Upper Floridan aquifer without producing undesirable effects such as lowered lake levels and water table, drying up of wetland areas, reduced springflow and streamflow, saltwater intrusion, and the development of sinkholes. Safe yield of the entire Basin has not been determined at this point in time however, a good estimate will be made upon completion of the Districtwide Inventory model.

areas to greater than 1500 feet in the easternmost part of the Basin. The Upper Floridan is generally unconfined throughout the Basin.

- 3) The Upper Floridan aquifer is highly transmissive. Reported transmissivities range from less than 13,000 to greater than 2 million feet squared per day. Based on an Upper Floridan aquifer potable water thickness of 600 feet, total Basin area of 4,500 square miles, and a porosity of 20 percent, total potable water stored in the Upper Floridan within the Basin calculates to 113 trillion gallons.
- 4) With the exception of saltwater intrusion in the coastal areas, and high iron, sulfate, and total dissolved solid values in the floodplain and swampy areas of the Withlacoochee River, ground-water quality in the Basin is generally very good.
- 5) Ground-water recharge in the Basin is generally high, ranging from 10 to greater than 20 inches per year in the upland areas to less than 2 inches per year along the coast. Over 50 percent of the Basin receives 10 inches or more of recharge annually. Discharge from the Upper Floridan occurs along the coast and in areas where river valleys have cut through the limestone of the underlying Upper Floridan aquifer.
- 6) Preliminary results utilizing recently developed United States Environmental Protection Agency methodology indicate that much of the Basin is highly susceptible to ground-water contamination. Specific to Hernando County, where the evaluation is complete, areas east and west of the Brooksville Ridge have the greatest susceptibility to ground-water contamination. The area least susceptible is extreme southeastern Hernando County where a clay unit overlying the Upper Floridan aquifer reaches thicknesses in excess of 50 feet.
- 7) Although the Basin as a whole is not experiencing an overdraft problem, there are areas of significant ground-water withdrawals. These areas include intense rock mining areas, primarily northwest of Brooksville, and areas of major public supply withdrawals, primarily in north-central Pasco County.
- 8) Although prime recharge areas will not be fully addressed until a regional ground-water model, targeted for completion in 1988, is completed, nearly the entire northern portion of the Basin and the central areas of the southern portion of the Basin receive moderate to high amounts of ground-water recharge (usually 10 inches per year or greater).



# GROUND-WATER BASIN RESOURCE AVAILABILITY INVENTORY

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## I. INTRODUCTION

Ground water is clearly one of the nation's most valuable resources supplying approximately forty percent of the water used for all purposes exclusive of hydropower generation and electric powerplant cooling. Americans have long depended on ground water for many uses, but the primary use has been as a source for drinking water. Over ninety percent of the nation's public supply systems, which account for approximately sixty percent of the public supply, utilize ground water as their source water (Lappenbusch, 1984). Additionally, ninety-seven percent of the water needs for domestic use in rural areas is served by ground-water resources (Solley and others, 1983). In Florida, ground water may be considered an even more precious commodity supplying greater than ninety percent of all drinking water. However, rapid population growth, urban sprawl, and increased agricultural and industrial activities during the past several decades have significantly impacted both the availability and quality of the state's ground-water resources.

In response to these impacts and increased local and national attention focusing on the availability and quality of our ground-water resources, the Florida Legislature enacted a series of legislative acts designed to protect the quality and assure adequate quantities of this most valuable resource. Included in these acts was the 1982 amendment (Section 373.0395, Florida Statutes) of the 1972 Florida Water Resource Act, (Chapter 373, Florida Statutes) which directed each of the state's five Water Management Districts (WMDs) to conduct a Ground Water Basin Resource Availability Inventory (GWBRAI) "covering areas deemed appropriate by the District's Governing Board." The inventory was to include, but not be limited to, the following:

1. A hydrologic study to define the Ground-Water Basin and its associated recharge areas;
2. Delineation of site specific areas in the Basin deemed prone to contamination or overdraft resulting from current or projected development;
3. Delineation of prime ground-water recharge areas;
4. Criteria needed to establish minimum seasonal surface and ground-water levels;
5. Areas suitable for future water resource development within the Ground-Water Basin;
6. Existing sources of wastewater discharge suitable for reuse as well as the feasibility of integrating coastal wellfields; and,
7. Potential quantities of water available for consumptive use.

Upon completion, a copy of the GWBRAI was to be submitted to each affected municipality, county, and regional planning agency and reviewed for consistency with the local governments comprehensive plan and to be considered in future revisions of such plans. It was the intent of the legislature that future growth and development planning reflect the limitations of the available ground water or other available water supplies.

#### PURPOSE AND SCOPE

The GWBRAI has two primary goals: the short-term goal is to provide local governments with available ground-water information, while the long-term goal is to enhance each WMD's technical capability to quantify and predict ground-water availability. Accomplishment of these objectives should enhance the protection of ground-water quality and quantity through effective land use planning, including identifying water resource limitations in future growth and development patterns.

The Southwest Florida Water Management District (SWFWMD) will be completing the GWBRAI for 13 of the 16 counties within its jurisdiction between January and December, 1987. These counties are Charlotte, Citrus, DeSoto, Hardee, Hernando, Hillsborough, Manatee, Marion, Pasco, Pinellas, Polk, Sarasota, and Sumter. Primarily, existing hydrologic, geologic, physiographic, demographic, and water use data are being compiled and evaluated to complete the GWBRAI. These data are being utilized to define the ground-water basins and their associated recharge areas, delineate site specific areas deemed prone to contamination or overdraft, delineate areas suitable for future water resource development, develop criteria needed to establish minimum seasonal surface and ground-water levels, and delineate existing sources of wastewater discharge suitable for reuse, as well as assess the feasibility of integrating coastal wellfields. Additionally, the United States Environmental Protection Agency's (USEPA's) recently developed DRASTIC\* methodology, which ranks areas relative to their susceptibility to ground-water contamination from strictly a hydrogeologic viewpoint, is being utilized to aid in delineating site specific areas within the basins prone to contamination, to aid in delineating areas suitable for future water resource development, and to aid in delineating prime recharge areas. Lastly, regional ground-water flow models have been initiated to determine potential quantities of water available for consumptive use, establish seasonal surface and ground-water levels, aid in identifying ground-water recharge areas, and to aid in identifying areas suitable for future water resource development.

\*The acronym DRASTIC is derived from the seven primary hydrologic parameters evaluated to determine an area's susceptibility to ground-water contamination. These parameters are Depth to water, Recharge, Aquifer characteristics, Soil type, Topography, Impact of the vadose zone, and Hydraulic conductivity.

The compilation and evaluation of existing data, and the construction of DRASTIC maps will be completed and included in the thirteen county GWBRAI reports scheduled for completion in 1987. However, the regional ground-water models are targeted for completion in 1988. Existing data and the DRASTIC maps will be utilized to qualitatively assess potential quantities of water available for consumptive use, to identify areas of ground-water recharge, to identify areas suitable for future water resource development, and to establish seasonal surface and ground-water levels. Quantitative assessment of these issues will be addressed in the regional models. Upon completion of these models the county GWBRAI reports will be updated to include a more accurate assessment of water resources in the counties throughout the SWFWMD.

This report is divided into three sections. Section one includes the introduction, discussion of previous investigations, and the acknowledgements. Section two is a physical and hydrologic discussion of the Northern West-Central Florida Ground-Water Basin (NWCFGWB), including recharge and discharge areas, minimum flows and levels criteria, areas deemed prone to contamination or overdraft, locations of potential point and non-point sources of contamination, and areas suitable for water resource development. Section three is a physical, demographic, and hydrologic assessment of Hernando County and includes recharge and discharge areas, areas susceptible to ground-water contamination, water supply sources and alternatives, and a generalized discussion of the implications for county planning efforts. Additionally, a glossary is included as Appendix A and a summary of related Florida legislation as Appendix B.

## PREVIOUS INVESTIGATIONS

### NWCFGWB

Water supply development has been studied in several reports for areas located within the NWCFGWB. Russell and Axon, Inc. (1985) prepared Water System Master Plans for Hernando, Sumter, and Marion Counties. These reports, which were partially funded by the SWFWMD, take into account many considerations and alternatives for potential water supply development. Sinclair (1978) evaluates potential for water supply development of the coastal springs system in the Weeki Wachee and Withlacoochee Rivers. Fretwell (1983) provides an understanding of the hydrogeology of the coastal margins of the Basin and provides a basis for effective ground-water management. The SWFWMD Water Management Plan (1978) identifies water management concepts, requirements, projections, rules, and a physical description of the SWFWMD area which includes the NWCFGWB.

The hydrology and geology of the NWCFGWB have been referenced in many reports published by several authors from governmental agencies. Jones (1985a) completed the "Northern Withlacoochee

Hydrologic Investigation" which evaluated the impact of various proposed wellfields on the flow of Rainbow Springs. The study uses a ground-water flow model that covers the entire localized ground-water basins that contribute to the flow of Rainbow and Silver Springs. Adams (1985) completed the "Ground-Water Supplement to the Wysong-Panasoffkee Study" which evaluated impacts to the surface and ground-water systems caused by changing surface-water control structures and by potential ground-water withdrawals in the area. When combined, these two reports cover most of the hydrogeology of the NWCFGWB. Measurements of discharge, stage, and quality of ground water and surface water are summarized in the annual report entitled "Water Resources Data for Florida," (U.S. Geologic Survey, 1984). The general hydrology of the Middle Gulf Area was described by Cherry and others (1970), and Vernon's (1951) study of the geology of Citrus and Levy Counties provided an understanding of the geologic framework essential to interpretation of hydrology of the coastal springs area. Puri and Vernon (1964), White (1970), Brooks (1981), and Sinclair (1985) describe the physiographic and geologic features of the Basin.

As part of a statewide inventory of the large springs in Florida, Rosenau and others (1977), described several of the large springs included in the Basin. Falkner (1976) analyzed ground-water flow in a karst system near Silver Springs.

Wolfe and others (1986) attempt to summarize available information on factors affecting the environment. This report is informative in the areas of habitat types, water quality, climate, and geology of the Big Bend area. The ambient ground-water quality of the surficial, intermediate, and deep aquifers are described by Moore and others (1986 a, b). Causseaux and Fretwell (1983) evaluate chloride concentrations in the coastal margins of the Floridan aquifer system.

#### HERNANDO COUNTY

A few references describe the geology and water resource information of Hernando County. Russell and Axon, Inc. (1985) evaluated the potable water requirements of Hernando County. The existing systems are examined and proposed facilities are recommended based on many factors. A study completed by Fretwell (1985) involves water resources and the effects of development in Hernando County. This hydrologic investigation was initiated to determine (1) the availability of water, (2) the extent of water-quality problems in surface and ground water, (3) the interconnection between surface and ground water, and (4) the effects of pumping on the hydrologic system. A reconnaissance study was made by Wetterhall (1964) for greater knowledge of the geology and hydrology of Pasco and Southern Hernando Counties. This study inventoried 108 wells and 16 springs to determine potentiometric surface and geologic cross-sections. This study was required for the expanding use of ground water for domestic, municipal, industrial, and agricultural supplies.

**SECTION TWO**  
**HYDROLOGIC INVESTIGATION**  
**AND RELEVANT GROUND-WATER BASIN RESOURCE**  
**AVAILABILITY INVENTORY**  
**ISSUES OF THE NORTHERN WEST-CENTRAL FLORIDA**  
**GROUND-WATER BASIN**

## GROUND-WATER BASIN OVERVIEW

### INTRODUCTION

A ground-water basin is a three-dimensional closed hydrologic unit that contains the entire flow paths followed by all water recharging the basin (Freeze and Witherspoon, 1966). The bottom boundary is usually an impermeable basement rock and the top boundary is land surface. The lateral boundaries are imaginary vertical impermeable ground-water divides. These ground-water divides are generally delineated by high and low ridges in the potentiometric surface of the aquifer. Although not as well defined as the more pronounced ground-water basins of western United States, ground-water resources in Florida can be divided into several distinct ground-water basins. Figure 1 is a modified version of Fisk's (1983) delineation of the ground-water basins in Florida. Two ground-water basins occur in west-central Florida and include nearly the entirety of the SWFWMD. For the purpose of this report these two basins are termed the Northern West-Central Florida Ground-Water Basin and the Southern West-Central Florida Ground-Water Basin (SWCFGWB).

The NWCFGWB is bounded on the east by the axis of the Green Swamp and Keystone Floridan aquifer system potentiometric highs, the most pronounced ground-water divide in peninsular Florida (Figures 1 and 2). On the north, the Basin is bounded by the axis of the Keystone and Bronson potentiometric highs, and on the south by the Pasco and Green Swamp highs. On the west the Basin is bounded by the Gulf of Mexico. The SWCFGWB is bounded on the east by the axis of the Green Swamp high, to the north by the Pasco and Green Swamp highs, and on the south and west by the Gulf of Mexico. Although ground-water basin boundaries may change due to climatic conditions or ground-water withdrawals, presently ground water north of the Pasco-Green Swamp ground-water divide flows north and west to the Gulf of Mexico and water to the south flows south and west to either the Gulf of Mexico or the Tampa Bay -Ruskin potentiometric low.

### HYDROLOGIC AND PHYSICAL DESCRIPTION OF THE BASIN

#### GEOGRAPHIC SETTING, TOPOGRAPHY, AND DRAINAGE

The NWCFGWB is approximately 4,500 square miles in extent and includes all of Hernando, Citrus, and Sumter counties, and major areas of Alachua, Levy, Marion, Lake, Polk, Putnam, and Pasco counties (Figure 3). The Basin is characterized by relatively flat, generally swampy lowlands in the coastal areas butting against the north-northwesterly trending Brooksville Ridge. Land surface altitudes range from sea level at the coast to greater than 250 feet above the National Geodetic Vertical Datum (NGVD) at several places along the Brooksville Ridge (Figure 4). The rolling hill and valley terrain along the ridge results in irregular topography. The 100-foot contour generally outlines the northwest trending Brooksville Ridge (Fretwell 1985). East

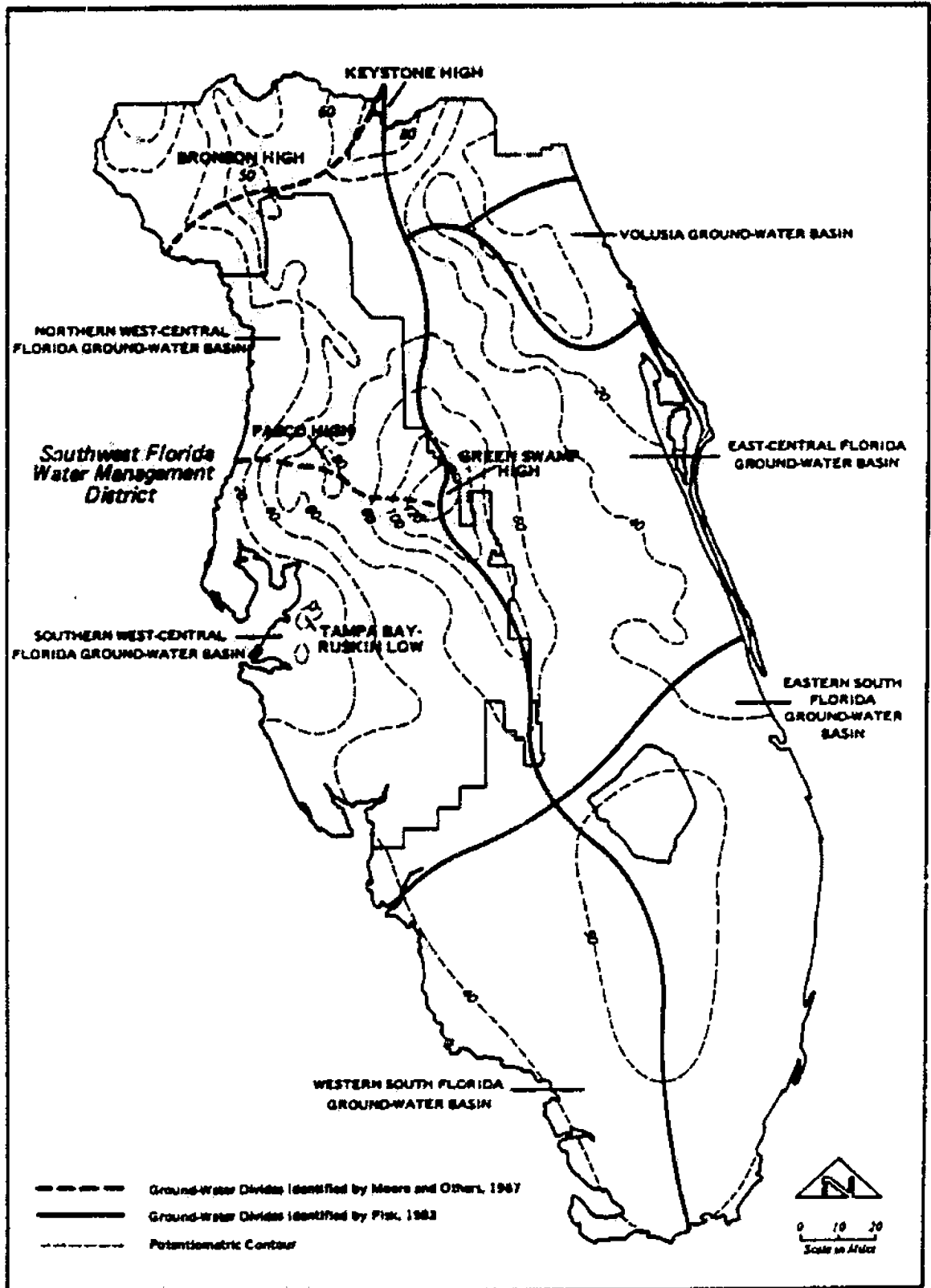


Figure 1. May 1980 Potentiometric Surface of the Floridan Aquifer in Peninsular Florida, with the Major Ground-Water Basins Delineated. Modified from Fisk (1983) and Johnston, Healy and Hayes (1981).

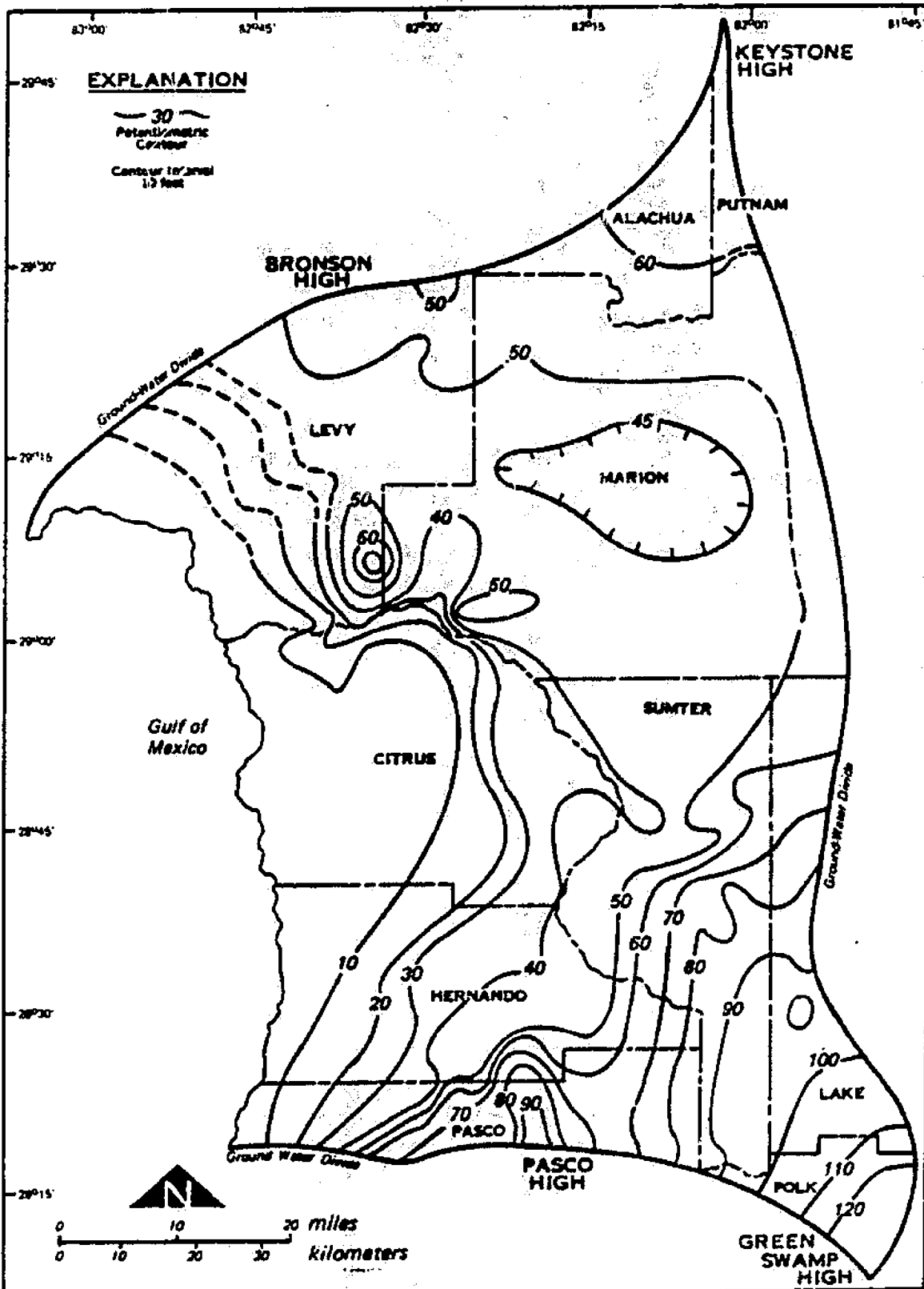


Figure 2. Delineation of the Northern West-Central Florida Ground-Water Basin with the May 1986 Potentiometric Surface of the Floridan Aquifer. (Modified by Barr and Lewelling, 1986).



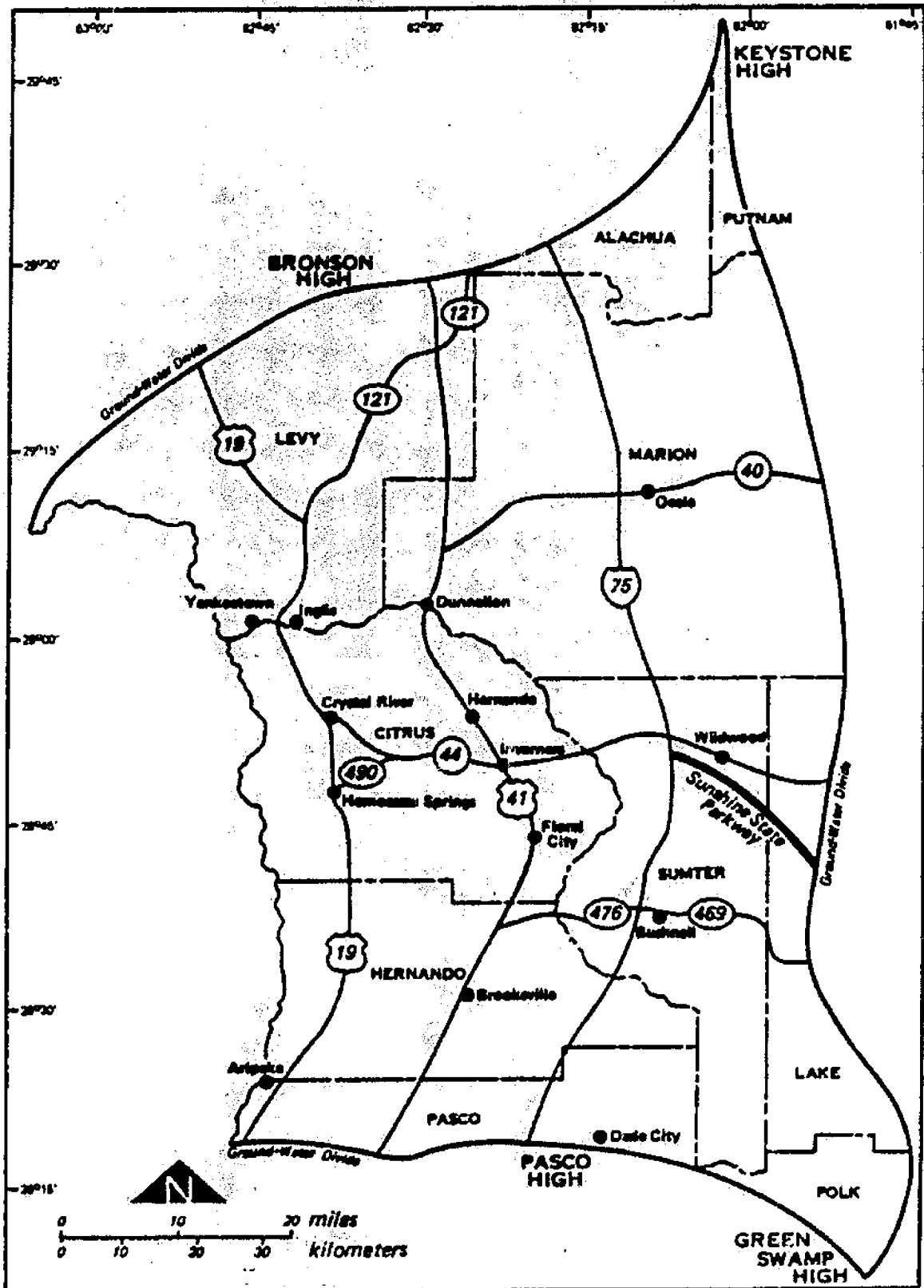


Figure 3. Location Map of the Northern West-Central Florida Ground-Water Basin.

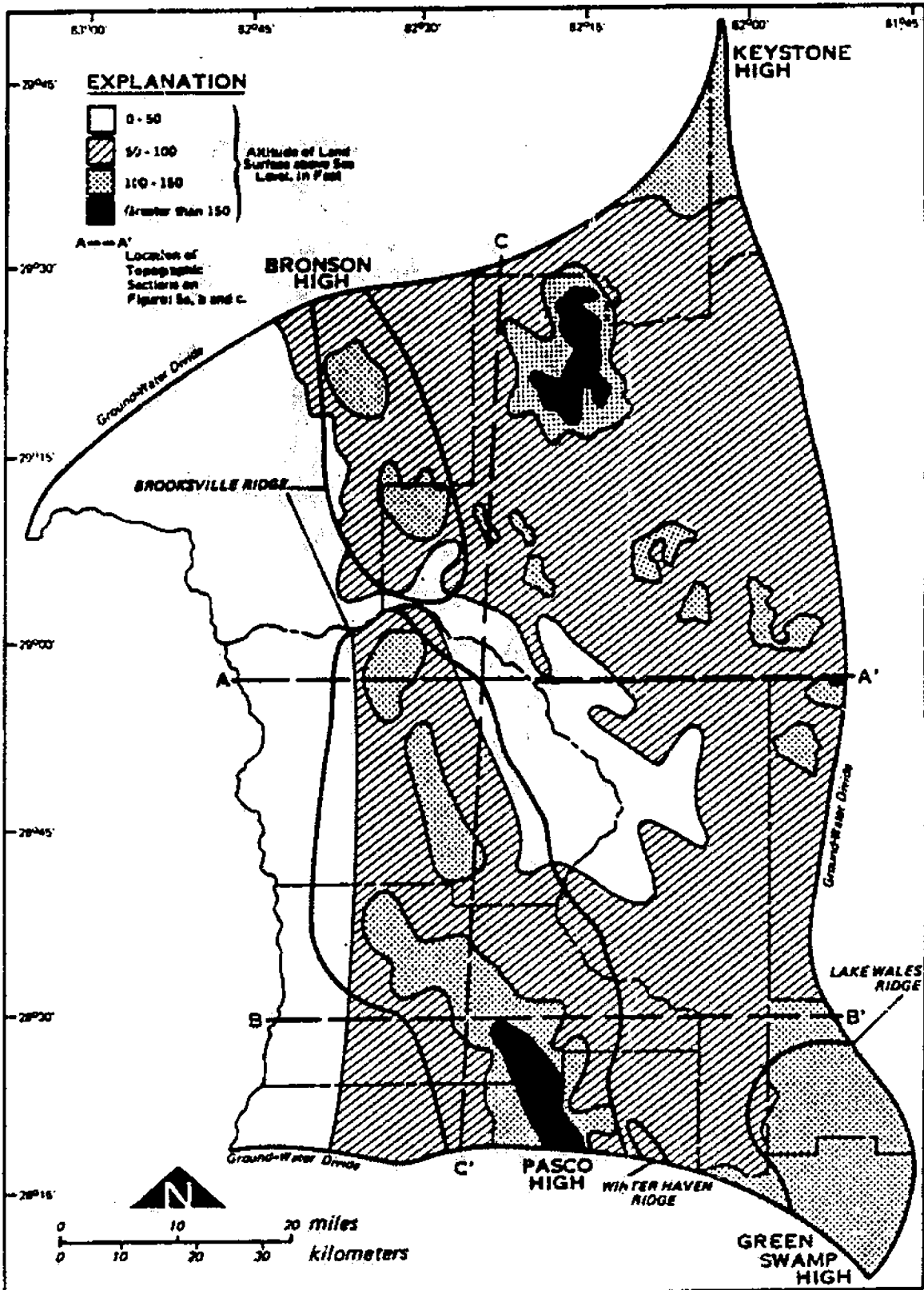


Figure 4. Land Surface Altitudes in the Northern West-Central Florida Ground-Water Basin. Lines A-A', B-B' and C-C' Shown in Figure 5 (modified from Sinclair and Others, 1985).

of the ridge, the altitude ranges from 50 to 100 feet above NGVD and the topography is relatively subdued. Figures 5a, 5b, and 5c are east-west and north-south trending cross-sections that illustrate the topography in the Basin.

The Basin is characterized by karst terrain, developed through the dissolution of the underlying limestone and dolomite resulting in numerous swamps, lakes, and shallow sinkholes. Surface drainage is absent or poorly developed in most of the Basin, but waters from coastal springs, and the Withlacoochee and Little Withlacoochee Rivers flow through well-defined stream channels.

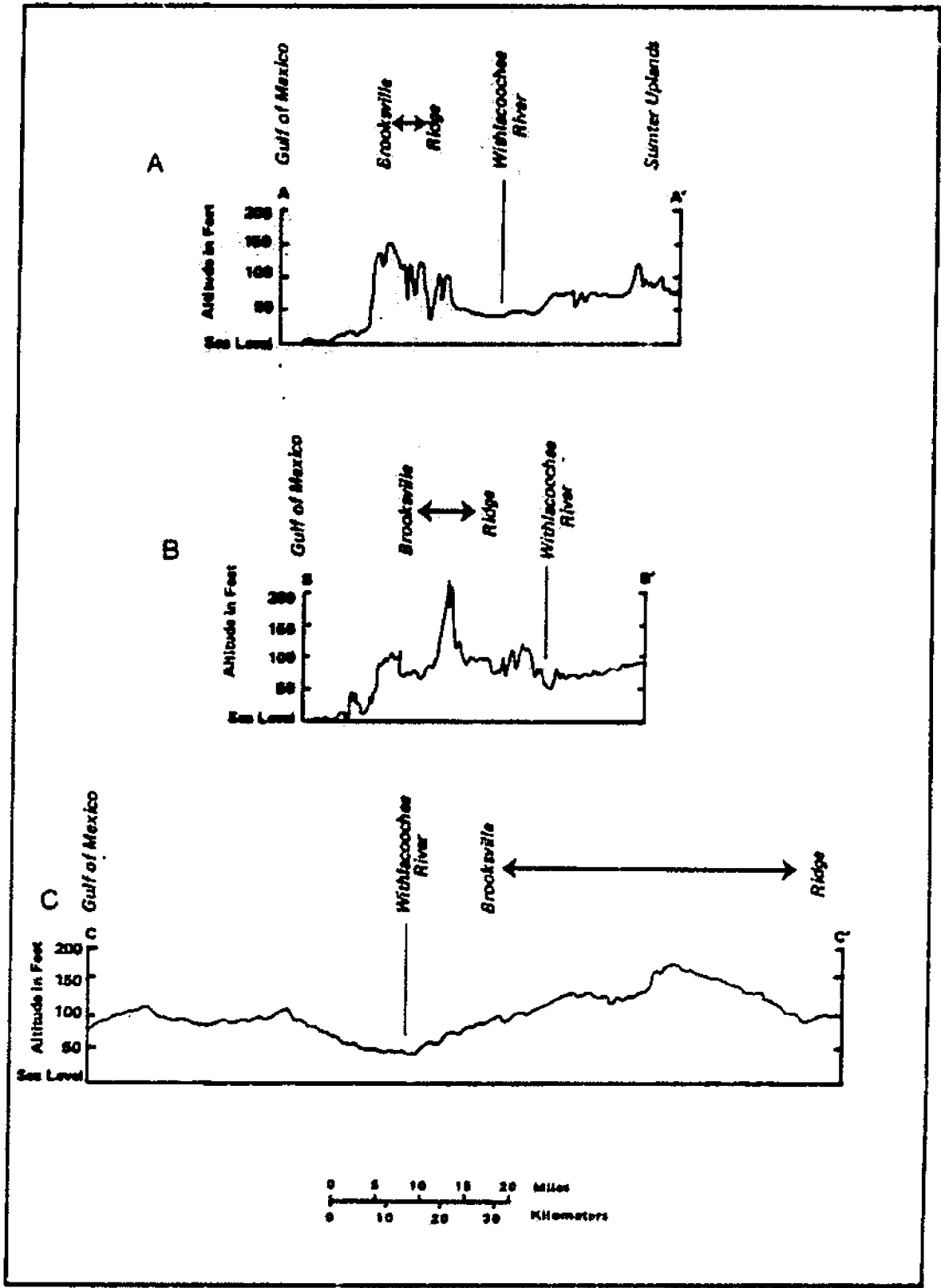
The dominant river basin is the Withlacoochee flowing 120 miles from the Green Swamp to the Gulf of Mexico at Yankeetown, Florida. The extent of this basin is over 1980 square-miles and lies across the Tsala Apopka Plain and Webster Limestone Plain described by Brooks (1981), (Figure 6). Located between the Brooksville and Central Florida Ridges, the Withlacoochee River drains through the Dunnellon gap in the Brooksville ridge (Figure 6). The sandy soils are thin to absent along the river and there are many areas of recharge into and discharge directly from the Floridan aquifer system's shallow limestones. Three major wetland areas are the Green Swamp, Tsala Apopka Chain of Lakes, and Coastal Marsh. Recent studies indicate that the Green Swamp is an area of low recharge (0-2 inches/yr), due to the aquifer system being nearly saturated, resulting in mostly rejected recharge (Grubb and Rutledge, 1979; Ryder, 1985; and Adams, 1985). The coastal lowlands have essentially no recharge, and the Tsala Apopka area has a small net recharge. The wetlands are very important biologically for water purification and, therefore need to be considered as conservation areas.

There are 6 first magnitude springs and numerous second and third magnitude springs in the Basin. Many of the first magnitude springs are headwaters for coastal rivers. Virtually all springflow is derived from the Floridan aquifer system.

The geology, topography, and drainage are all interdependent with water erosion shaping the limestone chemically and mechanically. The karst nature of the limestone results in solution features redirecting runoff underground. The sand and soft limestone supporting the flat to hilly topography was first shaped by beach erosion terracing the sand and stone. Afterwards, weak limestone caverns collapsed and surface erosion reshaped the highland sands. Nutrients and fresh water entering the Gulf also supports a large estuary system along the coast.

#### CLIMATE

The climate of the NWCFGWB is characterized by long, warm, humid summers and short, mild winters. Average monthly temperatures range from 60° F in January to 82° F in July and August (National



Figures 5a, b and c. Topographic Cross-Sections of the Northern West-Central Florida Groundwater Basin. Location of Sections are Shown in Figure 4 (modified from Sinclair and Others, 1985)

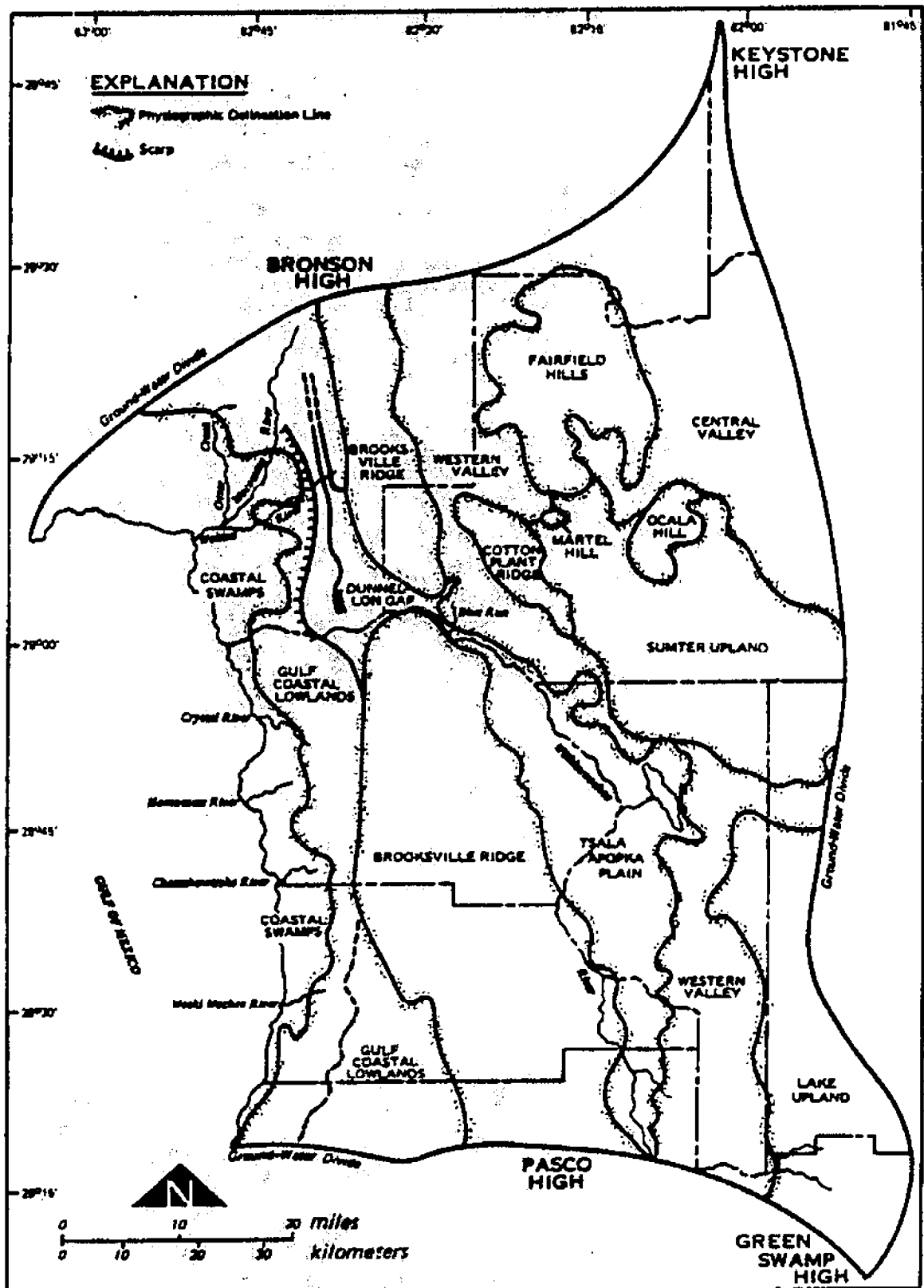


Figure 6. Physiographic Map of the Northern West-Central Florida Ground-Water Basin (Modified from White, 1970).

Oceanic and Atmospheric Administration (NOAA), 1983). Average annual temperature is 72° F.

Some rainfall normally occurs during each month, but a Basin high rainfall season extends from June through September and a low rainfall season extends from October through May. The winter rainfall is relatively light because west-central Florida is south of the normal southern limit of winter frontal systems. The average annual rainfall in the Basin is 55 inches per year. About sixty percent of the annual rainfall occurs during the rainy season and is derived principally from convectional storms. The Inverness Weather Bureau Station is centrally located in the NWCFGWB and figure 7 represents historic median and mean monthly rainfall. Spatially, summer rainfall is highly variable; areas only a few miles apart often receive widely differing amounts of rain.

Estimates of evapotranspiration (ET) within the Basin vary; however, approximately 39 inches per year is generally accepted. Close to sixty percent of the total ET occurs in the six month period from May to October (SWFWMD, 1978). The highest ET rates occur in May and June.

## GEOLOGY OF THE BASIN

### Overview

The NWCFGWB is underlain by a thick sequence of Cretaceous and Tertiary carbonate deposits, that are generally referred to as the Floridan aquifer system. The upper several hundred feet of limestones and dolomites comprise the Upper Floridan aquifer system. A relatively thin sequence of sands, silts, and clays overlay the thick carbonate deposits. Table 1 contains the lithologic characteristics and water supply properties of the potable water bearing deposits in the Basin. Figures 8 and 9 are geologic cross-sections and a surficial geologic map of the NWCFGWB, respectively.

The Upper Floridan aquifer is solution-riddled and faulted limestone comprised of chemically precipitated limestones and dolomites that contain shells and shell fragments of marine origin. The system was deposited throughout the Tertiary period. This aquifer system is the principal storage and water conveying component of the hydrologic system in the NWCFGWB. The carbonate units that are hydrologically significant, in ascending order include the Avon Park Limestone, Ocala Group, and Suwannee Limestone. These formations range in age from Eocene to Oligocene. The Tampa Limestone of Miocene Age is generally thin to absent throughout the Basin and reaches its greatest thickness in the ridge areas.

Early in the Miocene Epoch, terrestrial deposits were carried by rivers from the north and intermixed with the upper Tertiary deposits. The Hawthorn Formation of Miocene age and the Alachua

# INVERNESS MONTHLY RAINFALL

1915-1985

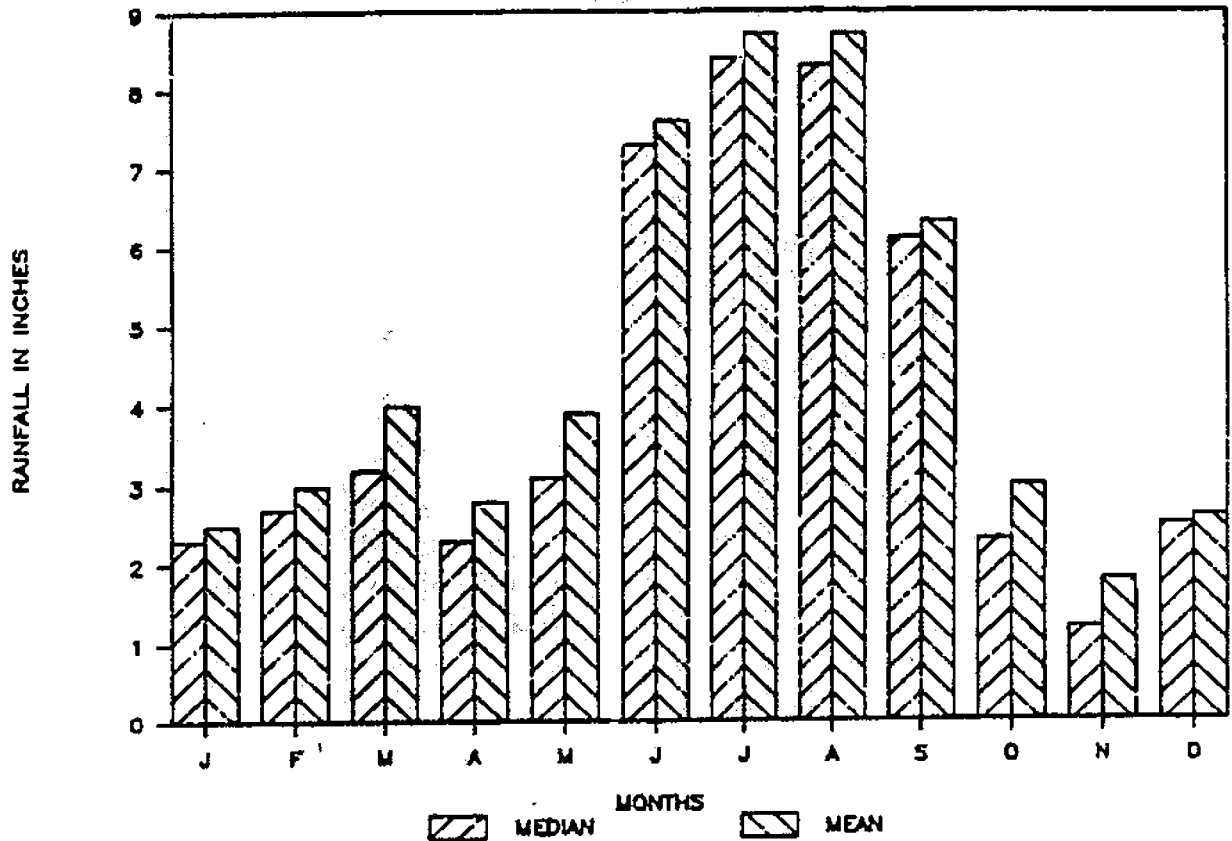


Figure 7. Historic Median and Mean Monthly Rainfall in the Northern West - Central Florida Ground-Water Basin (from SWFWMD Hydrologic Data Base System).

| System     | Series                            | Stratigraphic unit        | Thickness (feet)                                    | Lithology   | Water-producing characteristics   |
|------------|-----------------------------------|---------------------------|---|---|---|
| Quaternary | Holocene and Pleistocene          | Undifferentiated deposits | 0-100   | Soil, sand, and clay of marine and estuarine terraces, alluvial, lake, and windblown deposits.  | Generally not a source of water.  |
|            | Tertiary                          | Pliocene and Miocene      | Alachua and Hawthorn Formations and Tampa Limestone | 0-100   | Predominantly clay; some grayish-green, waxy; some interbedded sand and limestone, phosphatic clay, marl, calcareous sandstone, limestone residuum. |
|            |                                   | Oligocene                 | Suwannee Limestone                                  | 0-150   | Limestone, cream to tan colored, fine-grained, fossiliferous, thin-bedded to massive, porous.   |
|            | Eocene (upper)<br>Eocene (middle) | Ocala Limestone           | 100-500   | Limestone, white to tan fossiliferous, massive, soft to hard, porous.   | Yields large quantities of water to wells completed above evaporites.   |
|            |                                   | Avon Park Formation       | 200-800   | Limestone and dolomite. Limestone is light- to dark-brown, highly fossiliferous, and porosity is variable in lower part. Dolomite is gray to dark-brown, very fine to microcrystalline and contains porous fossil molds, thin beds of carbonaceous material, and peat fragments. Formation generally contains evaporites in lower part. |   |

TABLE 1. Generalized Hydrogeologic Column of the Northern West - Central Florida Ground-Water Basin (from Fretwell, 1985).



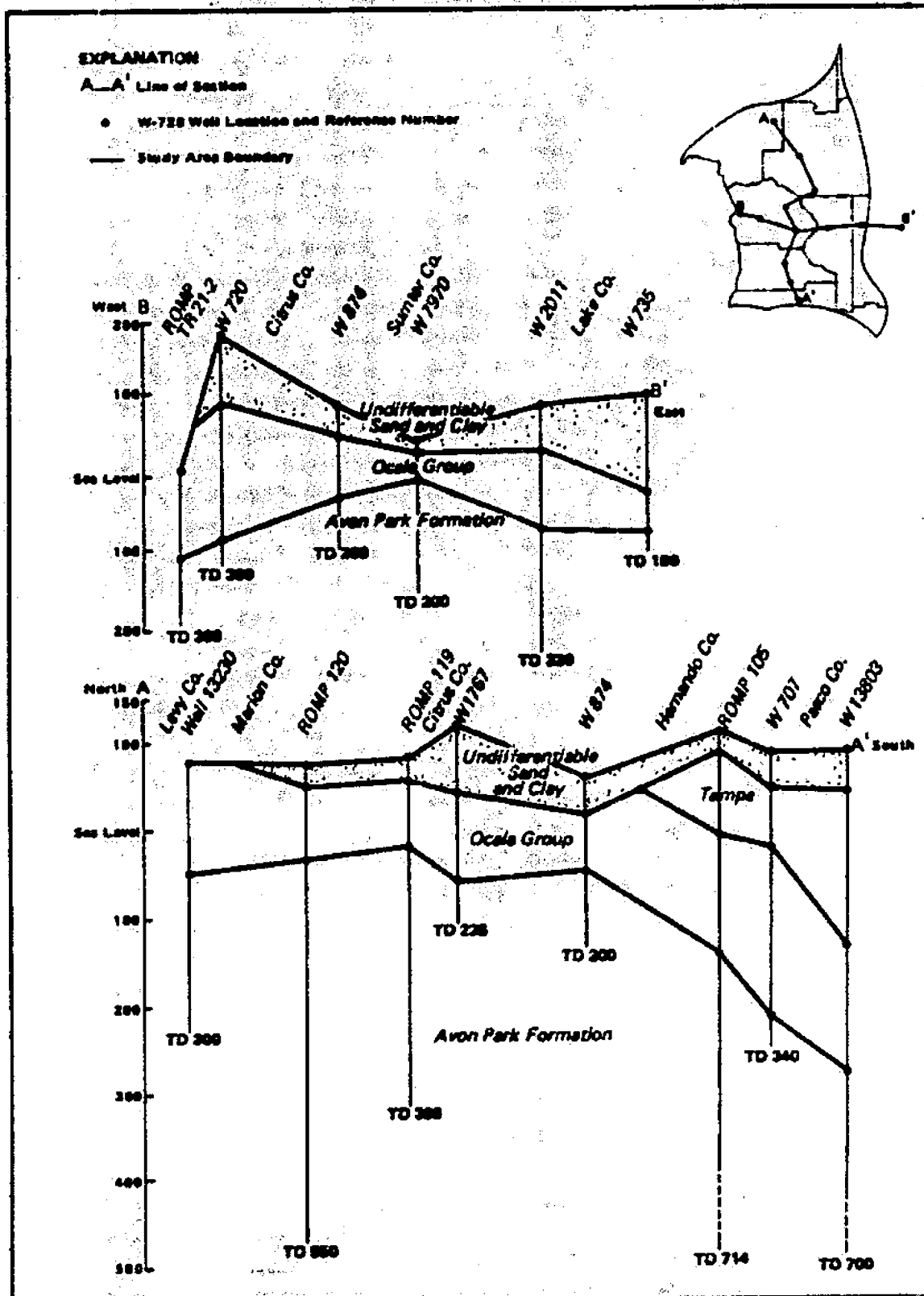


Figure 8. Generalized Geologic Sections of the Northern West-Central Florida Ground-Water Basin (modified from Gilbo, 1982).

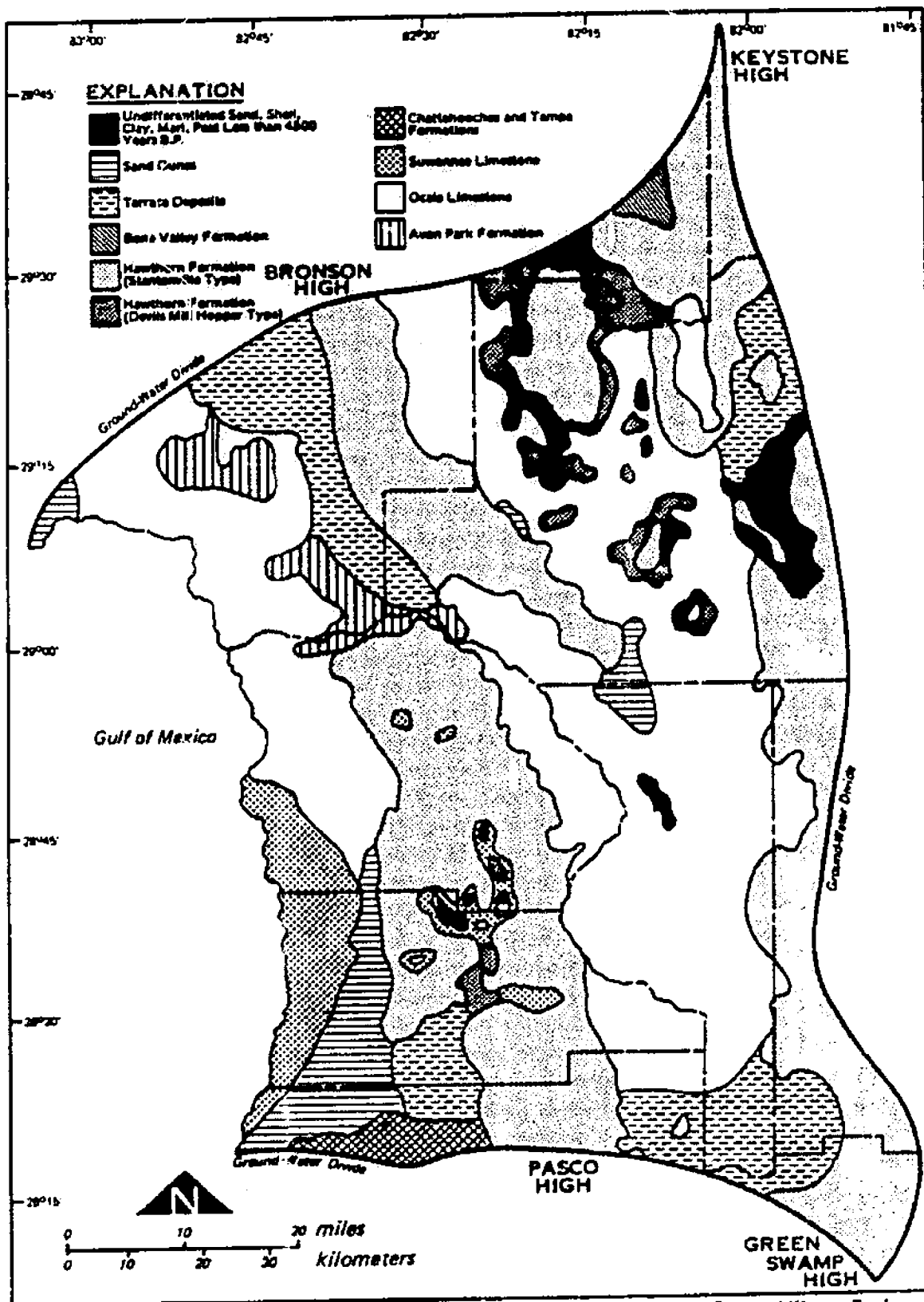


Figure 9. Surface Geology Map of the Northern West-Central Florida Ground-Water Basin (from Brooks, 1981)

Formation of Pliocene age are part of predominately clay units. These units consist of sand, limestone, phosphatic clay, marl, calcareous sandstone, and limestone residuum that overlie the carbonate strata throughout the Basin. This unit ranges from zero to greater than 100 feet in thickness.

Surficial deposits consisting of sand with some clay form a laterally discontinuous surficial aquifer system. These surficial deposits range in thickness from zero to greater than 100 feet. During the Pleistocene Epoch (Ice age), a series of marine terraces were formed along the coast by wave erosion and deposition. These terraces are former bottoms of shallow seas and are composed primarily of well-graded quartz sand (Fretwell, 1985).

### STRUCTURE

The regional structure of the study area incorporates sediments which thicken to the south and southeast. Two structural elements played major roles in controlling the depositional environments of the NWCFGWB (Figure 10). The Peninsular Arch is the first feature which affects rocks through the Cretaceous period. The arch trends approximately S 35° E and extends from South-Central Georgia to the vicinity of Lake Okeechobee (Applin and Applin, 1965). The arch is reported to be a buried anticlinal fold of late Paleozoic and early Mesozoic time which resulted in differential subsidence of the overlying coastal plain floor (Faulkner, 1970). The main axis is located east of the Basin and trends generally north-northwestward and is estimated to be 275 miles in length. A second structural feature, the Ocala Uplift, is southwest of and parallel to the Peninsular arch. It affects deposits of middle Eocene age and younger. This uplift raises Eocene limestones and dolostones to altitudes of 90 feet above NGVD. The crest covers an irregular elliptical area, about 45 miles long and 20 miles wide, trending approximately N 25° W. The crest extends from the vicinity of Dunnellon to Otter Springs in Levy County. The mapping of this feature is documented extensively by Vernon (1951), who delineated it as a gentle southeast trending anticline estimated to be 230 miles long and 70 miles wide.

Although these two features are often confused in the literature they are in fact distinct entities whose origins are not the same (Winston, 1976). The shape of the Peninsular arch and its effect on sedimentation in north-central Florida resemble those of an upwarp produced by compressional tectonics. Because the Ocala Uplift does not warp or otherwise affect sediments older than middle Eocene, it is not a true uplift. This feature was produced by sedimentational processes either an anomalous buildup of middle Eocene carbonate sediments (Winston, 1976) or, more likely, differential compaction of middle Eocene carbonate material shortly after deposition. Drilling on the crest of the Uplift shows that the feature is not of deltaic or reefal origin (Miller, 1982).

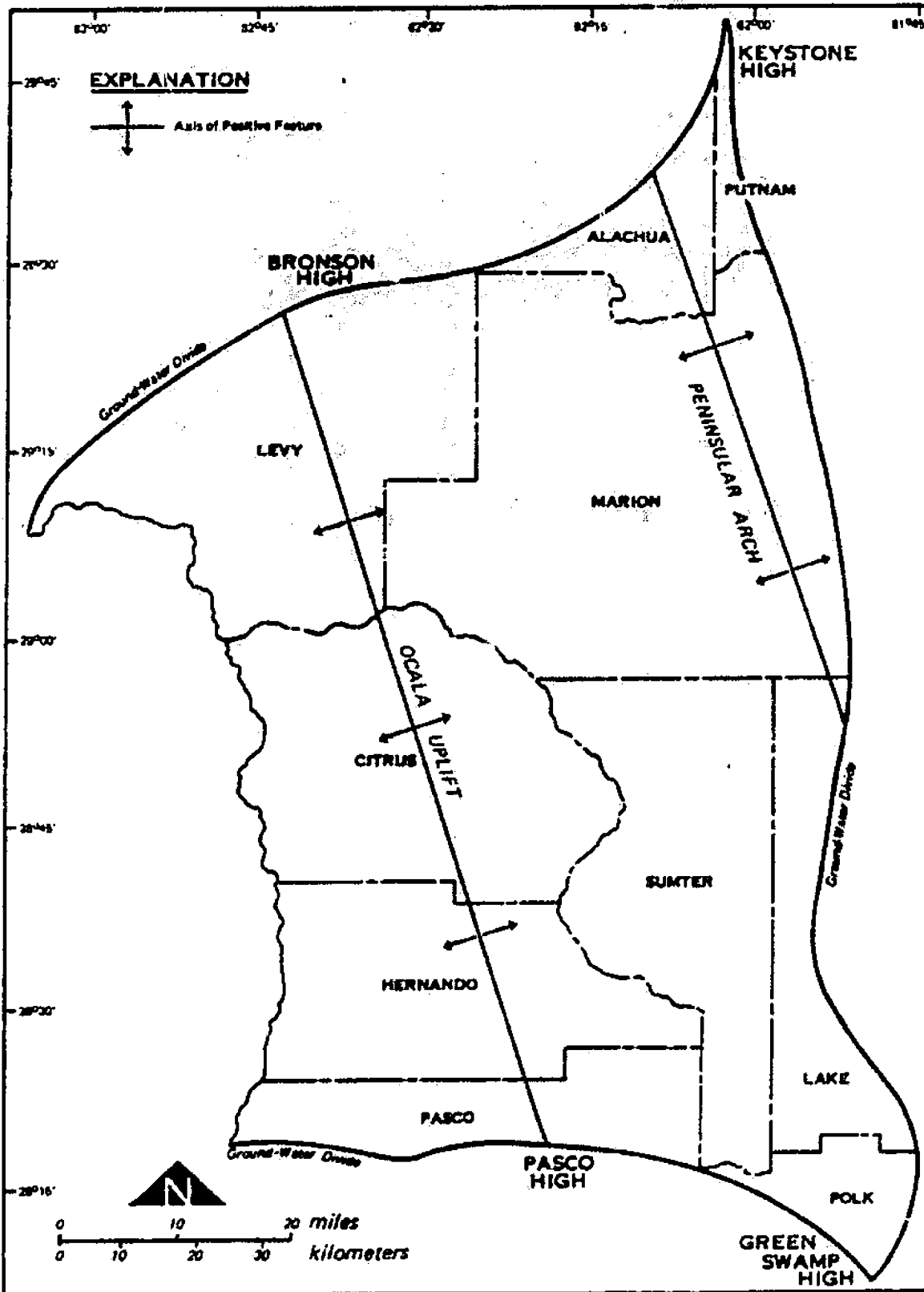


Figure 10. Major Structural Elements in the Northern West-Central Florida Ground-Water Basin (from Miller, 1982).

## STRATIGRAPHY

The stratigraphic features in the Basin are discussed in descending order, beginning with the most recent geologic time period.

Holocene and Pleistocene Epochs - Sediments deposited within these epochs are sometimes referred to as terrace deposits which consist generally of unconsolidated sand, clay, peat, and marl deposited during interglacial periods when water levels rose due to melting of the polar ice caps. During the high stands of the sea, deposits of well-graded quartz sand accumulated to form terraces. Figure 11 depicts the areal distribution of terraces.

Pliocene and Miocene Epochs - The formations of these epochs consist of three stratigraphic units: the Alachua Formation, two zones of the Hawthorn Formation, and to a very limited extent, the Tampa Formation; progressing from youngest to oldest. With the exception of the Tampa Formation, these formations consist generally of clastic materials; sands, silts, and clays.

The Alachua Formation is of Pliocene Age and comprises most of the Brooksville Ridge (Puri and Vernon, 1964). It generally consists of a blue to gray sandy clay which weathers to yellow-orange or moderate-red from the presence of iron oxide. The formation generally contains sufficient clay to give it a distinct plasticity, but also contains significant amounts of quartz sand (Gilboy, 1984). Brooks (1981) refers to the Alachua as a portion of the Hawthorn. The Hawthorn Formation of the Miocene Age can generally be differentiated into an upper and lower unit. The upper unit is referred to as the Groveland Park Type. It is comprised of deeply weathered clayey sand and granular sand with beds of kaolinitic clay. The lower unit is referred to as the Statenville Type. It consists of a white to gray-green phosphatic clayey sand, with intermittent shell beds (Brooks, 1981). The Tampa Formation, of lower Miocene Age, consists of limestone with varying percentages of quartz sand and clay embedded in a carbonate matrix. It may be fossiliferous or can be devoid of fossils (Gilboy, 1984). The occurrence of this formation in the NWCFGWB is limited to Central Pasco County, and the northwest portion of Polk County.

Oligocene Epoch - The only formation of this epoch is the Suwannee Limestone. It is composed of hard, yellow or creamy fossiliferous limestone, which locally has an orangish tinge. The Suwannee Limestone contains many solution channels and is present at or near land surface in Citrus, Hernando, and Pasco counties (Yon and Hendry, 1972). The thickness of the Suwannee Limestone ranges from 0 to 300 feet in the NWCFGWB.

Eocene Epoch - The Eocene formations within the NWCFGWB consist of the Ocala Group, Avon Park Formation, and Oldsmar Formation, in descending order. The Eocene limestones found in the Basin

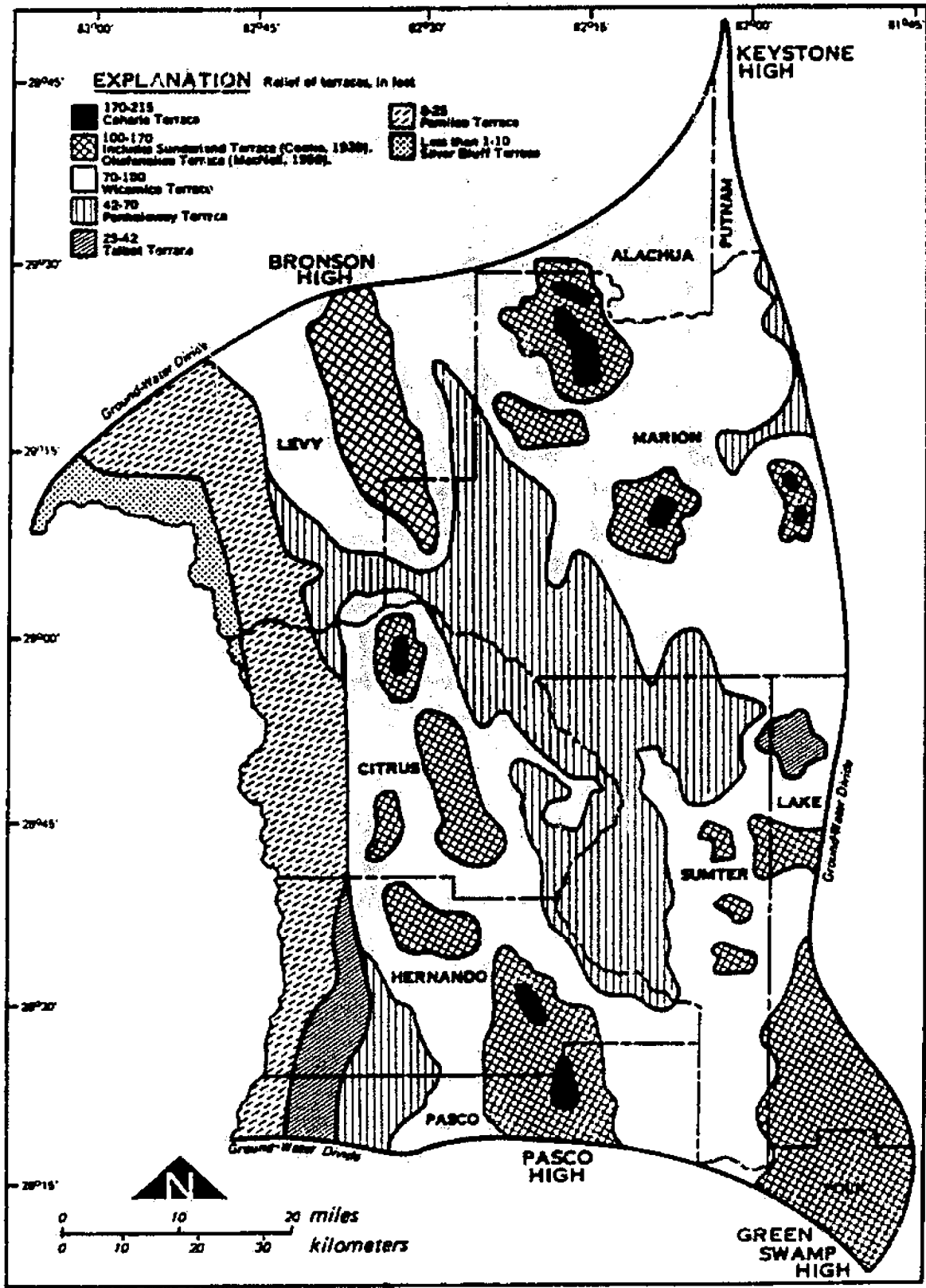


Figure 11. Location of Terraces and Shorelines in the Northern West-Central Florida Ground-Water Basin (from Healy, 1975).

are generally highly fractured and karstified rock units. During the development of the Ocala Arch, extension of the strata on the top and sides of the structure resulted in tensional stresses sufficient to cause widespread, near vertical fracturing and occasional normal faulting of the strata. Vernon (1951) reported two orientations of fractures that are associated with the arch. The primary fractures are oriented in a northwest-southeast direction paralleling the axis of the Ocala uplift with the secondary fractures trending northeast-southwest or perpendicular to the axis.

The Ocala Group consists of three units. In descending order these units are the Crystal River Formation, Williston Formation, and Inglis Formation. All three formations generally consist of a coquina foraminiferal limestone, usually cream to white in color. The Inglis Formation frequently contains gray to brown dolomite, and chert layers that can be present throughout the entire Ocala Group. The Ocala Group outcrops in northern Polk and southern Sumter counties within the Green Swamp area (Pride and others, 1966) and in northern Citrus County. The average thickness of the Ocala Group is 200 feet.

The Ocala Group is unconformably underlain by the middle Eocene Avon Park Formation. The Avon Park Formation crops out near the Dunnellon Gap. Lithologically the Avon Park is composed of fossiliferous limestone and dolostone. The limestone is moderate brown, dark-yellow brown to rusty-yellow brown, porous and very fine to medium grained and may be crystalline or saccharoidal in texture (Gilboy, 1984). The top of the formation may contain peat or carbonaceous layers and the bottom may contain small lenses of evaporite. The Avon Park Formation averages about 600 feet in depth within the NWCFGWB. The Avon Park is the deepest potable water bearing formation in the Basin, therefore, older geologic formations will not be discussed.

### KARST ACTIVITY

The NWCFGWB is dominated by features of karst topography. Karst topography develops where rainfall drains internally and rocks are susceptible to solution (Ritter, 1979). In these areas, the solution process can create and enlarge cavities within the rocks and allow underground circulation of water which, in turn, promotes further solution. This leads to progressive integration of voids beneath the surface and allows large amounts of water to be funneled into an underground drainage system, disrupting the pattern of surface flow. Chemical corrosion and internal drainage are the active processes rather than physical erosion from surface runoff (Sinclair, 1985). Dissolution is most active at the water-table or in the zone of water-table fluctuation where carbonic acid contained in atmospheric precipitation reacts with limestone and dolomite (Carroll, 1970). Because the altitude of the water table shifted in response to changes in sea level several times during the Pleistocene Epoch, many vertical and lateral paths have developed in the underlying carbonate

strata in the NWCFGWB. Many of these features lie below the present water table and greatly facilitate ground-water flow.

Large vertical shafts were formed by water percolating through the carbonate rocks that were above the water table at a time when sea level was lower than at present. The present water table lies above some vertical shafts. Percolating water slowly dissolves the rock and water movement tends to concentrate along these flow paths. Eventual collapse of the roofs over cavities, channels, caverns, or shafts form sinkholes (Sinclair, 1978).

## HYDROLOGY

### SURFACE WATER

Major surface-water drainage basins that occur within the NWCFGWB include the Withlacoochee River, Coastal Rivers, Waccasassa River, and Oklawaha River (Figure 12). The largest of these surface-water basins is the Withlacoochee River Basin with a drainage area of approximately 1,980 square miles (SWFWMD, 1985). Principle features of this basin include the Withlacoochee River, Lake Panasoffkee, Tsala Apopka Chain of Lakes, and Lake Rousseau. The Withlacoochee River originates in the Green Swamp, and flows generally northwest where it discharges into the Gulf of Mexico near Yankeetown. Average flow in the Withlacoochee River at its confluence with Blue Run, which conveys the discharge of Rainbow Springs near Dunellon to the river, is about 2,000 cubic feet per second (cfs). Approximately 180 cfs or ten percent of the combined flows of Rainbow Springs and the Withlacoochee River at Holder, is included in the 2,000 cfs figure to account for ungaged flow in the river between the gaging station at Holder and Blue Run (German, 1978). There are also indications that the Withlacoochee River receives approximately 146 cfs of discharge from the Floridan aquifer system along a 17 mile stretch between the Wysong Dam and the gaging station near Holder.

Lake Panasoffkee is located in midwest Sumter County and drains into the Withlacoochee River via the Outlet River. The lake is about six miles long, encompassing an area of approximately 7.5 square miles. Of the lakes' 420 square mile topographic basin area, only 60 square miles contribute direct runoff to the lake (Taylor, 1977). Average runoff to the lake from this area is about 44 cfs. Taylor estimated net inflow to the lake from ground-water sources to be 160 cfs. Three creeks flowing into Lake Panasoffkee were reported to be partly spring fed. Outflow from the lake is controlled by small rock dams in the Outlet River and the Wysong Dam in the Withlacoochee River.

Downstream from the confluence of the Outlet River and Withlacoochee River is the Tsala Apopka Chain of Lakes. This consists of interconnected ponds, marshes, and pools. The open water portions of the lakes consist of three primary pools, the Floral City Pool, Inverness Pool, and Hernando Pool. Most of the flow in and out of the lake today is via canals, instead of the



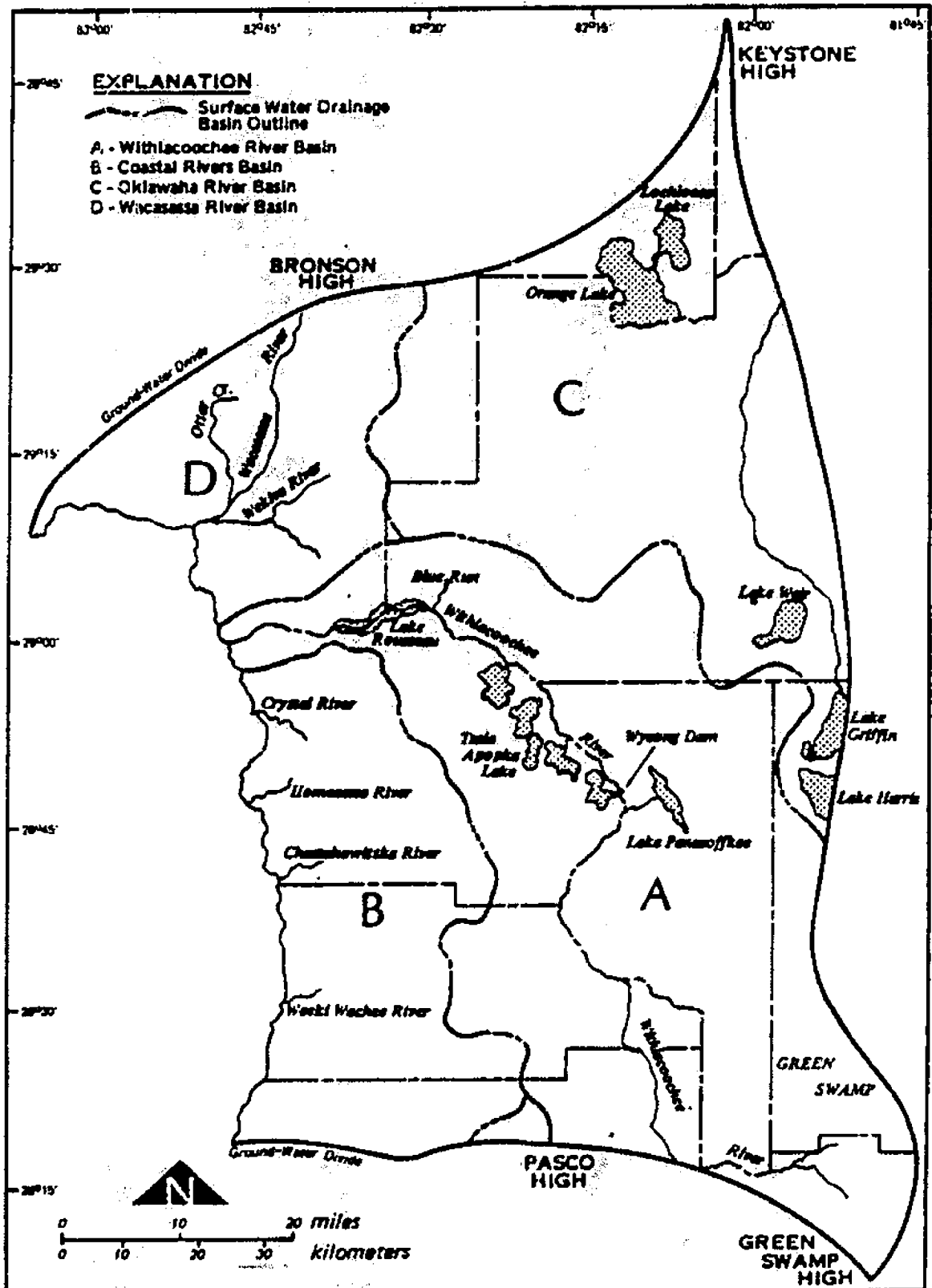


Figure 12. Major Surface Water Drainage Basins in the Northern West-Central Florida Ground-Water Basin (Modified from U.S.G.S. Hydrologic Unit Map - 1974, State of Florida).

marshes and swamps of the late 1880s, and the gradient of the lake level from south to north is maintained by flow control structures (Rutledge, 1977). There are indications that lake water may drain vertically in sinks to the north.

Lake Rousseau is located west of Dunnellon and is an impoundment of the Withlacoochee River formed by the Inglis Dam. The dam was constructed in 1909 originally for the purpose of hydroelectric power generation. Inflow to the lake from the river is approximately 2,000 cfs, as cited above for flow in the river at its confluence with Blue Run. The lake is approximately 11 miles long and covers an area of about 6.3 square miles. Lake Rousseau exhibits characteristics of river basins that have considerable surface storage such as swamps and lakes so that flood peaks are extended or drawn out (German, 1978). The topography is relatively flat and permeability of surficial sediments are sufficiently high to restrict direct runoff.

The Coastal Rivers Basin is the second largest drainage basin though not wholly contained within the NWCFGWB. In general, surface drainage in this basin is poorly developed (Fretwell, 1983). Principal streams include the Crystal, Homosassa, Chassahowitzka, and Weeki Wachee rivers. These rivers originate at springs and carry little overland flow. Cherry and others (1970) state that in Citrus, and Hernando counties surface drainage is almost non-existent. Rainfall in the area primarily infiltrates the highly permeable sands and considerable surface drainage occurs through existing sinkholes. Where these sinkholes are hydraulically connected to the Floridan aquifer system considerable recharge can occur. Cherry and others, (1970) note that Blue sink, located near Brooksville, has a drainage area of 30 square miles and is capable of recharging large quantities of water to the ground-water system. Other sinks have been known to make prairies out of lakes, as was the case with Neff Lake in Central Hernando County.

Approximately seventy percent of the Wacasassa River Basin is contained within the NWCFGWB. Surface runoff in this basin occurs through densely vegetated areas. Average flow in the Wacasassa River near Gulf Hammock is about 345 cfs. Of this flow Wekiva Springs contributes approximately sixteen percent, or 56 cfs. Several creeks also drain the basin and flow into the Wacasassa River near the Gulf. Lands under 25 feet NGVD in the southern half of the basin are considered flood prone areas (Taylor and others, 1978). Lower lying areas in other parts of the basin where land surface ranges between 25 and 75 feet NGVD are also considered flood prone.

In the Oklawaha River Basin major surface-water features include the Oklawaha River, Orange Lake, Lake Lochloosa, Lake Weir, Lake Griffin, and a portion of Lake Harris. Along the northeastern boundary of the NWCFGWB the Oklawaha River flows from its origin near the Green Swamp through several lakes including Lakes Griffin and Harris. East of Ocala discharge from Silver Springs

enters the Oklawaha River at its confluence with Silver Run, which conveys the spring discharge. Average flow is approximately 800 cfs. No major rivers exist in the remaining basin area. It appears that several lakes in the basin have a direct hydraulic connection to the Floridan aquifer system (Jones, 1985a). As in the Coastal Rivers Basin, rainfall rapidly infiltrates land surface and drains to several sinkholes in the area. Where direct hydraulic connections exist, considerable leakage can occur. Along the Oklawaha River near Lake Griffin the Floridan aquifer discharges to the river.

## SPRINGS

There are six first magnitude springs within the NWCFGWB, which are defined as springs that have an average discharge of at least 100 cfs (Table 2). These springs are Silver, Rainbow, Crystal River Group, Homosassa, Chassahowitzka, and Weeki Wachee (Figure 13). The two major springs in this group are Silver and Rainbow, located in the northern half of the Basin. The discharge of these two springs average 820 cfs and 763 cfs, respectively, (Roseneau and others, 1977). It is generally felt that in the northern half of the NWCFGWB the majority of ground-water flow is discharged through these two springs. Roseneau and others (1977) noted that the flow of Rainbow Springs is derived from local rainfall that infiltrates the aquifer over a catchment area of about 645 square miles, distributed mostly north and northeast of the springs. The flow of Silver Springs is generally from a catchment area of 730 square miles located mostly north, south, and west of the Springs. In general, flow to these springs is supplied through a complex system of fractures and solution channels in the Floridan aquifer system. Faulkner (1976) noted that the majority of flow to Silver Springs is derived from the upper 100 to 200 feet of the Floridan aquifer system.

Table 2. Major springs and flow in the Northern West-Central Florida Ground-Water Basin (from Roseneau and others, 1977).

| Index number | Spring(s)           | Flow (cfs) | Index number | Spring(s)       | Flow (cfs) |
|--------------|---------------------|------------|--------------|-----------------|------------|
| 1            | Wekiva              | 56         | 13           | Chassahowitzka  | 138        |
| 2            | Silver              | 820        | 14           | Nos. 10, 11, 12 | 9          |
| 3            | Rainbow             | 763        | 15           | No. 9           | 20         |
| 4            | Wilson Head         | 3          | 16           | Blind           | 40         |
| 5            | Gum                 | 50         | 17           | No. 7           | 25         |
|              |                     |            | 18           | Salt            | 29         |
| 6            | Blue                | 15         | 19           | Mud             | 50         |
| 7            | Crystal River Group | 916        | 20           | Weeki Wachee    | 176        |
| 8            | Homosassa           | 175        | 21           | Boat            | 5          |
| 9            | Fenny               | 15         | 22           | Bobhill         | 3          |
| 10           | Miscellaneous       | 29         | 23           | Magnolia        | 9          |
| 11           | Bugg                | 15         | 24           | Horseshoe       | 6          |
| 12           | Potter and Ruth     | 29         | 25           | Salt            | 5          |

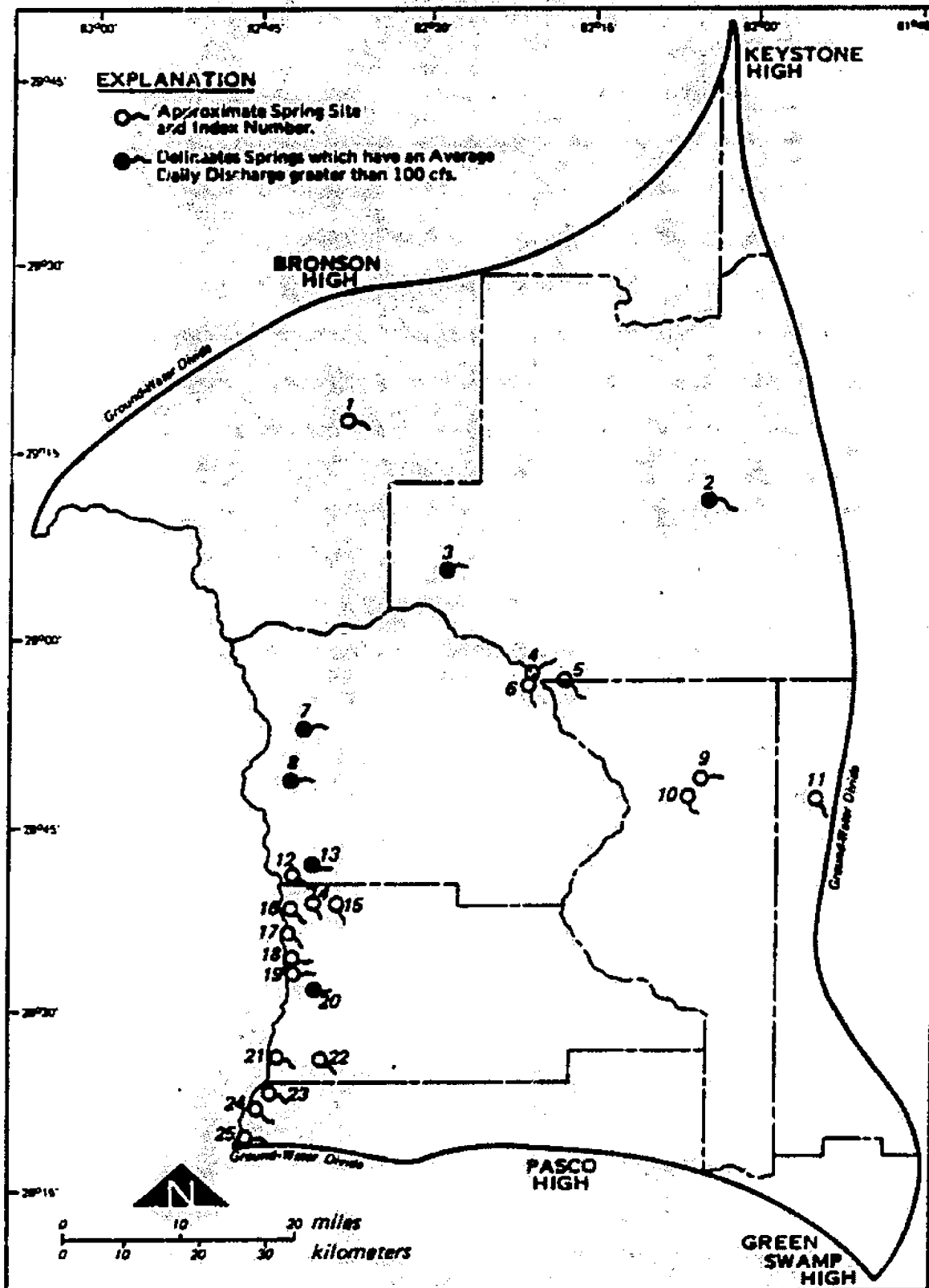


Figure 13. Location of Springs in the North West-Central Florida Ground-Water Basin (modified from Rosenau and others, 1977; and Ryder, 1982).

Other inland springs in the NWCFGWB include Wakiva, Wilson Head, Gum, Blue, Penny, and some miscellaneous springs that occur in the Withlacoochee and Oklawaha Rivers. Several coastal springs also exist as shown on Figure 13. As noted in Cherry and others (1970), Hernando and Citrus counties are essentially internally drained. Ground-water discharge in this area is primarily through the coastal springs. Total average discharge via springflow from the entire NWCFGWB is approximately 3,400 cfs (2,220 million gallons per day (Mgal/d)).

## GROUND WATER

### SURFICIAL AQUIFER SYSTEM

A distinct surficial aquifer does not exist as a continuous unit in the NWCFGWB. Where the surficial aquifer system does exist, it is generally comprised of fine to coarse grained sands, clayey sands, shell, and thin layers of limestone that occur above the confining clay unit separating the surficial and Floridan aquifer systems. Thickness of the surficial deposits range from greater than 150 feet in areas in the eastern part of the NWCFGWB to less than 25 feet in much of the central and western part of the Basin (Figure 14).

Along the Brooksville Ridge the surficial aquifer system is perched and discontinuous. In general, the surficial aquifer system appears to contain water on a seasonal basis as a function of rainfall. Jones (1985a) noted that north of the Withlacoochee River, the surficial aquifer exists in approximately sixty percent of the area.

Aquifer coefficients for the surficial aquifer system have been determined for a few sites near the southern boundary of the Basin. Hydraulic conductivity was found to range from about 7 to 40 feet per day. Owing to the variable nature of the thickness of the surficial deposits, transmissivities were found to range from 120 to 2500 feet squared per day ( $\text{ft}^2/\text{d}$ ). Specific yield was determined to range from 0.2 to 0.3 (Jones, 1985b).

Inflow to the surficial aquifer system is primarily from rainfall. Discharge occurs via downward leakage to the Floridan aquifer system, evapotranspiration, and seepage to lakes and streams. In areas such as coastal Citrus and Hernando counties the surficial aquifer system drains directly into the Floridan via solution features. In areas where surface drainage is slow due to relatively flat topography, such as the Green Swamp, evapotranspiration losses from the surficial aquifer system are high.

The water quality of the surficial aquifer system generally is good, except for some areas with high iron concentrations. The water is generally lower in hardness and total dissolved solids than water in the Floridan aquifer system.

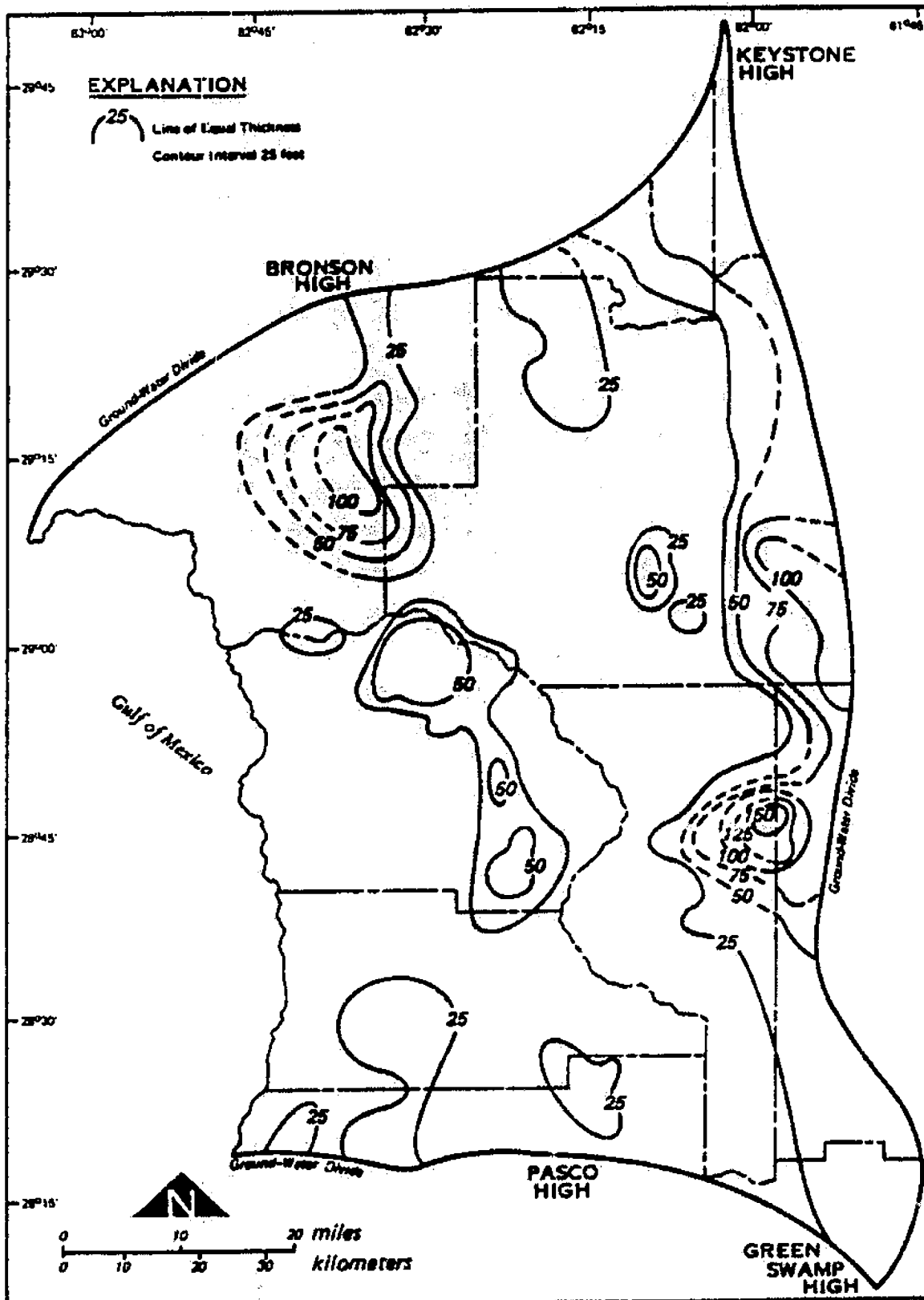


Figure 14. Thickness of the Surficial Deposits in the Northern West-Central Florida Ground-Water Basin (from Wolansky and Others, 1981; and Faulkner, 1970).

### CONFINING UNIT

The confining unit separating the surficial aquifer system from the Floridan aquifer system consist primarily of clays of the Alachua and Hawthorn Formations. The lithologies of these formations were previously described in the Stratigraphy section.

Where present, the confining unit ranges from less than 25 feet to greater than 50 feet (Figure 15), and restricts vertical ground-water flow between the aquifer systems. The rate and direction of vertical flow or leakage is dependent upon the vertical hydraulic conductivity, thickness of the confining unit and the head difference between the surficial and Floridan aquifer systems. Within the Basin, the confining unit is often breached by solution features, allowing ground-water recharge to directly enter the Floridan aquifer system.

### FLORIDAN AQUIFER SYSTEM

The Floridan aquifer system, is the principal aquifer system and major source of water for consumptive use in the Basin. This aquifer system is generally comprised of limestone and dolomite. The thickness of the Upper Floridan in the Basin varies from less than 800 feet near Rainbow Springs to greater than 1,500 feet in the northeast section, to 600 feet near the Withlacoochee River and 800 feet in southern Hernando County (Figure 16). Throughout the area the Upper Floridan acts primarily as a semi-confined aquifer. Where the confining clay layer is absent the aquifer acts as unconfined. In general, this occurs westward of the coastal springs and is variable throughout the Basin area, especially to the north (Jones, 1985a). Limestone of the Upper Floridan aquifer is known to outcrop at different points throughout the Basin (Pride and others, 1966), as evidenced by the several springs that occur and Brook's surficial geology map.

Recharge to the Upper Floridan aquifer occurs directly via rainfall where the confining clays do not exist and sinkholes have a direct hydraulic connection, and also by downward leakage from the surficial aquifer system. Discharge from the Upper Floridan aquifer occurs through spring discharge, upward leakage to the water table when the potentiometric surface is higher than the water table, lateral outflow to the Gulf, and pumpage. Jones (1985a) noted that about ninety percent of the discharge in the portion of the Basin north of the Withlacoochee River occurs through Rainbow and Silver Springs.

The general direction of ground-water flow in the NWCFGWB is northwest from the Green Swamp and Pasco highs, and southwest from the Keystone and Bronson highs to the Gulf of Mexico (Figures 1 and 2). In the Green Swamp the potentiometric surface rises to 120 feet above NGVD. At the Keystone and Pasco highs the potentiometric surface is about 80 to 90 feet above NGVD. Troughs in the potentiometric surface can be seen near Rainbow

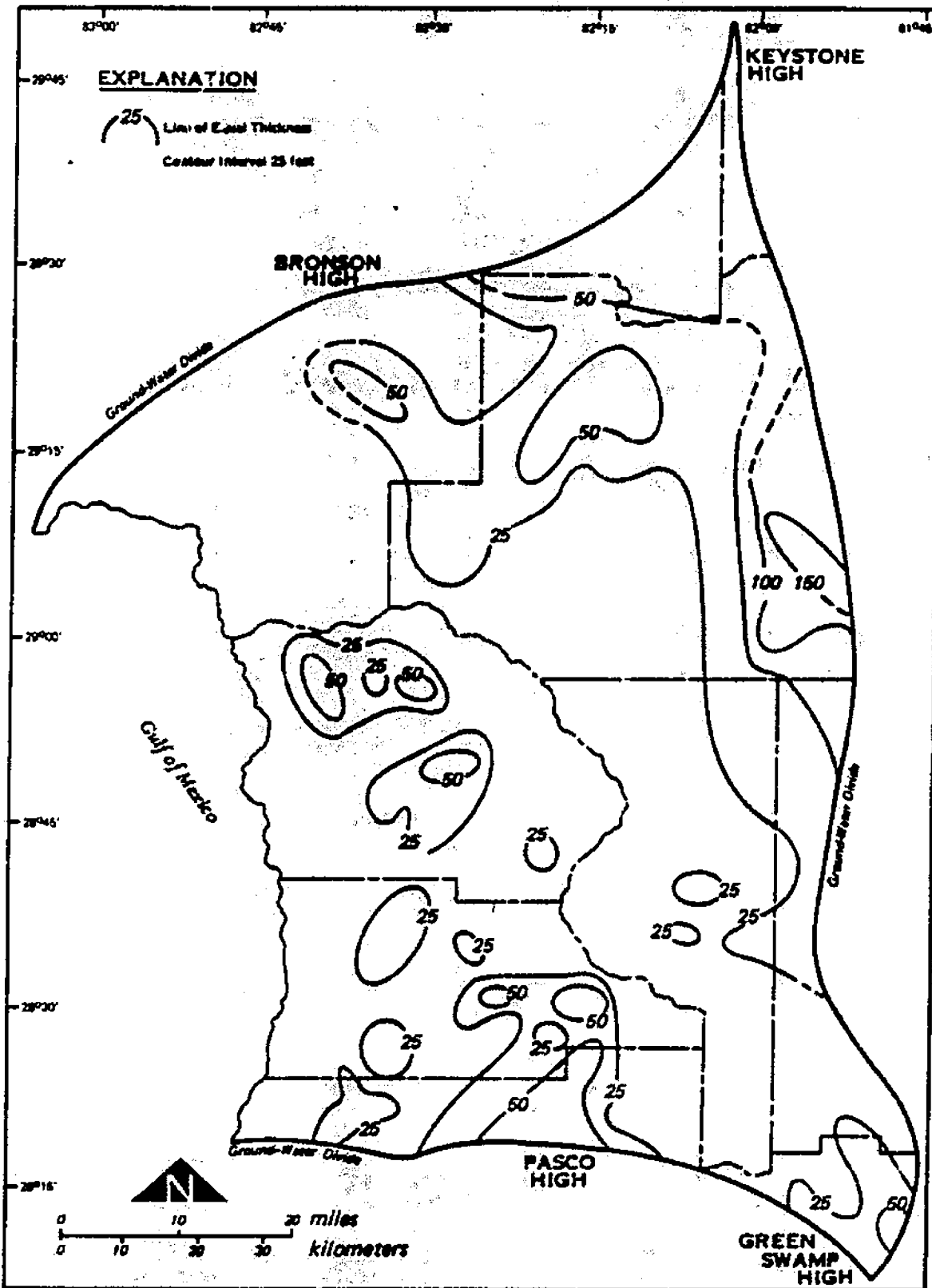


Figure 15. Thickness of the Confining Bed Overlying the Floridan Aquifer System in the Northern West-Central Florida Ground-Water Basin (from Buono and Others, 1979, and Faulkner, 1970).



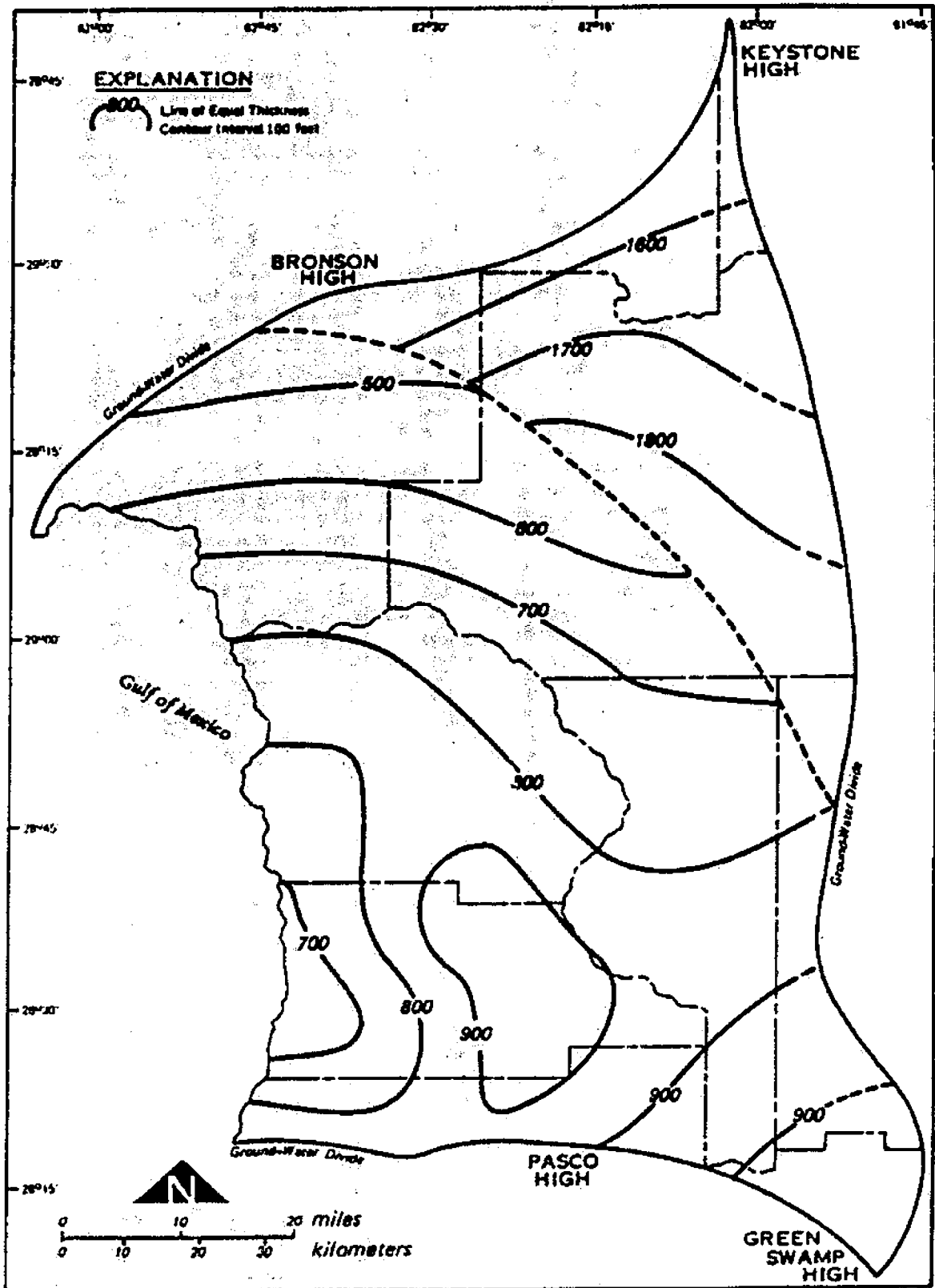


Figure 16. Generalized Thickness of the Upper Floridan Aquifer in the Northern West-Central Florida Ground-Water Basin (modified from Miller, 1982; and Ryder, 1985).

and Silver Springs. Between Silver Springs and Rainbow Springs the potentiometric surface is relatively flat and constant. In areas where potentiometric contours are spaced far apart the gradient is small, indicating high transmissivity values.

Transmissivity of the Upper Floridan aquifer in the NWCFGWB is characteristically variable for karst environments. Values of 2,085,000 ft<sup>2</sup>/d and 1,200,000 ft<sup>2</sup>/d were obtained by flow net analysis for Silver Springs and Weeki Wachee Springs, respectively (Faulkner, 1976; Sinclair, 1978). Typically, transmissivity values are high near the springs and decrease as you move away. The lowest value compiled by Jones (1985b) for the NWCFGWB was 13,000 ft<sup>2</sup>/d (Tibbals and others, 1982) in the Green Swamp. Locations of known aquifer tests in the Basin and aquifer test values are presented in Figure 17. Values of leakage coefficients ranged from 1.0x10<sup>-4</sup> to 2.0x10<sup>-2</sup> cubic foot per day per cubic foot (ft<sup>3</sup>/day/ft<sup>3</sup>).

In addition to leakage and transmissivity values derived from flow net analyses and aquifer tests, these values have been approximated by several digital models for the NWCFGWB during the past decade. One of the more recent models, Ryder (1982), derived transmissivity and leakage values from a 16 square mile, two-layered, steady-state, finite-difference model that included all of the NWCFGWB within the modeled area. Figure 18 and 19 depict transmissivity and leakage values of the Upper Floridan aquifer system derived from this model. Based on an average Upper Floridan aquifer potable water thickness of 600 feet, total NWCFGWB area of 4,500 square miles, and a porosity of 20 percent, total potable water stored in the Upper Floridan aquifer in the NWCFGWB is calculated to be 15 trillion cubic feet (113 trillion gallons).

#### WATER QUALITY

Water quality in the Upper Floridan aquifer is primarily affected by the chemical nature of precipitation that infiltrates land surface, the composition and solubility of the earth material coming in contact with the water, and the certain properties and characteristics that the soluble earth materials impart to the water. The water quality of the system is also influenced by surface water that directly recharges the aquifer via solution features and other direct hydraulic connections such as aquifer outcrop areas near rivers, streams, and swamps. Water quality along the coast is also effected by the position of the freshwater/saltwater interface.

Within the NWCFGWB the quality of water in the Upper Floridan aquifer is generally good. However, the quality deteriorates at depth, towards the coast, and in the riverine and swampy, lowland areas. Presented in Table 3 is a list of secondary drinking water standards (Florida Administrative Code (FAC), 17-22). In approximately 167 wells that were sampled for water-quality parameters in the Withlacoochee River Basin, Laughlin and

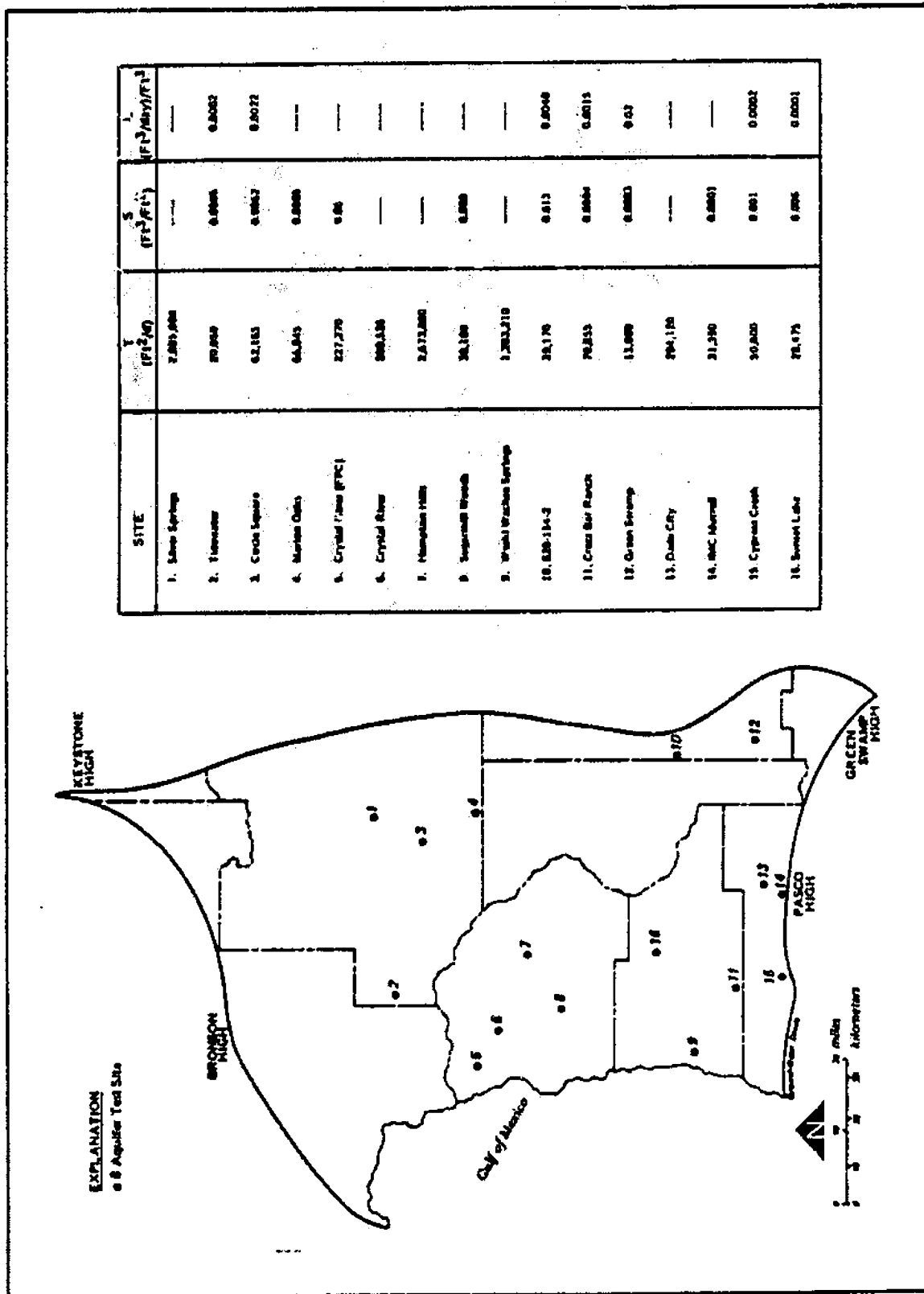


Figure 17. Aquifer Test Sites in the Northern West-Central Florida Ground-Water Basin (From Jones, 1985)

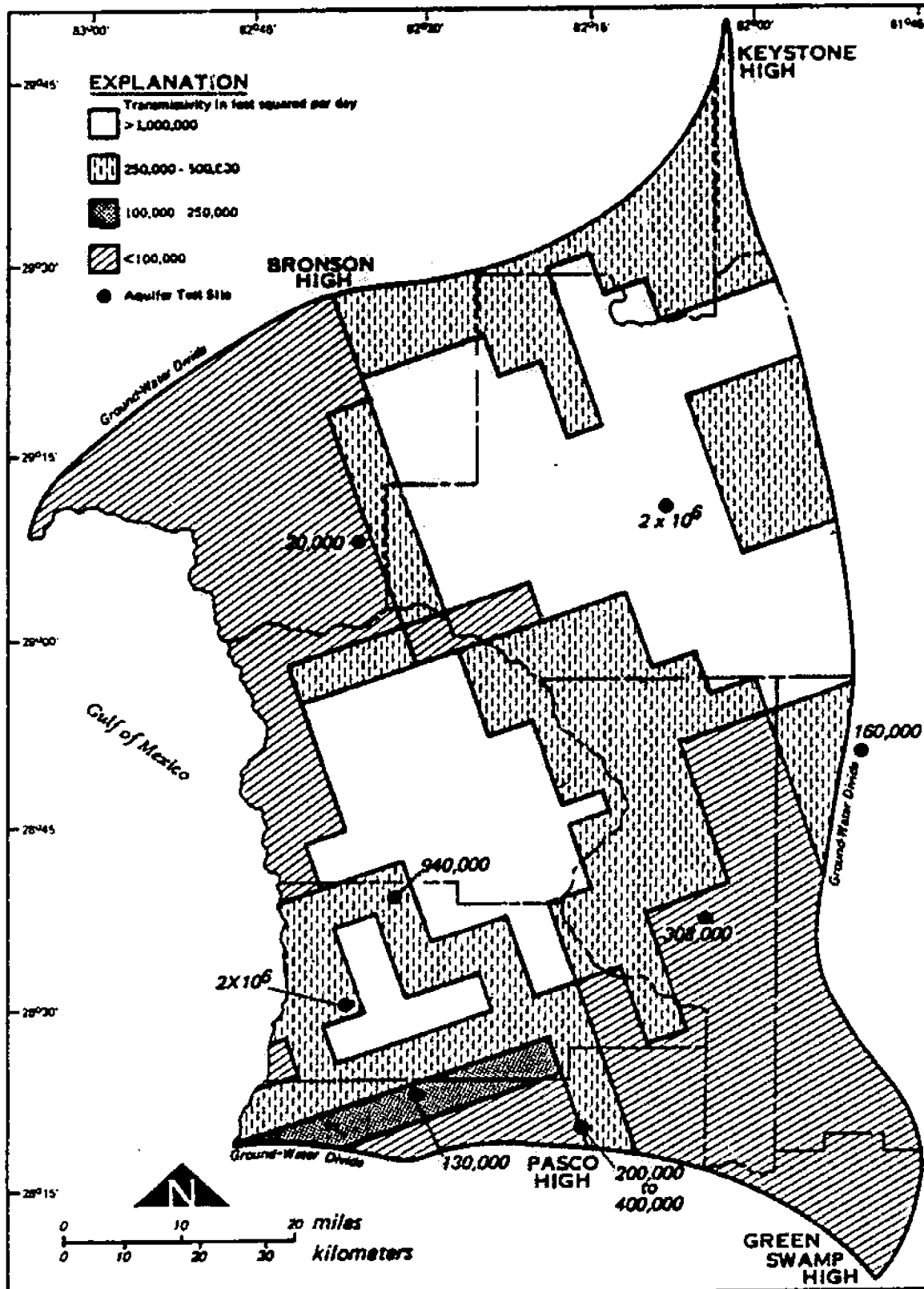


Figure 18. Generalized Transmissivity Values, in 1976, in the Northern West-Central Florida Ground-Water Basin, Derived From a Two Layer Steady State Digital Model (From Ryder, 1982).

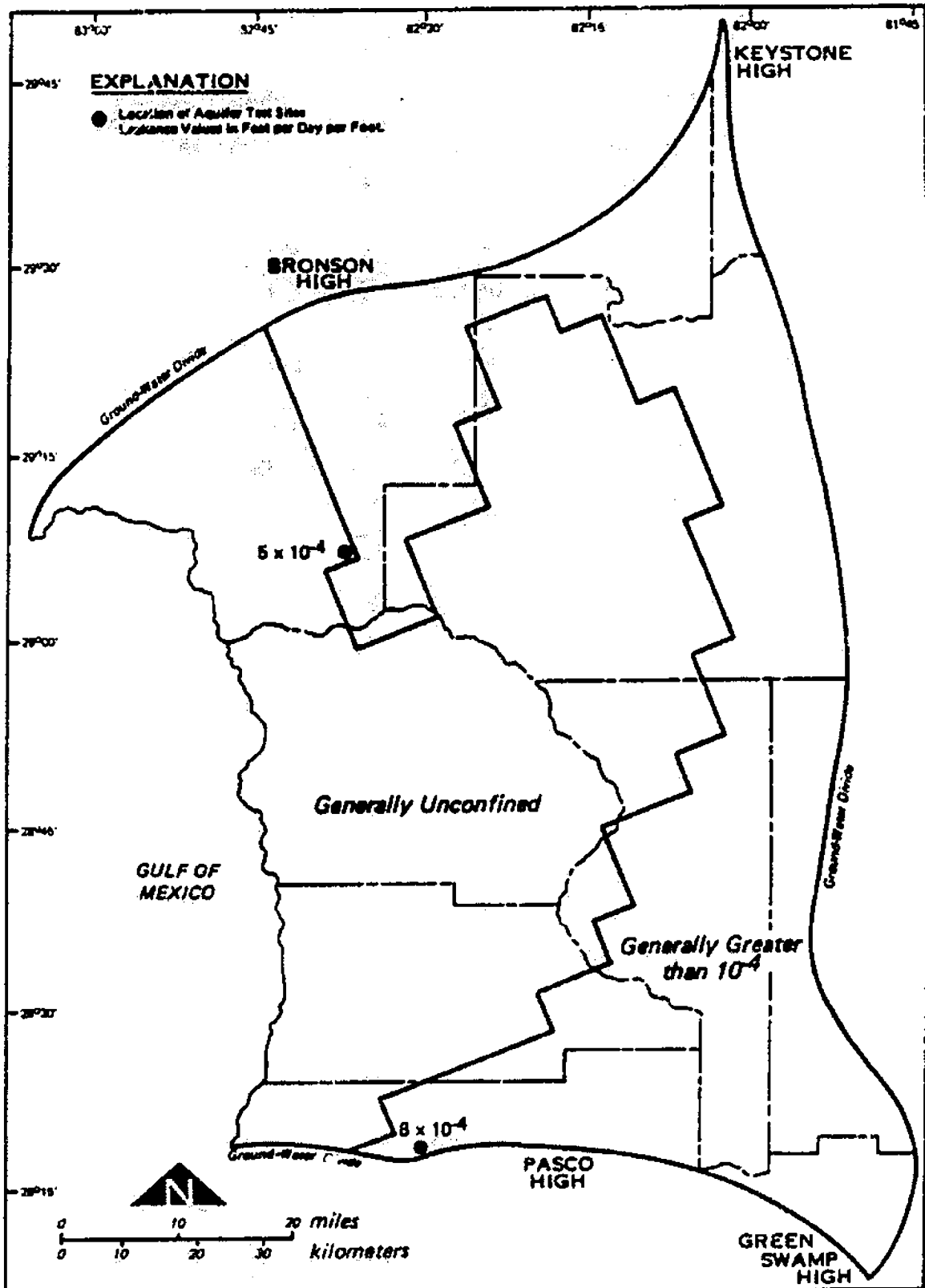


Figure 19. Generalized Leakage Values in the Northern West-Central Florida Ground-Water Basin, Derived from a Two-Layer, Steady-State, Digital Model (from Ryder, 1982).

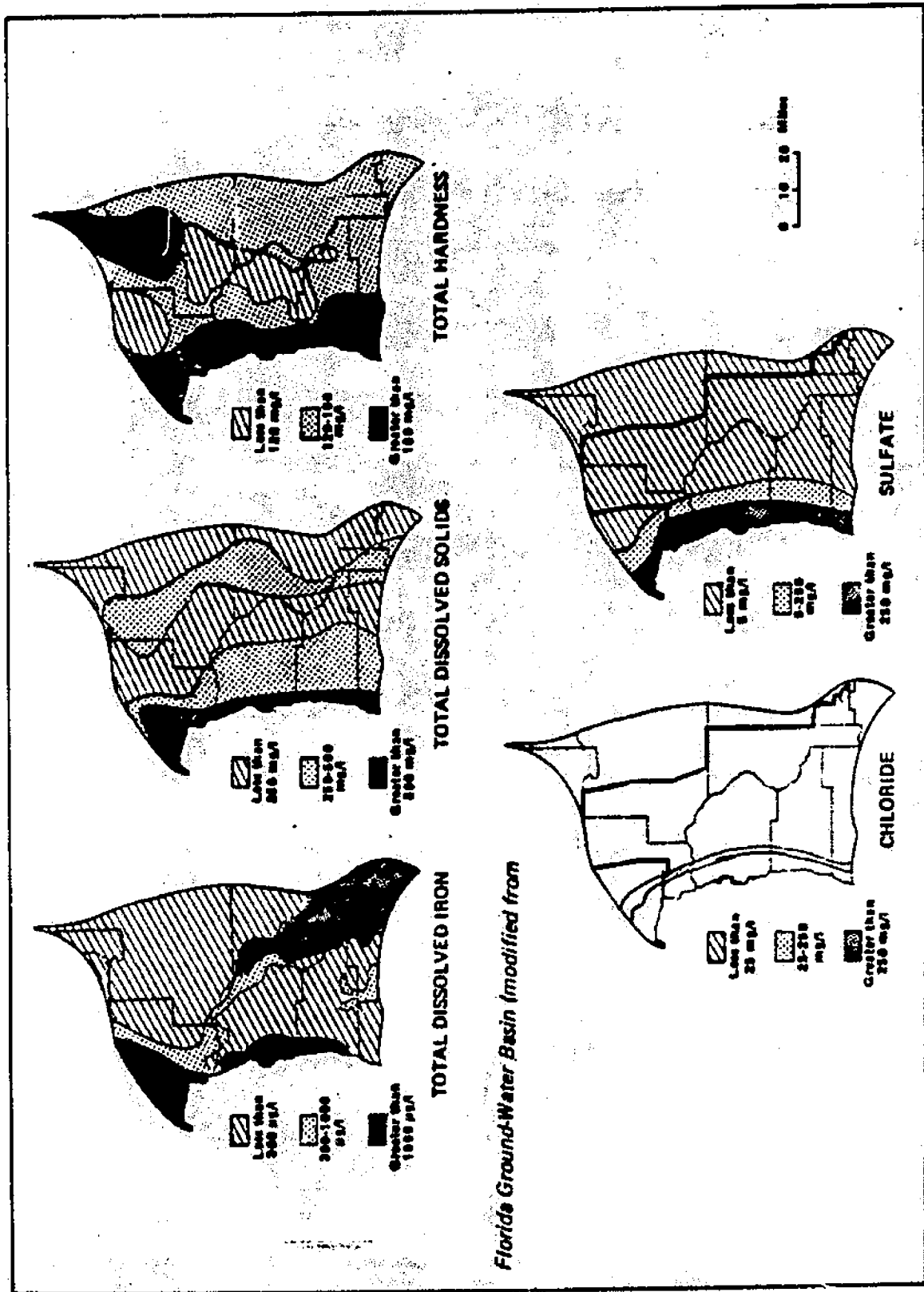
Anderson (1982) found approximately ten percent of the wells exceeded 17-22 criteria for color, twenty percent for iron, two percent for sulphate, and three percent for Total Dissolved Solids (TDS). Those wells that exceeded the criteria for color were generally found to be seldom used, near a lake or swamp, or were high in iron. Where iron was found to be excessive, the wells were mostly shallow wells penetrating the very top of the aquifer or were short cased deeper wells that allowed poorer quality water to leak downward. Half of the wells studied by Russell and Axon, Inc. (1985) in Sumter County were found to be excessive with respect to iron. From Figure 20, areas highest in iron were along the southern portion of the Withlacoochee River and along the coastline.

Table 3. Florida Administrative Code, Chapter 17-22 Secondary Existing Water Standards.

| Contaminant              | Levels, Milligrams Per Liter*                    |
|--------------------------|--|
| Chloride                 | 250  |
| Color                    | 15 color units                                   |
| Copper                   | 1  |
| Corrosivity              | **neither corrosive nor scale forming.           |
| Foaming agents           | 0.5  |
| Iron                     | 0.3  |
| Manganese                | 0.05   |
| Odor                     | 3 (threshold odor number)                        |
| pH (at collection point) | 6.5 (min. allowable - no max.)                   |
| Sulfate                  | 250  |
| TDS                      | 500 (may be greater if no other MCL is exceeded) |
| Zinc                     | 5  |

\*except color, odor, corrosivity and pH. \*\*Assessment of degree of corrosion or scale forming tendencies must be based on historical water characteristics of the system. A Langelier Index range of -0.2 to +0.2 should be used as a guideline toward obtaining water stability if calcium carbonate is present. If stabilizers are used, the -0.2 to +0.2 range may not be applicable.

Most inland wells in the NWCFGWB were below the secondary drinking water standards for sulphate (Figure 20). Increased concentrations of sulphate occur as you travel towards the coast. Water high in TDS was found throughout the Basin (Figure 20). Areas exceeding the criteria for TDS occurred primarily near the southern portion of the Withlacoochee River and near the coast.



Florida Ground-Water Basin (modified from

Figure 20. Naturally Occurring Major Constituents Within the Northern West-Central Florida Ground-Water Basin (modified from Anderson and Laughlin, 1982; Corral, 1983; Fretwell, 1983; and Sprinkle, 1982).

The potential for saltwater intrusion near the coastline of the NWCFGWB increases as development pressures within the Basin increase. In response to climatic and/or man-induced stress, potentiometric levels in the Upper Floridan aquifer decrease resulting in a reduced potentiometric gradient. As a result, ground-water outflow to the Gulf is reduced and the zone of freshwater/ saltwater mixing (transition zone) moves inland. The transition zone is bounded on the seaward side by saltwater at 19,000 milligrams of chloride per liter (mg/l) and on the landward side by freshwater at 25 mg/l (Causseaux and Fretwell, 1983). As presented in Table 3, maximum acceptable limits for chloride is 250 mg/l in drinking water.

In the inland portions of the NWCFGWB, levels of chlorides in the Upper Floridan aquifer are usually less than 250 mg/l (Laughlin and Anderson, 1982; Corral, 1983). The degree of freshwater/ saltwater mixing increases towards the coast as evidenced by increasing chloride concentrations depicted in Figure 20. Causseaux and Fretwell (1983) stated that saltwater generally occurs at shallow depths near the coast in Citrus and Pasco counties. At a depth of 200 feet below NGVD the 250 mg/l chloride line is found at approximate distances of 4, 2, and 4 1/2 miles from the coast in Citrus, Hernando, and Pasco counties, respectively. Causseaux and Fretwell noted that mixing of freshwater and saltwater in the Upper Floridan in these three counties occurs for several miles. Fretwell (1983) cited at least two springs, Homosassa and Salt Springs that had chloride levels in excess of 250 mg/l. From Roseneau and others (1983), other springs that exceeded the 250 mg/l limit were Ruth and Potter, Chassahowitzka, Blind, Mud, Horseshoe, and Salt Springs. Several unnamed springs on the coast of Hernando County also were reported to exceed the limit for chloride.

#### RECHARGE AND DISCHARGE AREAS

There have been several generations of studies that have included estimates of natural recharge to the Floridan aquifer system throughout Florida. Some of the more significant studies relative to the NWCFGWB are Parker's (1955) "Water Resources of Southeastern Florida; with special references to the geology and ground water of the Miami area", Prides's and others (1966) "Hydrology of the Green Swamp area in central Florida", Stewart's (1966) "Ground-Water resources of Polk County", Tibbal's (1975) "Recharge Areas of the Floridan Aquifer in Seminole County and Vicinity, Florida", Grubb's and Rutledge's (1979) "Long-Term Water Supply Potential, Green Swamp area, Florida", Stewart's (1980) "Areas of Natural Recharge to the Floridan Aquifer in Florida", Ryder's (1982) "Digital Model of Predevelopment Flow in the Tertiary Limestone (Floridan) Aquifer System in West-Central Florida", Jones' (1985a) "Northern Withlacoochee Hydrologic Investigation", and Adams's (1985) "Ground-Water Supplement to the Wysong-Panasoffkee Study". Recharge values reported through 1980 estimated recharge by analyzing certain geologic and hydrologic factors which affect recharge such as soil type,



confining bed thickness and continuity, water balance calculations, difference between water table and the potentiometric levels, etc. The last three studies listed (Ryder, (1982); Jones, (1985a); and Adams, (1985)) simulated values of recharge and upward leakage from the Upper Floridan aquifer through the use of two-layered, steady-state, digital models. Discussed below are Stewart's (1980) and Ryder's (1982) investigations, which represent recent analytically and numerically derived estimates of recharge, respectively.

Stewart delineated four categories of natural recharge: areas of generally no recharge, areas of known very low recharge (less than 2 inches per year), areas of very low to moderate recharge (less than 2 inches to as much as 10 inches per year), and areas of high recharge (10 to 20 inches per year). Areas of generally no recharge, are mostly where the potentiometric surface of the Upper Floridan aquifer is above land surface much of the time and coincide with areas of artesian flow shown by Healy (1975). The areas of known very low recharge are where the Upper Floridan aquifer is known to be overlain by relatively impermeable confining beds generally more than 25 feet thick. In these areas recharge rates are estimated to be less than 2 inches per year. The areas of very low to moderate recharge are where the confining beds are generally less than 25 feet thick or breached, but include unknown areas where the confining unit may be more than 25 feet thick and unbreached. Areas of very low to moderate recharge also include areas where the confining bed is absent, but where the water table and potentiometric surface of the Upper Floridan aquifer are both close to the land surface so that little recharge occurs. The areas of high recharge are generally a combination of where the confining unit is absent or very discontinuous, where the water table is at a significantly greater elevation than the potentiometric surface of the Floridan, and areas where the aquifer system is overlain with a relatively permeable soil and vadose zone.

Figure 21 is an excerpt from Stewart's statewide map depicting generalized areas of natural recharge in the NWCFGWB. The Basin includes all four of Stewart's recharge categories. Approximately 50 percent of the Basin is within Stewart's high recharge area. These high recharge areas primarily correspond to the Brooksville Ridge and the Tsala Apopka Plain.

Ryder (1982) simulated values of recharge and upward leakage from and to the Upper Floridan aquifer (excluding spring discharge) through the use of a two-layered, steady-state, digital model (Figure 22). Higher recharge rates of 10 to 20 inches per year occur in much of the Basin. Rates are moderate along the ridge areas in the eastern side of the Basin extending southward into Polk County. High rates of diffuse upward leakage occur along the coastal areas. These model derived rates compare well with Stewart's values and Jones' (1985a) and Adams' (1985) model derived values, as well as Bush's (1982) initial recharge

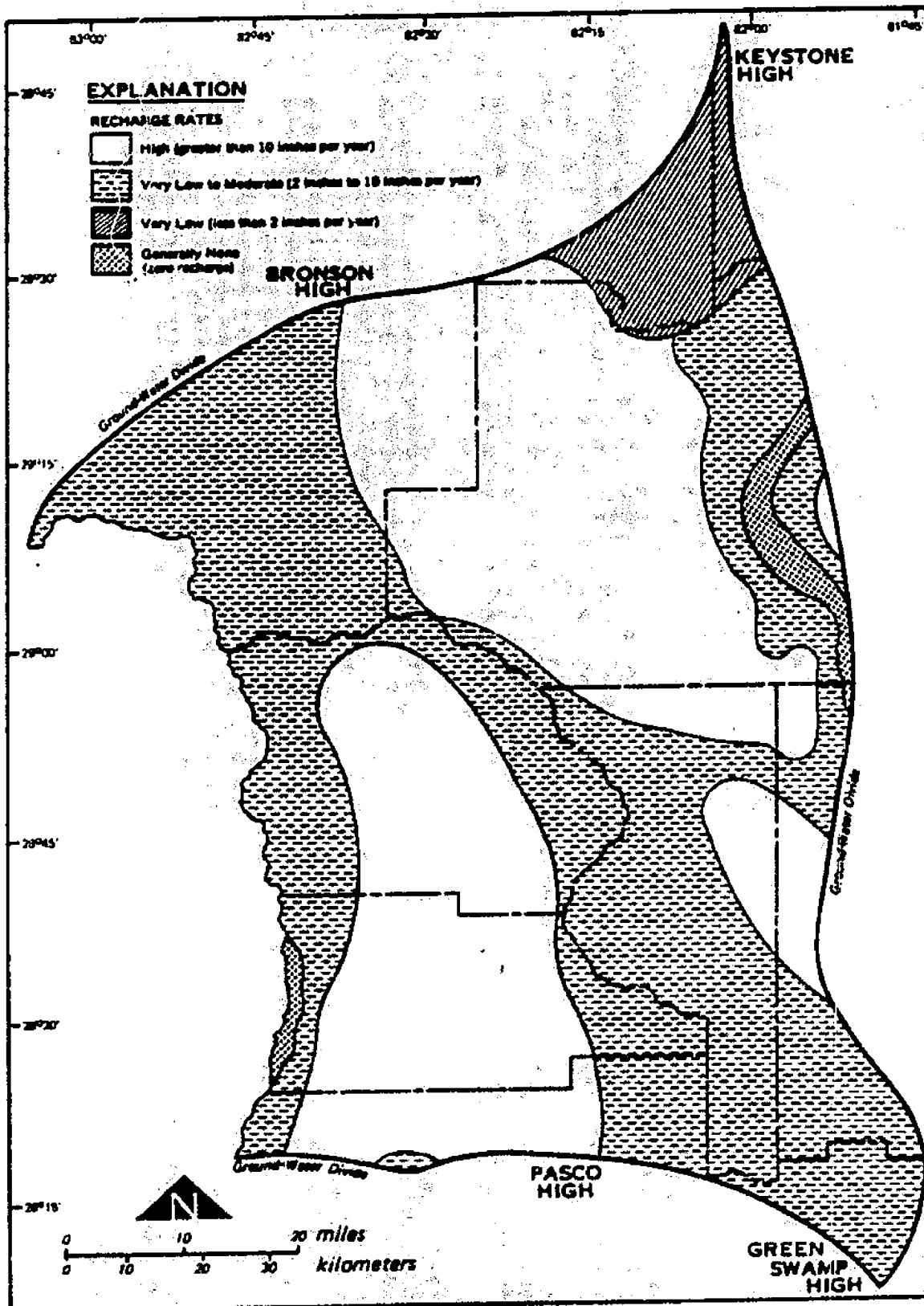


Figure 21. Generalized Recharge Areas in the Northern West-Central Florida Ground-Water Basin (from Stewart, 1980).

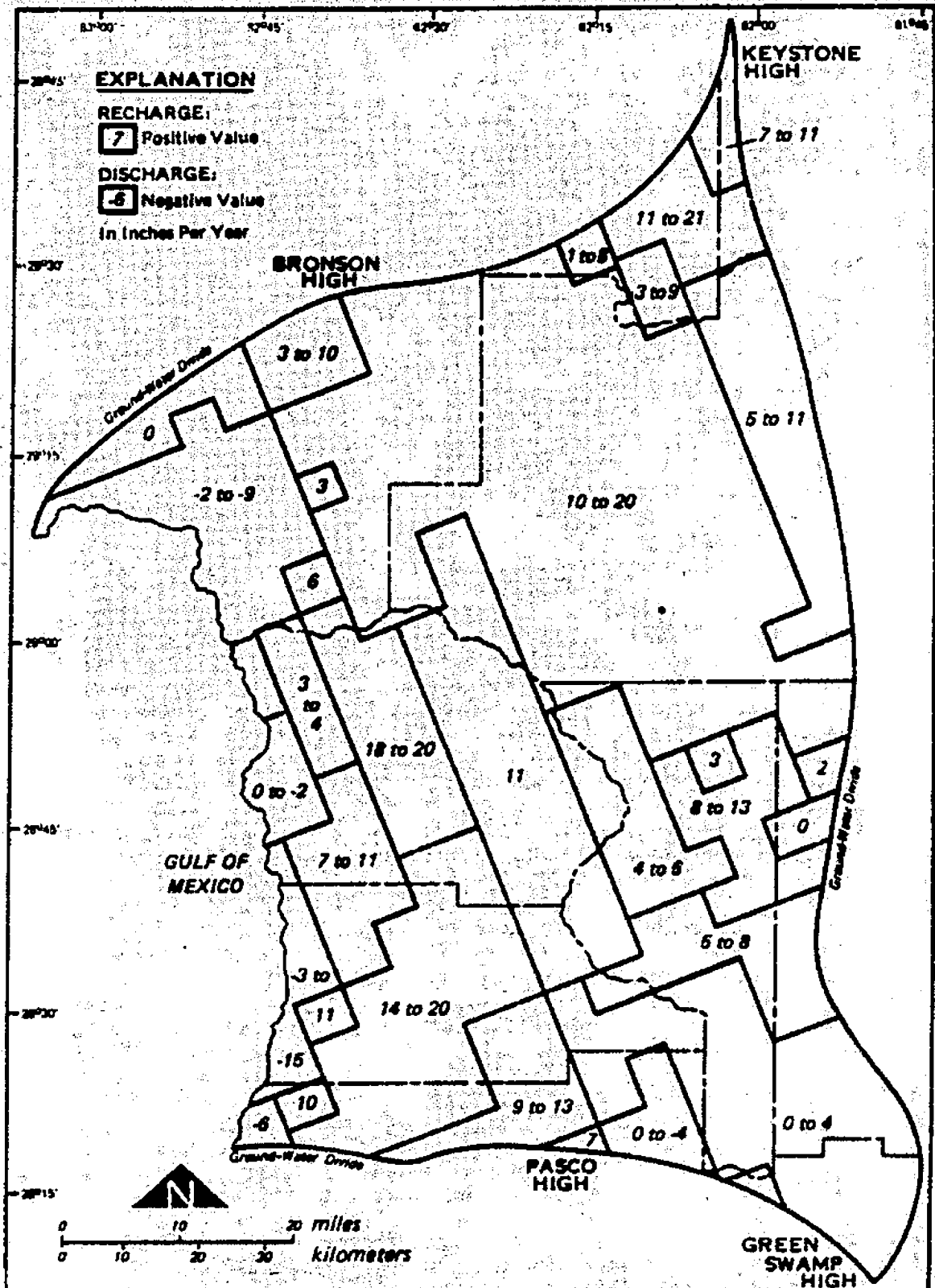


Figure 22. Generalized Estimated Predevelopment Recharge and Discharge Values in the Northern West-Central Florida Ground-Water Basin, Derived from a Two-Layer, Steady-State, Digital Model (from Ryder, 1982).

estimates from water-balance calculations for surface-water basins.

The recharge values in Figures 21 and 22 represent recent, regionally accepted, recharge values in the NWCFGWB. Additional fine tuning of these recharge values could be obtained with increased data coverage and possibly with the utilization of a transient flow model.

#### GENERALIZED AREAS SUITABLE FOR WATER RESOURCE DEVELOPMENT

One of the primary WMD's requirements relative to the GWBRAI is the delineation of areas suitable for future water resource development within the ground-water basins. Criteria generally used to identify these areas are:

- depth to the saltwater interface
- potentiometric surface elevation
- seasonal fluctuation in the potentiometric surface
- depth to the water table
- leakance (recharge potential)
- transmissivity
- water quality
- cumulative potentiometric drawdown

To fully evaluate these criteria the SWFWMD has initiated the following: 1) a compilation of existing data on areas suitable for future ground-water resource development; 2) construction of DRASTIC maps; and, 3) the development of detailed basin ground-water models to enhance our understanding of the ground-water flow system. To date, only the compilation of existing data is complete. The DRASTIC maps will be completed by September, 1987, and the ground-water models are targeted for completion in 1988. Areas suitable for future ground-water development will be comprehensively addressed when the models are completed, however, areas suitable for development, based on existing information are discussed below.

General areas suitable for future water resource development within the NWCFGWB, based on existing data are delineated in Figure 23. Areas suitable for future development have been delineated in Hernando, Marion, and Sumter counties by consultants completing Master Water Use Plans for the counties. Additionally, the United States Geological Survey (USGS) has delineated the location of the 250 mg/l chloride isochlor in the Upper Floridan aquifer which greatly lessens the suitability for water resource development eastward of this isochlor. Areas of suitability in Citrus, Pasco, Polk, Levy, and Lake counties have yet to be established. However, as of January, 1987, Citrus County was nearing completion of delineating suitable areas.

Common to the areas found suitable for water resource development in Figure 23 is that these areas have sufficient water quality to meet public health standards (FAC, 17-22,) and sufficient

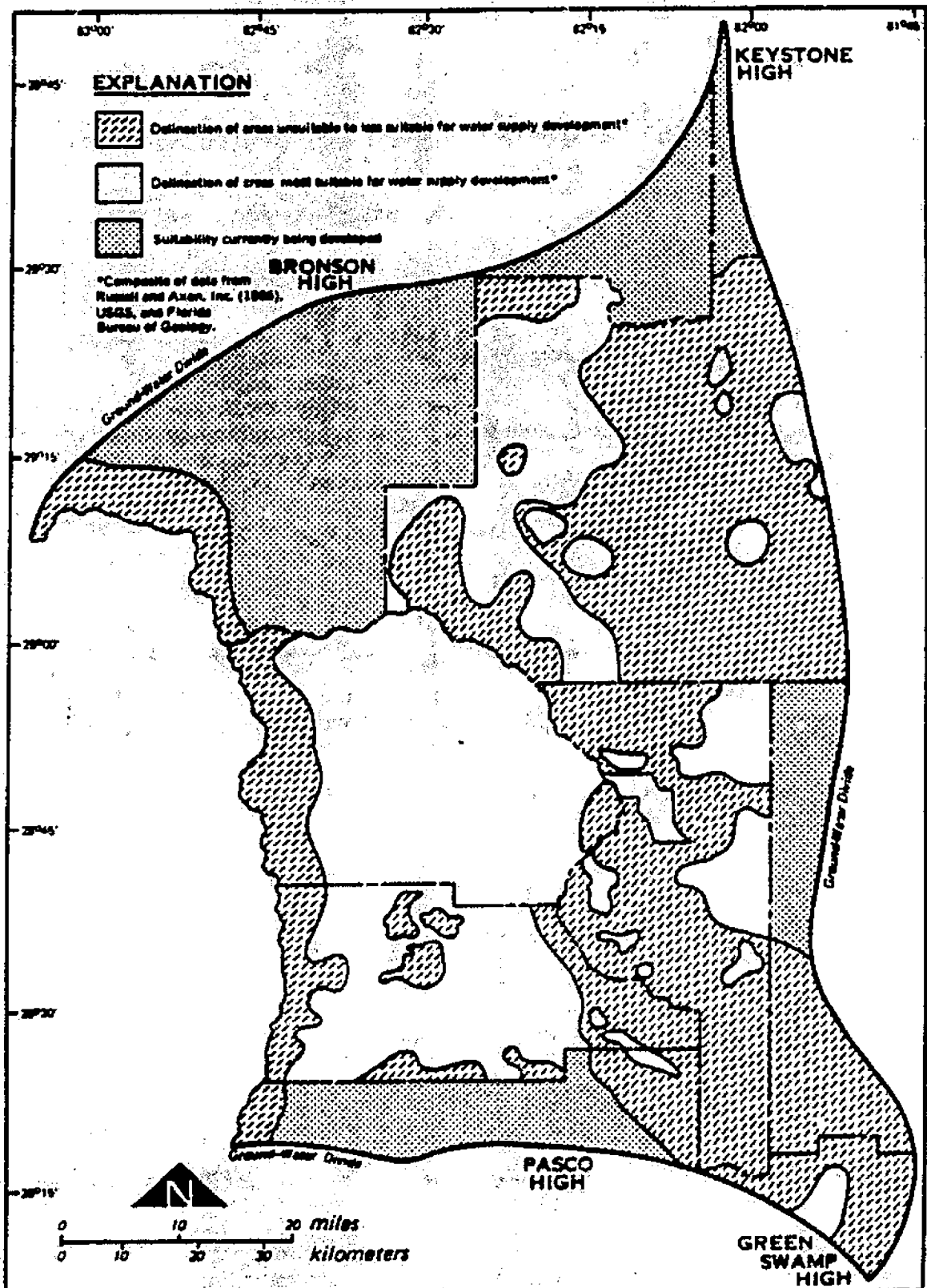


Figure 23. Generalized Areas Most Suitable, and Less Suitable to Unsuitable for Ground-Water Supply in the Northern West-Central Florida Ground-Water Basin (modified from Russell and Axon, Inc., 1985).

quantity to minimize impacts to the environment and hydrology from withdrawal. Russell and Axon, Inc. (1985) used a ranking system primarily based on DRASTIC maps to evaluate the existing water quality and quantity, as well as the potential water quality and quantity in the areas studied. As illustrated in this figure, ground-water quality, or the potential for ground-water contamination, may be the limiting factor for ground-water development, in the near-term, and not water availability. Figure 22 is a compilation of existing data on suitability and will be updated at a later date to fill in those areas not delineated and adjust those areas that require refinement or reevaluation.

The SWFWMD is responsible for regulating the consumptive use of water and requires a consumptive use permit (CUP) for all ground-water withdrawals that exceed 100,000 gallons per day (gal/d) on an average-annual basis or have the potential of producing 1,000,000 gal/d, or are from wells with pipe casing diameters of 6 inches or greater. CUP applications must show reasonable and beneficial use of the water being withdrawn and that there is no interference with existing legal uses of water. The SWFWMD evaluates CUP applications based on similar criteria as listed above in an effort to balance the needs of water users with the needs of the environment.

Environmental and potential contamination concerns are presently being given more consideration for determining suitability of future development. In particular, proximity of heavily developed areas, industrial sites, mining sites, landfills, and surface-water bodies hydraulically connected to ground-water systems are factors which should affect site selection of future wellfields. Land use around wellfield areas must be evaluated carefully, since large ground-water withdrawals induce greater recharge rates, which in turn increases migration of contaminants through the ground-water system.

While the SWFWMD ultimately permits water resource development through its permitting process, proper planning of water resource development is achieved through a cooperative effort among SWFWMD, water supply authorities, and county governments. The large amount of information contained within SWFWMD's CUP files and Data Collection files, the completion of regional ground-water flow models, and the construction of DRASTIC maps should produce the necessary information to allow continued determination of areas where water resource development should occur.

#### AREAS IN THE BASIN DEEMED PRONE TO CONTAMINATION AND OVERDRAFT

Another of the primary WMD's requirements relative to the GWBRAI is to delineate site specific areas in the Basin deemed prone to contamination or overdraft resulting from current or projected development. This requirement can be further divided into two subrequirements: 1) delineation of areas deemed prone to contamination; and, 2) areas deemed prone to overdraft.

### Areas Prone to Contamination

Two tasks were needed to complete the identification of areas in the Basin deemed prone to contamination. The first was an inventory of existing potential point and non-point sources of contamination and the second was completing an evaluation of the Basins susceptibility to ground-water contamination utilizing the USEPA's DRASTIC methodology.

The inventory of potential point and non-point sources is discussed in detail in the next section. Summarizing however, there are numerous unlined landfills, sewage treatment plants, with associated percolation ponds and sludge spreading operations, storm water facilities, and industrial sites that if improperly operated and monitored pose a significant threat to the generally unconfined ground-water system in the NWCFGWB. Additionally, significant agricultural activity and septic tank usage provide the potential for more regional, non-point source contamination by nitrates, phosphates, pesticides, fertilizers, and synthetic organic compounds of the ground-water system.

The second task needed was the evaluation of the Basin's susceptibility to ground-water contamination using EPA's DRASTIC methodology. As mentioned in the introduction, the DRASTIC evaluations are being conducted on a county by county basis. These evaluations are designed to assist planners, managers, and administrators in the task of directing resources, land disposal, and other land use activities to the appropriate areas. The Hernando County map is complete and included in section two of this report (see Areas Prone to Contamination and Figure 55). However, a composite DRASTIC map for the entire Basin will not be available until September, 1987, at which time this report will be updated to include a more comprehensive discussion of the areas within the Basin deemed prone to contamination from current or projected development.

### Areas Prone To Overdraft

In initial response to delineate areas prone to overdraft in the Basin, staff at the SWFWMD developed a data base comprised of monthly water use of each of the major ground-water users, from September, 1979 to May, 1982. Permitted wells were grouped together to coincide with the four-square mile grid of the regional models being developed. Monthly reported pumpage from public supply and industrial users were used, while monthly agricultural water use was estimated based upon permitted acreage, crop type, and application rates. The monthly data was averaged to generate the average annual ground-water withdrawal rate in the Basin. Ground-water withdrawal quantities shown in Figure 24 represent the 1981 average annual day in Mgal/d. In the Basin, the total 1981 average day withdrawal was 149.38 Mgal/d. Of this 72.73 Mgal/d was estimated agricultural withdrawal and 76.65 Mgal/d was reported pumpage from public

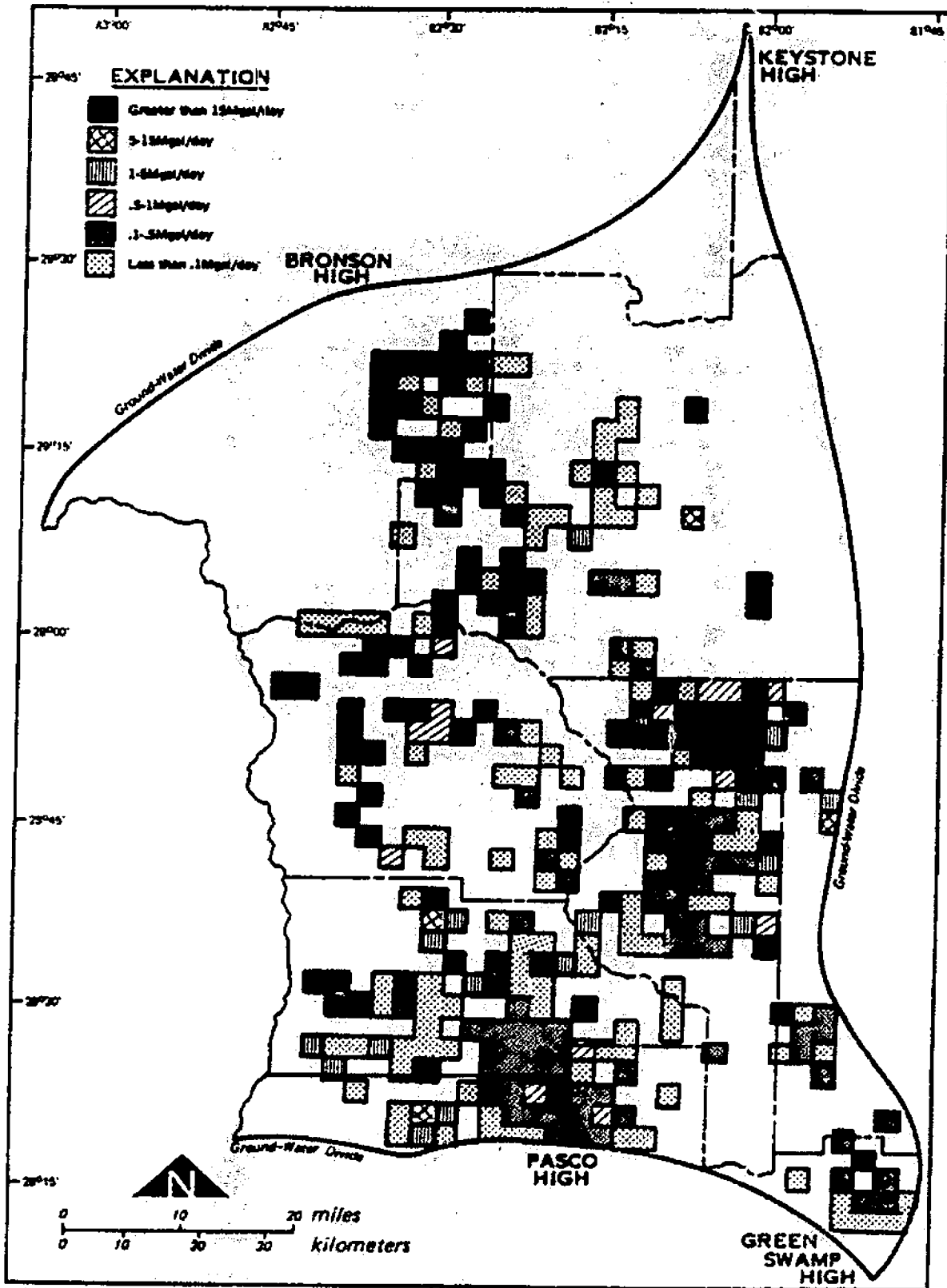


Figure 24. Estimated 1981 Average Annual Daily Withdrawals in the Northern West-Central Florida Ground-Water Basin. Withdrawals are Determined for Four Square-Mile Areas.



supply and industrial users. The total volume of water withdrawn a day accounted for approximately 0.0000013 percent of the estimated water stored in the Upper Florida aquifer in the Basin.

Although the Basin as a whole is not experiencing overdraft problems, there are areas of significant ground-water withdrawal. The largest ground-water withdrawal for 1981 in the NWCFGWB occurred in Hernando County in Sections 6 and 7, of Township 22 South, Range 19 East. This area is an active limestone mine and had a reported 1981 withdrawal rate of 20.7 Mgal/d. Other areas of large ground-water withdrawal are in southwestern Marion County, northwest-central Hernando County, and in the Cypress Creek Wellfield in north-central Pasco County. Additionally, the Cross-Bar Ranch wellfield, located in northwest-central Pasco County, began operating in 1982. This wellfield has an average annual daily permitted pumpage rate of 30 Mgal/d.

Due to the extreme variability of the hydraulic parameters of the Floridan aquifer system it is difficult to determine on a regional scale specific areas of overdraft. Currently, overdraft is evaluated on an individual basis through the SWFWMD consumptive use permitting process. However, as previously mentioned, a regional ground-water model of the Basin, which will address areas of overdraft, is targeted for completion in FY'88.

#### POINT AND NONPOINT SOURCE LOCATIONS

There are many factors involved with aquifer contamination. Some are naturally occurring, others are man induced. Naturally occurring poor quality water is related to endemic geochemical and hydraulic characteristics of an area. Some sediments release inorganic salts in particularly high concentrations in certain areas. Other sediments have low hydraulic conductivities which allow ionic concentrations of inorganic salts to accumulate due to the slow ground-water flow rate. Monitoring of high concentrations of inorganic salts in freshwater occurs along coastal areas. Sea water can migrate up coastal rivers and inlets to mix and contaminate freshwaters of the surficial aquifer, as well as migrate downward and mix with freshwater at depth. Saltwater has a greater density than freshwater and therefore underlies freshwater producing a wedge-shaped interface between fresh and saltwaters somewhere near the coast. The position of the interface is a complex hydro-dynamic function of freshwater outflow, saltwater flux, chemical dispersion and diffusion. A map of existing basic chemical parameters is given in Figure 20.

Man induced contamination is relatively new to this ground-water basin but poses as great or greater a threat to the water resources as naturally occurring poor quality water. Types of chemicals, volumes, and rates of accumulation are reasons why man-induced contamination is of great concern. There are two main sources of man-induced contamination, point and non-point.

Point sources of pollution can come from a variety of activities such as domestic, industrial, and mining activities, waste treatment, landfills, and stormwater treatment. Many of these activities have the potential to pollute through waste disposal by drainfields, landspreading, overland flow, and spray irrigation. Vertical and lateral migration of pollutants such as chlorides, sulfates, nitrates, phosphates, metals, coliform bacteria, and viruses is possible (Moore and others, 1976; Franks, 1981). Active, inactive, and abandoned landfills are a particular concern for potential sites of contamination, as seventy-one percent of the Class I landfills in SWFWMD are unlined. Inorganic salts, organic compounds, and products of aerobic and anaerobic decay are known to leach from some of these landfills in the NWCFGWB. Waste treatment facilities either publicly or privately owned, such as housing developments and trailer parks, can be sources of bacterial or viral contaminants if the waste is improperly treated. Industrial sites can have several potential sources of pollution from non-hazardous brines, heated waste water, organic-rich effluents, high or low pH fluids, and hazardous wastes.

Non-point sources of pollution generally refer to areas of dense septic tank use, urban sprawl, and agricultural uses of fertilizers and pesticides. Heavy use of fertilizers and pesticides in agricultural intense areas increase phosphate and nitrate constituents of the ground water. Infiltration and absorption characteristics of soils change with repeated use of these compounds. Exotic organic compounds are introduced into the ground-water system with heavy pesticide applications. Runoff and infiltration of animal wastes can also elevate nitrate concentrations to high levels.

Figure 25 depicts potential sites of point and non-point sources of contamination in the NWCFGWB. Figure 25 is a compilation of collected data and criteria established by the Ambient Ground-Water Quality Monitoring Program (AGWQMP), at the SWFWMD. The program has established a network of monitor wells which will check for key water-quality parameters. The establishment of the network is the result of compiling data from many sources with cooperative effort from SWFWMD, USGS, USEPA, and the Florida Department of Environmental Regulation (FDER). Maps identify locations of potential sources of pollution from sewage and stormwater treatment, landfills, industrial and domestic land use application of wastes, and different agricultural uses.

## WETLANDS

Wetlands are defined as lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered with shallow water (Cowardin and others, 1979). Wetland functions are therefore by definition interconnected with the hydrology of the area. This connection determines the presence, extent, movement, and quality of the water in the wetland. Upwellings of ground water such as

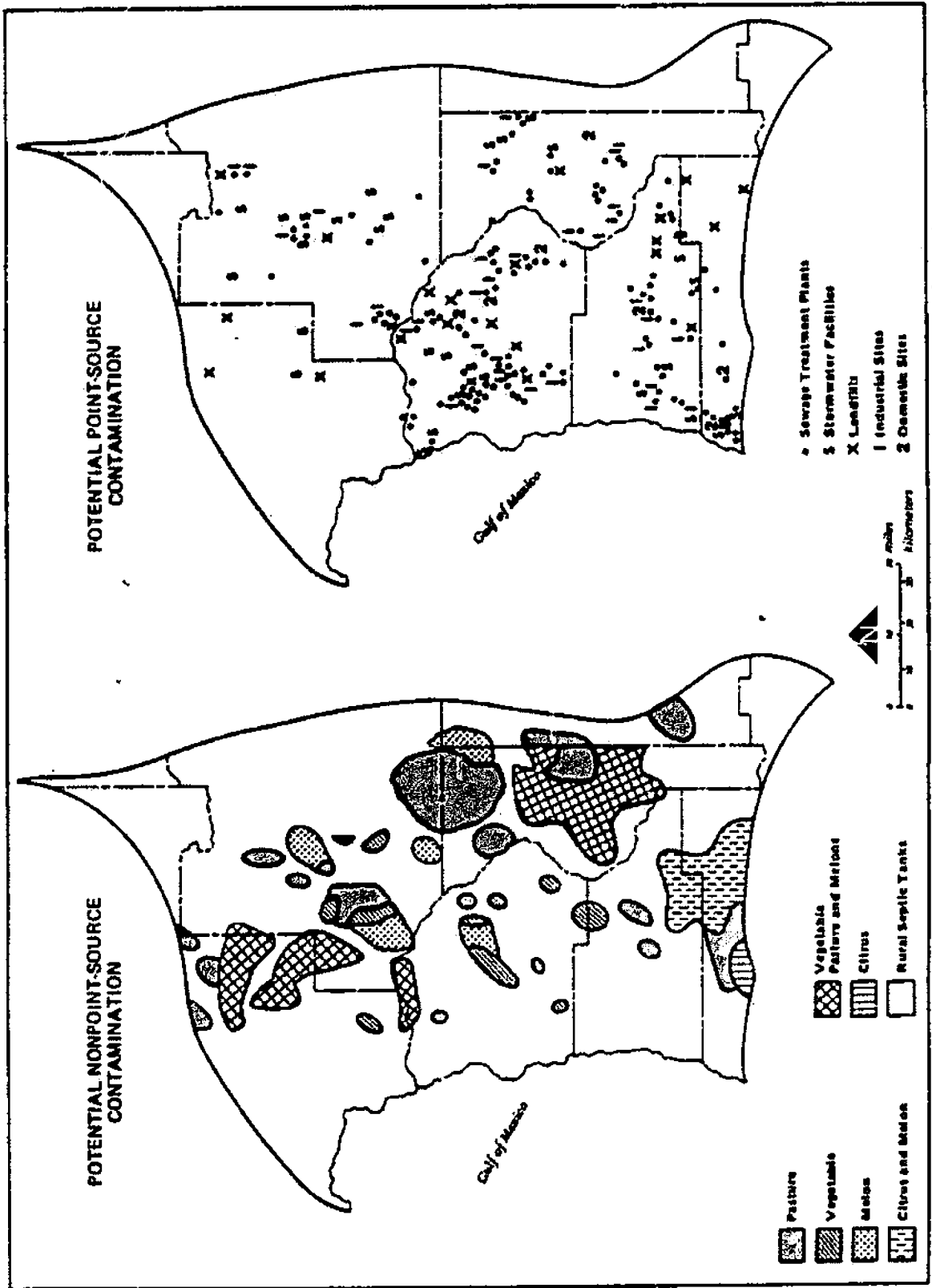


Figure 25. Potential Point and Nonpoint Source Locations in the Northern West-Central Florida Ground-Water Basin (modified from Moore and Others, 1986).

springs, seepage from the water-table aquifer into topographic depressions, and proximity to aquatic systems such as lakes, rivers or the gulf can create wetlands.

In the context of ground-water resource availability and quality, it is important to discuss three management benefits that wetlands provide: flood control, water-quality improvement, and recharge and discharge.

Flood control benefits of wetlands have been well documented for those wetlands that are part of a stream or river system (Sather and Smith, 1984). Wetlands physically slow the floodwater, reducing the peak elevation of the flood waters, and moderate the duration of the flood. These functions have indirect implications on recharge to aquifers, as the longer the water remains in the wetlands, the greater the amount that infiltrates into the ground and recharges the aquifer system.

Water quality changes as it enters or passes through wetlands. In reducing flood velocity, the wetlands cause sedimentation of the suspended solids, including toxic compounds, nutrients, and pollutants, in the flood waters. The metabolic actions of plants, animals, and microbes use and bind some of these compounds into living tissue, removing them from the water. This filtration improves the quality of water leaving the wetlands. The improved water moves either to the ground or to another surface-water body. The efficiency of wetlands in this regard varies with the vegetative life-form of the wetlands, as well as chemical, geological, and soil influences.

The same biological processes may also increase the chemical constituents of ground water flowing from wetlands. Swamps and bogs are documented to increase the concentrations of iron, magnesium, sulfates, solids, and color to ground water. These releases may hamper human attempts to use this ground water as a drinking water supply, but in most cases these effects are limited to localized areas of the surficial aquifer.

The role of wetlands in recharge is subject to discussion. Hydrologists seem to agree that, while some wetlands perform recharge benefits, most do not (Sather and Smith, 1984). It is important to remember that the wetland ecosystems are maintained by saturated conditions. These conditions preclude a large amount of recharge because, in essence, wetlands have to hold water to survive. Soils perform an important role in maintaining the hydroperiod. The low porosity of the organic soils and clays, which characterize wetland substrate, limits recharge. Any recharge that might occur results from ground water moving laterally from the wetland areas to areas of more porous soils.

Wetland areas adjacent to freshwater or marine systems provide little recharge benefits to the aquifer because the movement of ground water is normally towards these topographic lows that the rivers, streams, and oceans occupy. Localized benefits to the

surficial aquifer systems are probably realized, but are insignificant compared to the recharge rates of upland areas with more porous soils.

Sather and Smith (1984) reviewed the available literature and concluded that many wetlands perform a ground-water discharge function and that such wetlands are, therefore, good indicators of potential water supplies. It should be noted here, however, that large scale ground-water withdrawals foreshorten hydroperiods in proximate wetlands. Wetlands have been documented to undergo changes in vegetation and habitat structure as a result of this shortened hydroperiod, (Rochow and Lopez, 1984; Lopez, 1985; and Rochow, 1985). Efforts are being considered in mitigation of these adverse impacts, such as improved pre-site planning to avoid or minimize the potential for adverse effects to wetlands. Techniques are becoming available to balance the water needs of the wetlands and the water needs for human consumption. Within the NWCFGWB, wetland environments range from brackish and saltwater coastal marshes to freshwater swamps and marshes and wet prairies. Each type of wetland has specific floristic, faunistic, and hydrological characteristics that make it distinct.

The brackish and saltwater coastal marshes are dominated by cordgrass, needlerush, saltgrass, and glassworts. Coastal wetland forests are interspersed among the marshes and contain red cedar, cabbage palm, and salt-tolerant shrubs. These coastal wetlands serve a role in providing freshwater outflow to prevent saltwater intrusion, and storm protection to inland areas. They also serve as habitat and nursery grounds to the majority of commercial fish and vertebrate species.

The freshwater forested wetlands generally occupy the floodplains and swamps of the Little Withlacoochee and Withlacoochee riverine system. This vegetative community is also predominate with the area known as the Green Swamp, a portion of which occurs within the NWCFGWB. The dominant tree species of the forested wetlands include Cypress, Tupelo, Black Gum, Red Maple, and Sweetgum. The wide variety and diversity of other flora, and the associated fauna of the communities is well-known. Non-consumptive and consumptive uses of wildlife through activities such as hiking, nature study, hunting, and fishing enhance the economic, and aesthetic values of this wetland assemblage. The riverine swamps and floodplains have been described as providing free flood control and pollution assimilation benefits to downstream areas. The Green Swamp area is itself an indispensable element by providing enormous water storage capacity and forming SWFWMD's three major riverine systems (Withlacoochee, Hillsborough, and Peace rivers).

The freshwater marshes and wet prairies are also associated with the riverine systems, but occur frequently as isolated communities within upland vegetative association. Freshwater marsh communities have a diverse variety of landscape signatures,

but predominant plants include: Maidencanes, Sawgrass, Arrowhead, and Duck Potato. Wet prairies include the above mentioned plants plus Spikerushes and Beakrushes.

Hampson (1984) calculated the total number of surface acres that wetlands occupied in each county in Florida for the period of 1972-1974. A breakdown of this data within the counties encompassing the NWCFGWB is as follows:

| COUNTY        | COUNTY AREA<br>(IN ACRES) | ESTIMATED<br>COUNTY AREA<br>W/I NWCFGWB<br>(IN ACRES) | ESTIMATED<br>% OF ACRES<br>W/I NWCFGWB | ESTIMATED<br>AREA OF<br>WETLANDS<br>(IN ACRES) |
|---------------|---------------------------|---|--|--|
| ALACHUA       | 620,380                   | 117,126   | 18.9                                   | 12,752   |
| CITRUS        | 416,776                   | 416,776   | 100.0                                  | 111,395  |
| HERNANDO      | 321,800                   | 321,800   | 100.0                                  | 77,185   |
| LAKE          | 736,373                   | 146,669   | 19.9                                   | 29,187   |
| LEVY          | 736,976                   | 339,648   | 46.1                                   | 156,578  |
| MARION        | 1,066,062                 | 688,777   | 64.6                                   | 444,950  |
| PASCO         | 494,130                   | 177,051   | 35.8                                   | 63,384   |
| POLK          | 1,283,740                 | 64,299  | 5.0                                    | 3,215  |
| PUTNAM        | 527,389                   | 32,601  | 6.2                                    | 2,021  |
| SUMTER        | 372,687                   | 372,687   | 100.0                                  | 115,320  |
| <b>TOTALS</b> | <b>6,576,313</b>          | <b>2,718,288</b>                                      | <b>-----</b>                           | <b>1,015,987</b>                               |

The total estimate of forested and non-forested wetlands within the NWCFGWB can be conservatively stated as 1,015,987 acres. This value reflects data determined using level I categories (the most generalized categories for use on a nationwide, interstate, or statewide basis and are further explained in Anderson and others (1976)). Note that the estimated area of wetlands for those counties that were only partly contained by the boundaries of the NWCFGWB were calculated as multiplying the estimated percentage the county within the NWCFGWB by the total wetland acreage value appearing in the Hampson (1984) report. For the techniques used to determine these initial values, please refer to Hampson (1984).

This information was collected for the period 1972-74, and is presented for historical purposes only. It should not be construed for current condition as development and population growth since 1974 has resulted in a reduction of the state's wetland inventory.

Currently, efforts are underway to assist in mapping the wetlands as they exist today. Hernando County, for example, has just obtained a comprehensive land cover map from LANDSAT imagery. Other data bases include the United States Fish and Wildlife Service's National Wetlands Inventory, (USFWS, 1986), which prepared large scale maps of the entire state. Most of the counties within the SWFWMD are now available. The SWFWMD is

embarking on a detailed 3-year mapping project designed to locate every wetland area within its boundary and create small scale maps for use in planning and protection. All of the aforementioned data bases now, or will in the future, serve a role in identifying and protecting wetland ecosystems within the SWFWMD.

In summarizing, the relationship of wetlands and ground-water availability, it can be said that one of the primary functions of the wetland areas within the NWCFGWB is discharge of ground water, rather than recharge. The relative dependency of the wetlands on this discharge cannot be overstated. The associated hydrological, water quality, habitat, and socio-economic attributes of wetland environments strengthens their importance in the protection, development, and maintenance of any water resource, both surface and ground related.

### REGULATION

The SWFWMD issues permits for the consumptive use of water, for the construction of wells, and the construction of facilities which impound or otherwise alter the flow of surface waters. The SWFWMD is also a source of technical information on the geology and hydrology of areas within its jurisdiction.

The SWFWMD was created by a special act of Florida legislature in 1961 after Hurricane Donna passed through the Tampa area and necessitated a regional study to alleviate flooding problems. The SWFWMD continues to address structural and non-structural flood control as well as other water management problems. The Florida Water Resources Act of 1972 (Chapter 373, Florida Statutes) defines the responsibilities of WMD's and establishes funding, administration, and operational procedures. The jurisdictional rules of the SWFWMD are found in Chapter 40D of the Florida Administrative Codes (FAC).

A short summary of the regulatory programs of the SWFWMD follows:

### CONSUMPTIVE USE OF WATER

Except for domestic consumption of water by individual users, all consumptive uses of water within the state of Florida require a permit from the WMD's. The SWFWMD requires a permit for users that withdraw more than 100,000 gallons per day average, or for withdrawals from facilities which have the capacity to withdraw more than 1,000,000 gal/day, or for withdrawals from wells which are 6 inches in inside diameter or greater. The owner of a well, or combination of wells, meeting the criteria above (Chapter 40D-2, FAC), must obtain a consumptive use permit before a well construction permit will be issued, unless a well exemption or temporary consumption use permit is issued. The intent of the consumptive use permit program is to conserve and affectively manage the water resource. In order to obtain a permit, the applicant must show there is reasonable and

beneficial use of the water being withdrawn and that the withdrawal does not interfere with existing legal use of water.

Currently, the SWFWMD also requires applicants to meet the "5/3/1 drawdown criteria". The "5/3/1 drawdown criteria" balances water users needs with minimal environmental damage. For example, lowering the water table may not adversely affect the hydrologic system, but vegetation could be sensitive to reduced moisture in the soils induced by pumping. The SWFWMD's "5/3/1 criteria" states that ground-water withdrawals must not cause the potentiometric surface of lands not owned, leased, or otherwise controlled by the applicant to be lowered more than 5 feet. The water table of areas outside of the applicants control must not be lowered more than 3 feet. Also, the level of the surface water in any lake or impoundment must not be lowered by more than 1 foot, unless the applicant wholly owns, leases, or otherwise controls those surface-water bodies. Additionally, the potentiometric surface cannot be lowered below sea level, as this would induce saltwater intrusion.

#### WATER WELL CONSTRUCTION

All water wells regardless of size, must comply with Florida's well construction standards. Permits are required for the construction, alteration, repair or abandonment of water wells with an inside diameter of 2 inches or greater. Within the SWFWMD, water wells are required to be constructed under the supervision of a licensed water well driller. The SWFWMD issues water well construction permits and also licenses water well contractors and registered water well drillers within its jurisdictional boundaries.

Generally, wells to be used for public consumptive use purposes must be grout sealed to protect the well from possible contamination and must be located at least 100 feet from any potential source of contamination, such as: septic tanks or stormwater facilities. If the septic tank facility exceeds 2,000 gal/d, the minimum set back is 200 feet from the facility. Specific construction requirements may be found in Chapter 373 Florida Statutes and Chapters 17-21 and 40D-3, FAC.

#### SURFACE-WATER MANAGEMENT AND STORAGE

This program requires permits for projects that require construction, alteration, or operation of surface-water management works not specifically exempted by law or administrative rule, or for which a general permit has not been issued. The intent of this program is to regulate projects that would impact water quantity, water quality, wetlands, and other associated environmental concerns.

The SWFWMD may issue a general permit for projects that do not affect lakes, streams, or other water courses, which have the approval of the appropriate unit of local government and involve



a project land area of less than 40 acres. Public highway projects may also fall into the general permit category (see Chapter 40D-40.302, FAC). Individual permits are required for projects which exceed the general permit threshold. Exemptions from the SWFWMD surface-water permitting are found in Chapter 40D-4.051 FAC and generally apply to certain agricultural activities and small projects which do not impact wetlands.

#### MINIMUM FLOWS AND LEVELS

Another primary requirement of the GWBRAI is to delineate criteria needed to establish minimum seasonal surfaces and ground-water levels in the basins.

Acting under Chapter 373.042 Florida Statutes, the SWFWMD enacted Chapter 40D-8 of its rules and regulations to specifically address the criteria for the establishment of minimum flows and/or management levels for both surface and ground-water resources of the District. The SWFWMD may elect to establish minimum lake levels, a minimum flow for a stream or river, or minimum aquifer levels.

As stated in 40D-8.041, in establishing minimum rates of flow and levels and regulatory levels the SWFWMD shall use the best information and methods available, and will consider the protection of existing, as well as future consumptive uses of water so as to promote the conservation, development, and proper utilization of water while preventing damage from floods, soil erosion, and excessive drainage. When deemed appropriate, a schedule of rates of flow and levels may be established to reflect seasonal or cyclic variations. The Governing Board of the SWFWMD will also consider, and at its discretion may provide for, the protection of non-consumptive uses, including navigation, recreation, and the preservation of natural resources, fish, and wildlife.

The two SWFWMD programs used to meet these objectives are the Consumptive Use Permit Process and the Lake Levels Projects.

The Consumptive Use Permit Process (Chapter 40D-2) is required for all users of surface and ground-water within SWFWMD jurisdiction. Users of ground-water must comply with specific conditions; reflected by local geological and hydrological factors influencing the amount of water that can be withdrawn and the vulnerability of the resource to its withdrawal. Further explanation is provided in the Regulatory Section of this document.

The current rules state that users of surface-water bodies cannot reduce the rate of stream flow by more than 5 percent at the point of withdrawal or reduce the calculated minimum flow. The calculated minimum flow rule is established for each month of the calendar year and represents an average of five of the lowest monthly mean discharges for the preceding twenty years.

Although the SWFWMD has the authority to establish minimum levels of lakes in regard to monitoring withdrawals, the SWFWMD has instead created the Lake Levels Project. This on-going project created in 1976 was designed to set both management levels and management schedules for lakes within the SWFWMD.

The project objectives are fivefold:

1. Conserve the water storage and recharge capabilities of the lakes;
2. Provide levels for the operation of control structures;
3. Provide information for CUP permitting activities;
4. Provide guidelines for development bordering lakes; and
5. Provide the necessary fluctuations in water levels to keep a lake biologically healthy.

The selection criteria devised for lakes to be included in the Lake Levels Project is as follows: The Lake must

1. Be twenty acres or greater in size;
2. Not be wholly owned by one owner;
3. Have existing flood control structures; or
4. Have existing or proposed CUPs; or
5. Be a special or problem lake.

If the lake meets the selection criteria, then the SWFWMD will develop, establish, and adopt the lake's levels based on the individual nature of the lake, and upon public comments and testimony.

Four management levels are determined for these selected lakes:

1. Ten-year Flood Warning Level;
2. Minimum Flood Level;
3. Low Management Level; and
4. Extreme Low Management Level.

The levels set accomplish the project objectives as follows:

#### Ten-Year Flood Warning Level -

This is an advisory level provided only as a discretionary guideline for the lake shore development.

#### Minimum Flood Level -

This is a level that conserves the water storage and recharge capability of a lake. Drainage works into and out of the lake require SWFWMD permits to ensure proper design and prevent excessive drainage, thereby maintaining and protecting the lake's ability to reach the minimum flood level and see that it is maintained, and protected.

For lakes with control structures, this is the maximum level which the lake would achieve by operation of the control structure. This is a peak elevation and not one which is held constant.

#### Low Management Level -

This is the normal yearly low level used as a guide to operate a lake control structure.

For Consumptive Use Permitting purposes this level may be used to:

1. Regulate the upper limit of lake augmentation to reduce evapotranspiration and water table losses, prevent possible flooding through loss of storage, reduce possible solution of limestone in the aquifer, and lessen the water-quality impacts to the lake.
2. Provide information to regulate withdrawals that substantially affect the level of a lake.

#### Extreme Low Management Level -

This is the drought year low level used to operate a lake control structure. It is not a drawdown level, but merely a normal cyclic low that the lake should reach periodically for the biological health of the lake.

For consumptive use purposes, this level is provided as information for consumptive use permitting.

Currently, twenty-seven of the fifty qualified lakes in the NWCFGWB have adopted management levels. Table 4 lists the lakes, their sizes and locations. Figure 26 is a location map of these twenty-seven lakes.

Management levels will be adopted for the remaining qualified lakes in the future. All information requests concerning

specific lake levels should be directed to the SWFWMD Environmental Section.

TABLE 4. Lakes that have adopted levels within the Northern West-Central Florida Ground Water Basin

| REF. NO. | NAME                              | LOCATION SECT-TWNSHP-RANGE | COUNTY   | BASIN CODE     |
|----------|-----------------------------------|----------------------------|----------|----------------|
| 1.       | BRADLEY                           | 3-20-20                    | CITRUS   | Withlacoochee  |
| 2.       | LITTLE CONSUELLA<br>TSALA APOPKA: | 15-20-20                   | CITRUS   | Withlacoochee  |
| 3.       | FLORAL CITY POOL                  | SEV-19-20                  | CITRUS   | Withlacoochee  |
| 4.       | HERNANDO POOL                     | SEV-18-29                  | CITRUS   | Withlacoochee  |
| 5.       | INVERNESS POOL                    | SEV-19-20                  | CITRUS   | Withlacoochee  |
| 6.       | LINDSEY                           | 6-23-20                    | HERNANDO | Withlacoochee  |
| 7.       | MOUNTAIN                          | 16-23-20                   | HERNANDO | Withlacoochee  |
| 8.       | NEFF                              | 20-23-20                   | HERNANDO | Withlacoochee  |
| 9.       | NICKS                             | 29-23-20                   | HERNANDO | Hillsborough   |
| 10.      | SPARKMAN                          | 24-23-19                   | HERNANDO | Withlacoochee  |
| 11.      | SPRING                            | 15-23-20                   | HERNANDO | Withlacoochee  |
| 12.      | ST. CLAIR                         | 33-23-20                   | HERNANDO | Hillsborough   |
| 13.      | CREWS                             | 16-24-18                   | PASCO    | Coastal Rivers |
| 14.      | HANCOCK                           | 05-24-20                   | PASCO    | Hillsborough   |
| 15.      | IOLA                              | 15-24-20                   | PASCO    | Hillsborough   |
| 16.      | JESSAMINE                         | 11-24-20                   | PASCO    | Hillsborough   |
| 17.      | MIDDLE                            | 04-24-20                   | PASCO    | Hillsborough   |
| 18.      | MOODY                             | 10-24-20                   | PASCO    | Hillsborough   |
| 19.      | PASCO                             | 22-24-18                   | PASCO    | Coastal Rivers |
| 20.      | UNNAMED #22                       | 27-24-18                   | PASCO    | Coastal Rivers |
| 21.      | BIG GANT                          | 14-22-22                   | SUMTER   | Withlacoochee  |
| 22.      | BLACK                             | 23-18-23                   | SUMTER   | Withlacoochee  |
| 23.      | CHERRY                            | 24-18-23                   | SUMTER   | Withlacoochee  |
| 24.      | DEATON                            | 14-19-23                   | SUMTER   | Withlacoochee  |
| 25.      | MIONA                             | 27-18-23                   | SUMTER   | Withlacoochee  |
| 26.      | OKAHUMPKA                         | 21-19-23                   | SUMTER   | Withlacoochee  |
| 27.      | PANASOFFKEE                       | 29-19-22                   | SUMTER   | Withlacoochee  |

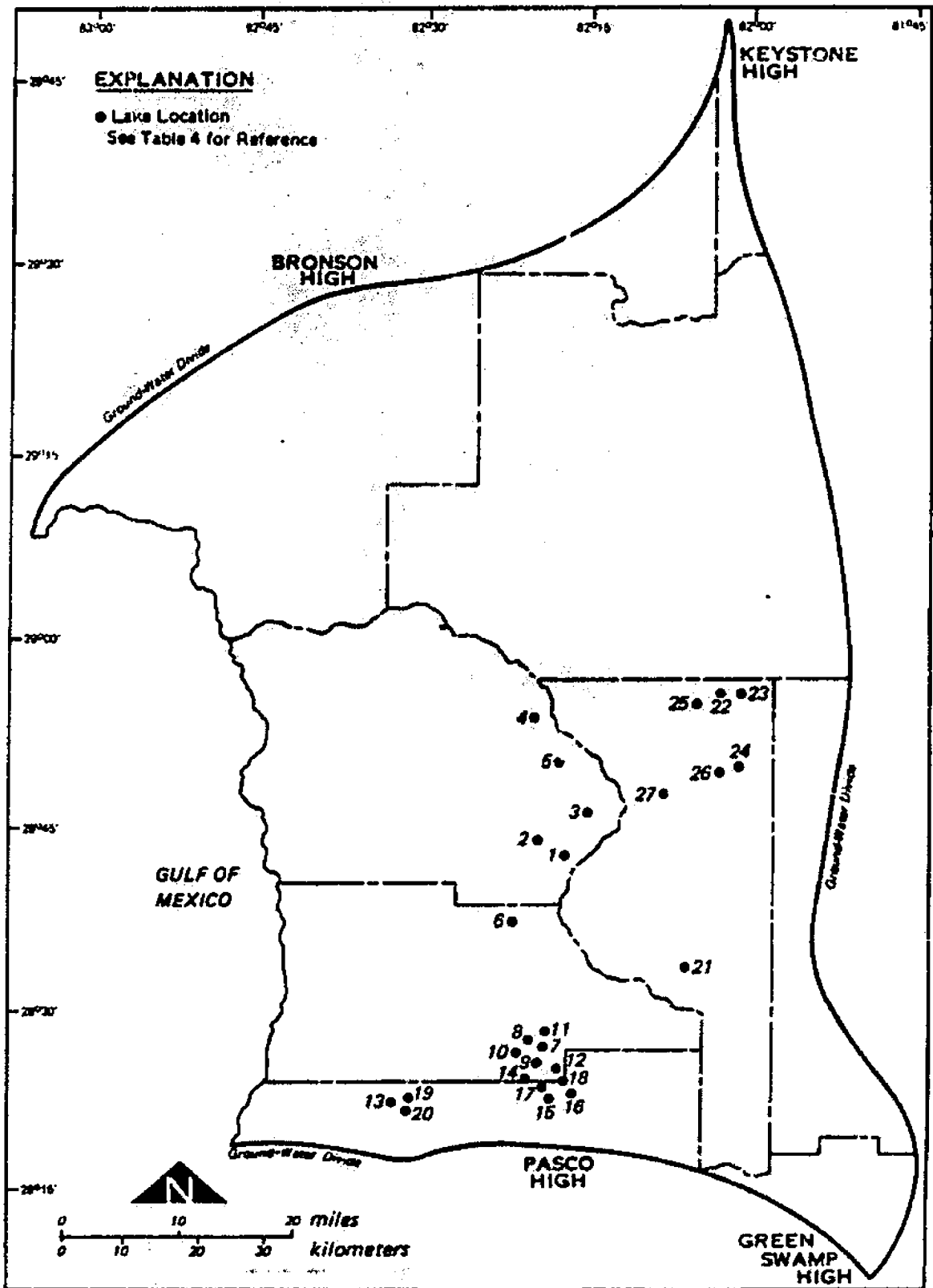


Figure 26. Location of Lakes in the Northern West-Central Florida Ground-Water Basin That Have Adopted Lake Management Levels.

SECTION THREE  
DISCUSSION OF THE HYDROLOGY AND RELEVANT  
GROUND-WATER BASIN RESOURCE  
AVAILABILITY INVENTORY ISSUES  
OF  
HERNANDO COUNTY, FLORIDA

## HERNANDO COUNTY OVERVIEW

### Geographic Setting, Physiography-Topography, and Drainage

Hernando County is located on the coast of west-central Florida, bounded on the west by the Gulf of Mexico, on the east by Sumter County, on the north by Citrus County, and on the south by Pasco County (Figure 27). Hernando County has a surface area of approximately 500 square miles which includes about 20 square miles of inland surface-water area (Fretwell, 1985). Land-surface altitudes range from sea level at the coast to about 250 feet above NGVD at several places near Brooksville (Figure 28). At least two hills have altitudes higher than 270 feet above NGVD.

White (1970) delineated Hernando County into four physiographic provinces. These provinces are the Coastal Swamps, the Gulf Coastal Lowlands, the Brooksville Ridge, and Tsala-Apopka Plain (Figure 29). The physiographic areas are primarily a function of topographic relief and underlying sediments. The coastal swamp area generally parallels the coast and extends inland about 5 miles. This physiographic area encompasses both tidal marshes and coastal swamps. Elevations range from sea level in the tidal marshes to about 10 feet above NGVD in some of the swamp areas. Poorly drained organic soils directly overlay limestones of the Floridan aquifer system in much of the coastal swamp area.

The coastal lowland area lies between the coastal swamp and the Brooksville Ridge areas, ranging from less than 2 miles to approximately 16 miles in width. Elevations of land surface range from 10 to 100 feet above NGVD. Sandy soils in the area contain little organic material.

The Brooksville Ridge is the dominant topographic feature in central Hernando County, extending from about U.S. Highway 19 easterly to U.S. Highway 301. The edges of the Ridge are characterized by deep, sandy soils pocketed with depressions and sinkholes. The ridge area soils are a mixture of poorly drained to well drained, sandy to clayey soils. The entire Brooksville Ridge area overlies a clayey unit that varies between 10 and 30 feet in thickness, but allows good hydraulic connection to the underlying Floridan aquifer system via solution features and fractures. Elevations range from 75 to about 270 feet above NGVD along the central Brooksville Ridge.

The Tsala-Apopka plain, east of the Brooksville Ridge, serves as a watershed for the Withlacoochee River. Elevations range from 75 to 85 feet above NGVD. This area is a series of interconnected swamps separated by ridges of low relief. The soils are generally sandy and weakly cemented with organic matter.

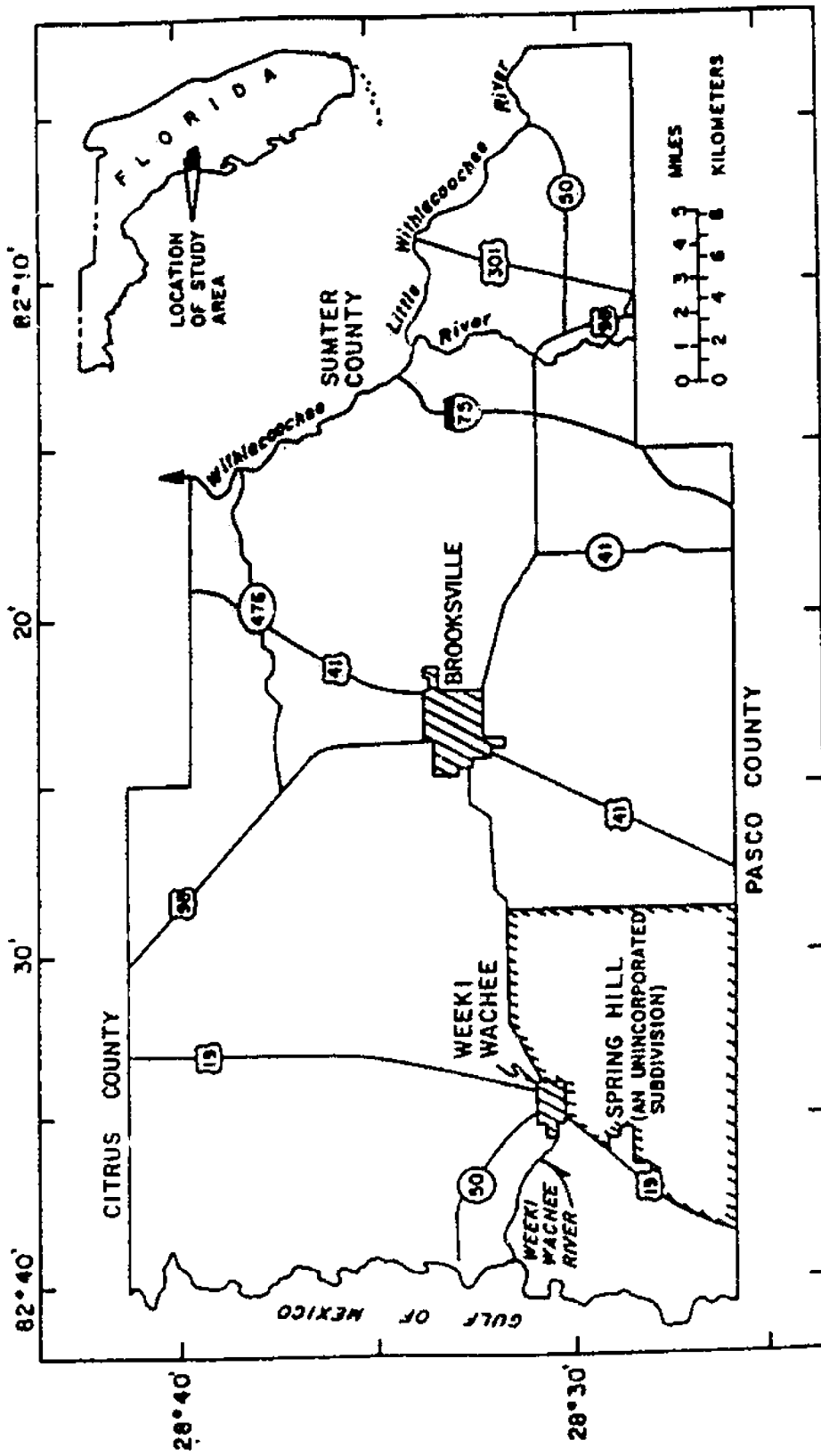


Figure 27. Hernando County Location Map.



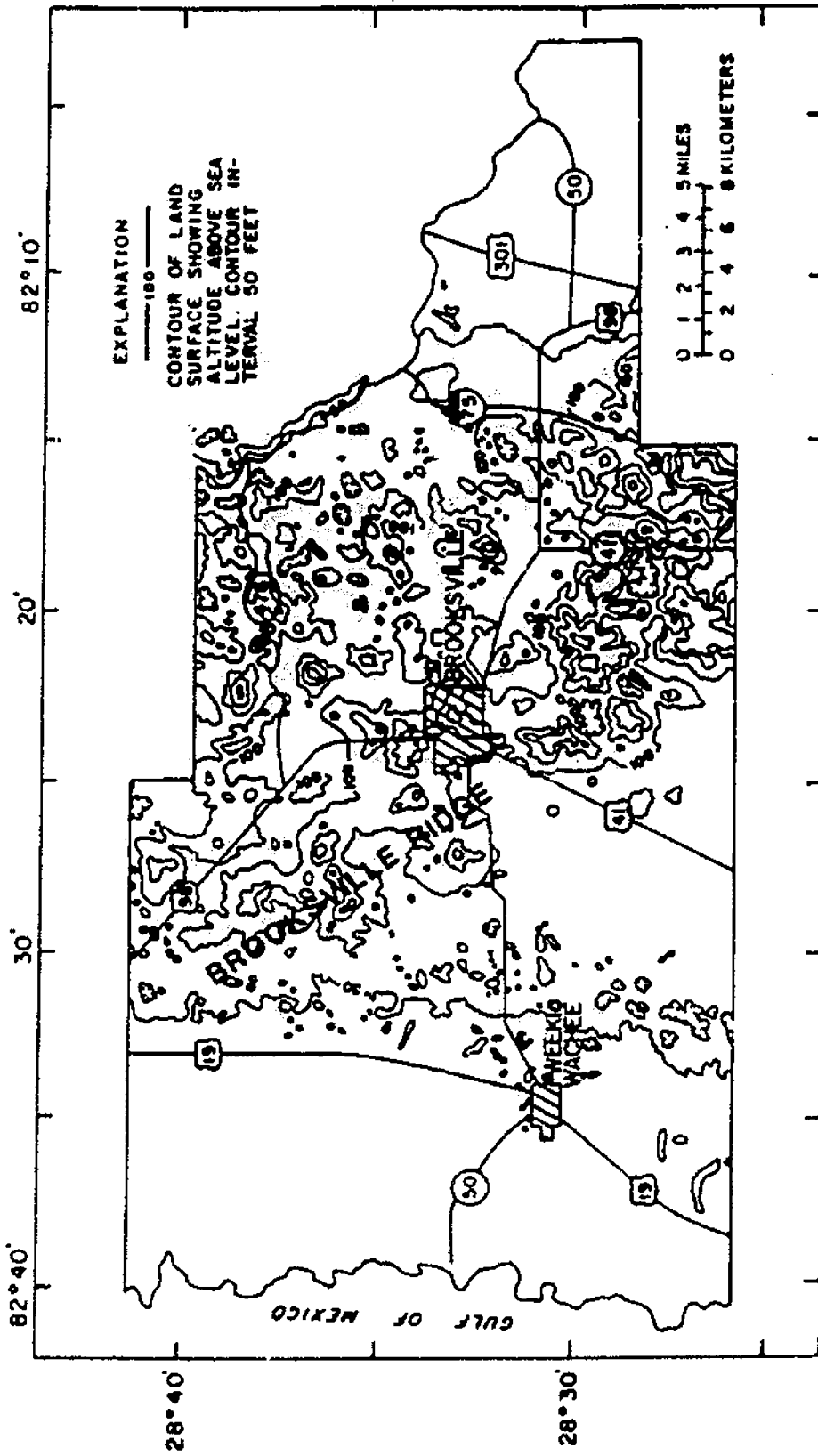


Figure 28. Topography of Hernando County (from Fretwell, 1985).

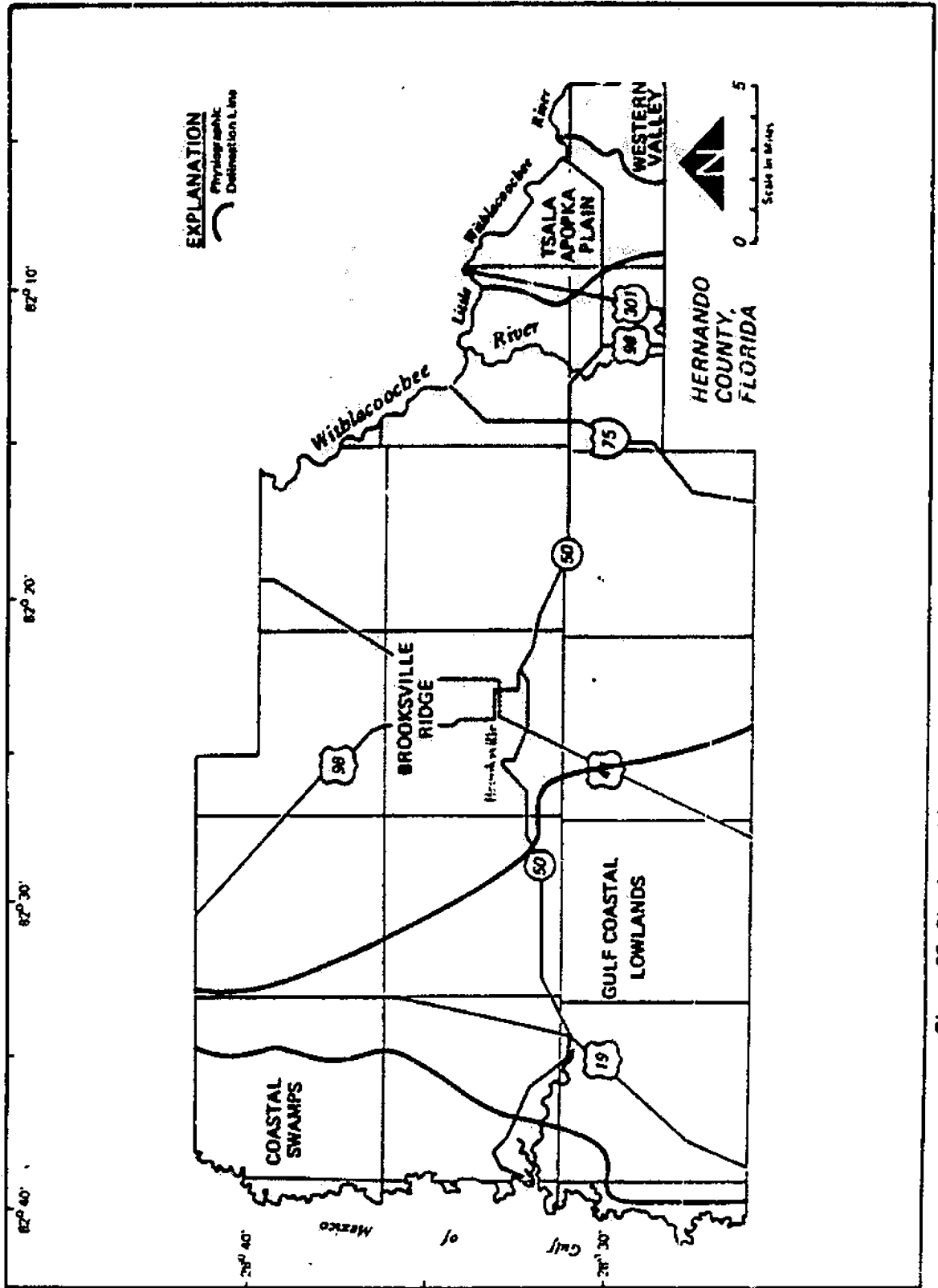


Figure 29. Physiographic Map of Hernando County (Modified From White, 1970).

The only well defined surface drainage features in Hernando County are the Withlacoochee River in the eastern part of the county and the Weeki-Wachee River in the western part of the County (Figure 30). The Withlacoochee River begins in the Green Swamp and flows north-westward draining about 1,980 square miles before emptying into the Gulf near Yankeetown. The Weeki-Wachee River begins at Weeki-Wachee Springs about 5 miles southeast of Bayport and meanders through about 7 miles of swampy lowlands to the Gulf at Bayport.

Much of the precipitation in the coastal springs area infiltrates the surficial deposits through streambeds and solution features. The rapid infiltration of precipitation has precluded the development of well defined streams in the area. Upon infiltration, the recharged water generally moves coastward eventually discharging primarily from coastal springs. These spring cavities often are large, and are connected with one another by conduits, some large enough to accommodate extremely large flows. Rosenau and others (1977) identified nineteen springs in Hernando County which are highlighted in figure 30. Long-term average discharge through coastal springs in Hernando County, as reported by Ryder (1982) is about 357 cfs (231 Mgal/d). Upward leakage in marsh areas near the coast, according to Ryder (1982) accounts for about 77 cfs (50 Mgal/d).

### Climate

The climate of Hernando County is humid sub-tropical, characterized by high mean annual rainfall and temperature. The climate is a result of latitude and the stabilizing effect of the Gulf of Mexico and the Atlantic Ocean (Bradley, 1972). The mean annual temperature in Hernando County is about 72°F (NOAA, 1983). August, the warmest month, has a mean monthly temperature of about 82°F and January, the coldest, has a mean monthly temperature of about 62°F. Summer highs generally are in the low to mid 90's with occasions of 100°F or higher (Wolfe and others, 1986). The colder winter fronts are of Arctic origin and may bring minimum temperatures ranging from 25-30°F. Temperatures rarely remain below freezing during the day and colder weather from a front generally lasts only 2-3 days. Temperatures in the 60's and 70's often separate the cold fronts. Frost and freezing temperature can be expected to occur at least once a year in Hernando County.

Rainfall amounts in Hernando County vary both seasonally and annually. Mean annual rainfall in Hernando County averages about 56 inches. Annual rainfall, however, has varied from 37.5 to 80.2 inches during the period of record (1915-1985) at the Brooksville National Weather Service Station. Maximum monthly and daily rainfall was recorded as 24 and 20 inches respectively at the Brooksville station.

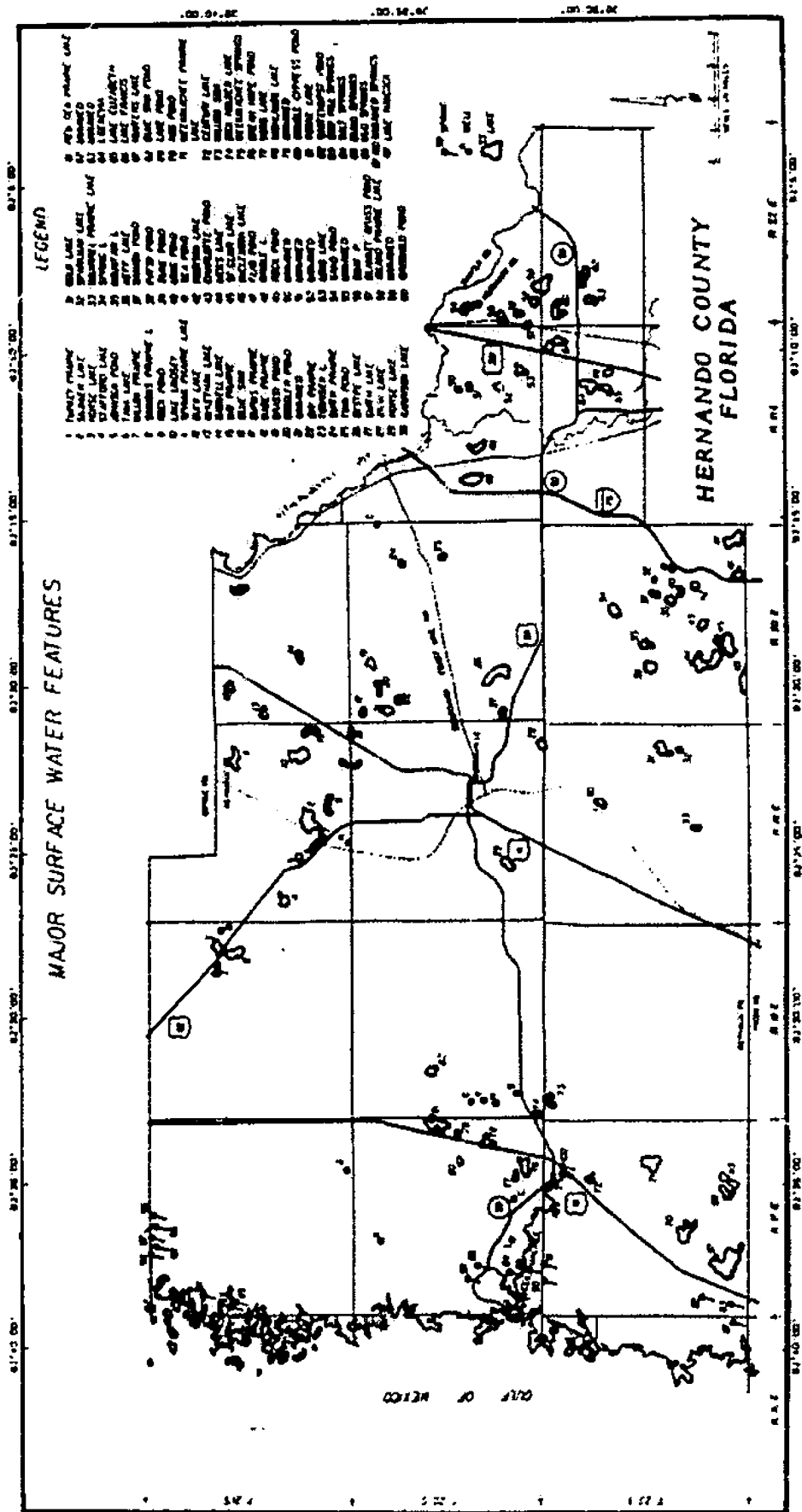


Figure 30. Location of Major Surface Water Features in Hernando County, Florida.

Figure 31 describes median and mean monthly rainfall for the period of record. Several months out of the year have passed with no rainfall.

In Hernando County the least rainfall occurs in the fall (October or November) and in the spring (April or May). In these transition periods, low pressure systems do not influence the state nearly as frequently as in winter and local convective shower activity is much weaker than in summer.

#### GEOLOGY OF HERNANDO COUNTY

In Hernando County, Pliocene to recent age sands of variable thickness overlie Cretaceous and Tertiary carbonates and clays, believed to have been deposited during higher stands of sea level. Underlying these sands are clayey sands and clays which geologically appear to be remnants of the Hawthorn Formation of Miocene age. The Hawthorn Formation when present, has a variable thickness. It is generally absent in the coastal areas of the county and thins to the east, away from the ridge area. The formation reaches a maximum thickness of approximately 30 feet in the central portion of the county underlying the Brooksville Ridge. Dune fields are visible seaward of the Brooksville Ridge and were formed by prevailing southwest winds at the time of deposition.

Below the surficial sands and clays are a thick sequence of sedimentary rocks which comprise the Floridan aquifer system (Figure 32). These chemically precipitated deposits of limestone and dolomite contain shells and shell fragments of marine origin which were deposited throughout the Tertiary period. These limestone units comprise the Suwannee, Ocala, and Avon Park Formations. The Avon Park Formation is the deepest containing potable water (Russell and Axon, 1985). Collectively these limestone units reach a thickness of approximately 1,200 feet. The shallow marine carbonates are highly variable in their composition, ranging from soft and friable to hard and well indurated or recrystallized variations. They may be composed almost entirely of calcium carbonate or contain impurities such as sand, clay, or chert. The Ocala Formation is the uppermost rock unit in the eastern part of the county and the Suwannee Formation is present in other parts of the county and crops out along the coast. Where present, the Suwannee Formation increases in thickness to the south and in the Brooksville Ridge area. The top of the limestone tends to be very irregular especially in the Brooksville Ridge area where it may vary more than 100 feet in elevation over a distance of a few hundred feet. Depth to limestone ranges from sea level at the coast to slightly more than 160 feet above NGVD in the area of the Brooksville Ridge. The geologic formations discussed above generally dip to the southeast and to the southwest from the center of the Brooksville Ridge. Figure 33 is a surface geologic map of Hernando County.

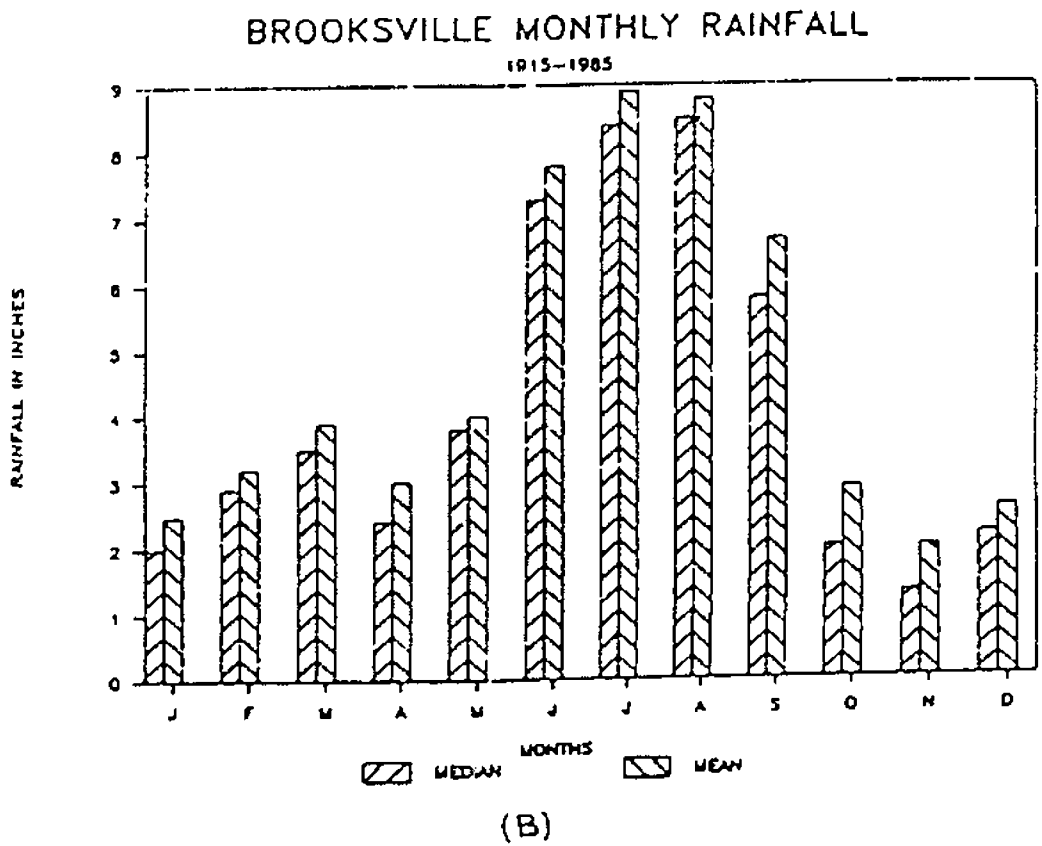
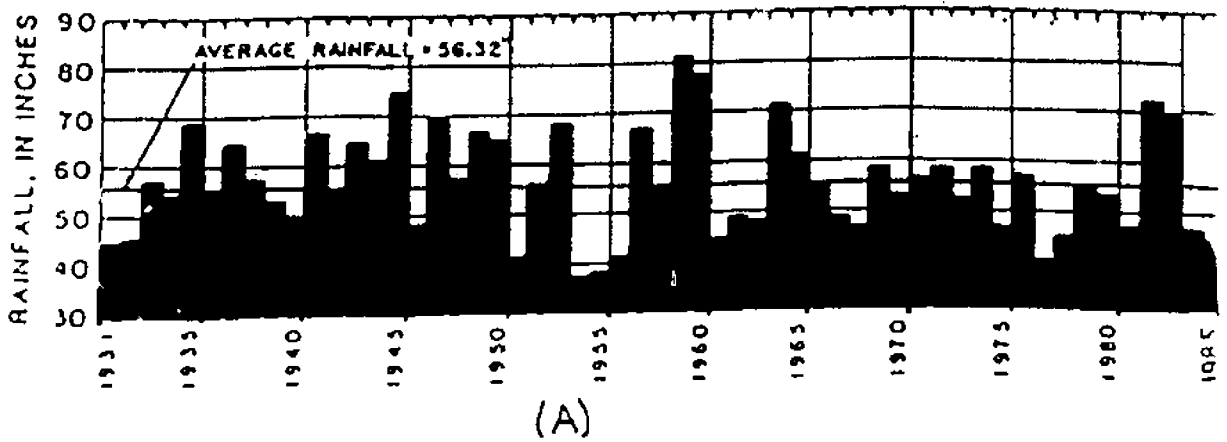


Figure 31. (A) Annual Rainfall at Brooksville, 1931-85. (B) Mean and Median Monthly Rainfall at Brooksville, 1915-1985.

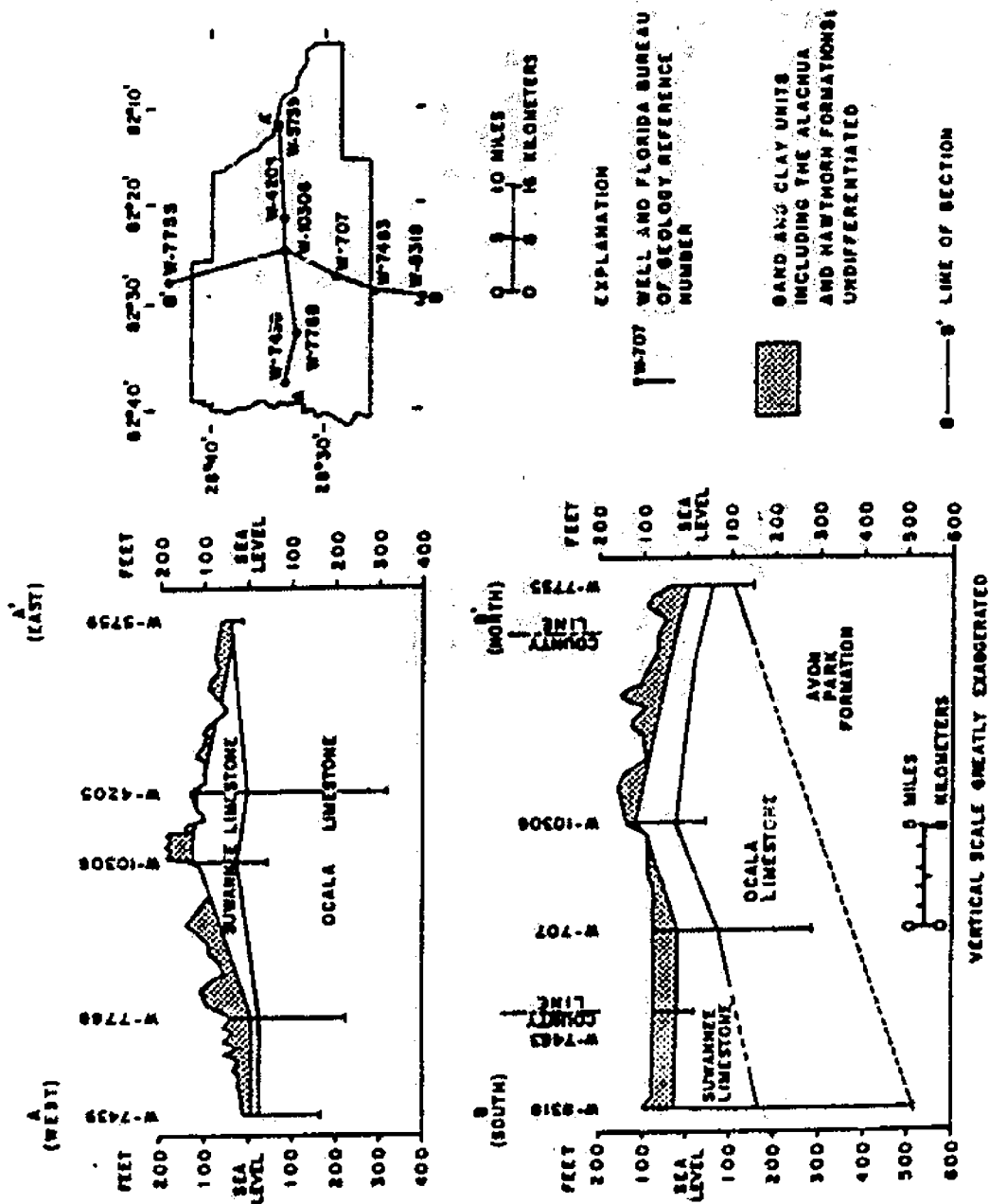


Figure 32. Generalized Geologic Sections of Hernando County, Florida (from Fretwell, 1985).

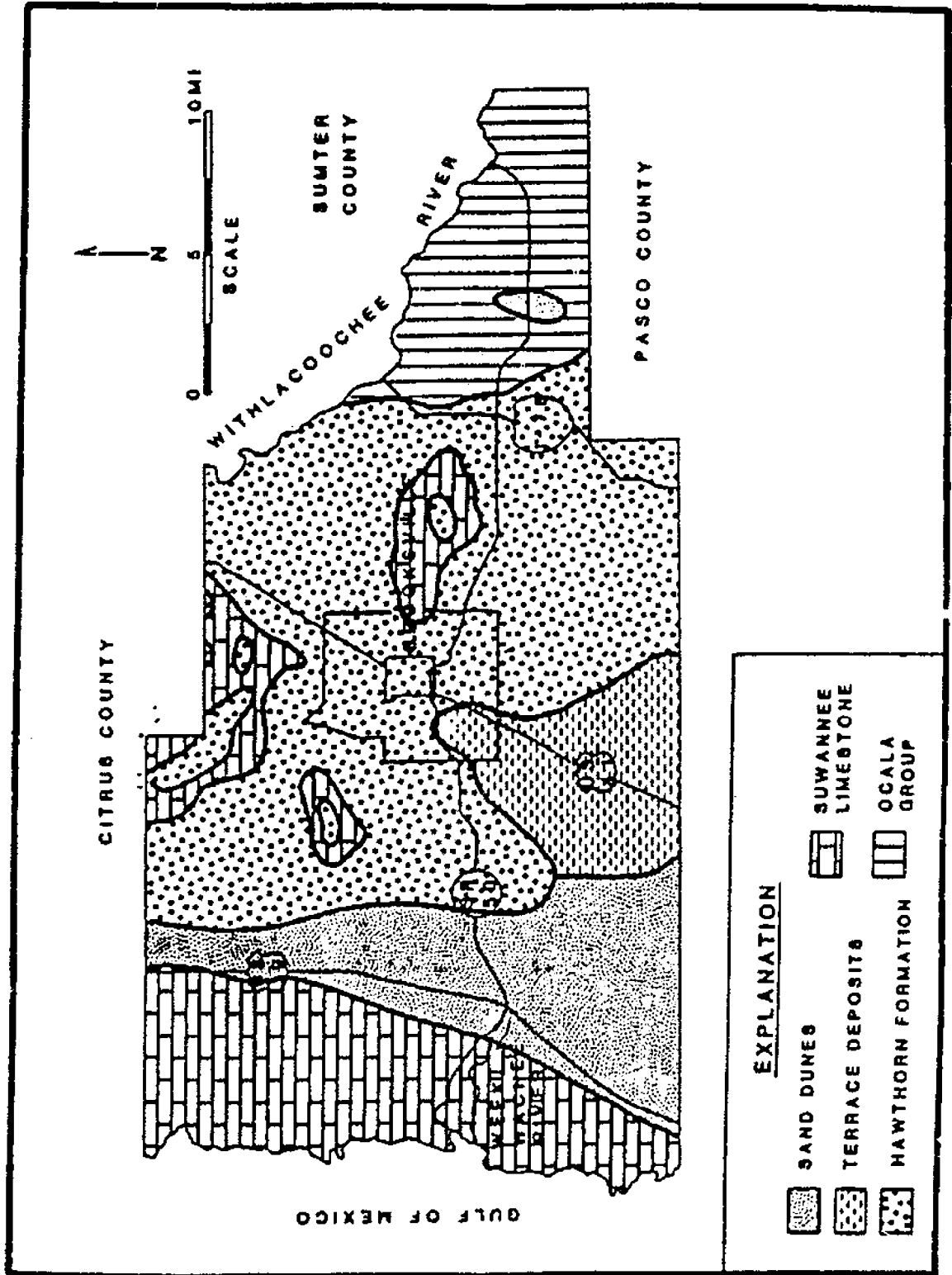


Figure 33. Geologic Units at Land Surface in Hernando County, Florida (from Brooks, 1981).



One dominant structural feature, the Ocala Uplift, located to the north of Hernando County is thought to control the outcrop patterns in the area. The significance of this feature is its influence on the underlying carbonate formations in the county. This structural high results in the limestones being close to land surface, consequently making the area ideal for limestone mining activities. This economical resource is used as road base, fill, concrete, and asphalt production. The quarried limerock is taken from the Oligocene Suwannee, and Eocene Ocala Formations. Other minor economical products include sand, clay, and limited hard rock phosphate.

## SOILS

The general soils map for Hernando County depicts three broad divisions as follows:

- poorly drained to very poorly drained
- somewhat poorly drained to poorly drained
- excessively drained to somewhat poorly drained

Each area outlined in Figure 34 consists of more than one kind of soil; therefore, this figure is intended for general planning purposes (refer to the USDA Soil Conservation Service publication "Soil Survey of Hernando County, Florida" for a detailed description of soil types in the county).

The poorly drained and very poorly drained soils include most of the nearly level soils in swamps, tidal marshes, and river flood plains. In Hernando County, these include the Okeelanta-Aripeka-Terra Ceia association, Homosassa-Weeki Wachee-Lacoochee association and the Floridana-Barringer association.

Along the coast the prevalent soil groups are the Okeelanta-Aripeka-Terra Ceia association and the Homosassa-Weeki Wachee Lacoochee association. These poorly drained soils support salt and brackish marshes, forested wetland further inland, and pine flatwoods up to the edge of the sandhills.

From the sandhills east of U.S. Highway 19 to the central Brooksville Ridge the predominate soil types are Candler-Tavares-Paola association, Arredondo-Sparr-Kendrick association and Chandler-Lake association. These generally well drained soils support longleaf pine and turkey oak communities, some of the sandhills also support sandpine scrub. Because of the high permeability of these soils and the general lack of a confining layer between the surficial soils and the limestone of the Floridan aquifer system, there is a high recharge potential in this area.

Moving further inland to the central Brooksville Ridge area, the principle soil type is the Nobleton-Blichton-Flemington association. These somewhat poorly drained soils generally support hardwood forests and mesic hammock communities. These

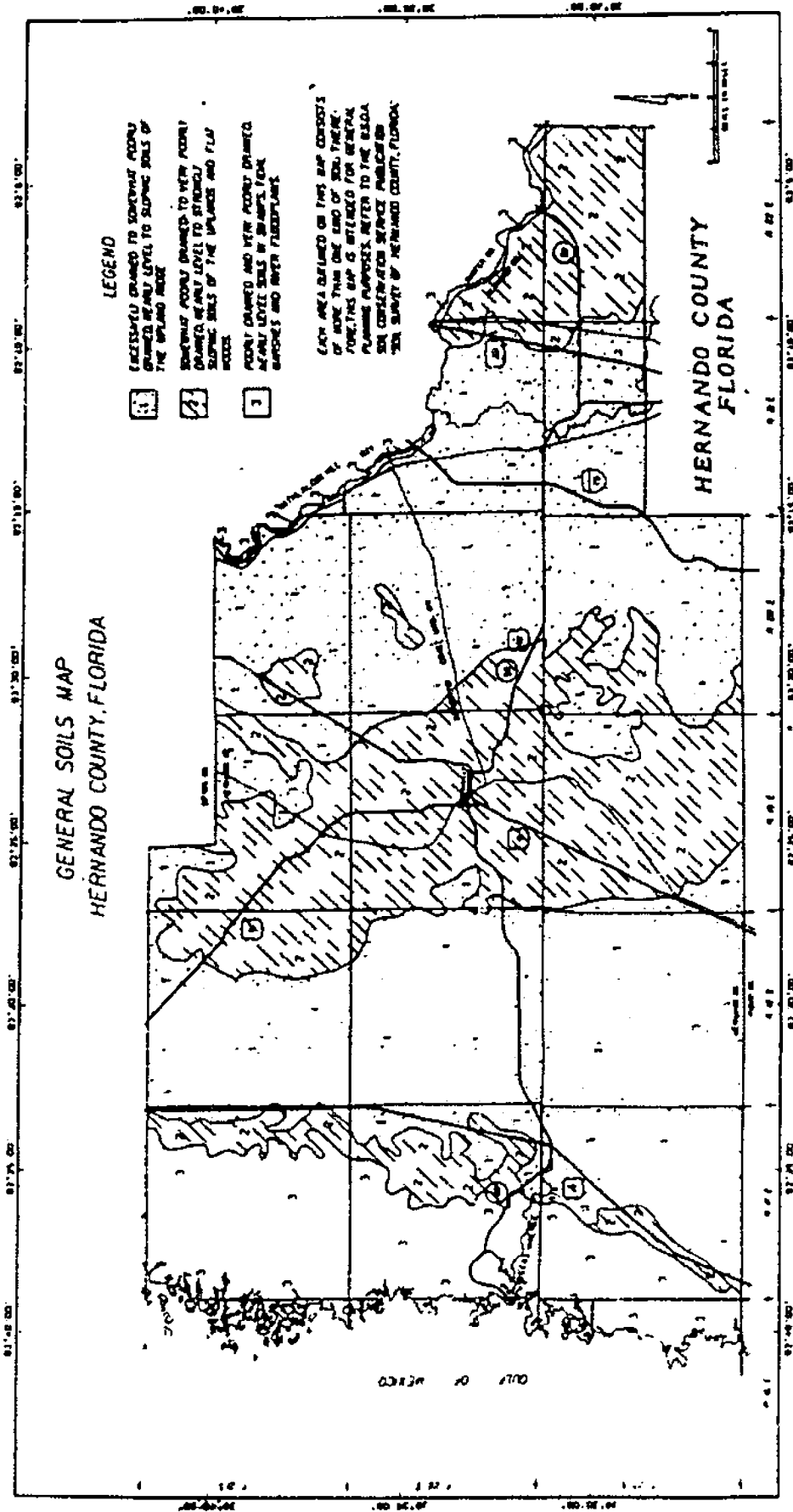


Figure 34. Generalized Soils Map of Hernando County, Florida.

soils are generally not very permeable, however there is a high potential for recharge to the Floridan aquifer system in these areas due to the presence of sinkholes. The sandhills east of the central Brooksville Ridge are Candler-Tavares-Paola association, Arrundondo-Sparr-Kendrick association, and Chandler-Lake association. Around lakes and depressions this area also supports oaks and mixed hardwoods.

In the Tsala-Apopka Plain area of Hernando County, the predominate soil types are Eau Gallie-Wabasso-Basinger association, Paisley-Floridana-Wabasso association and Floridana-Basinger association. These poorly drained soils support cypress ponds, freshwater marshes, and pine flatwoods.

## DEMOGRAPHIC CONDITIONS

### POPULATION, DISTRIBUTION, AND PROJECTIONS

Hernando County has been experiencing one of the fastest rates of population growth in the state. Between 1970 and 1980, Hernando County's population grew from an estimated 17,004 to 44,469, an increase of 161.5 percent (U.S. Bureau of the Census). In comparison, the population for the State of Florida grew from 6,791,418 to 9,747,197 during the same time period, an increase of 43.5 percent. The Bureau of Economic and Business Research estimates the 1985 Hernando County population at 67,742 (Smith and Sincich, 1986). This represents an increase of 52.3 percent over the 1980 total.

The estimated distribution of the 1980 and 1985 Hernando County populations is represented by Figures 35 and 36. These figures show that Hernando County's population is concentrated in the southwest section of the county along the U.S. Highway 19 corridor and around the centrally located City of Brooksville. During the past five years, the majority of the population growth for the county has taken place in the coastal areas along U.S. Highway 19.

Population projections for Hernando County are taken from the 1985 Florida Statistical Abstract (Bureau of Economic and Business Research, 1986). These projections are displayed graphically in Figure 37 and generally show that the population of Hernando County is expected to increase substantially in the future.

### LAND USE

The major trend in land use for Hernando County is the rapid growth of residential development. This trend is especially evident in the Spring Hill/Weeki Wachee vicinity and the rest of the U.S. 19 corridor in the western and coastal part of the county. The Brooksville area in the central part of the county and the Ridge Manor area along U.S. 98 between I-75 and U.S. 301 in the eastern part of the county also have growing concentrations of

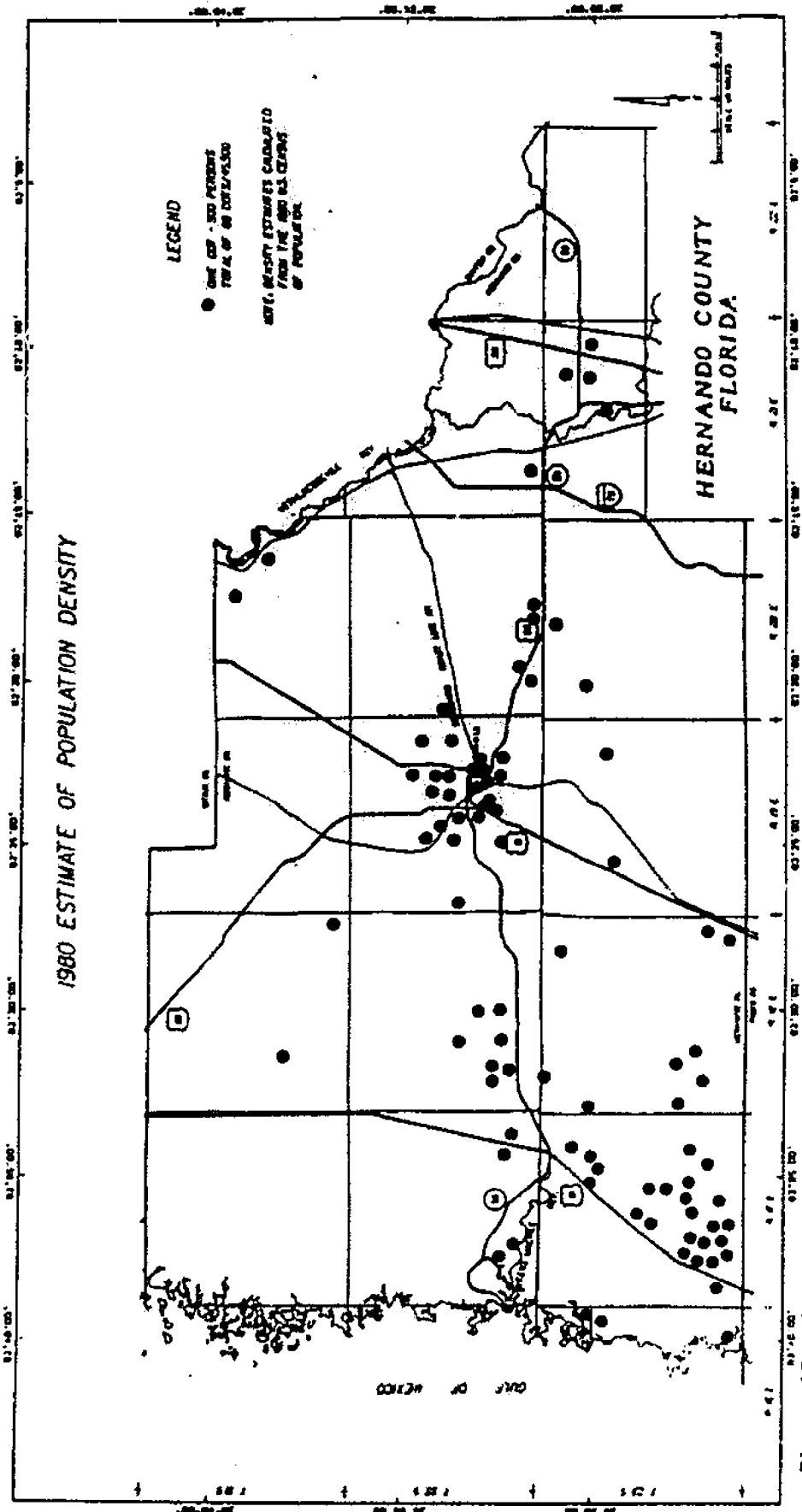


Figure 35. 1980 Estimated Population Density for Hernando County, Florida.

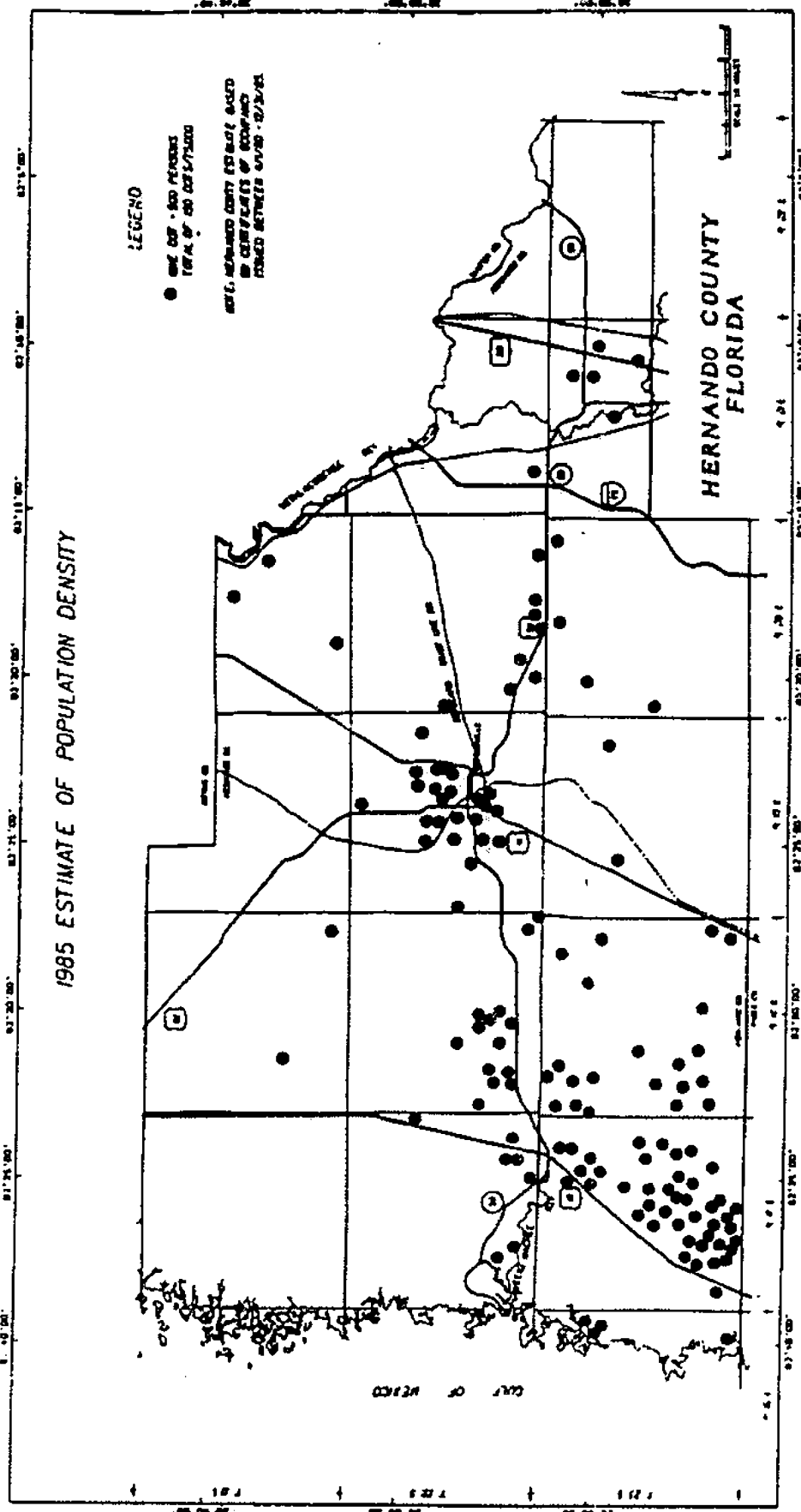


Figure 36. Estimated 1985 Population Density for Hernando County, Florida.

# HERNANDO COUNTY

## POPULATION ESTIMATES AND PROJECTIONS

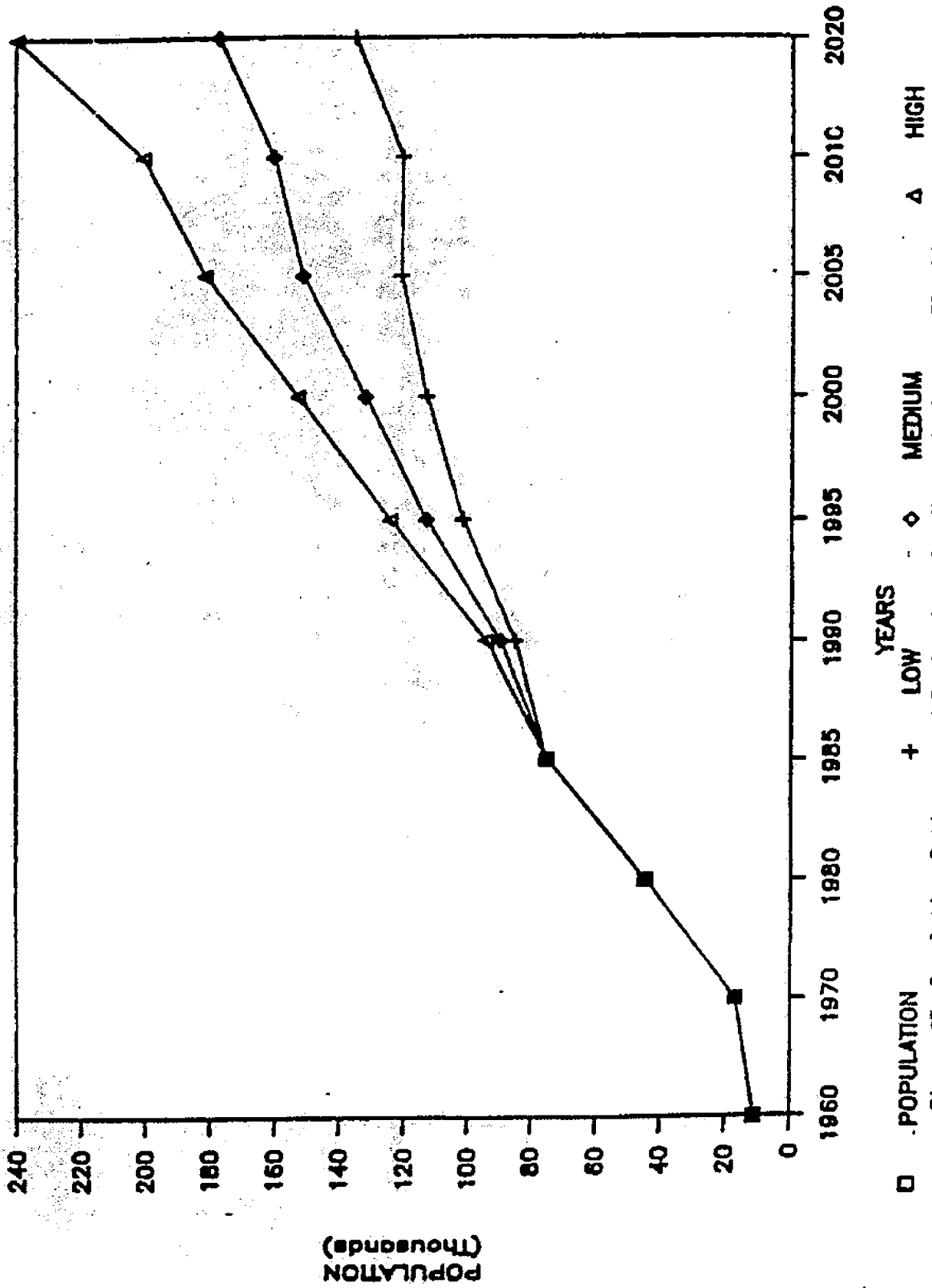


Figure 37. Population Estimates and Projections for Hernando County, Florida.

residential land uses. This trend can be seen by comparing the 1980 and 1985 population density maps (Figures 35 and 36).

Many agricultural areas, especially those historically in citrus production, are undergoing some form of transition. The continued migration of the citrus industry to the southern parts of the state, as a result of freezes experienced in the 1980's, leaves the future of the Hernando County citrus industry in question. Between 1980 and 1985, land used for citrus production declined from over 6,000 acres to less than 200 acres (Florida Crop and Livestock Reporting Service, 1986). Some citrus areas may be replanted, but there will also be large tracts converted into other types of land uses. These land uses could include residential developments, recreational areas, or other forms of agriculture such as forestry, grape, turf, or truck crop production.

Figure 38 presents generalized land uses for Hernando County. Land use classifications employed on this map are based on information provided by the Hernando County Planning Department. In order to accommodate the scale requirements of the base map, several related categories have been combined to form more generalized groupings. Land uses of 40 acres or greater are delineated in Figure 38.

Definitions for the generalized land use classifications provided on the Existing Land Use Map (Hernando County, 1986) are the basis for the legend of Figure 38. A combination and paraphrasing of the Hernando County definitions produced the following definitions for use on the generalized map presented with this report.

Public Lands/Conservation/Recreation/Public Facilities-  
All lands (public or private) which are formally committed to conservation, public facilities (such as electrical substations or wastewater treatment plants), and lands or facilities (public or private) which are used for sports or leisure activity or are committed to this future use.

Mining - Lands that are presently, or have been previously, utilized extensively for the excavation of natural resources along with lands that have not been previously mined or actively mined as of June 1, 1985 but are zoned for mining.

Residential and Commercial - Includes areas designated as single-family, multi-family, mobile home, mixed residential, and rural residential along with associated commercial development and educational facilities. This designation includes those lands that have one of the following characteristics: (1) an approved Application for Development Approval (ADA) from Hernando County (Development of Regional Impact); (2) vested rights; (3) infrastructure with or without dwelling units; (4) been platted; (5) unplatted subdivisions which have lots less

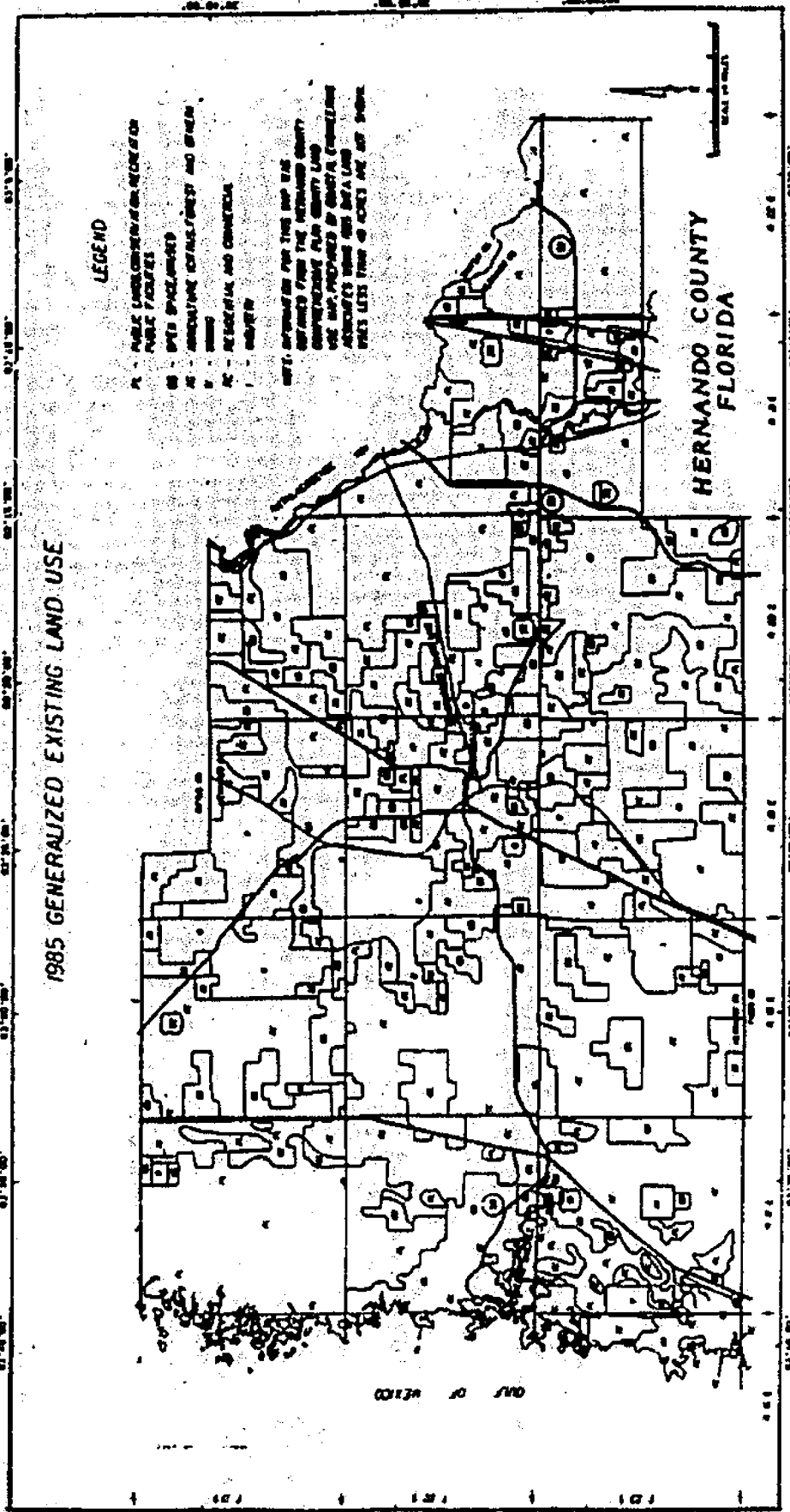


Figure 38. Generalized 1985 Land Use of Hernando County, Florida.



than 2 1/2 acres in size and no infrastructure; (6) been zoned commercial as of June 1, 1985.

Industry - Combines existing industrial parks and lands with areas zoned industrial as of June 1, 1985 which may or may not have an infrastructure.

Open Space/Unused - Lands that are not presently used, are undeveloped, or are in a transitional stage such as some areas of freeze damaged citrus. Isolated rural residential areas may also be included.

Some of the more significant patterns presented by the land use map include the large areas of public conservation lands in the northeast and northwest sections of the county. These lands are part of the Withlacoochee State Forest and the federal Chassahowitzka Wildlife Management Area, respectively. The concentration of mining activities in the north-central part of the county can also be seen on this map. The most dominant land use in the county, however, is the concentration of residential development in the western part of the county.

#### HYDROLOGIC ASSESSMENT OF HERNANDO COUNTY

There have been several investigations that have included Hernando County within their study area. These studies include Wetterhall's (1964) geohydrologic reconnaissance of Pasco and southern Hernando Counties, Cherry and others (1970) description of the general hydrology of the Florida Middle Gulf area, Mills and Ryder's (1977) investigation of saltwater intrusion in the Floridan aquifer system in coastal Citrus and Hernando counties, Fretwell's (1983) investigation of ground-water resources of coastal Citrus, Hernando, and southwestern Levy counties, and Miller's (1984) description of the hydrogeologic framework of the Floridan aquifer system in Florida and parts of Georgia, South Carolina, and Alabama.

In addition to these investigations, which contain general hydrologic discussions of Hernando County, Fretwell (1985) completed a detailed assessment of the water resources and effects of development in Hernando County, which has received favorable reviews. For the sake of efficiently completing a hydrologic assessment of Hernando County, the hydrologic assessment sections of Fretwell's report are included in nearly their entirety below.\*

#### SURFACE WATER\*

Most drainage in Hernando County is internal, as is typical in karst terrain. Rainfall percolates through sand and clay to recharge the underlying Floridan aquifer system. After heavy rainfall, small intermittent streams flow to sinkholes where the water either percolates rapidly or ponds to form prairie lakes.

Sections from Fretwell's report are delineated by an asterisk (\*).

During dry periods, these channels and lakes are usually dry. During wet periods, flooding may occur if the rate of rainfall exceeds the rate of percolation, or if the potentiometric surface of the aquifer rises to or above the bottom of the sinkholes. This is particularly a problem where the altitude of the land surface is close to that of the potentiometric surface.

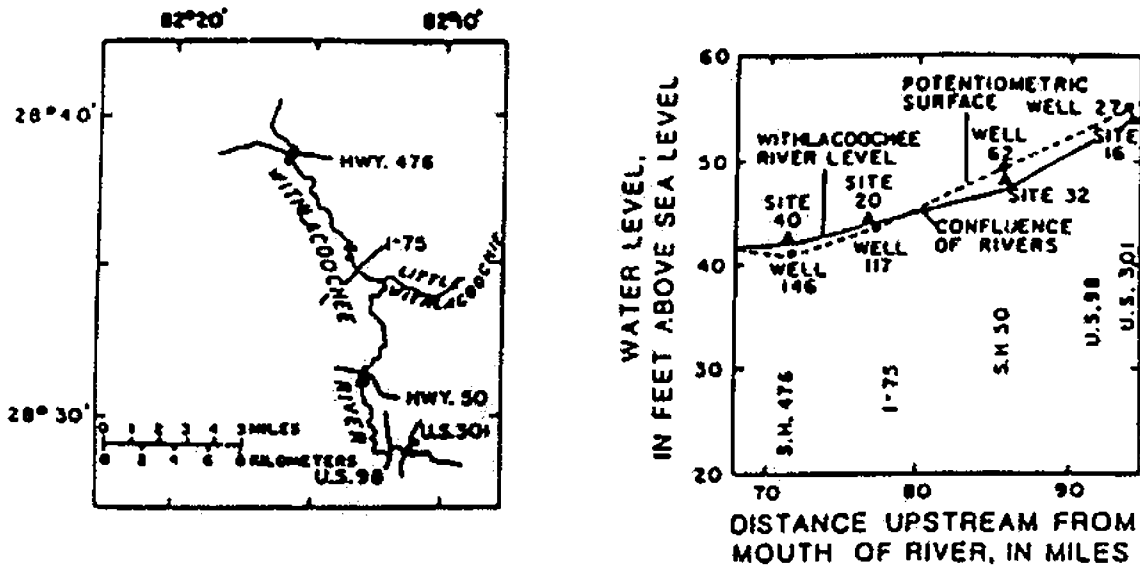
The Withlacoochee and Little Withlacoochee Rivers are the only perennial streams inland from the coast. Above their confluence in the southeastern part of the county, the two rivers cut through sand and clay. Below their confluence, the Withlacoochee River flows in a limestone channel.

The potentiometric surface of the Floridan aquifer system is generally higher than the water surface of the Withlacoochee River in the reach south of Interstate Highway 75 (Figure 39). Figure 39 also shows the relative water levels on May 16-17, 1979, during a period of fairly high water conditions in the river. At that time, the discharge of the Withlacoochee River at U.S. Highway 301 averaged 278 cfs (180 Mgal/d), a discharge that was exceeded only 30 percent of the time for the period 1931-1981 (K. M. Hammett, U.S. Geological Survey, written commun., 1984). The difference in the water levels shown in figure 39 suggest that water from the Floridan aquifer system generally is discharging to the river in the southern part of the county, and river water generally is recharging the Floridan aquifer system in the northern part of the county during periods of high stream discharge.

The only other perennial streams are those that are fed by springs along the coast. Most coastal streams are affected by Gulf tides. The largest of these streams is the Weeki Wachee River (Figure 30) that receives its water from Weeki Wachee Springs.

Many small lakes occur in Hernando County. Some lakes appear to be surface expressions of water tables perched on impermeable materials; others are directly connected to the Floridan aquifer system through sinkholes and reflect the potentiometric surface of the aquifer. The largest lake entirely within the county is Bystre Lake (Figure 30). It has a surface area of 307 acres (Gant, 1982). Hunters Lake (Figure 30) is almost as large and has a surface area of 302 acres (Gant, 1982). The largest lake included in the study, Lake Hancock (Figure 30), 519 acres (Gant, 1982), lies mostly within Pasco County.

Water levels of Lake Lindsey and Horse Lake (figure 30) were measured weekly during part of Fretwell's study. Figure 40 shows changes in water levels for each lake during 1982-83. Also shown are water levels in a nearby well, well A, and rainfall at Brooksville. Water levels of Lake Lindsey rose from May through September 1982 as a result of above normal rainfall and subsequently remained high. A similar response was seen in well A, which suggests some connection between the lake and the



- EXPLANATION
- ▲ STREAM MEASURING SITE
  - WELL TAPPING THE UPPER FLORIDAN AQUIFER

Figure 39. Water Levels of the Withlacoochee River and Potentiometric Surface of the Upper Floridan Aquifer Along the River, May 16-17, 1979 (from Anderson and Laughlin, 1982).

Floridan aquifer system. Levels of Horse Lake peaked in June 1982 and subsequently receded, indicating a more rapid response than Lake Lindsey to climatic conditions.

Water levels in eight lakes, measured several times during wet and dry seasons between April 1982 and June 1983, are shown in figure 41. Levels in several lakes responded to climatic conditions in the same way as water levels in the Floridan aquifer system by rising with the heavy rainfall in 1982, declining slightly during the fall and early winter months between 1982 and 1983, and then rising again as rainfall increased in the spring of 1983.

Changes in lake levels between April 1982 and June 1983 ranged from a 5.4-foot increase in Lake Hancock to a 1.4-foot decline in Bonnet Pond. Although most lakes had very high water levels in September 1982, Skinner and Bystre Lakes and Bonnet Pond had lower levels in September 1982. At Skinner Lake, the gauge was on dry land in September. A pond in the southern part of the county went completely dry during the same period. Residents near Nicks Lake indicated that this lake has gone dry during period when water levels of St. Clair Lake were high. This, however, was not observed.

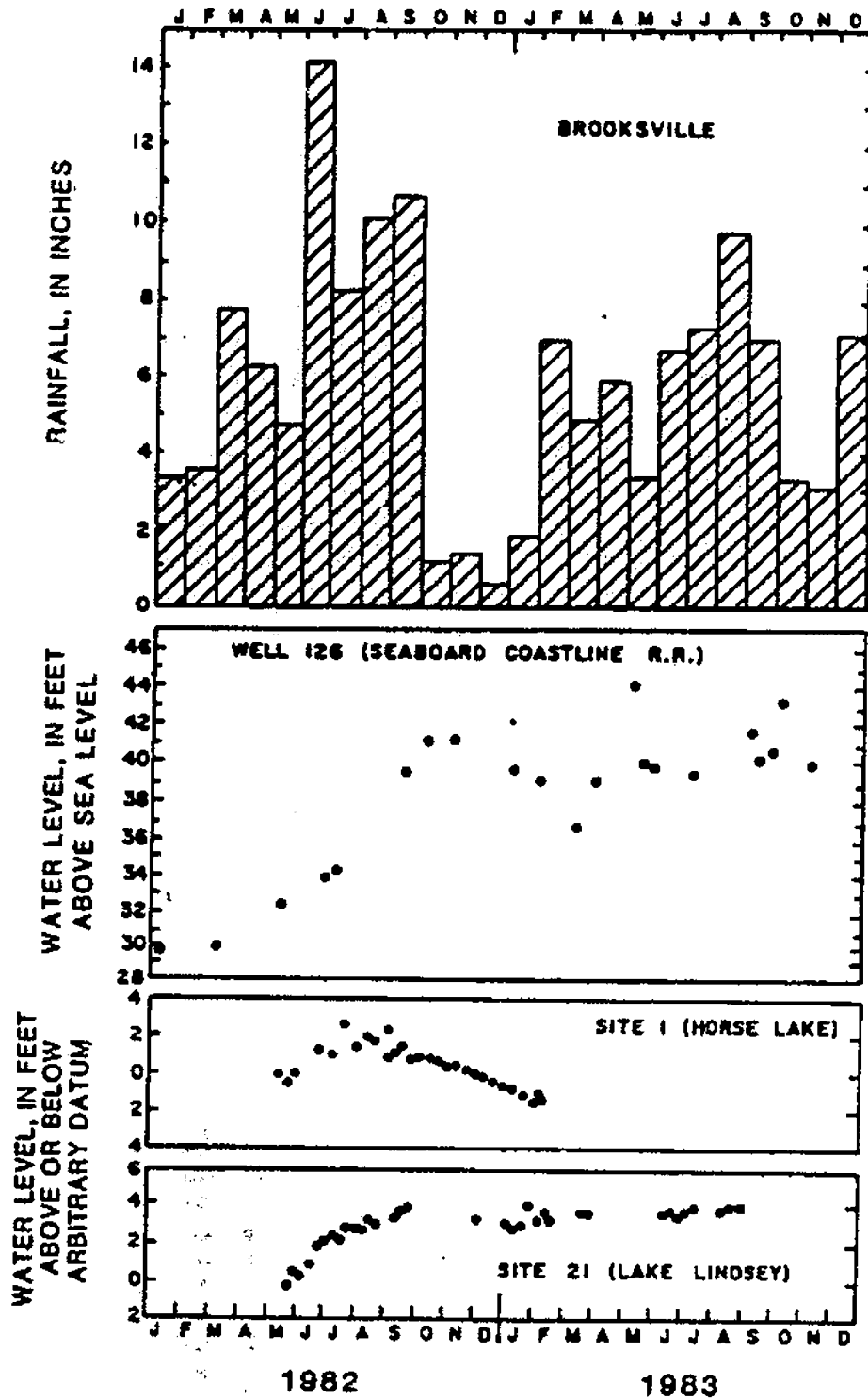


Figure 40. Rainfall at Brooksville and Water Levels in Well A, Horse Lake, and Lake Lindsey. (from Fretwell, 1985)

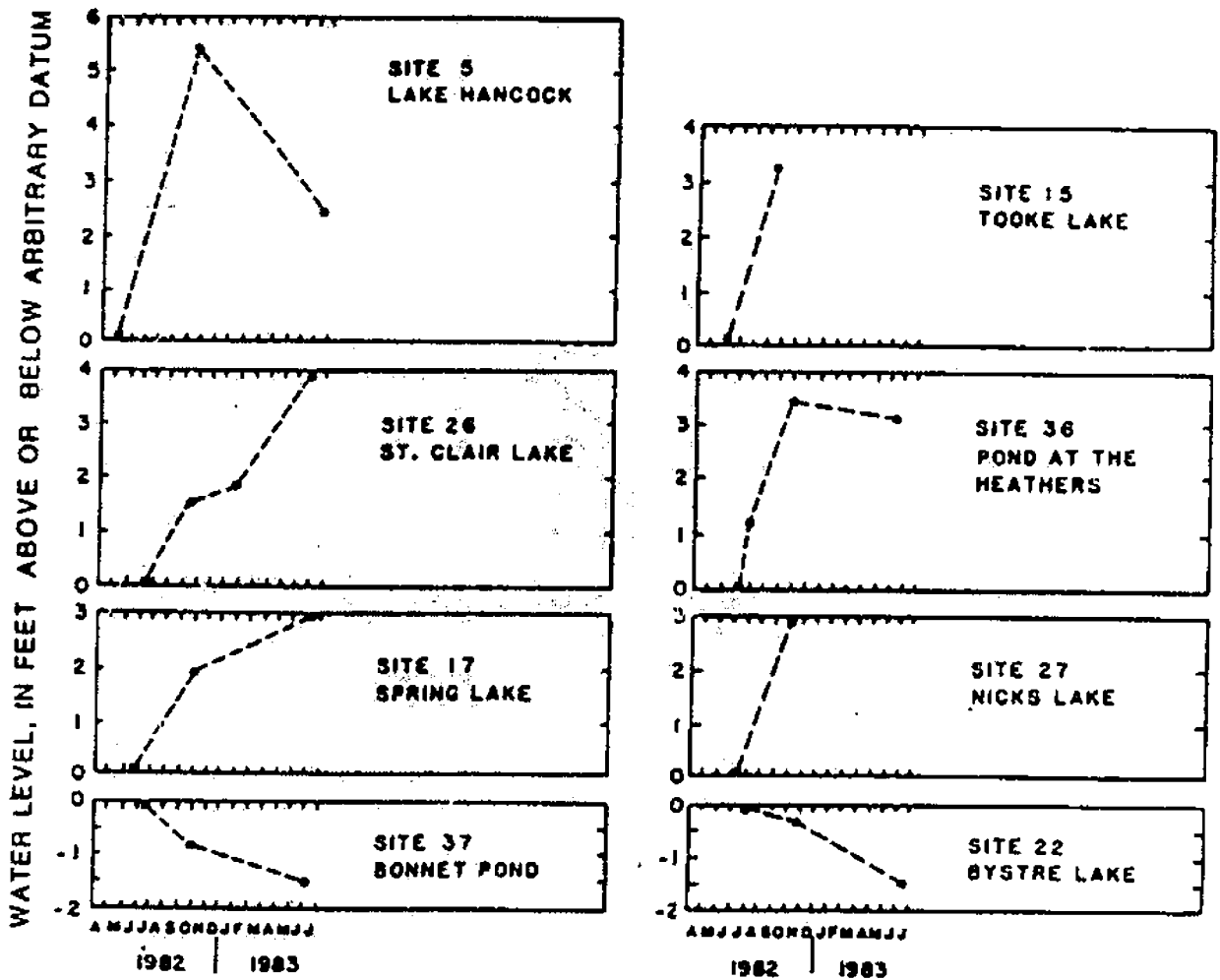


Figure 41. Water Levels in Eight Lakes During the Period April 1982, - June 1983 (from Fretwell, 1985).

It is possible that lakes that show a decline in water levels may reach a certain level at which the water body becomes heavy enough to force out sediments that had formed a plug in the sinkholes beneath the lake beds. As water flows from the lake into the Floridan aquifer system, sediment is redeposited, a new plug is formed, and the lake again accumulates water. In the case of the pond in the southern part of the county, the plug did not reform, and the pond remained dry through the end of the study period. Other factors that affect the rapid lowering of lake levels during times of heavy rainfall are the relation of water levels in the lake to the potentiometric surface of the Floridan aquifer system, permeability of the lake bottom, and availability of water from storage in adjacent sand hills. Lakes that have a direct connection with the Floridan aquifer system could be potential sources of contamination to the aquifer.

## SPRINGS\*

Weeki Wachee Springs is centrally located in the coastal area of Hernando County. Discharge from the spring has ranged from 101 cfs (65 Mgal/d) to 275 cfs (178 Mgal/d) for the period of record, 1931 to 1984, and averages 176 cfs (114 Mgal/d). Other springs that discharge more than 10 cfs (6.5 Mgal/d) are Salt, Mud, Blind, and unnamed springs No. 93 and No. 95, sites 84, 86, 85, 93, and 95, respectively, in figure 30 (Rosenau and others, 1977). Long-term average discharge through coastal springs in Hernando County, as reported by Ryder (1982) is about 357 cfs (231 Mgal/d). Upward leakage in marsh areas near the coast, according to Ryder (1982), accounts for about 77 cfs (50 Mgal/d).

Springflow is related to the altitude of ground water. Correlation between discharge from Weeki Wachee Springs and water levels in well B (Figure 30) is shown in figure 42. For every foot of water level change in the well, a change of about 12.5 cfs of discharge occurs at the spring. The graph includes all discharge measurements from August 1966 through 1982, the period for which water-level data measurements from August 1966 through 1982, the period for which water-level data are available for well B.

## GROUND WATER\*

The Floridan aquifer system is the principal source of water for domestic, agricultural, and industrial supplies within Hernando County. At a few locations in Hernando County, a surficial aquifer occurs in the sand overlying the Floridan aquifer system. In some places, as on some hills in the Brooksville Ridge area, a perched water table in the surficial aquifer of limited areal extent occurs above the Floridan aquifer system due to separation of the sand from the underlying limestone by clay of very low permeability. In most parts of the county, there are sufficient breaches in the clay layer to allow percolation of water from the sand into the underlying limestone. In areas where saturated sand lies directly above limestone, water in the sand is hydraulically connected to the Floridan aquifer system.

## SURFICIAL AQUIFER \*

In some places, the sand contains water only during the wet season. Water levels in the sand change rapidly, which suggest hydraulic connection with the limestone and leakage through clay layers where present. Twenty-eight wells that range in depth from 10 to 70 feet were drilled in May 1982 during a dry period. Of these wells, only seven contained water; however, by the following month, eight of the wells contained water. All but one of these wells were quickly dewatered when pumped at a rate of less than 5 gallons per minute. Locations of these wells and other surficial aquifer wells measured in May and June 1982 are shown in figure 43. An area in the southwest part of the county (area A, figure 43) contains numerous shallow wells that were

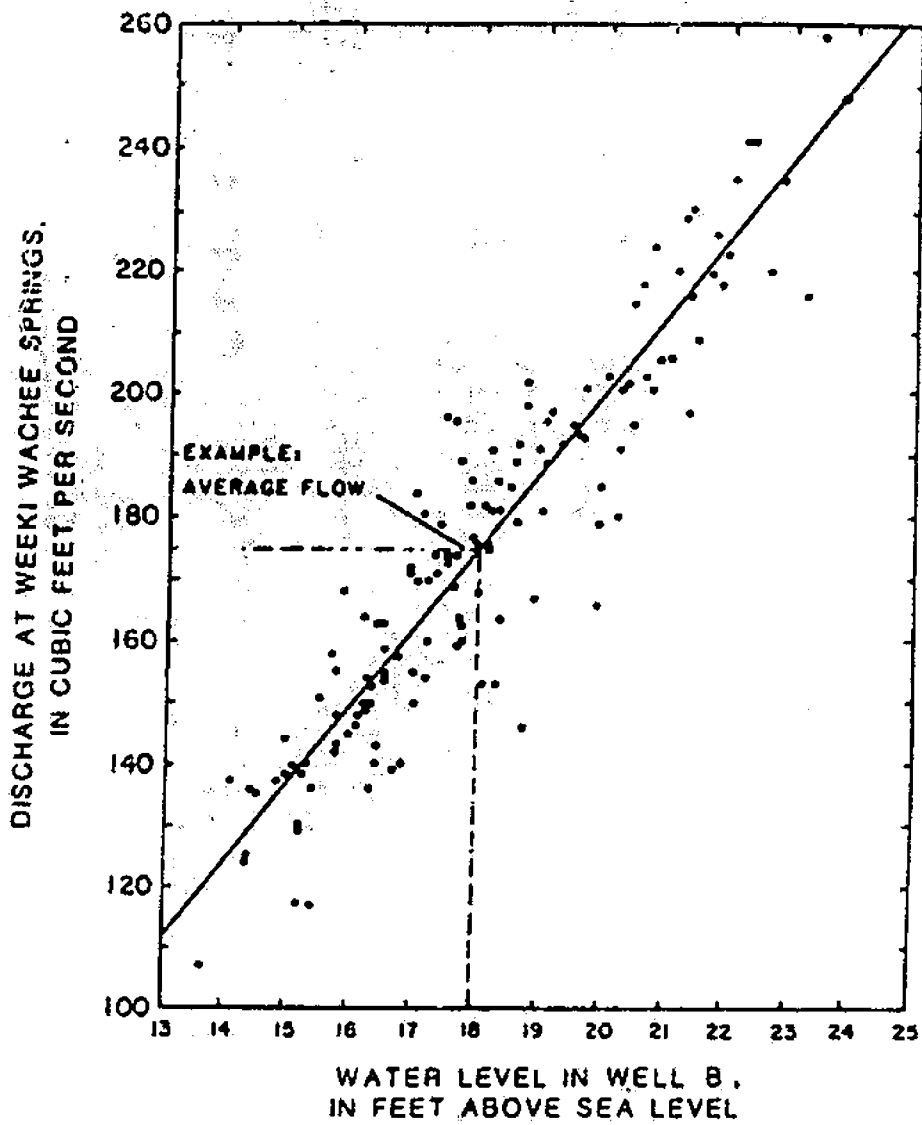


Figure 42. Relation Between Discharge of Weeki Wachee Springs and Water Levels in Well B. (from Fretwell, 1985).

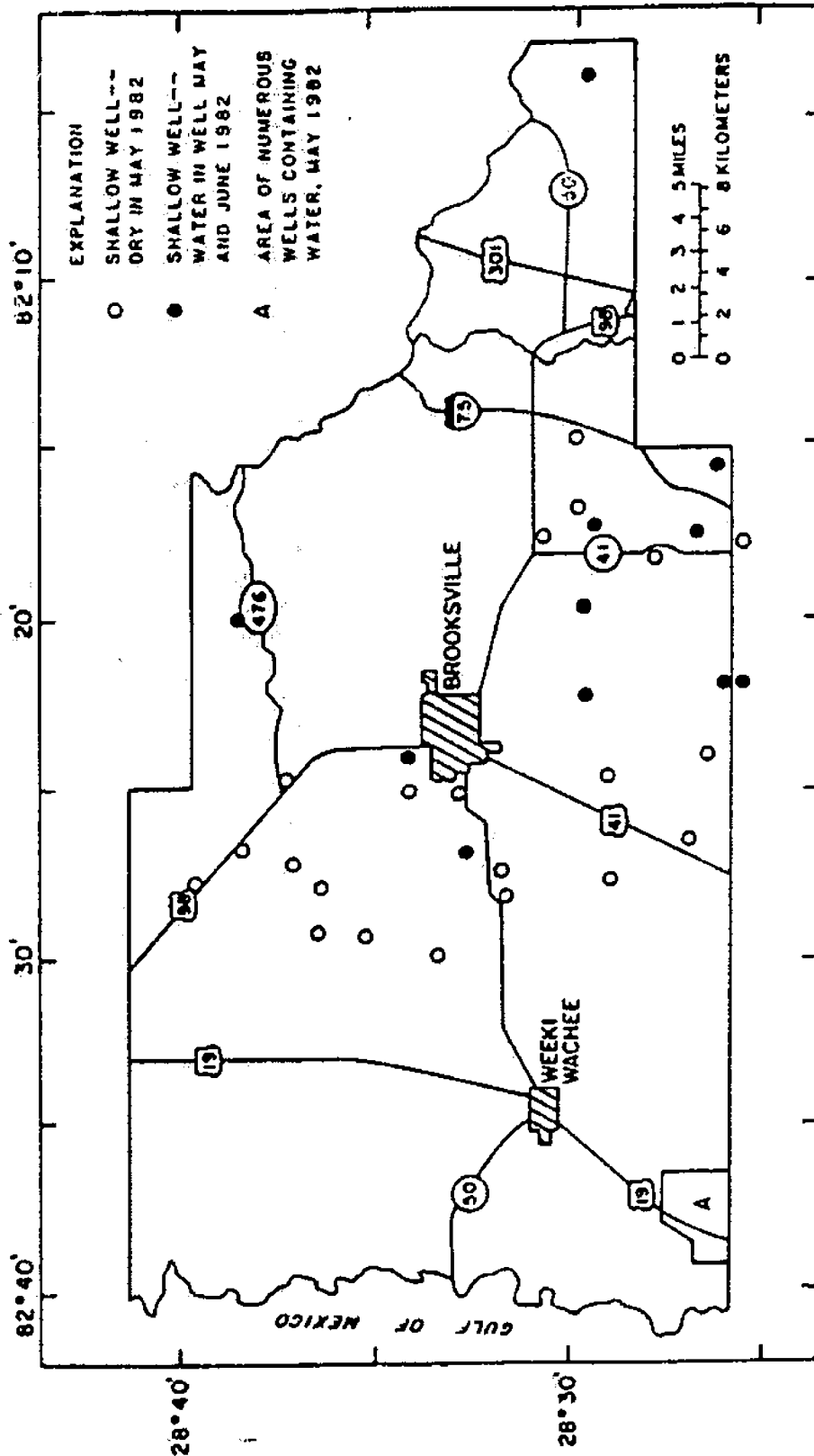


Figure 43. Locations of Selected Surficial Aquifer Wells (from Fretwell, 1985).



drilled for a study of Hunters Lake (S.E. Henderson, U.S. Geological Survey, written commun., 1984). Most of these wells also contained water in May 1982. In this area, the water table is in the sand that lies directly above the Floridan aquifer system and is probably in hydraulic connection with the Floridan aquifer system. Sand throughout the county generally yields insufficient quantities of water to wells to be of economic importance.

#### FLORIDAN AQUIFER SYSTEM \*

In Hernando County, the freshwater-bearing part of the Floridan aquifer system is the Upper Floridan aquifer that is comprised of the following formations, in ascending order: Avon Park Formation, Ocala Limestone, and Suwannee Limestone. The Tampa Limestone is generally missing, either because of erosion or lack of deposition. Where present, it is generally unsaturated and not significant as part of the aquifer. The lower part of the Avon Park Formation, formerly known as the Lake City Limestone, contains evaporites consisting of gypsum and anhydrite and reduce permeability of the rock and are considered to be the base of the Upper Floridan aquifer. The lower part of the Avon Park Formation and rocks below it contain salty water; therefore, it is the lowermost unit studied. The Upper Floridan aquifer is generally unconfined in Hernando County, but it may be locally confined where it is overlain by thick clay beds or low permeability limestone that retard vertical flow of water.

The top of the Floridan aquifer system is at land surface near the coast; it is more than 100 feet below land surface in the Brooksville Ridge area. Thickness of the Upper Floridan aquifer ranges from a little less than 700 feet at the coast to a little greater than 800 feet in the ridge area (Miller, 1982). Figure 44 is a structural map of the top of the Floridan aquifer system in Hernando County.

A highly developed secondary porosity system exists in the vicinity of Weeki Wachee Springs and other large springs. In these areas, dissolution of limestone produced cavities and channels. Small passages in the limestone coalesced until water from many successively larger passages began moving through a single major channel toward a discharge point, or spring. A well in such a major channel will yield more water than a well developed in the immediately adjacent, less permeable part of the aquifer even though both may be constructed identically, be within a few tens of feet of each other, and be equipped with identical pumps.

#### POTENTIOMETRIC SURFACE \*

The potentiometric surface of the Upper Floridan aquifer fluctuates in response to changes in the rates of recharge and the rates of discharge. Some factors in this process are rainfall, pumping, and, near the coast, tidal fluctuations.

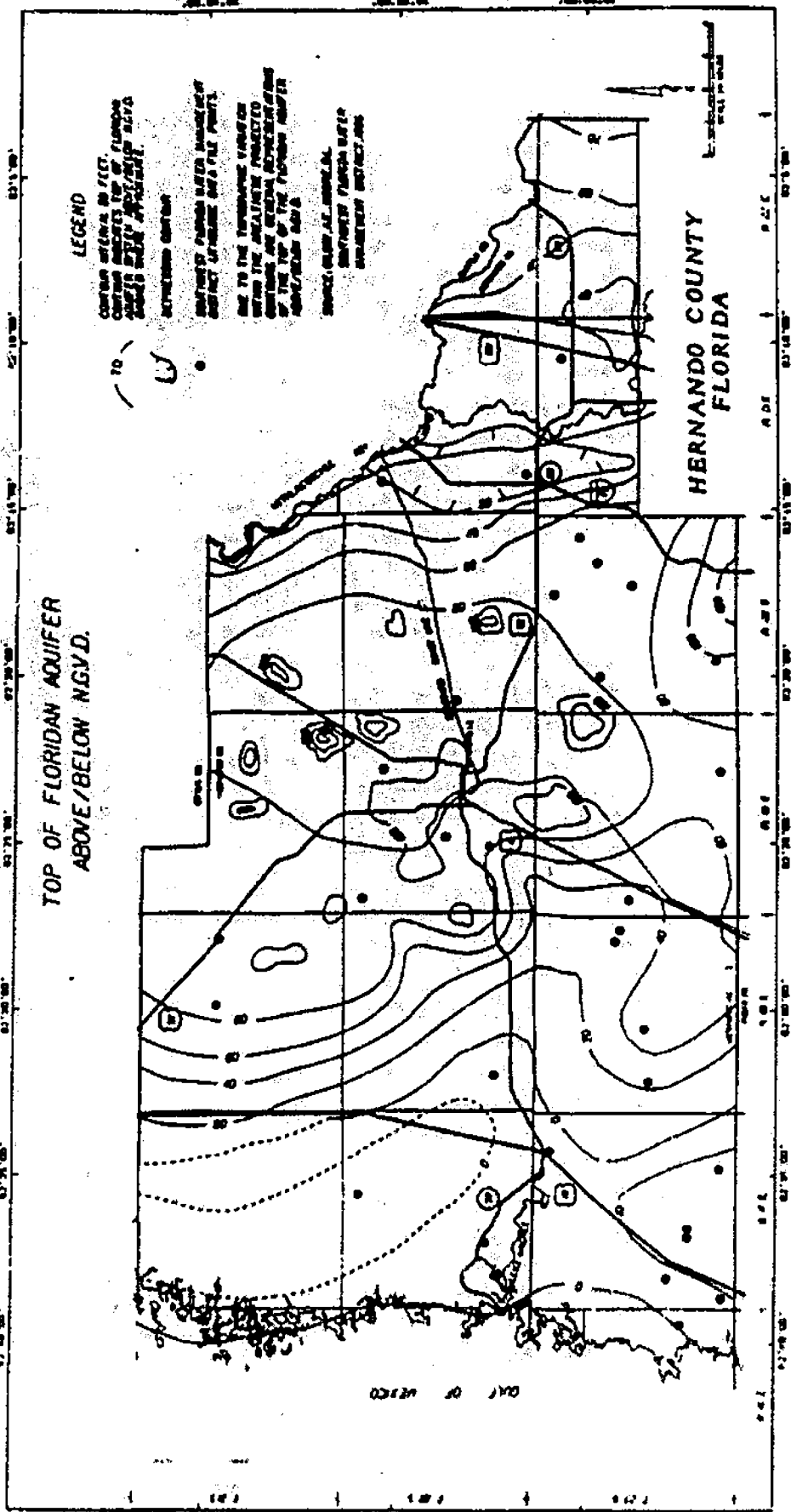


Figure 44. Top of the Floridan Aquifer Above/Below N.G.V.D.

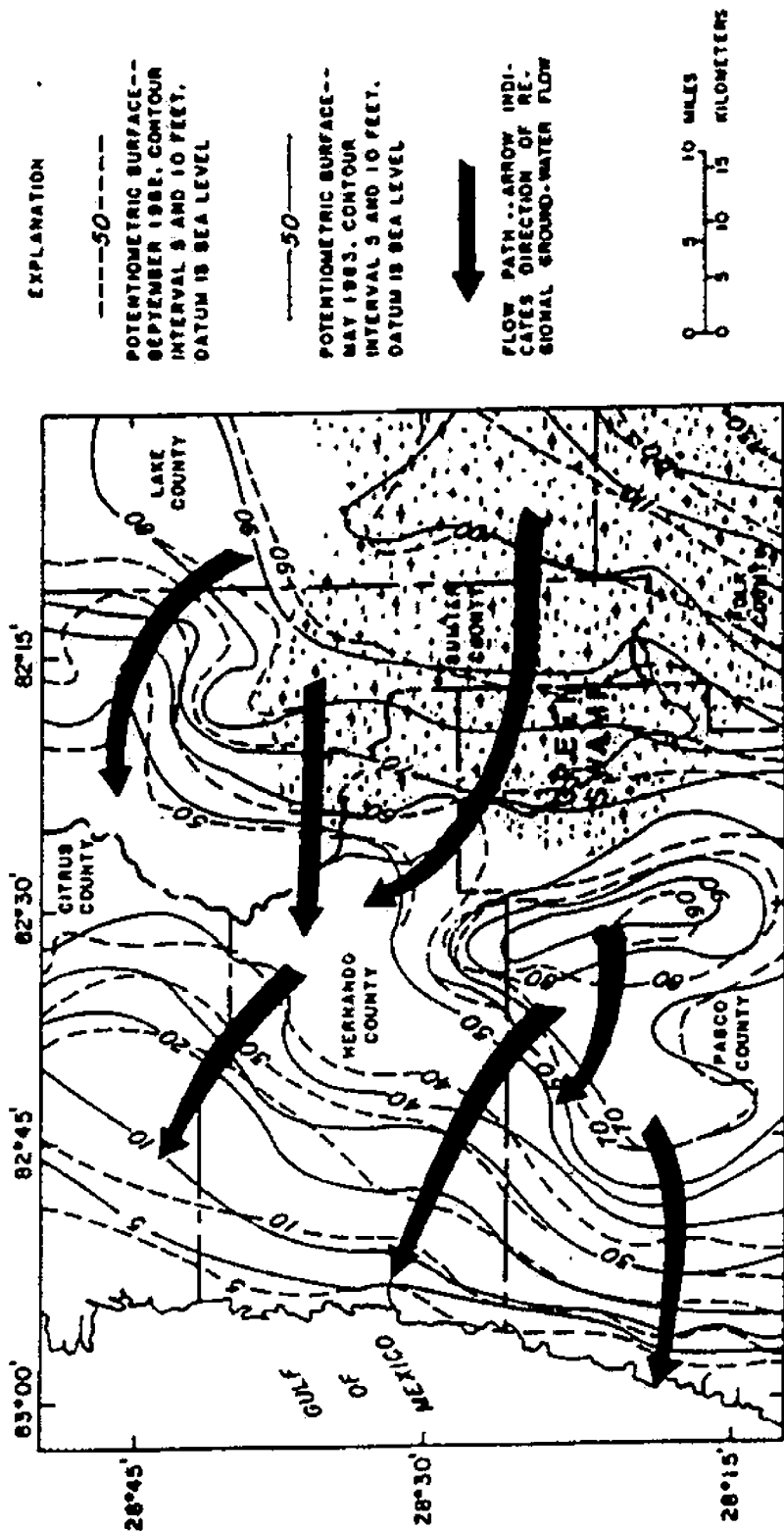
Figure 45 shows the potentiometric surfaces of the Upper Floridan aquifer for September 1982 and May 1983. September is normally the end of the wet season; May, the end of the dry season. Generally, more stress is placed on the aquifer in May because seasonal rains have not yet begun and crop irrigation is heaviest. Also, tourism is at its peak in late winter and early spring and places additional demands on the freshwater supply at a time when rainfall is least. However, the amount of rainfall is the most important factor in dictating the altitude of the potentiometric surface of the Upper Floridan aquifer.

In west-central Florida, the potentiometric surface usually shifts slightly gulfward between May and September as the Floridan aquifer system is recharged by summer rains and pumping is minimal. This shift is generally very small in Hernando County and was actually reversed, except very close to the coast, between September 1982 and May 1983 (Figure 45) due to unusually heavy rainfall in the spring.

Ground water moves from potentiometric-surface highs to areas where the surface is low, such as at the coast. One such high occurs in the Green Swamp area a few miles southeast of Hernando County (Figure 45). Here, the potentiometric surface in September 1982 was as much as 130 feet above sea level and in May 1983 as much as 120 feet above sea level. Another potentiometric surface high occurs near the south boundary of the study area where the potentiometric surface was about 90 feet above sea level in both September 1982 and May 1983. Recharge to the aquifer occurs throughout most of Hernando County, generally through highly permeable surficial sand and sinkholes.

Ground water flows downgradient and perpendicular to the potentiometric contours to areas of discharge (Figure 45). Reentrants of the contours indicate concentrated discharge. Such reentrants occur around Weeki Wachee Springs and the Withlacoochee River that lies in a trough between the two potentiometric surface highs.

Hydrographs for four wells are shown in Figure 46. The hydrographs, particularly for well B, show a normal seasonal trend with minimum water levels in late spring. Departures from the norm are illustrated by the peak that occurred in late 1969 and lasted through 1971 and the almost steady decline in 1972 and 1973. Even though water levels have fluctuated seasonally over the years, the hydrographs do not indicate any long-term trend toward higher or lower levels. Water-level peaks in 1982 and 1983 correspond with annual rainfall that exceeded the average by nearly 10 inches. The difference between the potentiometric surface in 1964 and that in 1980 was less than 10 feet anywhere in the study area (Yobbi, 1983).



**EXPLANATION**

---50---  
 POTENTIOMETRIC SURFACE--  
 SEPTEMBER 1982. CONTOUR  
 INTERVAL 5 AND 10 FEET.  
 DATUM IS SEA LEVEL

—50—  
 POTENTIOMETRIC SURFACE--  
 MAY 1983. CONTOUR  
 INTERVAL 5 AND 10 FEET.  
 DATUM IS SEA LEVEL

↓  
 FLOW PATH --ARROW INDI-  
 CATES DIRECTION OF RE-  
 GIONAL GROUND-WATER FLOW



Figure 45. Potentiometric Surface of the Upper Floridan Aquifer in the Vicinity of Hernando County Showing Flow Paths, September 1982 and May 1983 (modified from Barr and Schiner, 1982; 1983).

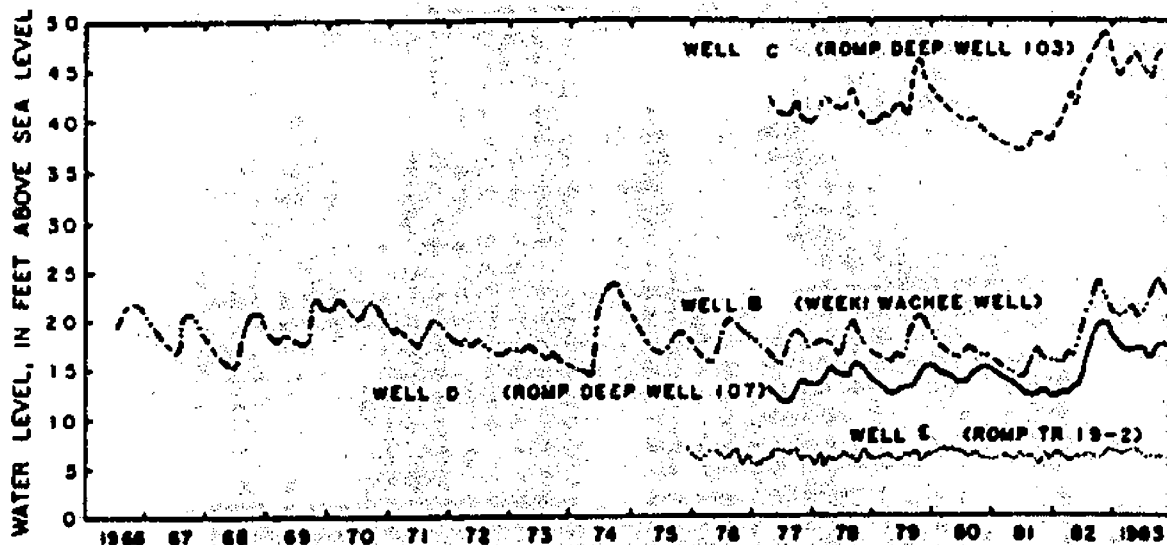


Figure 46. Water Levels in Four Wells (from Fretwell, 1985).

**AQUIFER PROPERTIES \***

Transmissivity is a measure of an aquifer's ability to transmit water. Figure 47 shows locations where transmissivity has been determined for the Upper Floridan aquifer. Table 5 lists these transmissivity values.

Table 5 -- Transmissivity of the Floridan aquifer system  
(Locations are shown in figure 47)

| Reference Number | Transmissivity (ft <sup>2</sup> /d)        | Reference                                    |
|------------------|--|--|
| T1               | 2.0x10 <sup>6</sup>                        | Cherry and others (1970, p. 59 and 75).      |
| T2               | 3.8x10 <sup>4</sup>                        | Seaburn and Robertson, Inc. (1980).          |
| T3               | 1.2x10 <sup>6</sup>                        | Parker (written commun., 1980).              |
| T4               | 9.4x10 <sup>5</sup>                        | Ryder (1982, p. 13).                         |
| T5               | 6.7x10 <sup>5</sup>                        | Cherry and others (1970, p. 59 and 75).      |
| T6               | 1.2x10 <sup>6</sup> to 2.1x10 <sup>6</sup> | Sinclair (1978, p.17).                       |
| T7               | 1.1x10 <sup>5</sup>                        | Leggette, Brashears and Graham, Inc. (1979). |

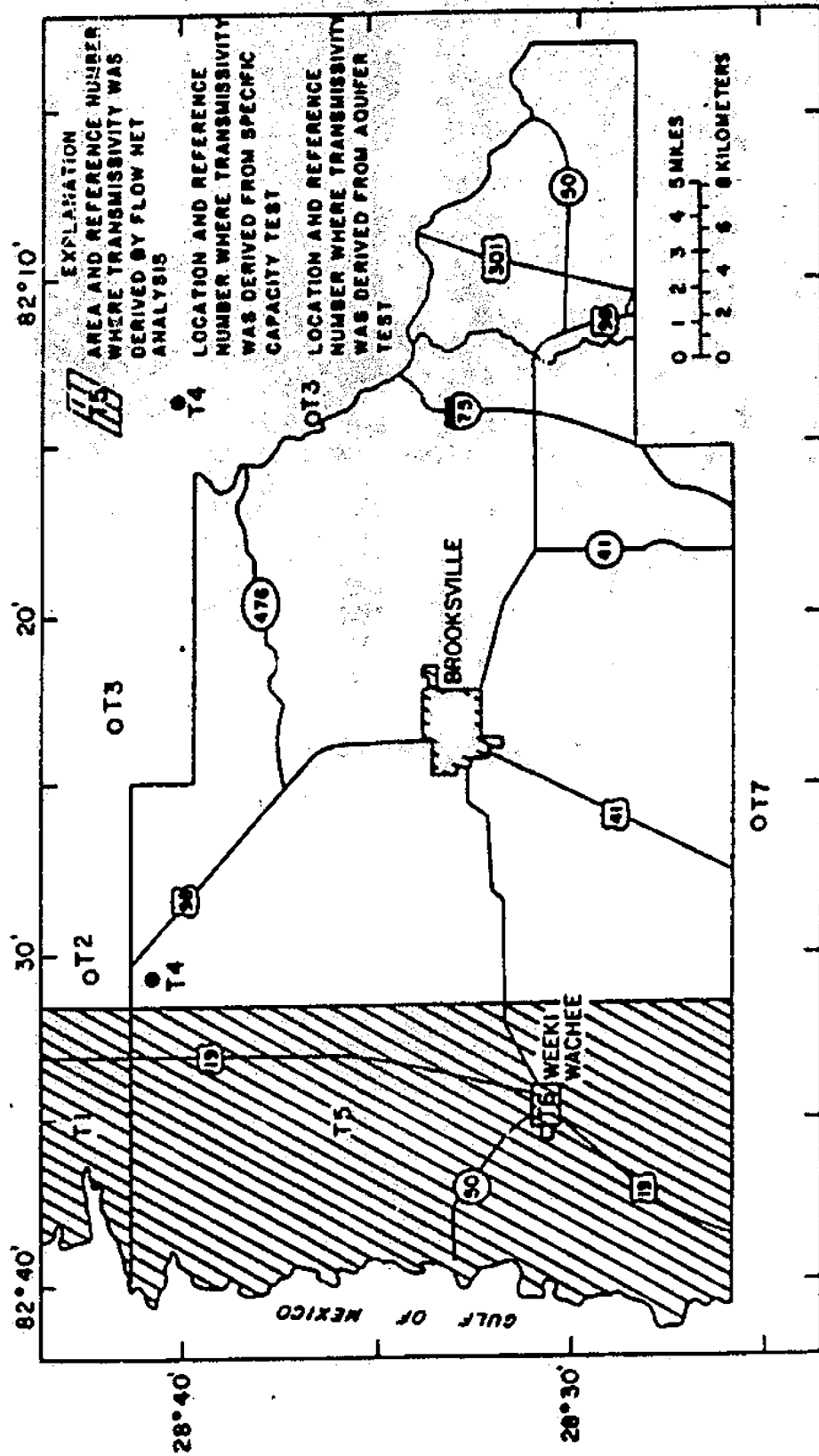


Figure 47. Area and Sites Where Transmissivity of the Upper Floridan Aquifer was Derived. (from Fretwell, 1985) (Values for transmissivity are given in table 5.)

Transmissivity is generally high at springs and decreases away from the springs (Faulkner, 1975). At Weeki Wachee Springs (site T6) transmissivity of the Upper Floridan aquifer is estimated to be between  $1.2 \times 10^6$  and  $2.1 \times 10^6$  ft<sup>2</sup>/d (Sinclair, 1978). Transmissivities calculated from aquifer tests other than flow-net analyses in Hernando County and surrounding areas range from  $9 \times 10^4$  ft<sup>2</sup>/d at site T2 to  $8.6 \times 10^5$  at site T7.

Storage coefficient is approximately equal to specific yield for the Upper Floridan aquifer in Hernando County. The aquifer is generally unconfined and most of the water is released from storage by gravity drainage, given sufficient time. The specific yield is estimated to be 0.15 based on findings in other counties by Stewart (1966) and Hickey (1979).

When a well is pumped, water levels in the well and in the aquifer are lowered. The greatest drawdown is at the pumped well. The amount of drawdown decreases radially away from the well. The depressed water surface forms a cone known as "the cone of depression" (figure 48). At some distance from the well, drawdown due to pumping is virtually nonexistent. Distance from the pumped well to the point of no drawdown varies with (1) length of time of pumping, (2) aquifer characteristics, (3) slope of the water surface, and (4) amount of recharge or natural discharge available for capture in the area of influence. The cone of depression will expand until natural discharge is captured or recharge is induced in sufficient quantities to balance pumping.

Problems may result from pumping where the cones of depression intercept (1) a surface-water body, such as a lake; (2) the saltwater-freshwater transition zone; or (3) another cone of depression, such as that developed by another pumping well or a spring. If a lake is intercepted and the lake bottom is fairly permeable, water levels in the lake may be lowered or the lake may be completely drained. If the saltwater-freshwater transition zone is intercepted salty water may be drawn to the well and contaminate the water. If another cone of depression is intercepted, drawdowns of the two cones are additive therefore creating a larger cone of depression. If a spring is intercepted, the spring head would be lowered, the rate of flow would be reduced, and a potential for saltwater intrusion would develop if the spring is near the coast.

Two aquifer tests were performed near Weeki Wachee Springs as part of Fretwell's study to determine the aquifer properties at wells F and G (figure 30, table 5). A hydrogeologic section through the pumping wells and the wells used for water-level observation are shown in figure 49. Table 6 describes the wells used in the test.

For the first aquifer test, well F was pumped at 1,080 gal/min for 48 hours. Water-level measurements were made in the pumped well and in observation wells H and G throughout the pumping

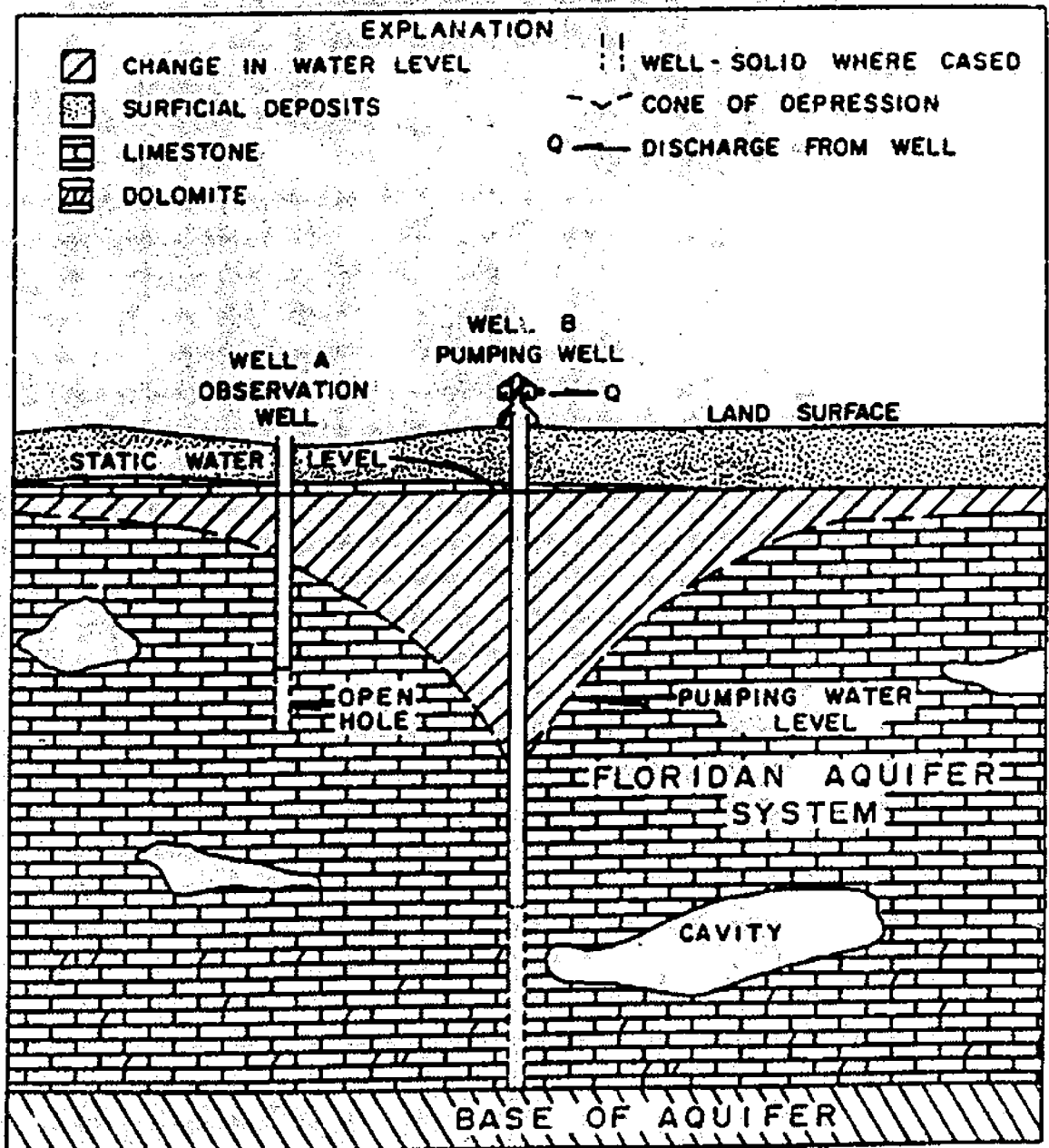


Figure 48. Changes in Water Level Resulting from Pumping.



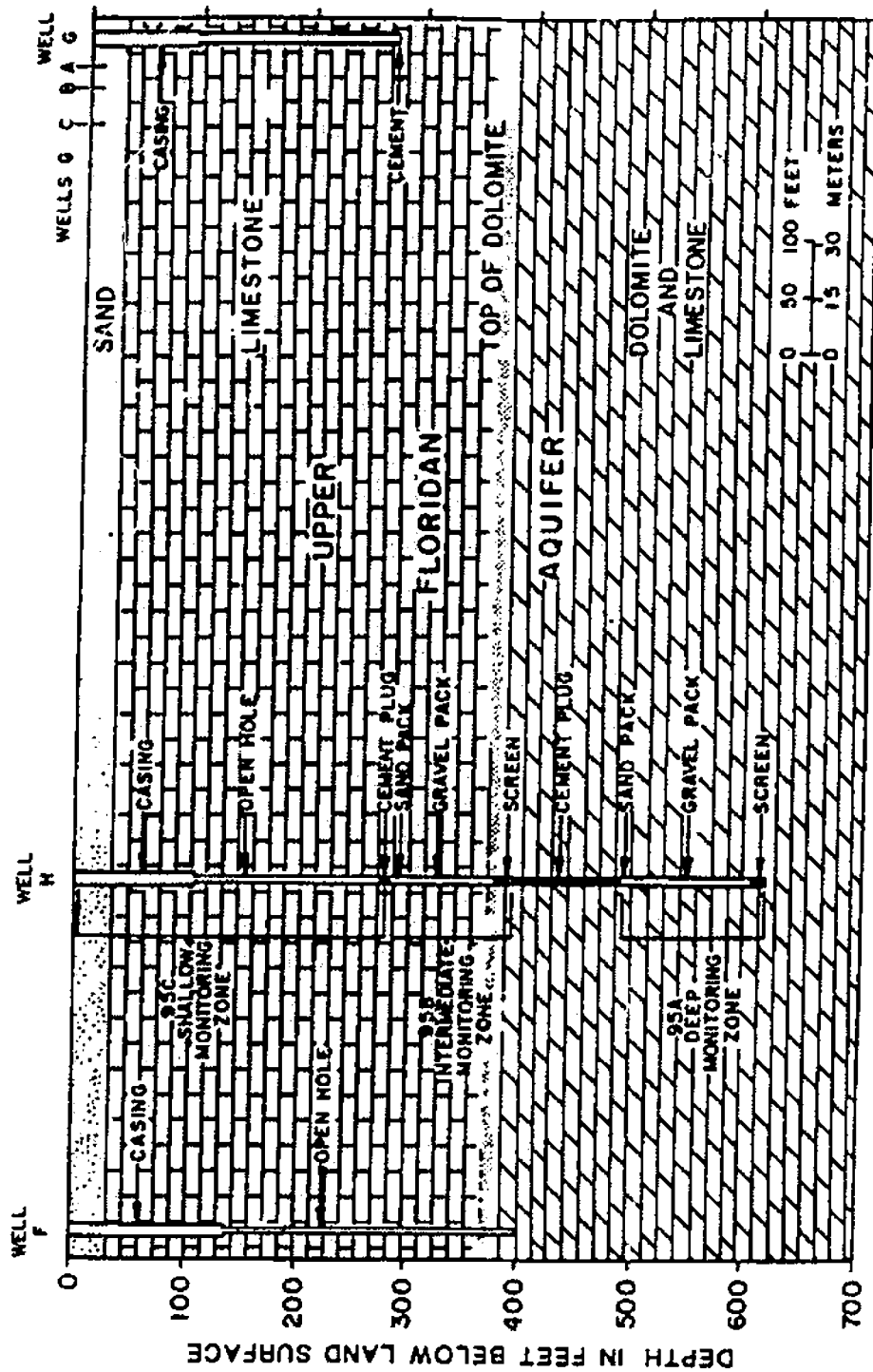


Figure 49. Lithology and Description of Wells Used in Aquifer Tests Near Weeki Wachee, 1983 (from Fretwell, 1985).

Table 6.--Description of wells used in aquifer tests

| Well | Well name                       | Description of well                 | Depth (feet)     | Distance from pumped well, test 1 (feet) | Distance from pumped well, test 2 (feet) | Remarks   |
|------|---------------------------------|-------------------------------------|------------------|--|--|---|
| G    | Production well 4               | 12-inch casing<br>8-inch open hole  | 0-97<br>97-275   | 1,063                                    | 0  | Pumped well test 2.   |
| F    | Production well 3               | 10-inch casing<br>6-inch open hole  | 0-135<br>135-400 | 0  | 1,063                                    | Pumped well test 1.   |
| H-A  | WRCWS monitor well deep         | 2-inch pvc<br>6-inch screen         | 0-598<br>598-613 | 309                                      | 753                                      | Triple zone monitor well originally drilled to 620 feet and cased to 104 feet.  |
| H-B  | WRCWS monitor well intermediate | 2-inch pvc<br>2-inch screen         | 0-377<br>377-392 | 309                                      | 753                                      | Deep and intermediate wells are formed of pvc in the annulus and sealed to monitored zone. The shallow well is the annulus that is sealed below 280 feet. |
| H-C  | WRCWS monitor well shallow      | 8-inch casing<br>6-inch open hole   | 0-104<br>104-280 | 309                                      | 753                                      |   |
| G-A  | Shallow well 1                  | 1-1/4-inch pvc<br>1-1/4-inch screen | 0-13<br>13-17    | --                                       | 18                                       | Open in sand.   |
| G-B  | Shallow well 2                  | 1-1/4-inch pvc<br>1-1/4-inch screen | 0-9<br>9-13      | --                                       | 36                                       | Open in sand.   |
| G-C  | Shallow well 3                  | 1-1/4-inch pvc<br>1-1/4-inch screen | 0-9<br>9-13      | --                                       | 72                                       | Open in sand.   |

period and after pumping ceased until water levels in the pumped well had fully recovered. A drawdown of 55 feet was measured in the pumped well at the end of the pumping period. Ninety percent of the drawdown occurred in the first minute of pumping. No drawdown was measured in wells H or G, 309 feet and 1,063 feet away, respectively. Water levels in well H were measured for two zones, an intermediate zone 4B and a deep zone 4A. No appreciable change was detected in specific conductance of water during the test. Conductance ranged from 180 to 235 umho/cm.

After the water level had recovered in well F, well G was pumped at 1,950 gal/min for a 48-hour period. Drawdown at the end of the test was 5.4 feet. Ninety percent of the drawdown occurred in the first 1.5 minutes of pumping. No drawdown was measured in wells F, H, or in three shallow wells in the sand within 100 feet of the pumped well. Also, no appreciable change occurred in specific conductance of water from the pumped well during the test; conductance ranged from 155 to 185 umho/cm.

The aquifer tests indicate that the Upper Floridan aquifer in this area can yield large quantities of water without the development of extensive cones of depression. Because no drawdown occurred in the observation wells, aquifer characteristics could not be determined. Water levels in both production wells approached steady state (no change with time) by the end of the 48-hour pumping period. This indicates that nearly sufficient water was captured to balance the well discharge and that further drawdown would have been very small if pumping had continued at the same rate.

Water quality did not change significantly during the test period even though the bottom of well F is at a 400-foot depth and is close to the saltwater-freshwater interface that occurs at a depth of about 500 feet. The trace for fluid conductance and resistance logs for well H shows a shift at a little below 500 feet in depth (figure 50) that is believed to be the saltwater-freshwater transition zone. Conductivity data collected during the aquifer test suggest that mixing with freshwater from highly productive zones above the interface may dilute any water drawn upward and that during short periods of pumping there would be no significant deterioration of water quality.

#### WATER QUALITY \*

Chemical characteristics of ground water and surface water are affected by many factors. Composition and solubility of soil and rocks over and through which water flows and the length of time water is in contact with these materials largely determine the degree of mineralization. Ions from atmospheric precipitation contribute to mineralization of these waters. The nature and extent of interconnection of sinkholes, ponds, lakes, rivers, and the Gulf with the Upper Floridan aquifer affect the degree of mineralization of aquifer and surface water. Ground water will be diluted by surface water or vice versa depending on the nature

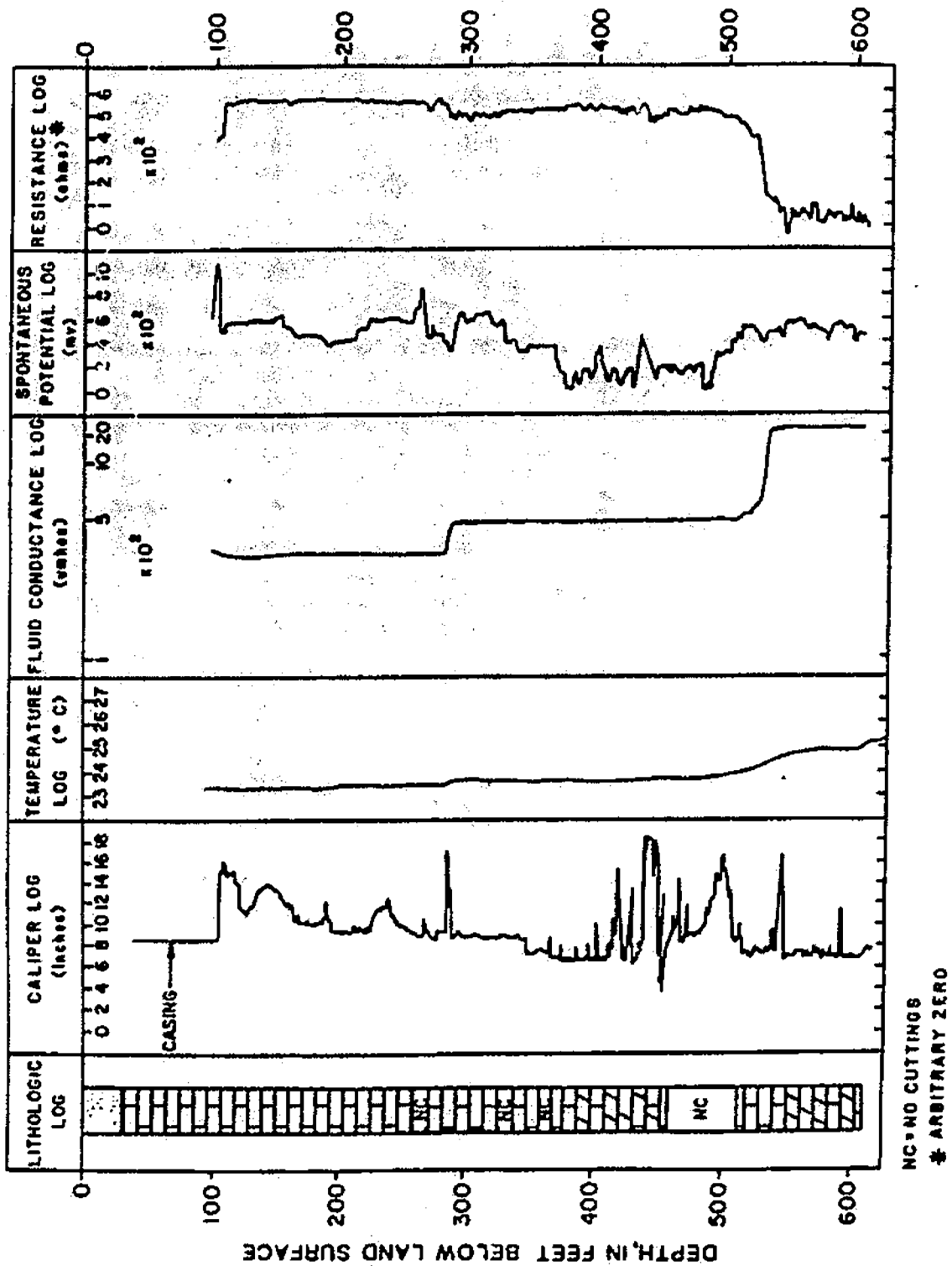


Figure 50. Lithologic and Geophysical Logs for Well H Near Weeki Machee (from Fretwell, 1985).

of the interconnection. The mixing of freshwater and saltwater in coastal areas affects the quality of water in the Upper Floridan aquifer and the quality of water in channels along the Gulf.

Chemical characteristics of water may influence its use. The FDER (1982) has established primary drinking-water regulations. These regulations set minimum standards for the quality of drinking water distributed by public water systems for human consumption. Secondary drinking-water recommendations (FDER, 1983) recommend limits on certain chemical constituents that are not directly related to health, but rather to the esthetic quality of water. Criteria have also been developed for evaluating quality of water to be used for industrial and irrigation purposes (McKee and Wolf, 1963).

Concentrations of most constituents in Hernando County increase toward the coast and with depth. Silica concentrations are generally higher in inland areas and are probably related to percolation of water through sand and clay. Iron concentrations are generally highest in the eastern part of the county near the rivers and in the western part of the county near the coast. Sites where iron concentrations were observed to exceed the recommended limits of 300 ug/L are shown in figure 51.

High iron concentrations appear to be associated with wells that have shallow casings. Iron is commonly found as a product of a reducing environment in swamps and marshes. Water from shallow sources such as these is easily drawn to shallow cased wells. Increasing casing lengths might alleviate some high iron-concentration problems. Hydrogen sulfide was detected in water from several wells near the Withlacoochee River. Hydrogen sulfide is found in a similar environment in which iron is found. This constituent, although not measured for the study, can be detected in small concentrations by its odor.

Concentrations of constituents were almost always higher for ground water than for surface water except near the coast. Ground water generally is in contact with rocks and minerals for longer periods of time than surface water, which results in higher mineral content. High concentrations of dissolved solids in water are found only near the coast. Figure 52 shows the areal distribution of specific conductance in the Upper Floridan aquifer. Specific conductance is generally proportional to dissolved solids. Highest values of conductance are found in the coastal area. Increases in specific conductance or chloride concentrations may indicate areas of potential contamination by saltwater. Figure 53 shows a gradual increase in chloride concentration in three coastal Hernando County wells.

In the vicinity of the coast, the landward advance of saltwater is held in dynamic equilibrium as it is eroded by overriding freshwater moving seaward. The volume of seawater moving inland is balanced by the eroded seawater moving seaward in admixture

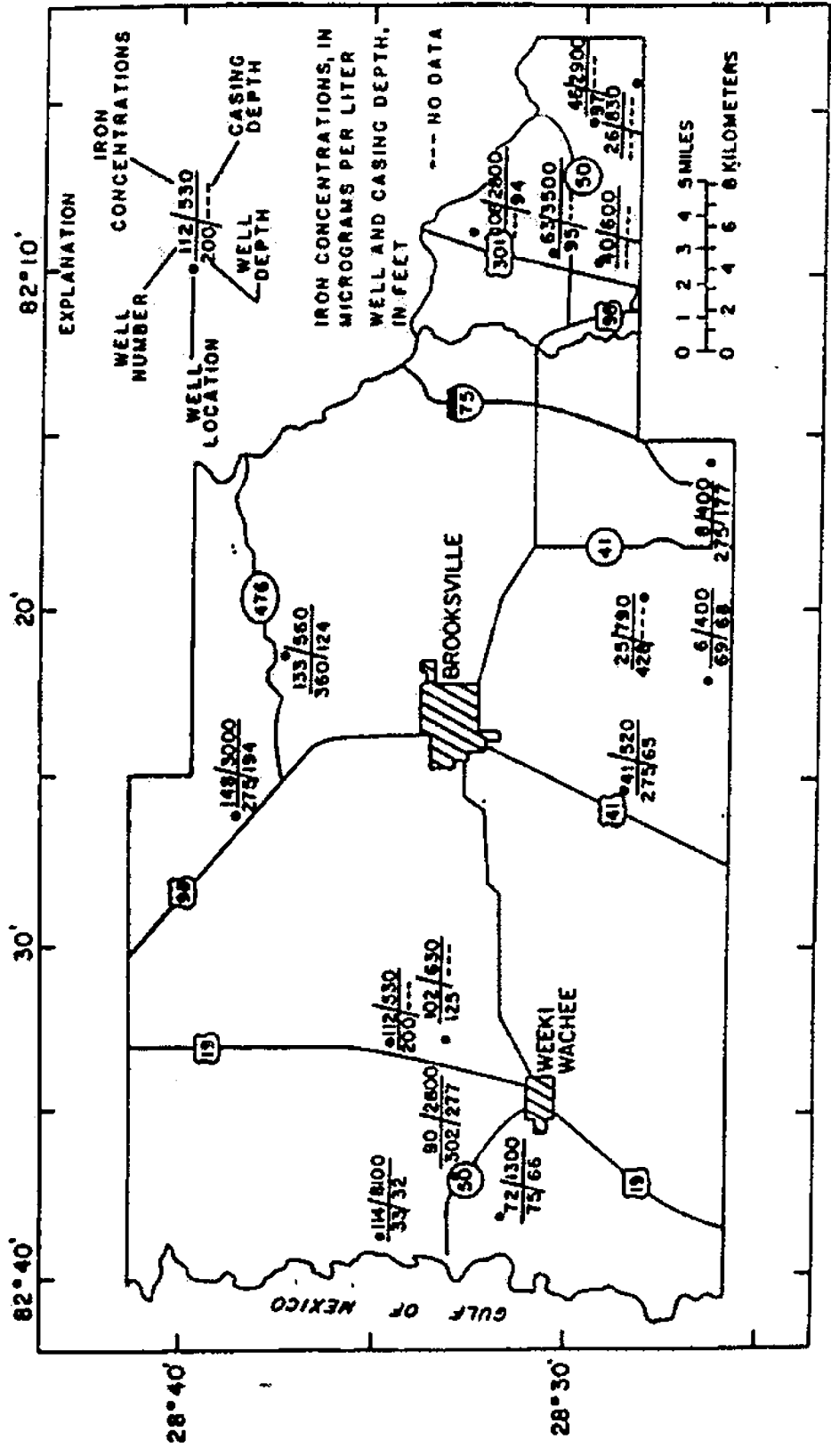


Figure 51. Sites Where Concentrations of Dissolved Iron were Greater Than 300 Micrograms Per Liter in Water from the Upper Floridan Aquifer (from Fretwell, 1985).



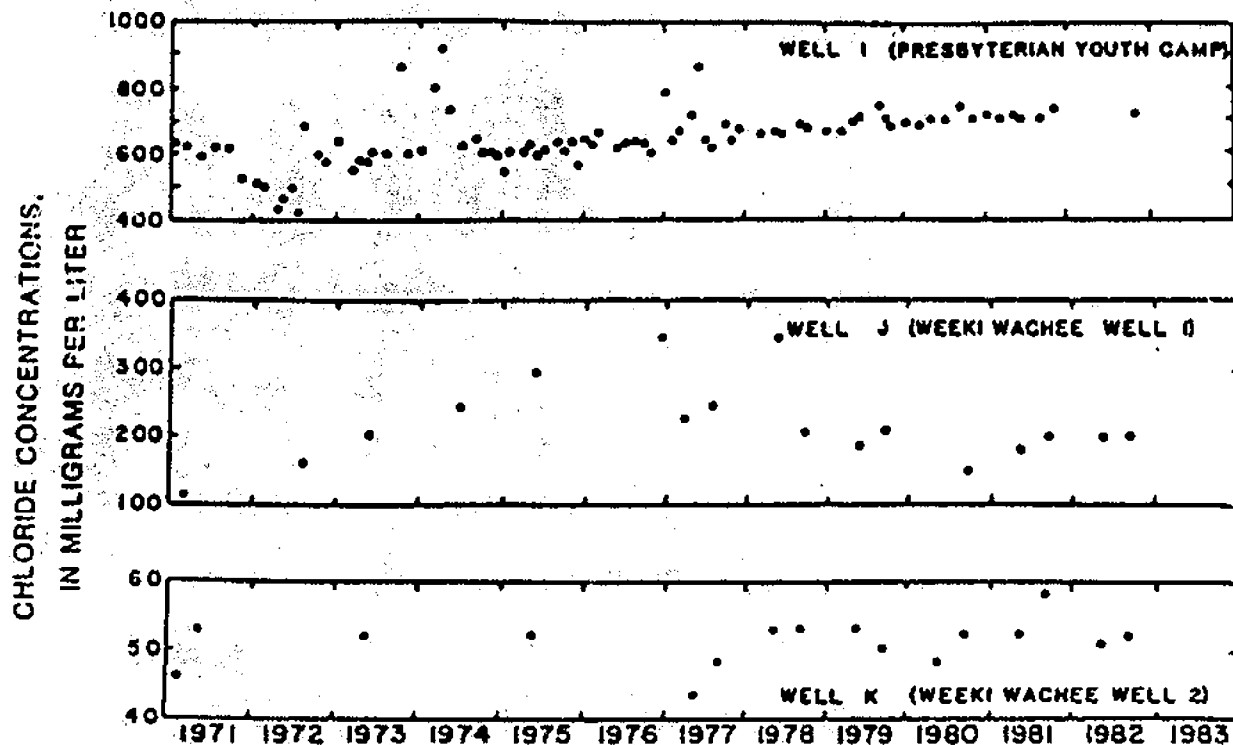


Figure 53. Concentrations of Chloride in Water from Three Wells in the Coastal Area, 1971-83 (from Fretwell, 1985).

with freshwater in the zone of transition (Cooper and others, 1964). The general shape of the transition zone at one section along the coast is shown in figure 54. The section was constructed using well data within a 5-mile-wide band. Most data were collected in 1983, but data collected as early as 1965 were also used. At its steepest part, the interface drops about 250 feet per mile.

Encroachment of seawater results from a lowering of head in the aquifer caused by man or from natural causes, such as increased withdrawals from the aquifer or reduced rainfall and recharge. The rate and extend of landward movement of saltwater are determined primarily by the net hydraulic gradient (the difference between the freshwater head and the saltwater head) and hydraulic characteristics of the aquifer.

Chloride concentrations in water from wells in or very near the transition zone will increase if the freshwater head is reduced by deficient rainfall. If the natural balance of the system is



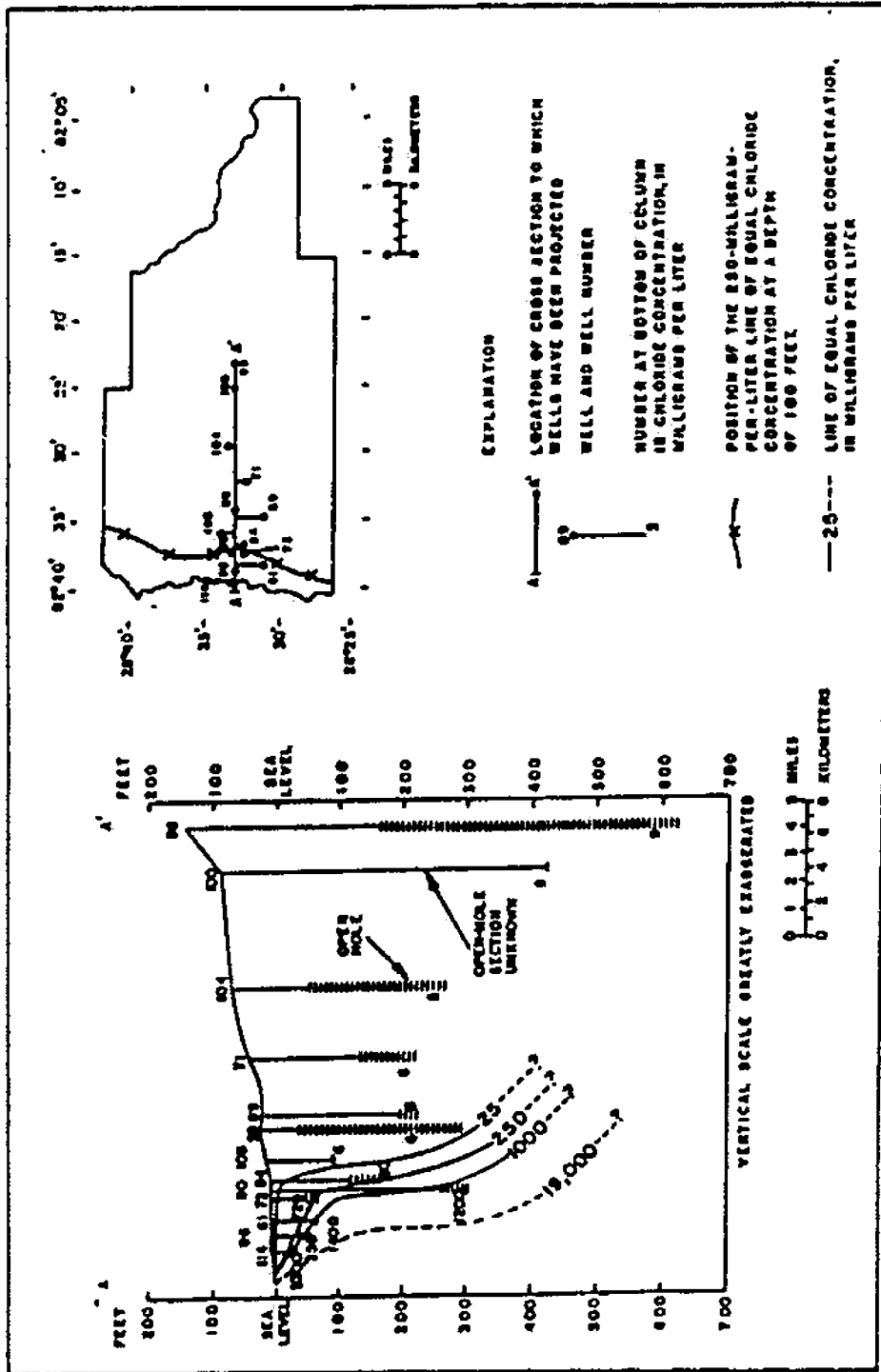


Figure 54. Saltwater-Freshwater Transition Zone in the Upper Floridan Aquifer (from Mills and Ryder, 1977; Causseaux and Fretwell, 1982; Fretwell, 1983).

not disturbed and mixing due to pumping does not occur at the wells, chloride concentrations may return to near their original concentrations after the return of normal rainfall. However, if mixing has occurred due to pumping of water from the transition zone, high concentrations of chloride may continue for a long period of time.

In coastal areas, chloride concentrations fluctuate in rivers and springs with tide. During rising tide, seawater flows up stream channels and often rises in springs that feed these streams. This causes increases in chloride concentrations in the lower reaches of streams and at some springs farther upstream until the tide again recedes.

#### AREAS PRONE TO CONTAMINATION (DRASTIC)

The GWBRAI legislation specifically states that the state's WMD's are to "delineate site specific areas in the Basin deemed prone to contamination or overdraft resulting from current or projected development." As discussed previously in "Areas Deemed Prone to Contamination and Overdraft" section, the SWFWMD is using several methodologies to address this task. One method is the mapping of areas susceptible to ground-water contamination utilizing USEPA's recently developed DRASTIC methodology. The USEPA's objective in developing the DRASTIC methodology was to produce a product that would permit ground-water pollution potential of any hydrogeologic setting, greater than 100 acres in size, to be systematically evaluated with existing information. Once completed, this information can help planners, managers, and administrators direct resources, waste disposal, and other land-use activities to the appropriate areas.

DRASTIC maps are constructed by individually mapping variations of the seven DRASTIC parameters (example: mapping areas in Hernando County where depth from land surface to the water table is 0-5 feet, 5-15 feet, ..., or greater than 100 feet. The variations in the seven mappable parameters are then assigned ratings. In the case of depth to water in Hernando County, 0-5 feet is assigned a rating of 10, 5-15 feet a rating of 9, ..., and a depth of water greater than 100 feet a rating of 1. In addition to ratings, each of the seven parameters are assigned a weight relative to their importance of restricting the potential for the ground-water system to become contaminated. The weights of the seven mappable parameters are:

| <u>Parameter</u>          | <u>Weighing Factor</u> |
|---------------------------|------------------------|
| Depth to water            | 5                      |
| net Recharge              | 4                      |
| Aquifer media             | 3                      |
| Soil media                | 2                      |
| Topography                | 1                      |
| Impact of the vadose zone | 5                      |
| hydraulic conductivity    | 3                      |

Once the seven parameters are individually mapped and assigned ratings, the seven maps are superimposed, and composite DRASTIC areas are formed. These composite areas are assigned DRASTIC indices. These indices are the sum of the products of the ratings and weights of the seven parameters for the individual composite areas. Lastly, DRASTIC indices of the composite areas are grouped in categories for ease of map discernibility. These categories are listed below:

| <u>Category</u> | <u>Color</u> |
|-----------------|--------------|
| 200+            | Red          |
| 180-199         | Orange       |
| 160-179         | Yellow       |
| 140-159         | Light Green  |
| 120-139         | Dark Green   |
| 100-119         | Light Blue   |
| 80-99           | Indigo       |
| 79 and below    | Violet       |

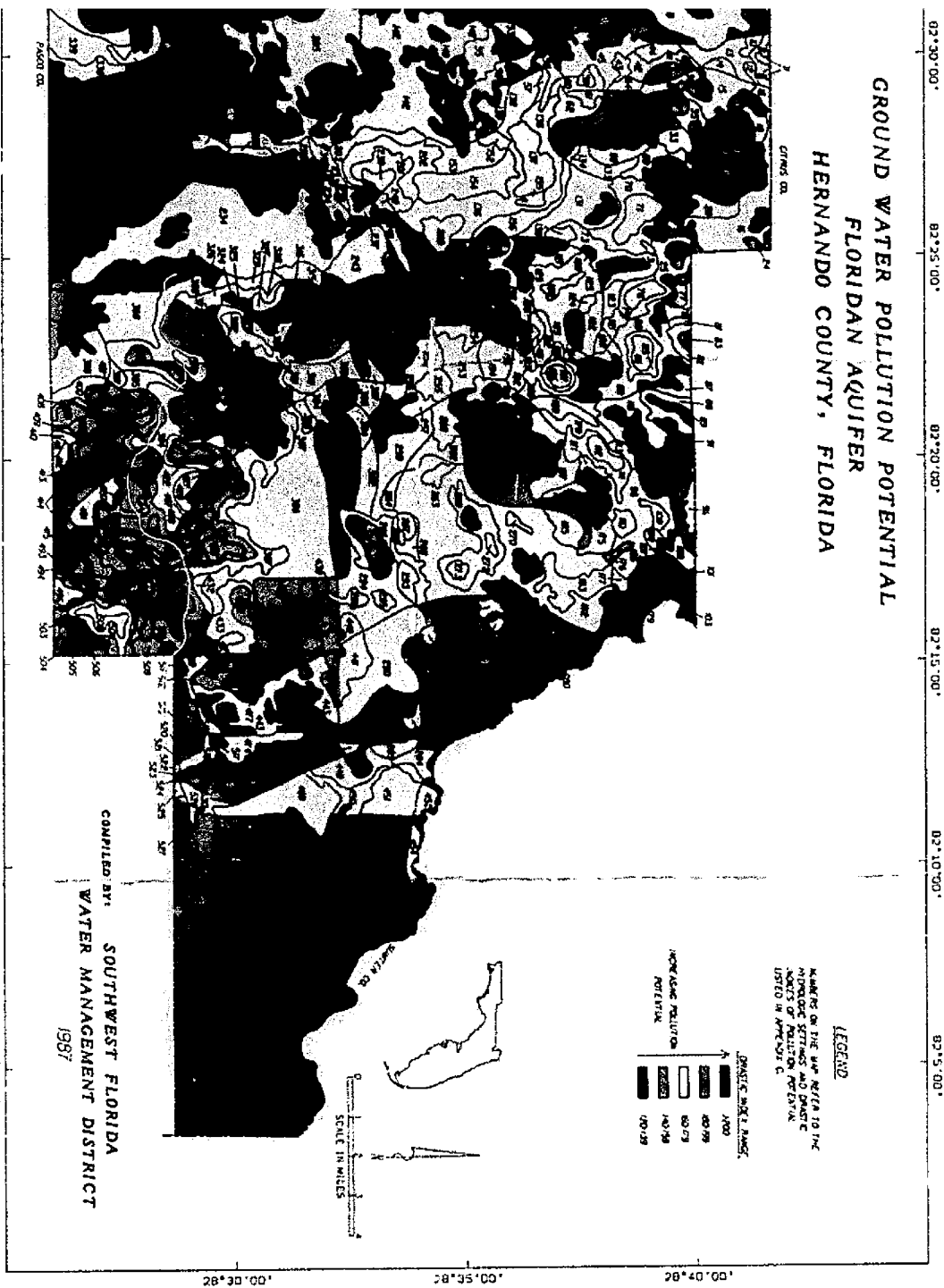
Interpreting DRASTIC maps is quite simple, the higher the DRASTIC index, the greater the ground-water pollution potential. DRASTIC methodology is designed to yield a relative numerical value which can readily be compared to a value obtained for another setting either in the same region or in a different region. A numerical value of 160, for example, has no intrinsic meaning. That number is of value only with respect to other numbers generated by the same DRASTIC index (Aller and others, 1985). For a thorough discussion of the construction and interpretation of DRASTIC maps, refer to USEPA/600/2-85/018, May 1985.

Figure 55 is the Hernando County DRASTIC map recently prepared by staff at the SWFWMD. In general, Hernando County has a high degree of susceptibility to ground-water contamination. DRASTIC indices for the county range from a low of 125 in the extreme southeast corner of the county to a high of 208 in a linear band along the western coastal area.

The areas of higher susceptibility form a north to south trending belt that ranges from approximately seven miles wide at the Pasco County line to approximately two miles wide at the Citrus line and approximately a twenty-five square mile area in the easternmost part of the county. In these areas, limestones of the Floridan aquifer system are exposed or very near land surface. As a result, shallow depth to water, absence or near absence of the vadose zone, and very sandy soils result in very high DRASTIC indices (i.e. very high pollution potential).

The areas of lower susceptibility occur in a northwest-southeast trending band, in central Hernando County, that ranges from approximately fourteen miles wide at the Pasco County line to about nine miles wide at the Citrus County line. This band corresponds to an area in the Central Highlands. Not only are

**GROUND WATER POLLUTION POTENTIAL  
FLORIDAN AQUIFER  
HERNANDO COUNTY, FLORIDA**



downward to  
 The mixing of freshwater and saltwater in  
 Hernando County, affects the quality of water about 3 miles  
 inland in the Upper Floridan aquifer and several more miles  
 inland in the lower part of the aquifer and in channels along the  
 coast (Causseaux and Fretwell, 1985).

**RECHARGE AND DISCHARGE AREAS**

Ryder (1985) and Adams (1985) reported values of recharge and  
 discharge for Hernando County range from approximately 20 inches  
 per year of recharge along the Brooksville Ridge area to  
 approximately 20 inches per year of discharge along the  
 Withlacoochee River, in the eastern part of the County. These  
 values were derived from two-layered, steady-state, digital  
 models which included Hernando County as part of the modeled

the vadose zone and soils thicker here than the Coastal Lowlands to the west, but also the depth to water and percent slope of the topography are greater. These factors combine to reduce the DRASTIC indices. In extreme southeastern Hernando County, the DRASTIC indices are lowest as a result of the Upper Floridan aquifer being overlain by a clay unit that reaches thickness in excess of 50 feet.

#### POINT AND NONPOINT SOURCE LOCATIONS

Hernando County is dependent solely upon ground water to meet its domestic, agricultural, and industrial water supply needs. The water quality in the Upper Floridan aquifer is generally good in most areas of Hernando County (Russell and Axon, Inc., 1985). There are, however, certain areas where water quality exceeds recommended maximum contamination levels due to localized hydrogeologic conditions and man's influence.

Chemical characteristics of ground water and surface water are affected by many factors. Some of the more prominent potential sources of ground-water contamination include percolation ponds and land spreading activities associated with sewage treatment plants, landfills, and industrial waste sites. Locations of these types of sites in Hernando County are shown in figure 56.

Composition and solubility of soil and rocks, and the length of time water is in contact with these materials largely determine the degree of mineralization of the water. The nature and extent of interconnections of sinkholes, ponds, lakes, rivers, and the Gulf of Mexico with the Upper Floridan aquifer affect the degree of mineralization of ground water. Ground water will be diluted by surface water or visa versa depending on the nature of the interconnection. The overlying soils of the aquifer system allow water to move downward very quickly and with little natural filtration. It is therefore necessary to monitor any activity where contamination might be introduced into water moving downward to the aquifer.

The mixing of freshwater and saltwater in coastal areas, of Hernando County, affects the quality of water about 3 miles inland in the Upper Floridan aquifer and several more miles inland in the lower part of the aquifer and in channels along the coast (Causseaux and Fretwell, 1985).

#### RECHARGE AND DISCHARGE AREAS

Ryder (1985) and Adams (1985) reported values of recharge and discharge for Hernando County range from approximately 20 inches per year of recharge along the Brooksville Ridge area to approximately 20 inches per year of discharge along the Withlacoochee River, in the eastern part of the County. These values were derived from two-layered, steady-state, digital models which included Hernando County as part of the modeled

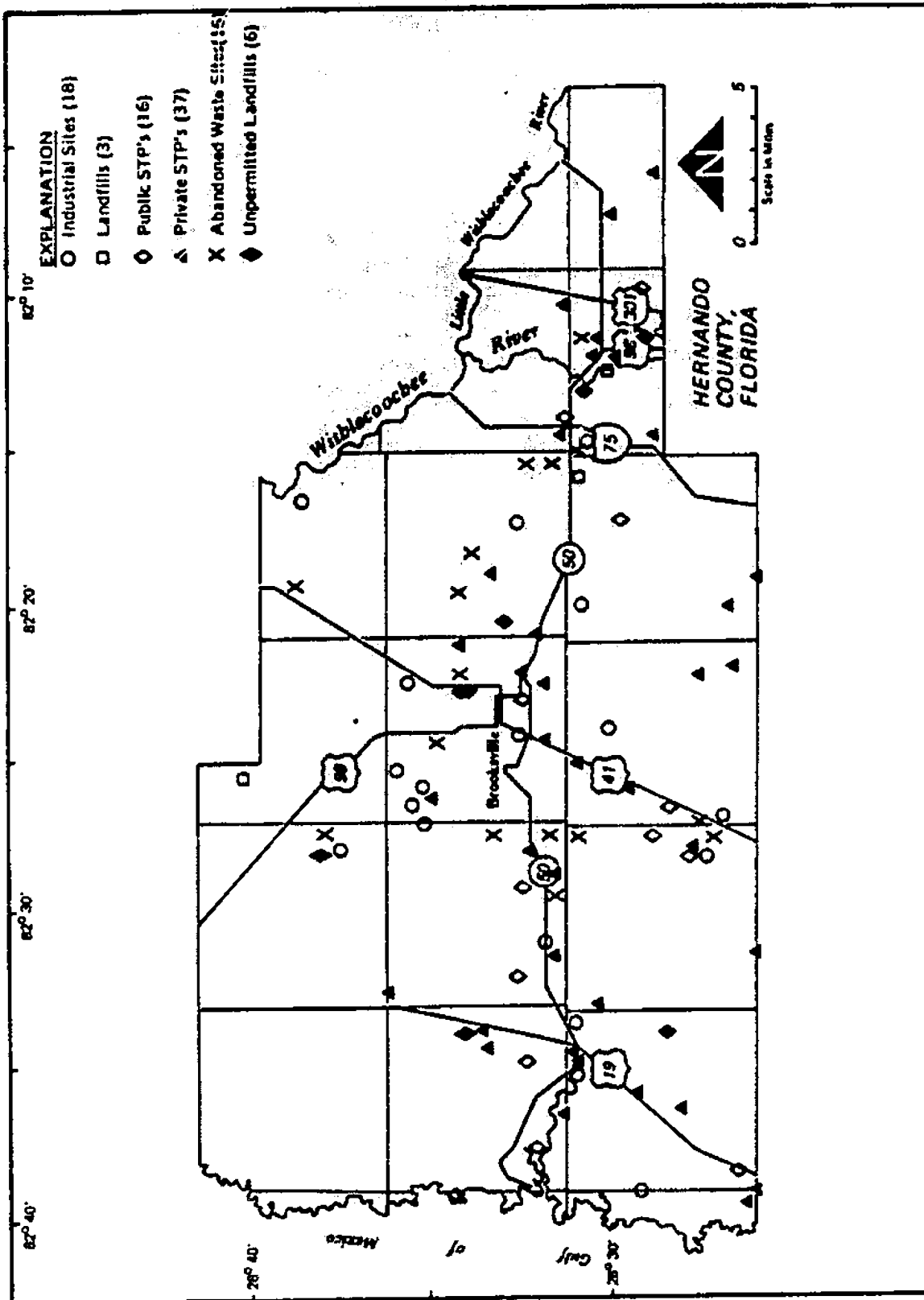


Figure 56. Location of Industrial Waste Sites, Landfills, Public and Private Sewage Treatment Plants, and Abandoned Waste Sites. (Source: Department of Environmental Regulation, 1987; Withlacoochee Regional Planning Council, 1986)

area. Figures 57 and 58 are excerpts from Ryder's and Adams' calibrated recharge and discharge value maps for Hernando County.

Ryder's and Adams' reported values are consistent with prior reported recharge values. Faulkner (1970) suggested a rate of recharge to the Floridan aquifer system in the Silver Springs and Rainbow Springs basins, east and north of Hernando County, of about 15 inches per year. Fretwell (1985) stated that both the opportunity for recharge and the amount of rainfall available for recharge are probably greater in Hernando County than in these basins. Additionally, Stewart (1980) reported that recharge values range from 10 to 20 inches per year in much of Hernando County (figure 21). Thus, recharge in Hernando County can be conservatively estimated to be at least 15 inches per year, and because there is hardly any runoff from the county, recharge could be as much as 20 inches per year, if average ET is considered to be 36 inches per year (Fretwell, 1985).

Countywide variations in recharge and discharge are dependent on a number of variables including rates of surface runoff, permeability of soils and the underlying confining beds, relative differences between potentiometric and water table levels, precipitation, and ET rates. Much of the Coastal Swamp and coastal part of the Gulf Coastal Lowlands are areas of discharge, with discharge values ranging from 3 to 20 inches per year (figures 57 and 58). Discharge occurs primarily through coastal springs. As land-surface altitudes increase eastward, discharge ceases and recharge increases. Values of recharge in the remaining Coastal Swamp physiographic areas vary from 7 to 12 inches per year (figure 57 and 58). Further eastward, including nearly all the Brooksville Ridge area, a combination of increased land-surface altitudes, presence of a discontinuous confining bed, and permeable soils result in the highest rates of recharge in the County. Recharge rates in this area vary from 8 to 22 inches per year (figures 57 and 58). These values represent some of the highest values of recharge in the southeastern United States.

Recharge rates decrease in the eastern side of the county, including the entire Tsala Apopka Plain physiographic region, as land surface altitudes decrease, the discontinuous confining bed pinches out, and the Withlacoochee drainage basin erodes the Upper Floridan aquifer. Recharge rates in this area range from 1 to 10 inches per year (figures 57 and 58). Additionally, Adams (1985) reported discharge values ranging between 20 to 24 inches per year along the Withlacoochee River in Hernando County (figure 58).

#### SINKHOLE CATEGORIES, DEVELOPMENT AND DISTRIBUTION

Numerous sinkholes and springs exist in Hernando County. One of the better known sinkholes is Pecks Sink. It consists of three vertical shafts which carry surface water down into the groundwater system. Springs such as Weeki Wachee and Salt Springs are

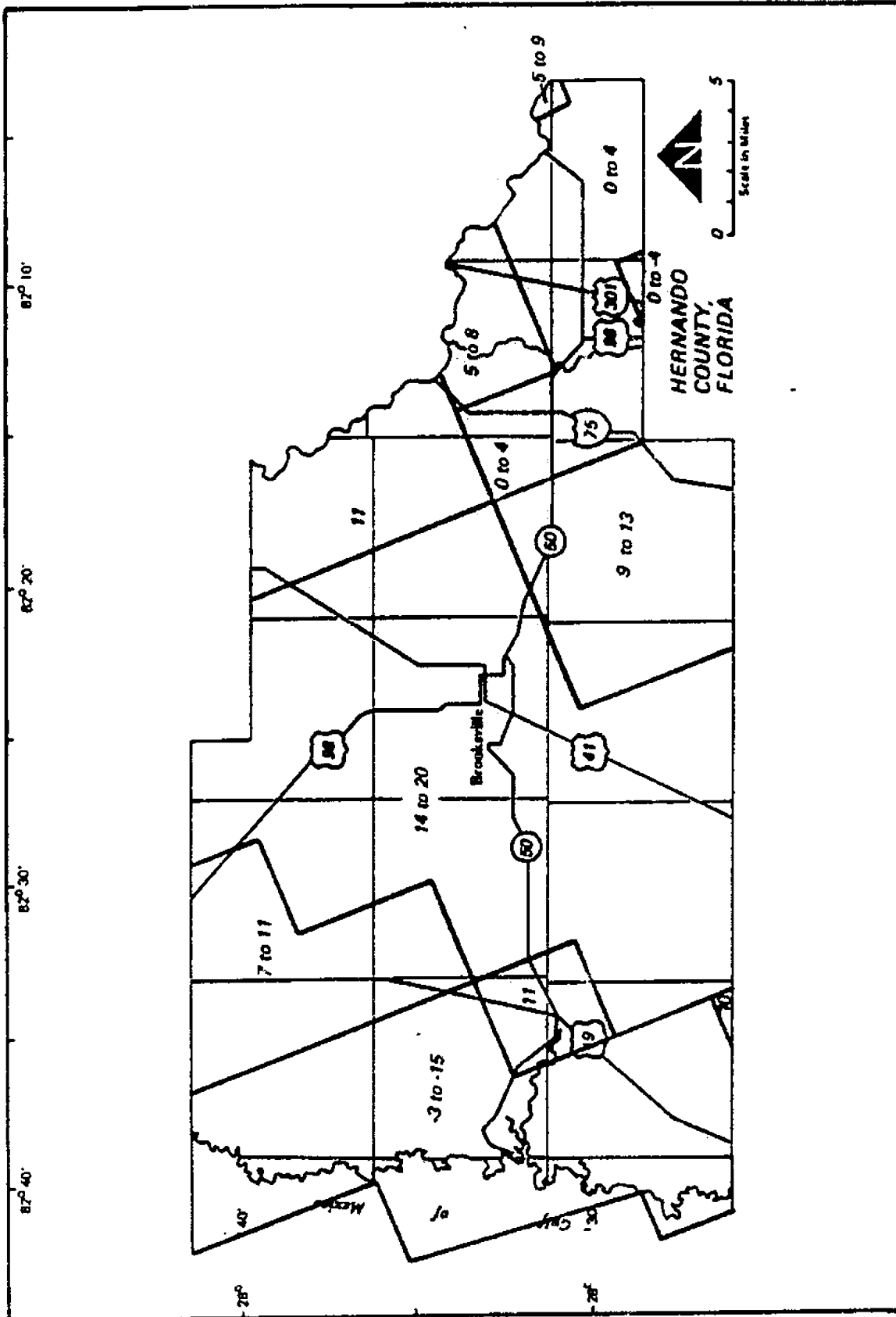


Figure 57. Generalized Model-Derived Recharge and Discharge Values for the Upper Floridan Aquifer for Predevelopment, in inches per year (from Ryder, 1985).



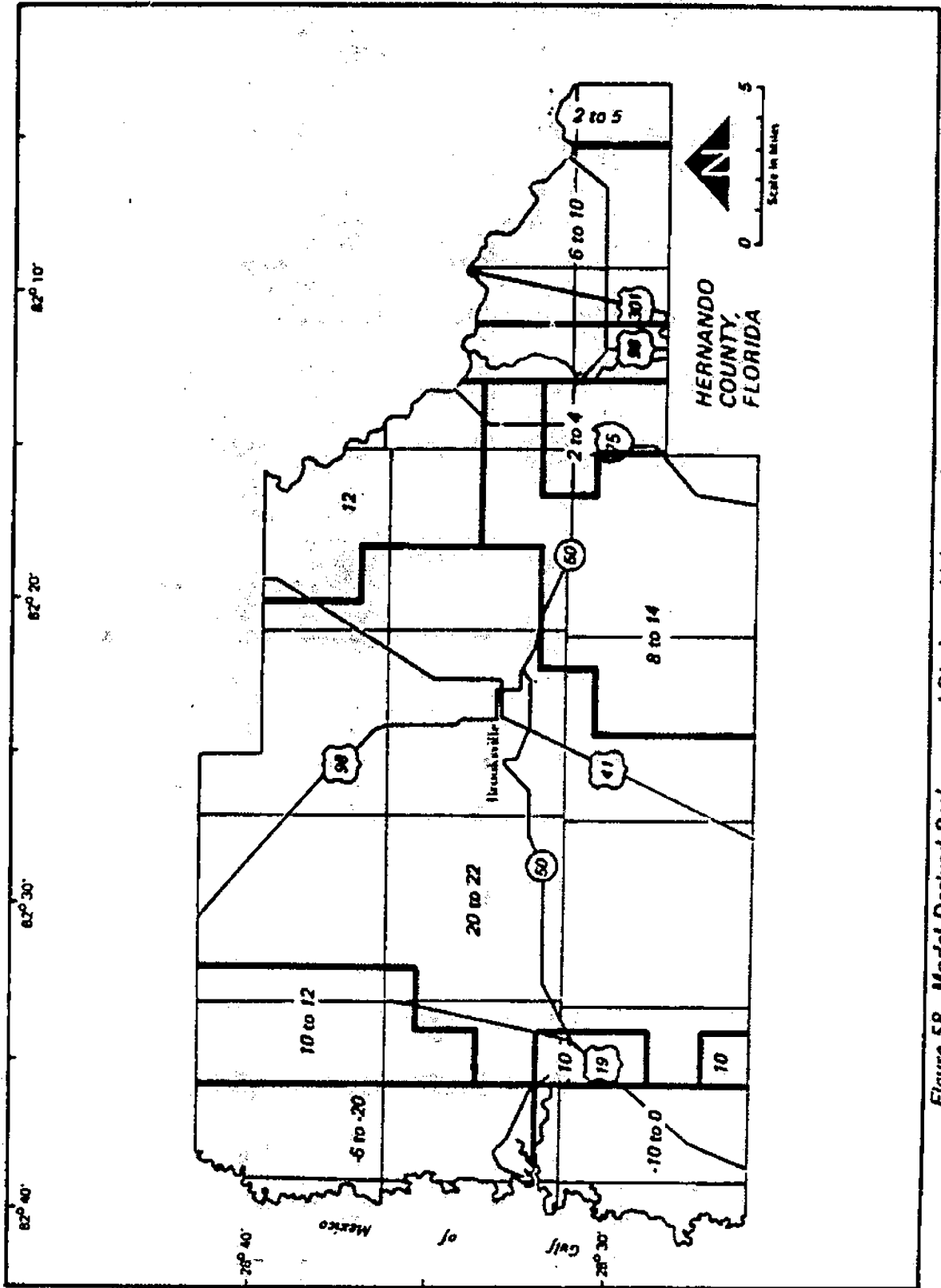


Figure 58. Model Derived Recharge and Discharge Values to the Upper Floridan Aquifer, for Predevelopment, in Inches per year (from Adams, 1985).

sinkholes which discharge ground water. Pecks Sink, about 2.5 miles southwest of Brooksville, drains about 15 square miles through a well developed stream channel. The channel is dry except during periods of heavy rainfall.

Figure 59 was produced from existing geologic data in the area of known sinkhole distributions. From these data, the region was divided into several geologic settings. Factors such as topography and geology dictate the type and number of sinkholes present in particular parts of the county. The map was formatted from map series number 110, Florida Bureau of Geology, with some minor modifications. Overlain on this map are known distributions of sinkholes collected and compiled by the SWFWMD and Florida Sinkhole Research Institute.

Just as rivers constantly erode the land surface and carry away soil and sediment a particle at a time, so also is limestone slowly carried away by ground water, under the much slower conditions inherent to removal by dissolution. Sinkholes ultimately form due to the natural dissolution of the limestone which underlies all of Hernando County. This dissolution process is exceedingly slow and occurs over tens of thousands of years. In Florida the solution process is most active where numerous vertical fractures in the limestone facilitate the flow of ground water. Limestone as seen today in outcrop or quarry exposure is riddled with channels, conduits, and voids which are the result of countless centuries of natural erosion from the flow of ground water.

The natural process of sinkhole development has become increasingly influenced by man's activities. Diversion of surface water, surface water impoundments, and declines in ground-water levels are particularly troublesome because they may trigger collapse in the limestone where underlying cavities are present. Sinkholes are widespread in Hernando County. However, the western part of the county appears to be the most active for development of sinkholes. This may be due in part to the construction activity taking place at this time and the rapid population increase in that part of the county over the past few years.

The illustration prepared for this report was compiled over a rather short 10-year period. It delineates sinkhole density and type which occur in the area. Each of the three areas outlined, produces a characteristic type of sinkhole (Sinclair and others, 1985). Area I includes two types of sinkholes, limestone solution, and limestone collapse. Both can occur in areas where the limestone is exposed or thinly covered with sediment. Sinkhole development in Area I is very slow with piping and subsidence of the land surface common. Limestone collapse occurs when a large cavity in the limestone gradually expands upward toward land surface. The roof of the cavity then becomes too thin to support itself and it collapses abruptly. This is a relatively rare occurrence in terms of landscape development.

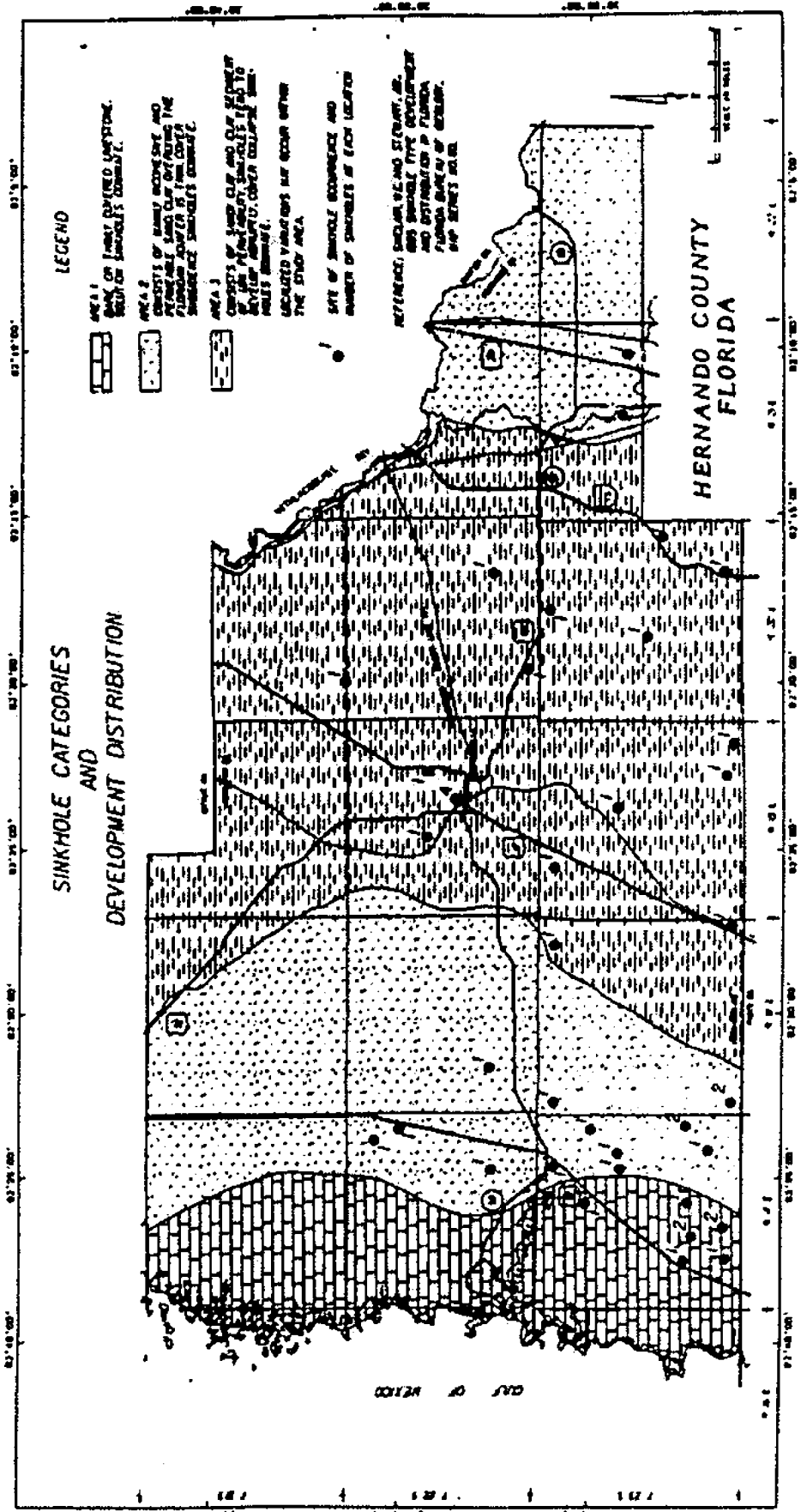


Figure 59. Categories, Development Distribution, and Site Locations of Sinkholes in Hernando County, Florida (modified from Sinclair and others, 1985).

Area II consists mostly of incohesive permeable sand, 50 feet or more thick. Moderate to small sinkholes are likely to form at the limestone surface as incohesive sand moves continuously downward to occupy space formerly held by non-dissolved limestone. Area III is inclusive of the Brooksville Ridge. Here the sediments overlying the limestone include incohesive, permeable sands, grading downward to clayey-sand with relatively cohesive, poorly permeable clay overlying limestone. Collapse sinkholes, are prevalent in this area due principally to the cohesive clay and its structural properties.

Many other sinkholes have occurred which are not displayed on this map. The illustration is intended to only reference those sinkholes which have been reported to agencies that have documented sinkhole occurrences in the county, during the past decade.

## WATER SUPPLY SOURCES AND ALTERNATIVES

### CURRENT WATER SUPPLY SOURCES, USE, AND PROJECTION

Beginning with 1977, which is the first year that water use information is available on an annual basis, to 1985, which is the most current information available from the SWFWMD, water use data have been collected by two separate agencies. During this nine year period, the USGS collected information for the first five years and the SWFWMD for the last four years. Some differences exist between the methodologies used by the USGS and the SWFWMD in collecting and interpreting water use data, but generally the methodologies are comparable.

Figure 60 shows total water use and water use by categories for Hernando County. As can be seen from this graph, the industrial category in Hernando uses a large percentage of the total water consumed in the county. This industrial use of water can be attributed to the rock mining industry which used approximately 60 percent of the 1985 total. The industrial use of water in Hernando County has remained relatively stable since 1977, but has shown signs of decline since 1981.

This contrasts with the general pattern of water use within the entire SWFWMD. In 1985, agriculture accounted for approximately 45 percent of the total water used in the SWFWMD. The next largest user was the public supply category with 26 percent. Industry used 18.5 percent of the total water in the SWFWMD (Stieglitz, 1985). The comparable water use percentage figures for Hernando County in 1985 were 63 percent for industry, 19 percent for public supply, 16 percent for agricultural, and 2 percent for rural use.

Figure 61 details water use trends over time for the public, rural, and agricultural categories. This figure shows two important general trends. First, the amount of water used for public supply has been on the steady increase while the amount of

# HERNANDO COUNTY

WATER USE ESTIMATES 1977-1985

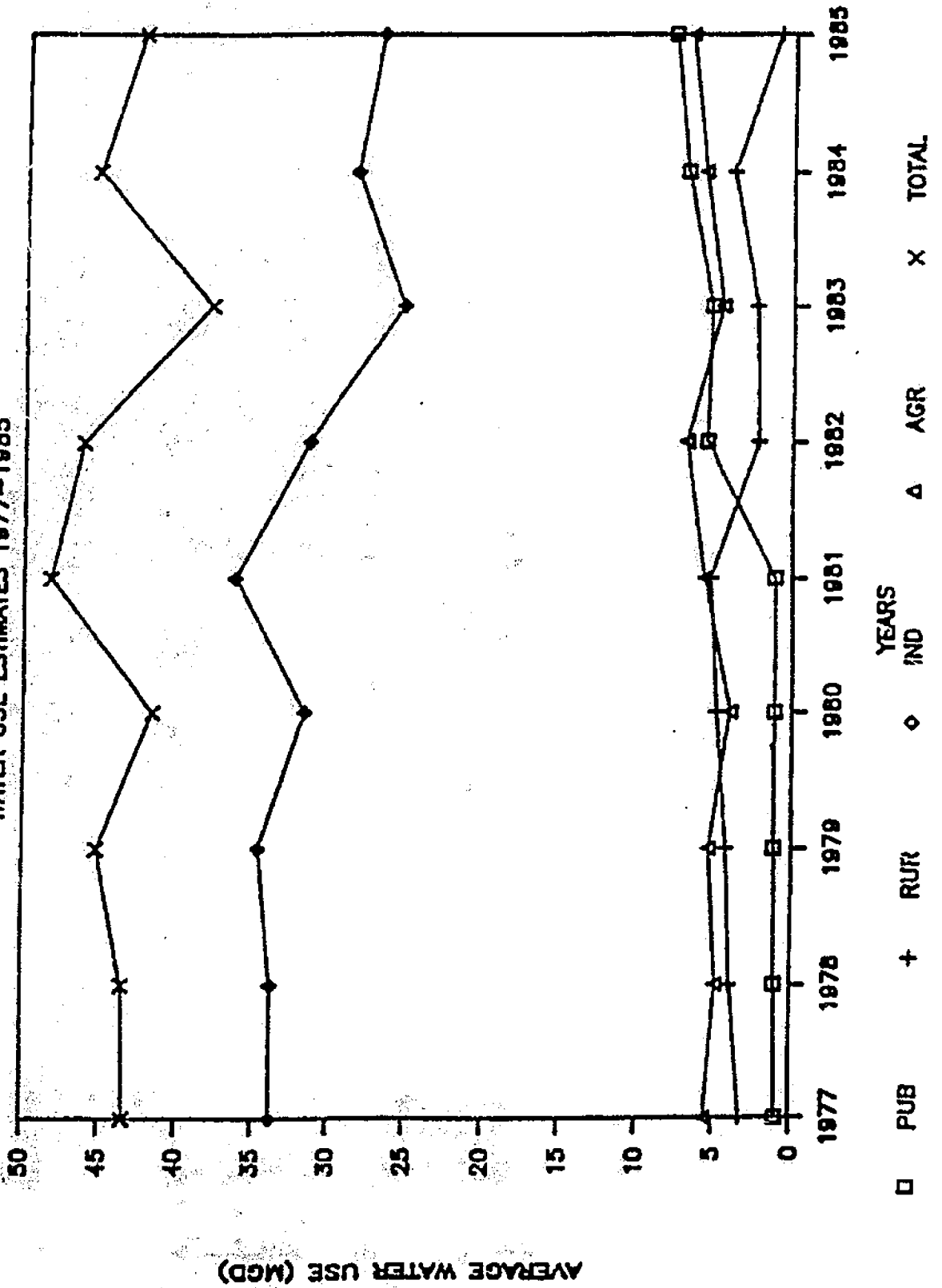


Figure 60. Water Use Estimates for Hernando County from 1977 to 1985.

# HERNANDO COUNTY

1985 WATER USE ESTIMATES, PUB, RUR, AGR

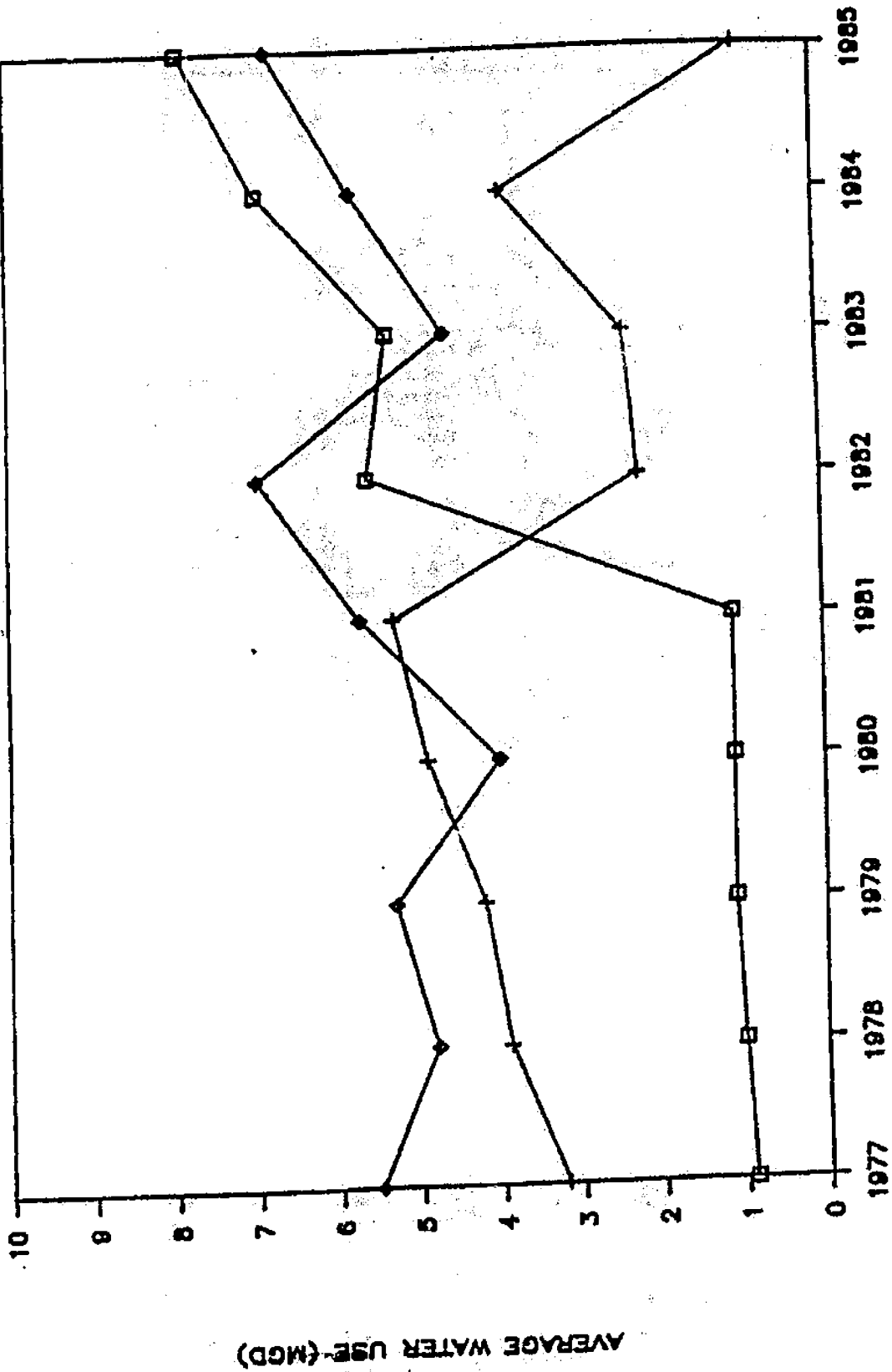


Figure 61. Estimates for Public, Rural, and Agricultural Water Use for Hernando County in 1985.

water used by the rural category has been steadily decreasing. This trend can be attributed to the fact that public systems are being developed to serve a growing population and that the population is increasing at very high rate. Another trend is the relatively constant use of water by the agricultural industry except in years of extreme climatological conditions (droughts or freezes). Historical water use information is presented in numerical form in Table 7.

Table 7. Water Use Estimates for Hernando County 1977-1984  
(shown in Millions of gallons of water used per day).

| YEAR | PUBLIC |     | RURAL |     | INDUSTR. |     | AGRIC. |     | MISC | TOTAL | GRAND |       |
|------|--------|-----|-------|-----|----------|-----|--------|-----|------|-------|-------|-------|
|      | GW     | SW  | GW    | SW  | GW       | SW  | GW     | SW  | TOT  | GW    | SW    | TOTAL |
| 1977 | .9     | 0.0 | 3.1   | .1  | 33.8     | 0.0 | 4.7    | 0.8 | 0.0  | 42.5  | 0.9   | 43.4  |
| 1978 | 1.0    | 0.0 | 3.8   | .1  | 33.8     | 0.0 | 4.1    | 0.7 | 0.0  | 42.7  | 0.8   | 43.5  |
| 1979 | 1.1    | 0.0 | 4.1   | .1  | 34.6     | 0.0 | 4.5    | 0.8 | 0.0  | 44.3  | 0.9   | 45.2  |
| 1980 | 1.1    | 0.0 | 4.8   | .1  | 31.6     | 0.0 | 4.0    | 0.0 | 0.0  | 41.5  | 0.1   | 41.6  |
| 1981 | 1.1    | 0.0 | 5.2   | .1  | 34.3     | 1.9 | 5.7    | 0.0 | 0.0  | 46.3  | 2.0   | 48.3  |
| 1982 | 5.6    | 0.0 | 2.2   | 0.0 | 31.4     | 0.0 | 7.0    | 0.0 | 0.0  | 46.2  | 0.0   | 46.2  |
| 1983 | 5.3    | 0.0 | 2.4   | 0.0 | 25.3     | 0.0 | 4.6    | 0.0 | 0.3  | 37.9  | 0.0   | 37.9  |
| 1984 | 6.9    | 0.0 | 3.9   | 0.0 | 28.3     | 0.0 | 5.8    | 0.0 | 0.4  | 45.3  | 0.0   | 45.3  |

Figure 62 shows per capita water use for the residents of Hernando County. This graph was developed by combining the water use of the public and rural categories and dividing by the population. This figure generally shows fluctuations of per capita water use, with the overall trend of a relatively constant per capita average. Per capita water use can be estimated to remain at a minimum of 135 to 140 gallons per capita per day, (gpcd), with fluctuations up to 150 to 175 gpcd, depending on hydrologic conditions.

As described above, water use for many categories is expected to remain relatively constant between now and the year 2000. The industrial category of water use may be expected to range between 20 and 40 Mgal/d until the year 2000 if mining activity remains consistent. The agricultural use of water, which has historically been in the 5 to 7 Mgal/d range, is estimated to range from 4 to 8 Mgal/d.

The public and rural use of water is expected to increase substantially as the population for Hernando County increases. Using the per capita water use figures as described above (135 and 160 gpcd) and the population figures previously discussed in this report (between 113,000 and 152,000 persons in the year 2000), public and rural water use for the year 2000 can be expected to be between 15 Mgal/d and 24 Mgal/d depending on population growth, adoption of water conservation practices, and hydrologic conditions. These projections are in general conformance with figures reported by Russell and Axon, Inc.

# HERNANDO COUNTY

PER CAPITA WATER USE FOR PUB & RUR

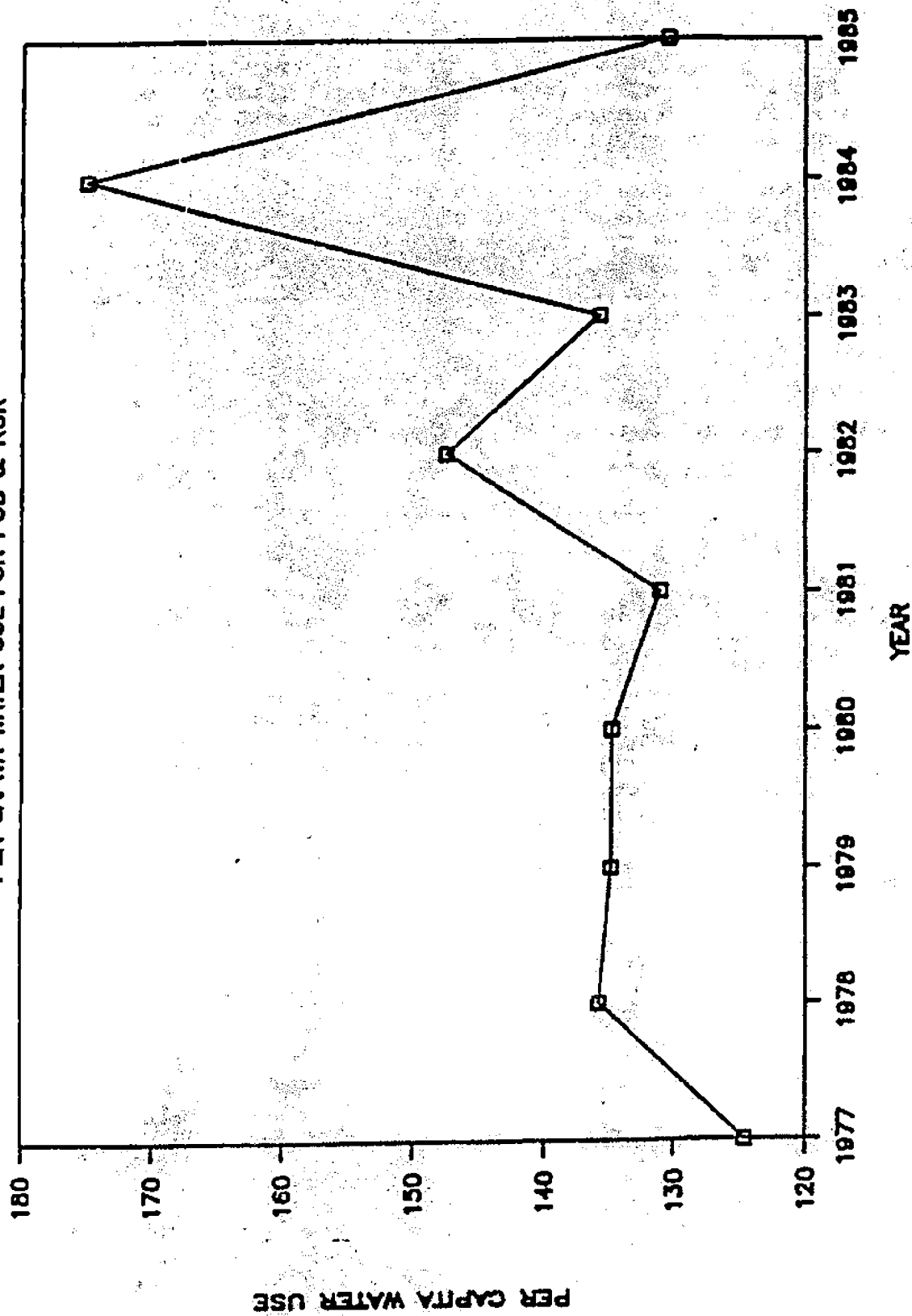


Figure 62. Per Capita Water Use for Public and Rural Water Withdrawals in Hernando County.



(1985), which projected publicly supplied water demand at 15 Mgal/d for the year 2000. Based on the above assumptions, total water use can be expected to be between 39 Mgal/d and 72 Mgal/d for Hernando County in the year 2000.

Figure 63 shows the distribution of 1982 withdrawal rates and estimated withdrawal rates for 2000 for each node of Fretwell's (1985) two-layered, steady-state, digital model. The projected increase in water use between 1982 and 2000 is 9 Mgal/d, which is in line with both Russell and Axon's (1985) and Stieglitz's (1985) estimates. Areas of heavy pumpage, such as mining activity northwest of Brooksville, are easily discernible from this figure.

The 1985 Water Use Estimates of the SWFWMD (Stieglitz, 1985) show that Hernando County uses only ground water as a source of water supply. Other areas within the SWFWMD, however use surface water as a major source of water. Approximately 15 percent of all water used in the District comes from surface-water sources, while 85 percent comes from ground-water sources.

#### EXISTING AND POTENTIAL WASTEWATER REUSE SOURCES

Proper management of the ground-water resource requires consideration of the potential for reuse of wastewater. Reuse can supplement demands for potable water, solve limitations on the disposal of wastewater effluent, and mitigate the effects of excessive ground-water withdrawal. In the context of this discussion, wastewater is defined as potable quality water which has been changed through human activity to non-potable quality. Wastewater originates in industrial applications, agricultural activities, and from municipal sewage treatment. All of these types of activities produce water that, provided environmental and health considerations are met, can be reused for non-potable uses.

The focus of this discussion is to evaluate the incentives and disincentives of the direct and indirect reuse of domestic class wastewater. Direct reuse is defined as the direct transmission of treated wastewater to the user. Examples of direct reuse include irrigation of landscapes, agricultural areas, and golf courses or its use in industrial processes such as rinsing and cooling. Indirect reuse of domestic wastewater includes the most often used method, that is, disposal via rapid infiltration basins or percolation/evaporation ponds.

Other techniques of managing wastewater disposal requirements include:

Separation of graywater from the wastestream at the source. Advantages of this option are the fewer limitations on application due to environmental and health constraints, as well as reduction in treatment and distribution costs.

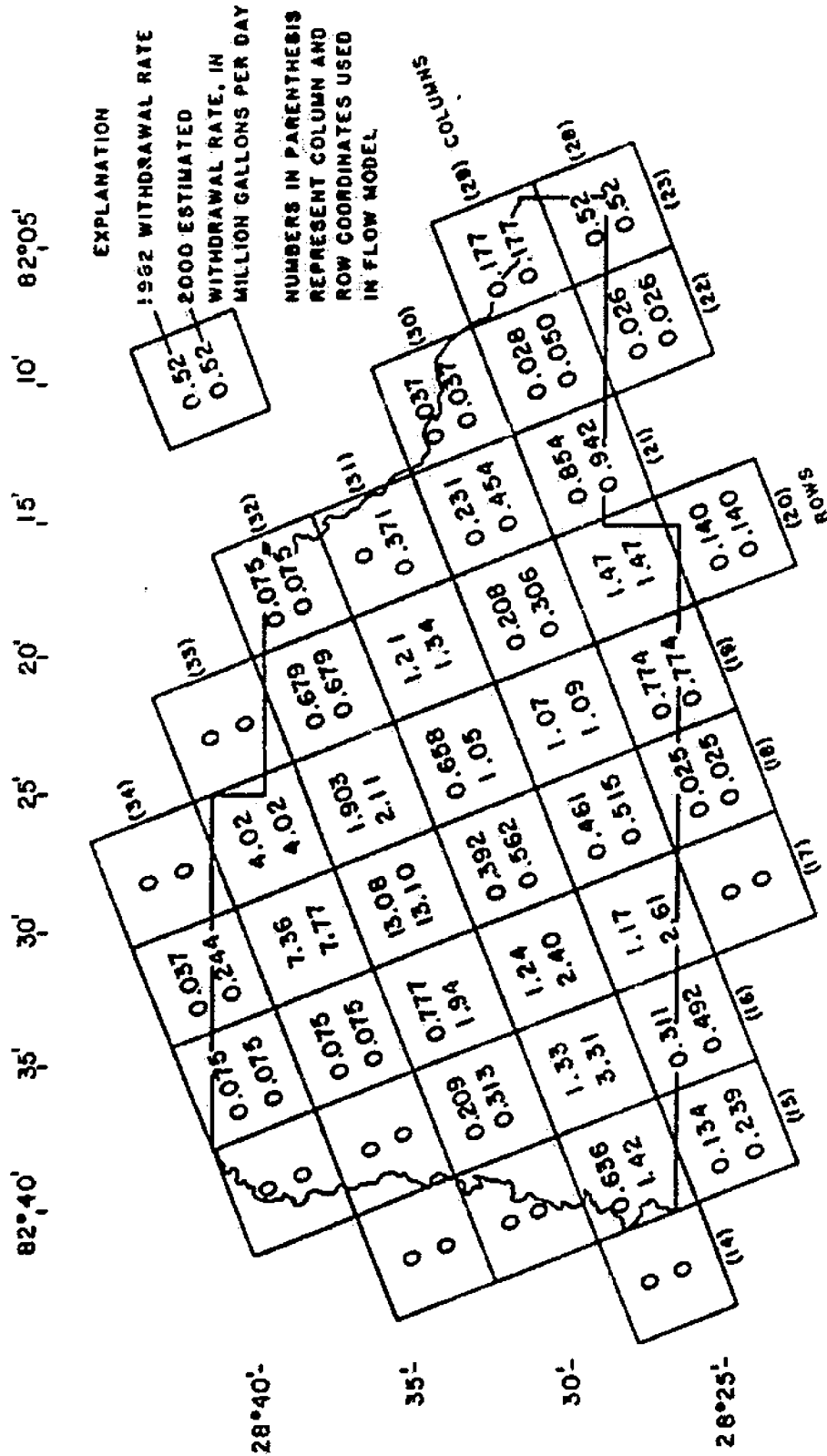


Figure 63. Areal Withdrawal Rates for 1982 and Projected Withdrawal Rates for 2000 (from Fretwell, 1985).

Deep well injection of wastewater. This option has been accepted in some coastal areas, where technically feasible and environmentally acceptable.

Recycling, or the treatment of wastewater to potable water quality standards.

The opportunities to implement innovative strategies of this sort are dependent on the comparative perceived and real cost-effectiveness of these options, combined with any applicable financial incentives and/or regulatory disincentives provided by federal, state, and local government.

The primary constraints of direct and indirect reuse of reclaimed water include: (1) the initial costs, depending on land price and availability, method of treatment, and of distribution; (2) the subsequent expensive monitoring requirements; and (3) the stigma attached to wastewater from the public viewpoint.

Other factors in the evaluation of the reuse option include the location and treatment/disposal method of the major domestic wastewater treatment plants, water supply and demand, land use, environmental factors such as soil types, and the existence of potential health hazards (Thabara and Rhodes 1985).

Two recently completed studies on the applicability of direct reuse with municipal wastewater using the above criteria concluded that it is difficult to standardize cost-effectiveness due to the variability in distribution of suppliers and potential users, regardless of the size or capacity of the treatment plant (Stewart, 1985; Adam et al, 1984). Both studies also limited their respective analyses to major treatment facilities (greater than 1 Mgal/d capacity).

Because only one of Hernando County's 53 municipal wastewater facilities have a treatment capacity of greater than 0.5 Mgal/day (FDER, 1986), it would appear that the application of the methods developed by the above mentioned reports may be limited. In order to determine direct reuse cost-effectiveness for the smaller wastewater treatment plant sites, a more detailed analysis would be required.

As growth within the county continues and the provision of central wastewater treatment facilities is pursued, the economics of direct reuse will become more favorable. This approach, coupled with additional regulatory, fiscal, and other governmental incentives, will promote direct reuse as viable component within a water resource management strategy.

#### FEASIBILITY OF INTEGRATING COASTAL WELLFIELDS

In the GWBRI, each WMD is to address the feasibility of integrating coastal wellfields. Connecting individual wells

with transmission mains in a network system and operating the system in a manner which prevents overpumpage of a single well creates an integrated wellfield. In coastal areas this type of operation ensures an adequate supply of potable water while preventing degradation of an aquifer system from saltwater intrusion.

Hernando County does not have a coastal wellfield, however it does have several public supply wells located in and adjacent to coastal areas (Figure 64). The county owns and operates eight water systems in the Southwest Service area. This area has been identified as the fastest growing region in the county. A complete description of each system's service area and capacities is described by Russell and Axon, Inc., (1985). Of these eight systems, four are interconnected with the west side regional system, two are operated independently and two are interconnected with each other.

The county has identified the need and plans to interconnect all the systems into the west side regional system. This will allow the county to operate and manage each system in a manner to prevent saltwater intrusion while providing an adequate supply of potable water to its residents.

#### CONSERVATION

Water conservation can play an important role in an area's efforts to plan for future water supplies, wastewater disposal, and environmental protection. Typically, as areas experience growth, inexpensive sources of water are developed first. As growth continues, remaining sources become more expensive to bring to specific locations. Also, with increasing water use, more wastewater treatment and disposal is required.

Water conservation methods are available within all categories of water use. It is estimated that water use within the residential water use category can be reduced by 15% to 70%, depending on various factors such as the efficiency of existing distribution and use systems and the proportion of water used outdoors (Environmental Policy Institute, 1982). Elements in a program to implement residential water conservation may include plumbing code changes, retrofit of existing structures, leak repair, metering, rate structure revision, public education, outdoor water codes, water shortage contingency plans, and reuse.

The potential for water conservation within the industrial category of Hernando County is largely centered on minimizing water discharge and increasing recycling within the rock mining industry. Efficiencies of water use may be increased by various uses of pressure reducing valves, cascade and air-blown rinses, leak detection and repair, and process modification. Water conservation within the industrial category has increased in recent years due in large part to regulatory limitations on surface water discharges and the superior economics of efficient

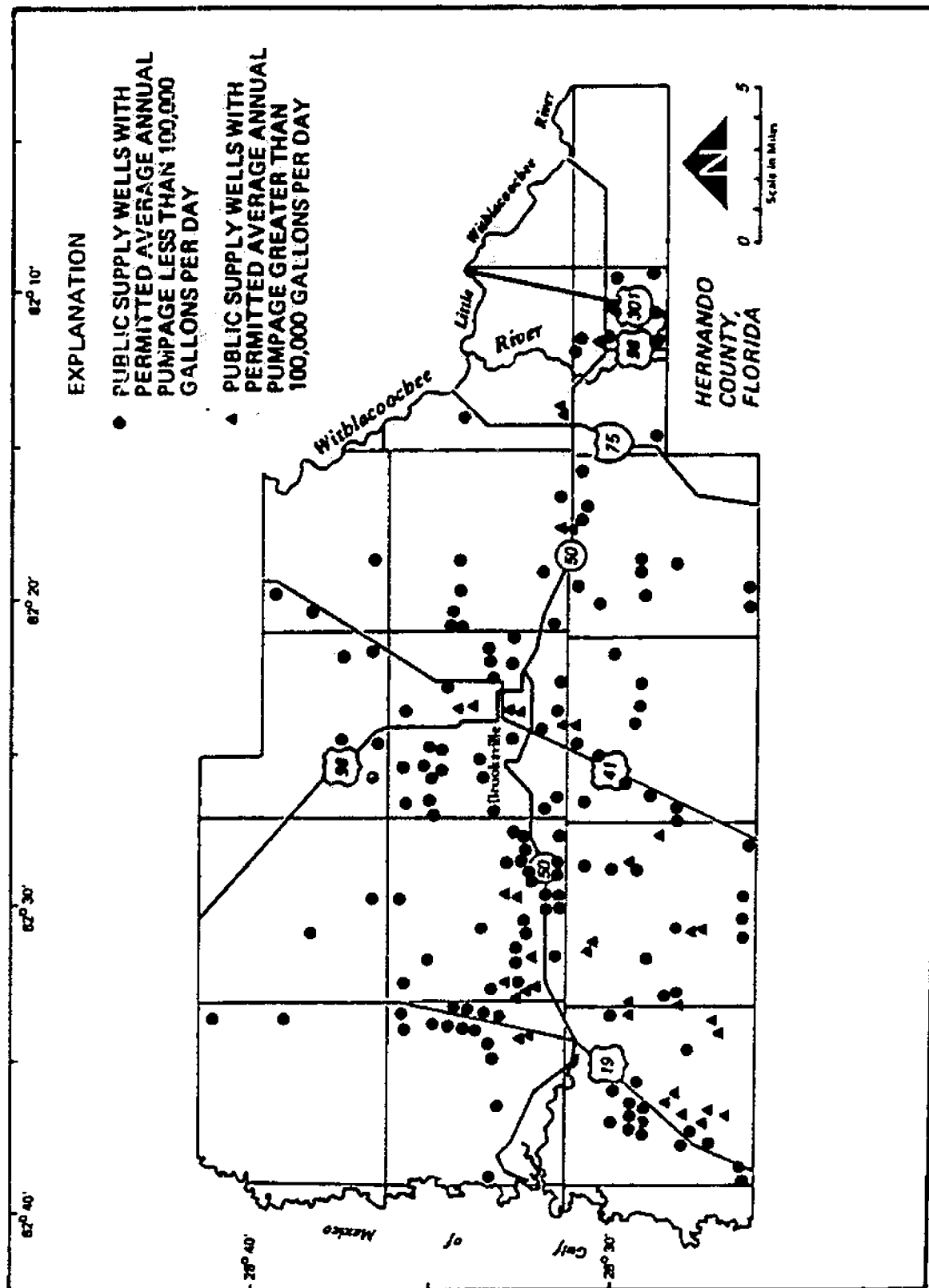


Figure 64. Existing Public Supply Wells in Hernando County (Source: SWFWMD Well Permit Summaries)

water use. Improvements can still be made which would limit the proportion of this major water use within the county.

Water conservation in the agricultural category offers the potential for significant water savings while maintaining economic yields. The two principal elements to effective water management in agriculture are 1) an irrigation system that can deliver water uniformly to the crop in the right quantity and at the right time; and 2) an irrigator who knows and follows water conservation practices. Water conservation practices available to agriculturalists within the county include reducing losses to seepage and tailwater, scheduling, and hardware modifications to deliver optimal quantities of water, use of mulching, and other soil covers, and use of the lowest water quality necessary including wastewater reuse.

The potential exists to significantly increase the efficiency of water use and to reduce the per capita potable water demands within the county. The State Water Use Plan sets an objective for the state to reduce potable water use 15% by 1995 (FDER, 1986). This is considered to be a conservative objective of the level of water conservation towards which efforts should be focused.

Low water use projections previously discussed were developed based on the assumption that the county will be successful in achieving water conservation. The SWFWMD has an active Water Conservation Planning project which is dedicated to assuring that conservation is realized.

#### REVERSE OSMOSIS

The natural tendency for solutions of different concentrations to equalize in concentration when contacted is well documented. If two similar fluids of different concentration are separated by a semi-permeable membrane, the less concentrated solution will diffuse through the membrane to the more concentrated solution. The molecular movement to facilitate this concentration equilibrium is called osmosis; the resulting pressure increase in the more concentrated solution is called osmotic pressure.

If the concentrated solution is subjected to a pressure greater than the osmotic pressure, then the fluid flow direction across the semi-permeable membrane is reversed. If the semi-permeable membrane is designed to allow only freshwater to diffuse, more freshwater will be generated by reverse osmosis.

Reverse osmosis desalination systems require pretreatment of the feed water to prevent membrane fouling and biological growth. These facilities are energy intensive and require careful disposal of the reject waters because of high chloride content.

At this time, reverse osmosis is not an economically viable source of potable water for Hernando County, because of the large supply of easily accessible ground-water within the county.

## IMPLICATIONS FOR LOCAL GOVERNMENT PLANNING EFFORTS

Hernando County is fortunate in the abundance of available high quality ground water to support its current and future needs. The technical information assembled in this report should assist the county in protecting that resource and developing facilities in an economically and environmentally sound manner.

This report may be used to aid local governments in two particular activities which are considered vital to the creation of an effective comprehensive ground-water protection program: land use regulations for protection of areas of susceptibility to ground-water contamination and appropriate water withdrawal facility siting. The first of these is facilitated through the use of DRASTIC maps (figure 55), wherein zones of relative susceptibility to contamination are mapped. The second is generally supported by several sections within this report and summarized in Figure 23, Suitability for Ground Water Development in the NWCFGWB.

One of the primary purposes of the GWBRAI is to provide water resources information to local governments for use in their comprehensive planning efforts. The Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163, Florida Statutes) requires all local governments within the State of Florida to develop and adopt comprehensive plans. The Department of Community Affairs (DCA) has developed an administrative rule which sets the minimum requirements for the contents for local plans.

DCA'S minimum criteria rule (Rule 9J-5, FAC) contains many specific requirements for water resources information which can be at least partially met by the information which is presented by this GWBRAI. A detailed analysis of the specific requirements which may be satisfied within this document is currently being developed and will be presented in a separate document.

This GWBRAI has been developed in part in response to the requirements of Section 373.0395, Florida Statutes. This statute directs that the GWBRAI include several specific analyses. This report has presented those data and analyses which have been completed to date. The SWFWMD is currently working on several ground and surface-water modeling efforts which will supplement the existing information. One particularly important linkage between local governments and these modeling efforts is the completion of existing and future land use maps within the revised Local Government Comprehensive Plans. It is anticipated that these will serve as valuable data sources to input surface parameters which will affect the recharge and runoff features of those models. This will serve to create an iterative process whereby local government plans are driven in part by SWFWMD data reporting efforts and SWFWMD models are driven by those local plans.

## APPENDIX A - GLOSSARY

**ANTICLINE** - A fold that is convex upward, the beds on opposite limbs dip in opposite directions.

**AQUIFER** - A water-bearing layer of rock or soil that will yield water in usable quantity to a well or spring.

**ARCH** - see **ANTICLINE**.

**BASE FLOW** - The ground water contribution to runoff that comes from springs or seepage into a stream channel.

**BASIN** - The drainage or catchment area of a stream, lake, or ground-water system; watershed.

**BEDROCK** - A general term for the consolidated (solid) rock that underlies soils or other unconsolidated surficial material.

**BRACKISH** - Waters whose saline content is intermediate between that of streams and sea water.

**CAPILLARY FRINGE** - The saturated zone above the water table in which water is held by surface tension. Water in the capillary fringe is under a pressure head which is less than atmospheric.

**CARBONATE** - A compound containing the radical  $\text{CO}_3^{-2}$  limestone,  $\text{CaCO}_3$ . Is found naturally occurring in ground water in contact with limestone or dolomite in the form of  $\text{CaCO}_3$  or  $\text{MgCO}_3$ .

**CHERT** - A compact siliceous rock of varying color occurring as nodules, lenses, or layers in limestone or shales.

**CLASTIC** - Sediment made up of fragmental material derived from pre-existing rocks.

**CONE OF DEPRESSION** - A depression in the potentiometric surface (drawdowns) around a pumping well caused by the withdrawal of water.

**CONFINING BED** - A layer of earth material, usually clay, that does not readily transmit water, generally restricting the vertical movement of water into and out of an aquifer.

**CONTROL STRUCTURE** - A structure placed on a lake, reservoir, river or stream etc. that regulates either the flow or water level.

**CONVECTIONAL RAINS** - Atmosphere motions that are predominantly vertical, resulting in vertical cloud formation with associated thunderstorms.



**COQUINA** - Limestone composed of broken shells, corals, and other organic debris.

**CYCLONIC STORMS** - Storms caused by rotating winds which move inward toward a center of minimum pressure; hurricane.

**DATUM PLANE** - An arbitrary surface (or plane) used as a reference plane in the measurement of hydraulic heads. The datum most commonly used is the National Geodetic Vertical Datum (NGVD) of 1929, which closely approximates sea level.

**DELTAIC** - A deposit of sediment formed at the mouth of a river either in an ocean or lake which results in progradation of the shoreline.

**DEMOGRAPHY** - Statistical study of births, deaths, movement, etc. of populations.

**DIP** - The angle at which a stratum or any planar feature is inclined from the horizontal.

**DIRECT REUSE** - The transmission of reclaimed water directly for some specific nonpotable use, such as irrigation of a golf course or public landscape, is called direct reuse. Under direct reuse, reclaimed water is used to satisfy demands that do not need the high quality of potable water and thus is a substitute for potable water. For example, reclaimed water can be used for irrigation, industrial cooling, augmentation or maintenance of minimum flows in streams to protect ecological functions, and reclamation of drained wetlands.

**DISPERSION** - The extent to which a solute liquid introduced into a ground-water system spreads as it moves through the system.

**DISSOLUTION** - The process of dissolving.

**DOLOMITE** - A mineral,  $\text{CaMg}(\text{CO}_3)_2$  occurring in many crystalline and noncrystalline forms the same as pure limestone.

**DOMAL CREST** - A roughly symmetrical upfold, the beds dipping in two directions, more or less equally.

**DRAWDOWN** - The reduction in hydraulic head at a point caused by the withdrawal of water from an aquifer.

**EFFLUENT** - The outflow of water, as from a lake, ditch, or pipe.

**EPOCH** - A division of geologic time corresponding to a series of rock and a subdivision of a period.

**EQUIPOTENTIAL LINE** - A line on a map or cross section along which hydraulic heads are equal.

**ESCARPMENT** - A slope, steep decent, terminating high lands abruptly.

**ESTUARY** - A funnel shaped mouth of a coastal river valley formed as a result of a rise in sea level or land subsidence.

**EVAPORITE** - Sediments deposited from seas or lakes as a result of extensive or total evaporation.

**FAULT** - Fractures or breaks in rocks along which there has been significant displacement of the sides relative to one another parallel to the fracture; **NORMAL FAULT** - Hanging wall depressed relative to footwall; **VERTICAL FAULT** - Wall displacement near vertical.

**FLOW LINE** - The idealized path followed by a particle of water in a flow system that intersects an equipotential line at right angles for a homogeneous and isotropic medium.

**FLOW NET** - a set of intersecting equipotential lines and flow lines.

**FORAMINIFERA** - Unicellular animals mostly of microscopic size that secrete shells, composed of calcium carbonate or build them of cemented sedimentary grains.

**FORMATION** - The primary unit of mapping or description possessing certain distinctive lithic features.

**FRONTAL RAINS** - Atmospheric flow of air masses from high to low pressure where cool air contacts warm air causing clouds and rain.

**GRAYWATER** - All residential wastewater except those carried off by toilet and kitchen drains and sewers.

**GROUND WATER** - Water in the saturated zone that is under pressure equal to or greater than atmospheric pressure.

**GROUND-WATER HEAD** - See TOTAL HEAD.

**GROUND-WATER MODEL** - Mathematical simulation of the flow of water through porous material by digital computer.

**GROUP** - Lithostratigraphic unit consisting of two or more formations; succession of strata too thick or inclusive to be considered a formation.

**HYDRAULIC CONDUCTIVITY** - The capacity of a rock or earth material to transmit water. It is expressed as the volume of water at the existing kinematic viscosity that will move in unit time under a

unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

**HYDRO-PERIOD** - An interval of time characterized by a hydrologic or climatic event.

**INDIRECT REUSE** - Indirect reuse involves returning reclaimed water to a natural storage area to provide a temporal and spatial separation of the reclaimed water from the point of actual reuse. For example, use of reclaimed water to recharge the ground water through rapid infiltration basins or to replenish and augment surface water supplies that serve as a source of water supply would be an indirect reuse. Also, disposal of secondary effluents by slow-rate land application (for crop irrigation) would be a form of indirect reuse. Even though this latter operation is designed exclusively for disposal of the wastewater, it would help to further renovate the wastewater and recharge the aquifers for potential future use.

**INFILTRATION BASIN** - The flow of water into a rock or soil through pores or small openings within a basin.

**INFRASTRUCTURE** - The basic facilities, equipment, and installations needed for the functioning of a system.

**INTERBEDDED** - Occurring between beds, or lying in a bed parallel to other beds of a different material; interstratified.

**ISOCHLOR** - Contour line indicating equal concentrations of chlorides.

**KARST** - Hummocky landscapes formed over limestone, dolomite or gypsum characterized by the features caused by the solution of rocks by ground water, such as closed depressions, sinkholes, and caves.

**LANDSAT IMAGERY** - Optical reproduction by camera of land forms, vegetation, structures, water, etc. from orbiting satellite.

**LIMESTONE** - A bedded sedimentary deposit consisting chiefly of calcium carbonate ( $\text{CaCO}_3$ ), equivalent of limy mud, calcareous sand, or shell fragments.

**LITHOLOGIC** - The physical character of a rock, description, and classification.

**MEAN** - The sum of items of a sample divided by the number of items in the sample.

**MEDIAN** - The value of a variable in a sample that has equal number of items on either side of it.

**METABOLISM** - Complex of chemical and physical processes involved in the maintenance of life.

**MINERALIZATION** - The conversion of an element from an organic form to an inorganic state as a result of microbial decomposition.

**OUTCROP** - Exposure of bedrock or strata projecting through the overlying cover of detritus and soil.

**OVERDRAFT** - Ground-water withdrawal in excess of the amount of water that can be withdrawn from the ground-water basin annually without producing an undesired result; specifically the rules of the SWFWMD state pumping from a well at such a flow rate that the resulting water level is below sea level, greater than 5 feet below original at property line, or causes environmental damage on the land surface.

**PERCHED WATER** - Water which is retarded from downward movement by impermeable material beneath, that in turn, over lies porous, unsaturated rock above the normal water table.

**PERMEABILITY** - Capacity for transmitting a fluid, measured by the rate at which a fluid of standard viscosity can move a given distance through a given interval of time.

**PHYSIOGRAPHIC** - Genesis and evolution of land forms with a unified geomorphic history.

**POROSITY** - The voids or openings in a rock. Porosity may be expressed quantitatively as the ratio of the volume of voids in a rock to the total volume of the rock.

**POTABLE** - Water that is fit for human consumption.

**POTENTIOMETRIC SURFACE** - A surface that represents the total head in an aquifer. It is determined by the height above a datum plane to which water will rise in tightly cased wells that penetrate the aquifer.

**RECLAIMED WATER** - Domestic wastewater that has been upgraded in quality for various forms of reuse in accordance with the criteria established by the FDER (Chapter 17-6, FAC).

**RECYCLE** - Recycle is the direct transmission and reuse of reclaimed water for the same original use. For example, use of highly treated (reclaimed) water directly for potable use would be a recycle.

**REEFAL** - A range or ridge of rocks lying at or near the surface of water, esp. coral; atoll, barrier.

**REENTRANT** - Recess; directed inward; indentation in a landform, more or less angular.

**RETROFIT** - To furnish or provide with new equipment or parts unavailable at the time of original construction.

**RIDGE** - A relatively narrow elevation which is prominent on account of the steep angle at which it rises.

**ROCK** - Any naturally formed, consolidated coherent, or relatively hard material (but not soil) consisting of two or more minerals; stone.

**SACCHAROIDAL** - Having a granular texture resembling that of sugar; some sandstones and marbles.

**SATURATED ZONE** - The subsurface zone in which all voids are filled with water.

**SEDIMENTARY** - Descriptive term for rock formed of sediment; clastic rocks, conglomerate, sand stone, shales, rocks formed by precipitation from solution as salt, gypsum, or from secretions of organisms as most limestones.

**SOIL** - The layer of material at the land surface that supports plant growth.

**SPECIFIC CAPACITY** - The yield of a well per unit of drawdown.

**SPECIFIC RETENTION** - The ratio of the volume of water retained in a rock after gravity drainage to the volume of the rock.

**SPECIFIC YIELD** - The ratio of the volume of water that will drain from an unconfined aquifer under the influence of gravity to the volume of saturated rock.

**STORAGE COEFFICIENT** - The volume of water released from storage in a unit area of an aquifer when the head is lowered a unit distance.

**STRATIFICATION** - The layered structure of sedimentary rocks.

**SYNCLINE** - A fold in rocks in which the strata dip inward from both sides toward the axis.

**TAILWATER-applied irrigation** - A water mass leaving an irrigated area as surface water.

**TECTONICS** - Designating the rock structure and external forms resulting from the deformation of the earth's crust.

**TERRACE** - Benches; relatively flat, horizontal, or gently inclined surfaces, sometimes long and narrow which are bounded by steeper, ascending, and steeper descending slopes.

**TOTAL HEAD** - The summation of the elevation head, the pressure head, and the velocity head.

**TRANSMISSIVITY** - The rate at which water is transmitted through a unit width of an aquifer under a unit hydraulic gradient. It equals the hydraulic conductivity multiplied by the aquifer thickness.

**UNCONFORMABLE** - Relationship between strata where the contact is an erosion surface.

**UNIT** - An individual, group, or structure regarded as an elementary structural or functional constituent of a whole.

**UNSATURATED ZONE** - The subsurface zone, usually starting at the land surface, that contains both water and air; vadose; zone of aeration.

**UPLIFT** - Elevation of any extensive part of the earth's surface relative to some other parts.

**WATER TABLE** - The level in the saturated zone at which the pressure is equal to the atmospheric pressure.

## APPENDIX B - RELEVANT FLORIDA LEGISLATION

Florida's water resources have attracted significant attention from the government and the public, particularly during the past twenty years. Rapid population growth and urban sprawl, combined with a fragile natural environment, have created major problems throughout the state. Historically, government programs have responded primarily to immediate issues. With the multitude of government agencies in Florida, it has become apparent that consistency among policies and programs is essential to effective growth management. Statewide planning has emerged as a means of integrating local, regional, and state functions for such consonance.

The original Florida Comprehensive Planning Act (formerly Chapter 23, Florida Statutes, currently Chapter 186, Florida Statutes) was enacted in 1972, along with two other land management acts. The Florida Environmental Land and Water Management Act (Chapter 380, Florida Statutes) provided regulations for Developments of Regional Impact (DRI's) and Areas of Critical State Concern. The Florida Water Resources Act (Chapter 373, Florida Statutes) established state policies as well as implementation measures, including the creation of the regional water management districts (WMD's). This act also mandated the formulation of a State Water Use Plan (Section 373.036, Florida Statutes) as a functional component of the State Comprehensive Plan. During the development of the State Comprehensive Plan, the Local Government Comprehensive Planning Act (Chapter 163, Florida Statutes) was enacted in 1975. The purpose of these four legislative acts was to improve resource management and guide future growth through state and local planning programs.

In 1978 the legislature amended the Comprehensive Planning Act, reducing it to an advisory level. With the absence of enforcement power, the statewide planning effort was temporarily ended.

A new approach was taken in 1980 with the enactment of the Florida Regional Planning Council Act (Chapter 186, Florida Statutes). This act required each of the eleven regional planning councils (RPC's) to develop comprehensive plans. Lack of state funds largely inhibited this effort, and no link was provided between local and regional plans.

While the state comprehensive planning effort was halted, other water-resource related regulation/policy emerged. The State Water Policy (Chapter 17-40, FAC) was adopted in 1981 to guide the development of rules, plans, and programs of the FDER and the WMD's. WMD rules are required by Chapter 373 to be consistent with the State Water Policy.

The Ground-Water Basin Resource Availability Inventory (Section 373.0395, Florida Statutes), also mandated/authorized in 1982, was incorporated into the Florida Water Resources Act. The

legislature mandated the WMD's to inventory ground-water resources within each District and disseminate the information to local and regional agencies.

The state comprehensive plan was readdressed in 1984 with the enactment of the Florida State and Regional Planning Act (formerly Chapter 23, Florida Statutes, currently in Chapter 186, Florida Statutes). This act not only required the preparation of a state comprehensive plan, but included consistency requirements for agency functional plans and regional policy plans. Conformity obligations were not included for local comprehensive plans.

In 1985, Chapter 85-87, Laws of Florida, adopted the state comprehensive plan which was comprised of 25 state goals and policies, one of which addressed water resources. This law also assigned a State Comprehensive Plan Committee to evaluate the funding needs of local and state agencies for implementation. The Local Government Comprehensive Planning and Development Regulation Act (Chapter 85-55, Laws of Florida) amended several development planning and regulatory laws, specifically addressing coastal protection, DRI's, and local comprehensive plans. This bill expanded the requirements of local comprehensive plans and provided a system of review to ensure consistency with the state comprehensive plan. Additionally, requirements were made for each local comprehensive plan to identify the need for and the process to ensure coordination of all development activities and services with the pertinent WMD.

Chapter 85-42, Laws of Florida, was also enacted in 1985, amending the Ground-Water Basin Resource Availability Inventory. The WMD's are now required to designate by rule, prime ground-water recharge areas upon completion of the Inventory. This information will be vital to local governments in preparation of the conservation element of their comprehensive plans which must address the preservation, use, and protection of ground-water recharge areas as well as other environmental issues.



APPENDIX C - DRASTIC

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 1       | 50 | 4  | 30 | 4  | 10 | 50 | 18 | 11C     | 16  |
| 2       | 50 | 36 | 30 | 4  | 10 | 50 | 18 | 11C     | 19  |
| 3       | 50 | 36 | 30 | 4  | 10 | 50 | 30 | 11C     | 21  |
| 4       | 50 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 22  |
| 5       | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 6       | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 20  |
| 7       | 25 | 36 | 30 | 18 | 10 | 40 | 30 | 11A     | 18  |
| 8       | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 9       | 25 | 36 | 30 | 18 | 10 | 40 | 30 | 11A     | 18  |
| 10      | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 11      | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 12      | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 13      | 25 | 36 | 30 | 18 | 10 | 30 | 30 | 11A     | 17  |
| 14      | 25 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 15      | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 16      | 25 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 16  |
| 17      | 15 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |
| 18      | 25 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 16  |
| 19      | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 15  |
| 20      | 10 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 14  |
| 21      | 5  | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 14  |
| 22      | 15 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |
| 23      | 35 | 36 | 30 | 16 | 9  | 50 | 30 | 11A     | 20  |
| 24      | 15 | 36 | 30 | 16 | 5  | 20 | 30 | 11A     | 15  |
| 25      | 15 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 26      | 5  | 36 | 30 | 14 | 5  | 30 | 30 | 11A     | 15  |
| 27      | 15 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |
| 28      | 25 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 16  |
| 29      | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 15  |
| 30      | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 15  |
| 31      | 5  | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 15  |
| 32      | 15 | 36 | 30 | 14 | 10 | 30 | 30 | 11A     | 16  |
| 33      | 25 | 36 | 30 | 14 | 10 | 30 | 30 | 11A     | 17  |
| 34      | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 15  |
| 35      | 25 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 16  |
| 36      | 15 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 15  |
| 37      | 15 | 36 | 30 | 16 | 10 | 20 | 30 | 11A     | 15  |
| 38      | 15 | 36 | 30 | 16 | 10 | 20 | 30 | 11A     | 15  |
| 39      | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 40      | 10 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 14  |
| 41      | 10 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |
| 42      | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

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 DRASTIC PARAMETERS, SETTINGS AND INDICES  
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| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | INDEX |
|---------|----|----|----|----|----|----|----|---------|-------|
| 43      | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 163   |
| 44      | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 178   |
| 45      | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 178   |
| 46      | 25 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 188   |
| 47      | 50 | 4  | 30 | 4  | 10 | 50 | 30 | 11C     | 178   |
| 48      | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 219   |
| 49      | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 219   |
| 50      | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 219   |
| 51      | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 209   |
| 52      | 25 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 199   |
| 53      | 25 | 36 | 30 | 18 | 10 | 20 | 30 | 11A     | 169   |
| 54      | 15 | 36 | 30 | 18 | 9  | 20 | 30 | 11A     | 158   |
| 55      | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 178   |
| 56      | 5  | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 168   |
| 57      | 10 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 169   |
| 58      | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 174   |
| 59      | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 176   |
| 60      | 10 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 171   |
| 61      | 10 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 169   |
| 62      | 5  | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 164   |
| 63      | 5  | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 154   |
| 64      | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 163   |
| 65      | 5  | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 144   |
| 66      | 10 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 149   |
| 67      | 10 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 150   |
| 68      | 15 | 36 | 30 | 14 | 10 | 30 | 30 | 11A     | 165   |
| 69      | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 174   |
| 70      | 10 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 169   |
| 71      | 5  | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 164   |
| 72      | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 159   |
| 73      | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 174   |
| 74      | 25 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 184   |
| 75      | 10 | 36 | 30 | 14 | 5  | 40 | 30 | 11A     | 165   |
| 76      | 5  | 36 | 30 | 14 | 5  | 40 | 30 | 11A     | 160   |
| 77      | 25 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 174   |
| 78      | 25 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 176   |
| 79      | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 186   |
| 80      | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 176   |
| 81      | 15 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 166   |
| 82      | 10 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 161   |
| 83      | 5  | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 156   |
| 84      | 25 | 36 | 30 | 16 | 9  | 50 | 30 | 11A     | 196   |
| 85      | 10 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 171   |
| 86      | 5  | 36 | 30 | 16 | 5  | 40 | 30 | 11A     | 162   |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

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 DRASTIC PARAMETERS, SETTINGS AND INDICES  
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| POLYGON | D  | R  | A  | S  | T | I  | C  | SETTING | IND |
|---------|----|----|----|----|---|----|----|---------|-----|
| 87      | 15 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 88      | 10 | 36 | 30 | 16 | 9 | 30 | 30 | 11A     | 16  |
| 89      | 5  | 36 | 30 | 16 | 9 | 20 | 30 | 11A     | 14  |
| 90      | 15 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 18  |
| 91      | 25 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 19  |
| 92      | 35 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 20  |
| 93      | 25 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 19  |
| 94      | 35 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 20  |
| 95      | 25 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 19  |
| 96      | 15 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 97      | 25 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 19  |
| 98      | 15 | 36 | 30 | 18 | 9 | 40 | 30 | 11A     | 17  |
| 99      | 25 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 19  |
| 100     | 15 | 36 | 30 | 18 | 9 | 40 | 30 | 11A     | 17  |
| 101     | 25 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 19  |
| 102     | 35 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 20  |
| 103     | 45 | 36 | 30 | 16 | 9 | 50 | 30 | 11A     | 21  |
| 104     | 35 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 20  |
| 105     | 45 | 36 | 30 | 16 | 9 | 30 | 30 | 11A     | 19  |
| 106     | 25 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 18  |
| 107     | 25 | 36 | 30 | 18 | 9 | 50 | 30 | 11A     | 19  |
| 108     | 15 | 36 | 30 | 18 | 9 | 40 | 30 | 11A     | 17  |
| 109     | 10 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 110     | 10 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 111     | 10 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 112     | 5  | 36 | 30 | 18 | 9 | 40 | 30 | 11A     | 16  |
| 113     | 15 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 17  |
| 114     | 25 | 36 | 30 | 14 | 9 | 50 | 30 | 11A     | 19  |
| 115     | 5  | 36 | 30 | 16 | 5 | 30 | 30 | 11A     | 15  |
| 116     | 15 | 36 | 30 | 16 | 9 | 30 | 30 | 11A     | 15  |
| 117     | 25 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 18  |
| 118     | 25 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 18  |
| 119     | 15 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 17  |
| 120     | 10 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 16  |
| 121     | 10 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 122     | 15 | 36 | 30 | 16 | 9 | 30 | 30 | 11A     | 16  |
| 123     | 15 | 36 | 30 | 16 | 9 | 40 | 30 | 11A     | 17  |
| 124     | 25 | 36 | 30 | 16 | 9 | 30 | 30 | 11A     | 17  |
| 125     | 25 | 36 | 30 | 14 | 9 | 30 | 30 | 11A     | 17  |
| 126     | 15 | 36 | 30 | 14 | 9 | 30 | 30 | 11A     | 16  |
| 127     | 15 | 36 | 30 | 14 | 9 | 30 | 30 | 11A     | 16  |
| 128     | 25 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 18  |
| 129     | 10 | 36 | 30 | 14 | 9 | 30 | 30 | 11A     | 15  |
| 130     | 10 | 36 | 30 | 14 | 9 | 40 | 30 | 11A     | 16  |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

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 DRASTIC PARAMETERS, SETTINGS AND INDICES  
 -----

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING INDEX |
|---------|----|----|----|----|----|----|----|---------------|
| 131     | 15 | 36 | 30 | 14 | 10 | 40 | 30 | 11A 175       |
| 132     | 25 | 36 | 30 | 14 | 10 | 40 | 30 | 11A 185       |
| 133     | 15 | 36 | 30 | 14 | 10 | 30 | 30 | 11A 165       |
| 134     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 164       |
| 135     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 159       |
| 136     | 10 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 169       |
| 137     | 5  | 36 | 30 | 14 | 5  | 40 | 30 | 11A 160       |
| 138     | 5  | 36 | 30 | 16 | 9  | 40 | 30 | 11A 166       |
| 139     | 5  | 36 | 30 | 18 | 9  | 40 | 30 | 11A 168       |
| 140     | 15 | 36 | 30 | 18 | 9  | 20 | 30 | 11A 158       |
| 141     | 25 | 36 | 30 | 18 | 9  | 20 | 30 | 11A 168       |
| 142     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A 178       |
| 143     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A 209       |
| 144     | 45 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 218       |
| 145     | 50 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 223       |
| 146     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 208       |
| 147     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 208       |
| 148     | 50 | 4  | 30 | 14 | 10 | 50 | 30 | 11A 188       |
| 149     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 198       |
| 150     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 198       |
| 151     | 25 | 36 | 30 | 18 | 9  | 40 | 30 | 11A 188       |
| 152     | 10 | 36 | 30 | 16 | 9  | 40 | 30 | 11A 171       |
| 153     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A 176       |
| 154     | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 174       |
| 155     | 5  | 36 | 30 | 14 | 9  | 40 | 30 | 11A 164       |
| 156     | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 174       |
| 157     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 159       |
| 158     | 15 | 36 | 30 | 14 | 10 | 30 | 30 | 11A 165       |
| 159     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 159       |
| 160     | 10 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 169       |
| 161     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 164       |
| 162     | 25 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 174       |
| 163     | 25 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 184       |
| 164     | 25 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 174       |
| 165     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 164       |
| 166     | 10 | 36 | 30 | 16 | 5  | 40 | 30 | 11A 167       |
| 167     | 5  | 36 | 30 | 16 | 5  | 40 | 30 | 11A 162       |
| 168     | 25 | 36 | 30 | 16 | 9  | 30 | 30 | 11A 176       |
| 169     | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A 178       |
| 170     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A 168       |
| 171     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A 176       |
| 172     | 25 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 184       |
| 173     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A 186       |
| 174     | 25 | 36 | 30 | 18 | 9  | 40 | 30 | 11A 188       |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 175     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 176     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 18  |
| 177     | 15 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 178     | 25 | 36 | 30 | 16 | 9  | 50 | 30 | 11A     | 19  |
| 179     | 50 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 22  |
| 180     | 45 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 21  |
| 181     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 20  |
| 182     | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 183     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 184     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 20  |
| 185     | 25 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 186     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 17  |
| 187     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 188     | 25 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 18  |
| 189     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 18  |
| 190     | 10 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 191     | 10 | 36 | 30 | 16 | 5  | 30 | 30 | 11A     | 15  |
| 192     | 25 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 17  |
| 193     | 25 | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 18  |
| 194     | 25 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 16  |
| 195     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 15  |
| 196     | 10 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 14  |
| 197     | 5  | 36 | 30 | 14 | 5  | 20 | 30 | 11A     | 14  |
| 198     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 15  |
| 199     | 5  | 36 | 30 | 14 | 5  | 30 | 30 | 11A     | 15  |
| 200     | 5  | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 16  |
| 201     | 5  | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 16  |
| 202     | 10 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 17  |
| 203     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 17  |
| 204     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 19  |
| 205     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 206     | 15 | 36 | 30 | 18 | 9  | 20 | 30 | 11A     | 15  |
| 207     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 208     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 19  |
| 209     | 25 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 19  |
| 210     | 25 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 19  |
| 211     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 212     | 45 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 21  |
| 213     | 45 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 21  |
| 214     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 20  |
| 215     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 216     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 217     | 45 | 36 | 30 | 4  | 10 | 50 | 30 | 11C     | 20  |
| 218     | 50 | 4  | 30 | 18 | 10 | 50 | 30 | 11A     | 19  |

## HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

## DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | INDEX |
|---------|----|----|----|----|----|----|----|---------|-------|
| 219     | 45 | 4  | 30 | 18 | 10 | 50 | 30 | 11A     | 187   |
| 220     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 219   |
| 221     | 50 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 224   |
| 222     | 25 | 36 | 30 | 18 | 10 | 40 | 30 | 11A     | 189   |
| 223     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 209   |
| 224     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 198   |
| 225     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 168   |
| 226     | 25 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 198   |
| 227     | 25 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 199   |
| 228     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 168   |
| 229     | 25 | 36 | 30 | 18 | 10 | 30 | 30 | 11A     | 179   |
| 230     | 25 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 197   |
| 231     | 35 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 207   |
| 232     | 35 | 36 | 30 | 14 | 10 | 50 | 30 | 11A     | 205   |
| 233     | 25 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 197   |
| 234     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 178   |
| 235     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 176   |
| 236     | 15 | 36 | 30 | 14 | 10 | 30 | 30 | 11A     | 165   |
| 237     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 164   |
| 238     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 159   |
| 239     | 5  | 36 | 30 | 14 | 9  | 40 | 30 | 11A     | 164   |
| 240     | 10 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 161   |
| 241     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 154   |
| 242     | 15 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 155   |
| 243     | 25 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 165   |
| 244     | 15 | 36 | 30 | 14 | 10 | 20 | 30 | 11A     | 155   |
| 245     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 164   |
| 246     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 159   |
| 247     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 154   |
| 248     | 10 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 149   |
| 249     | 5  | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 144   |
| 250     | 5  | 36 | 30 | 14 | 5  | 20 | 30 | 11A     | 140   |
| 251     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 154   |
| 252     | 25 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 164   |
| 253     | 25 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 174   |
| 254     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 164   |
| 255     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A     | 164   |
| 256     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A     | 154   |
| 257     | 25 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 166   |
| 258     | 15 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 156   |
| 259     | 25 | 36 | 30 | 16 | 9  | 20 | 30 | 11A     | 166   |
| 260     | 15 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 166   |
| 261     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 186   |
| 262     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 186   |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 263     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 264     | 25 | 36 | 30 | 18 | 9  | 20 | 30 | 11A     | 16  |
| 265     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 266     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 267     | 15 | 32 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 268     | 25 | 32 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 269     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 270     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 271     | 10 | 36 | 30 | 18 | 5  | 30 | 30 | 11A     | 15  |
| 272     | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 273     | 10 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 274     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 20  |
| 275     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 276     | 15 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 17  |
| 277     | 25 | 36 | 30 | 18 | 9  | 40 | 30 | 11A     | 18  |
| 278     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 20  |
| 279     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 18  |
| 280     | 50 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 22  |
| 281     | 35 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 20  |
| 282     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 20  |
| 283     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 284     | 45 | 4  | 30 | 18 | 9  | 50 | 12 | 11A     | 16  |
| 285     | 45 | 4  | 30 | 16 | 10 | 50 | 12 | 11A     | 16  |
| 286     | 45 | 32 | 30 | 18 | 9  | 50 | 30 | 11A     | 21  |
| 287     | 45 | 4  | 30 | 18 | 10 | 50 | 12 | 11A     | 16  |
| 288     | 45 | 32 | 30 | 16 | 9  | 50 | 30 | 11A     | 21  |
| 289     | 35 | 32 | 30 | 16 | 9  | 50 | 30 | 11A     | 20  |
| 290     | 25 | 12 | 30 | 18 | 9  | 40 | 30 | 11A     | 16  |
| 291     | 25 | 32 | 30 | 18 | 9  | 40 | 30 | 11A     | 18  |
| 292     | 15 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 17  |
| 293     | 25 | 32 | 30 | 18 | 9  | 30 | 30 | 11A     | 17  |
| 294     | 25 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 295     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 296     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 297     | 15 | 32 | 30 | 18 | 9  | 20 | 30 | 11A     | 15  |
| 298     | 10 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 299     | 5  | 32 | 30 | 16 | 5  | 30 | 30 | 11A     | 14  |
| 300     | 25 | 36 | 30 | 16 | 9  | 40 | 30 | 11A     | 18  |
| 301     | 25 | 32 | 30 | 16 | 9  | 40 | 30 | 11A     | 18  |
| 302     | 25 | 36 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 303     | 25 | 36 | 30 | 16 | 10 | 40 | 30 | 11A     | 18  |
| 304     | 25 | 36 | 30 | 14 | 10 | 30 | 30 | 11A     | 17  |
| 305     | 25 | 36 | 30 | 16 | 10 | 30 | 30 | 11A     | 17  |
| 306     | 15 | 32 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING INDEX |
|---------|----|----|----|----|----|----|----|---------------|
| 307     | 25 | 36 | 30 | 14 | 10 | 20 | 30 | 11A 165       |
| 308     | 15 | 36 | 30 | 14 | 10 | 20 | 30 | 11A 155       |
| 309     | 25 | 36 | 30 | 14 | 10 | 20 | 30 | 11A 165       |
| 310     | 25 | 32 | 30 | 14 | 10 | 20 | 30 | 11A 161       |
| 311     | 10 | 36 | 30 | 14 | 5  | 20 | 30 | 11A 145       |
| 312     | 10 | 36 | 30 | 14 | 5  | 20 | 30 | 11A 145       |
| 313     | 5  | 36 | 30 | 14 | 5  | 20 | 30 | 11A 140       |
| 314     | 15 | 36 | 30 | 14 | 9  | 20 | 30 | 11A 154       |
| 315     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 164       |
| 316     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 159       |
| 317     | 5  | 36 | 30 | 14 | 5  | 30 | 30 | 11A 150       |
| 318     | 5  | 36 | 30 | 14 | 9  | 20 | 30 | 11A 144       |
| 319     | 10 | 36 | 30 | 14 | 5  | 30 | 30 | 11A 155       |
| 320     | 10 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 159       |
| 321     | 15 | 36 | 30 | 14 | 9  | 30 | 30 | 11A 164       |
| 322     | 25 | 32 | 30 | 14 | 9  | 30 | 30 | 11A 170       |
| 323     | 15 | 32 | 30 | 14 | 9  | 30 | 30 | 11A 160       |
| 324     | 10 | 32 | 30 | 14 | 5  | 40 | 30 | 11A 161       |
| 325     | 5  | 32 | 30 | 14 | 5  | 40 | 30 | 11A 156       |
| 326     | 10 | 32 | 30 | 14 | 9  | 40 | 30 | 11A 165       |
| 327     | 5  | 36 | 30 | 14 | 5  | 40 | 30 | 11A 160       |
| 328     | 10 | 36 | 30 | 14 | 5  | 40 | 30 | 11A 165       |
| 329     | 15 | 36 | 30 | 14 | 9  | 40 | 30 | 11A 174       |
| 330     | 25 | 36 | 30 | 14 | 10 | 40 | 30 | 11A 185       |
| 331     | 15 | 36 | 30 | 14 | 10 | 50 | 30 | 11A 185       |
| 332     | 35 | 36 | 30 | 14 | 10 | 50 | 30 | 11A 205       |
| 333     | 35 | 36 | 30 | 16 | 10 | 50 | 30 | 11A 207       |
| 334     | 25 | 36 | 30 | 18 | 10 | 50 | 30 | 11A 199       |
| 335     | 25 | 36 | 30 | 16 | 10 | 50 | 30 | 11A 197       |
| 336     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A 209       |
| 337     | 25 | 36 | 30 | 18 | 10 | 40 | 30 | 11A 189       |
| 338     | 25 | 36 | 30 | 18 | 10 | 30 | 30 | 11A 179       |
| 339     | 25 | 36 | 30 | 18 | 9  | 30 | 30 | 11A 178       |
| 340     | 25 | 36 | 30 | 18 | 10 | 30 | 30 | 11A 179       |
| 341     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A 209       |
| 342     | 35 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 208       |
| 343     | 45 | 36 | 30 | 18 | 9  | 50 | 30 | 11A 218       |
| 344     | 35 | 4  | 30 | 18 | 9  | 50 | 30 | 11A 176       |
| 345     | 25 | 4  | 30 | 18 | 9  | 50 | 30 | 11A 166       |
| 346     | 35 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 177       |
| 347     | 50 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 192       |
| 348     | 50 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 192       |
| 349     | 50 | 4  | 30 | 4  | 10 | 50 | 18 | 11C 166       |
| 350     | 50 | 4  | 30 | 18 | 9  | 50 | 30 | 11A 191       |



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DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 351     | 45 | 4  | 30 | 18 | 9  | 50 | 30 | 11A     | 18  |
| 352     | 35 | 4  | 30 | 18 | 9  | 50 | 30 | 11A     | 17  |
| 353     | 35 | 4  | 30 | 18 | 9  | 50 | 30 | 11A     | 17  |
| 354     | 50 | 4  | 30 | 18 | 9  | 50 | 30 | 11A     | 19  |
| 355     | 35 | 4  | 30 | 18 | 9  | 50 | 30 | 11A     | 17  |
| 356     | 45 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 21  |
| 357     | 50 | 36 | 30 | 18 | 9  | 50 | 30 | 11A     | 22  |
| 358     | 35 | 36 | 30 | 18 | 10 | 30 | 30 | 11A     | 18  |
| 359     | 45 | 36 | 30 | 16 | 10 | 50 | 30 | 11A     | 21  |
| 360     | 45 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 361     | 45 | 36 | 30 | 14 | 10 | 50 | 30 | 11A     | 21  |
| 362     | 35 | 36 | 30 | 14 | 10 | 50 | 30 | 11A     | 20  |
| 363     | 35 | 36 | 30 | 18 | 10 | 50 | 30 | 11A     | 20  |
| 364     | 35 | 36 | 30 | 18 | 10 | 50 | 24 | 11A     | 20  |
| 365     | 35 | 36 | 30 | 14 | 10 | 50 | 24 | 11A     | 19  |
| 366     | 35 | 36 | 30 | 14 | 10 | 50 | 30 | 11A     | 20  |
| 367     | 35 | 32 | 30 | 14 | 10 | 50 | 24 | 11A     | 19  |
| 368     | 25 | 32 | 30 | 14 | 10 | 30 | 30 | 11A     | 17  |
| 369     | 15 | 32 | 30 | 14 | 9  | 30 | 30 | 11A     | 16  |
| 370     | 10 | 32 | 30 | 14 | 9  | 30 | 30 | 11A     | 15  |
| 371     | 5  | 32 | 30 | 14 | 5  | 30 | 30 | 11A     | 14  |
| 372     | 10 | 32 | 30 | 14 | 9  | 30 | 30 | 11A     | 15  |
| 373     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 374     | 10 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 375     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 376     | 25 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 377     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 378     | 10 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 379     | 5  | 32 | 30 | 16 | 5  | 30 | 30 | 11A     | 14  |
| 380     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 381     | 15 | 32 | 30 | 14 | 9  | 20 | 30 | 11A     | 15  |
| 382     | 15 | 32 | 30 | 16 | 9  | 20 | 30 | 11A     | 15  |
| 383     | 25 | 32 | 30 | 14 | 10 | 20 | 30 | 11A     | 16  |
| 384     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 385     | 25 | 32 | 30 | 16 | 10 | 30 | 30 | 11A     | 17  |
| 386     | 25 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 17  |
| 387     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 388     | 10 | 32 | 30 | 16 | 5  | 30 | 30 | 11A     | 15  |
| 389     | 10 | 32 | 30 | 16 | 5  | 20 | 30 | 11A     | 14  |
| 390     | 5  | 32 | 30 | 16 | 5  | 20 | 30 | 11A     | 13  |
| 391     | 5  | 32 | 30 | 16 | 9  | 20 | 30 | 11A     | 14  |
| 392     | 5  | 32 | 30 | 16 | 5  | 20 | 30 | 11A     | 13  |
| 393     | 15 | 32 | 30 | 16 | 5  | 30 | 30 | 11A     | 15  |
| 394     | 25 | 32 | 30 | 16 | 10 | 30 | 30 | 11A     | 17  |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

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| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING INDEX |
|---------|----|----|----|----|----|----|----|---------------|
| 395     | 25 | 32 | 30 | 14 | 10 | 30 | 30 | 11A 171       |
| 396     | 10 | 32 | 30 | 14 | 9  | 30 | 30 | 11A 155       |
| 397     | 25 | 32 | 30 | 14 | 10 | 30 | 24 | 11A 165       |
| 398     | 25 | 32 | 30 | 14 | 10 | 40 | 24 | 11A 175       |
| 399     | 35 | 32 | 30 | 14 | 9  | 50 | 24 | 11A 194       |
| 400     | 15 | 32 | 30 | 14 | 5  | 40 | 24 | 11A 160       |
| 401     | 15 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 152       |
| 402     | 10 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 147       |
| 403     | 5  | 32 | 30 | 14 | 9  | 30 | 24 | 11A 144       |
| 404     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 405     | 5  | 32 | 30 | 16 | 9  | 20 | 24 | 11A 136       |
| 406     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 407     | 5  | 32 | 30 | 14 | 5  | 40 | 24 | 11A 150       |
| 408     | 10 | 32 | 30 | 14 | 5  | 40 | 24 | 11A 155       |
| 409     | 10 | 32 | 30 | 14 | 5  | 40 | 24 | 11A 155       |
| 410     | 15 | 32 | 30 | 14 | 9  | 40 | 24 | 11A 164       |
| 411     | 25 | 32 | 30 | 14 | 9  | 40 | 24 | 11A 174       |
| 412     | 25 | 32 | 30 | 14 | 9  | 30 | 24 | 11A 164       |
| 413     | 15 | 32 | 30 | 14 | 9  | 30 | 24 | 11A 154       |
| 414     | 5  | 32 | 30 | 18 | 9  | 20 | 24 | 11A 138       |
| 415     | 5  | 32 | 30 | 16 | 9  | 20 | 24 | 11A 136       |
| 416     | 10 | 32 | 30 | 18 | 5  | 20 | 24 | 11A 139       |
| 417     | 25 | 32 | 30 | 16 | 10 | 20 | 24 | 11A 157       |
| 418     | 10 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 147       |
| 419     | 10 | 32 | 30 | 16 | 5  | 20 | 24 | 11A 137       |
| 420     | 15 | 32 | 30 | 16 | 9  | 30 | 24 | 11A 156       |
| 421     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 422     | 15 | 32 | 30 | 16 | 10 | 30 | 30 | 11A 163       |
| 423     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A 152       |
| 424     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A 152       |
| 425     | 5  | 32 | 30 | 16 | 9  | 20 | 30 | 11A 142       |
| 426     | 10 | 32 | 30 | 16 | 5  | 20 | 30 | 11A 143       |
| 427     | 15 | 32 | 30 | 16 | 5  | 20 | 30 | 11A 148       |
| 428     | 25 | 32 | 30 | 16 | 10 | 20 | 30 | 11A 163       |
| 429     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A 152       |
| 430     | 5  | 32 | 30 | 16 | 5  | 30 | 30 | 11A 148       |
| 431     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A 152       |
| 432     | 35 | 32 | 30 | 16 | 5  | 30 | 30 | 11A 178       |
| 433     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A 162       |
| 434     | 10 | 32 | 30 | 16 | 9  | 30 | 30 | 11A 157       |
| 435     | 10 | 12 | 30 | 16 | 9  | 30 | 30 | 11A 137       |
| 436     | 15 | 12 | 30 | 16 | 9  | 30 | 30 | 11A 142       |
| 437     | 25 | 12 | 30 | 16 | 9  | 30 | 30 | 11A 152       |
| 438     | 15 | 12 | 30 | 16 | 9  | 30 | 30 | 11A 142       |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 439     | 25 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 440     | 15 | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 16  |
| 441     | 15 | 32 | 30 | 16 | 9  | 40 | 30 | 11A     | 17  |
| 442     | 15 | 12 | 30 | 16 | 9  | 40 | 30 | 11A     | 15  |
| 443     | 25 | 12 | 30 | 16 | 9  | 40 | 30 | 11A     | 16  |
| 444     | 35 | 12 | 30 | 16 | 9  | 50 | 30 | 11A     | 18  |
| 445     | 45 | 12 | 30 | 16 | 9  | 50 | 30 | 11A     | 19  |
| 446     | 45 | 32 | 30 | 16 | 9  | 50 | 30 | 11A     | 21  |
| 447     | 35 | 4  | 30 | 16 | 9  | 50 | 30 | 11A     | 17  |
| 448     | 35 | 4  | 30 | 16 | 9  | 50 | 12 | 11A     | 15  |
| 449     | 45 | 4  | 30 | 16 | 10 | 50 | 12 | 11A     | 16  |
| 450     | 50 | 4  | 30 | 16 | 10 | 50 | 12 | 11A     | 17  |
| 451     | 45 | 4  | 30 | 16 | 10 | 50 | 12 | 11A     | 16  |
| 452     | 45 | 4  | 30 | 18 | 10 | 50 | 12 | 11A     | 16  |
| 453     | 45 | 32 | 30 | 16 | 10 | 50 | 12 | 11A     | 19  |
| 454     | 45 | 12 | 30 | 18 | 10 | 50 | 12 | 11A     | 17  |
| 455     | 50 | 32 | 30 | 18 | 10 | 50 | 30 | 11A     | 22  |
| 456     | 45 | 32 | 30 | 16 | 10 | 50 | 30 | 11A     | 21  |
| 457     | 50 | 32 | 30 | 18 | 10 | 50 | 30 | 11A     | 22  |
| 458     | 45 | 32 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 459     | 50 | 12 | 30 | 18 | 10 | 50 | 30 | 11A     | 20  |
| 460     | 50 | 12 | 30 | 18 | 10 | 50 | 12 | 11A     | 18  |
| 461     | 50 | 22 | 30 | 18 | 10 | 50 | 12 | 11A     | 20  |
| 462     | 45 | 32 | 30 | 18 | 10 | 50 | 12 | 11A     | 19  |
| 463     | 45 | 32 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 464     | 50 | 32 | 30 | 18 | 10 | 50 | 12 | 11A     | 20  |
| 465     | 50 | 32 | 30 | 18 | 10 | 50 | 12 | 11A     | 20  |
| 466     | 45 | 32 | 30 | 16 | 9  | 50 | 12 | 11A     | 19  |
| 467     | 45 | 32 | 30 | 18 | 10 | 50 | 12 | 11A     | 19  |
| 468     | 50 | 32 | 30 | 16 | 10 | 50 | 12 | 11A     | 20  |
| 469     | 45 | 4  | 30 | 16 | 10 | 50 | 12 | 11A     | 16  |
| 470     | 45 | 4  | 30 | 16 | 10 | 50 | 30 | 11A     | 18  |
| 471     | 50 | 4  | 30 | 16 | 10 | 50 | 30 | 11A     | 19  |
| 472     | 45 | 4  | 30 | 16 | 10 | 50 | 30 | 11A     | 18  |
| 473     | 45 | 4  | 30 | 16 | 9  | 50 | 30 | 11A     | 18  |
| 474     | 35 | 4  | 30 | 16 | 9  | 50 | 30 | 11A     | 17  |
| 475     | 35 | 12 | 30 | 16 | 9  | 50 | 30 | 11A     | 18  |
| 476     | 25 | 12 | 30 | 16 | 5  | 40 | 30 | 11A     | 15  |
| 477     | 15 | 12 | 30 | 16 | 9  | 40 | 30 | 11A     | 15  |
| 478     | 10 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 13  |
| 479     | 25 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 480     | 10 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 13  |
| 481     | 25 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 482     | 35 | 32 | 30 | 16 | 9  | 50 | 30 | 11A     | 20  |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

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 DRASTIC PARAMETERS, SETTINGS AND INDICES  
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| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING INDEX |
|---------|----|----|----|----|----|----|----|---------------|
| 483     | 25 | 32 | 30 | 16 | 9  | 30 | 30 | 11A 172       |
| 484     | 35 | 32 | 30 | 16 | 9  | 50 | 24 | 11A 196       |
| 485     | 15 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 152       |
| 486     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 487     | 10 | 32 | 30 | 16 | 5  | 30 | 30 | 11A 153       |
| 488     | 15 | 32 | 30 | 16 | 5  | 30 | 30 | 11A 158       |
| 489     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 490     | 5  | 32 | 30 | 16 | 9  | 30 | 24 | 11A 146       |
| 491     | 25 | 32 | 30 | 16 | 10 | 30 | 24 | 11A 167       |
| 492     | 10 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 147       |
| 493     | 10 | 32 | 30 | 16 | 5  | 20 | 24 | 11A 137       |
| 494     | 15 | 32 | 30 | 16 | 5  | 20 | 24 | 11A 142       |
| 495     | 25 | 32 | 30 | 16 | 9  | 20 | 24 | 11A 156       |
| 496     | 25 | 32 | 30 | 16 | 9  | 30 | 24 | 11A 166       |
| 497     | 15 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 152       |
| 498     | 15 | 32 | 30 | 16 | 5  | 20 | 24 | 11A 142       |
| 499     | 10 | 32 | 30 | 16 | 9  | 20 | 24 | 11A 141       |
| 500     | 25 | 32 | 30 | 16 | 9  | 50 | 24 | 11A 186       |
| 501     | 15 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 152       |
| 502     | 10 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 147       |
| 503     | 15 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 152       |
| 504     | 25 | 32 | 30 | 16 | 5  | 50 | 24 | 11A 182       |
| 505     | 25 | 32 | 30 | 16 | 9  | 50 | 24 | 11A 186       |
| 506     | 25 | 32 | 30 | 16 | 9  | 50 | 24 | 11A 186       |
| 507     | 25 | 32 | 30 | 16 | 5  | 30 | 24 | 11A 162       |
| 508     | 25 | 32 | 30 | 16 | 9  | 30 | 24 | 11A 166       |
| 509     | 15 | 32 | 30 | 16 | 9  | 30 | 24 | 11A 156       |
| 510     | 15 | 32 | 30 | 16 | 9  | 20 | 24 | 11A 146       |
| 511     | 15 | 12 | 30 | 16 | 9  | 30 | 24 | 11A 136       |
| 512     | 25 | 12 | 30 | 16 | 9  | 50 | 24 | 11A 166       |
| 513     | 15 | 12 | 30 | 16 | 5  | 40 | 30 | 11A 148       |
| 514     | 10 | 12 | 30 | 16 | 9  | 40 | 30 | 11A 147       |
| 515     | 5  | 12 | 30 | 16 | 5  | 40 | 30 | 11A 138       |
| 516     | 25 | 12 | 30 | 16 | 9  | 40 | 30 | 11A 162       |
| 517     | 25 | 4  | 30 | 16 | 9  | 40 | 30 | 11A 154       |
| 518     | 35 | 4  | 30 | 16 | 9  | 50 | 30 | 11A 174       |
| 519     | 25 | 4  | 30 | 16 | 9  | 40 | 30 | 11A 154       |
| 520     | 15 | 12 | 30 | 18 | 5  | 40 | 30 | 11A 150       |
| 521     | 25 | 4  | 30 | 18 | 9  | 40 | 30 | 11A 156       |
| 522     | 35 | 4  | 30 | 18 | 9  | 50 | 30 | 11A 176       |
| 523     | 45 | 4  | 30 | 18 | 9  | 50 | 30 | 11A 186       |
| 524     | 50 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 192       |
| 525     | 35 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 177       |
| 526     | 45 | 4  | 30 | 18 | 10 | 50 | 30 | 11A 187       |

HERNANDO COUNTY, FLORIDAN AQUIFER (Unconfined)

DRASTIC PARAMETERS, SETTINGS AND INDICES

| POLYGON | D  | R  | A  | S  | T  | I  | C  | SETTING | IND |
|---------|----|----|----|----|----|----|----|---------|-----|
| 527     | 45 | 32 | 30 | 18 | 10 | 50 | 30 | 11A     | 21  |
| 528     | 35 | 4  | 30 | 16 | 10 | 50 | 30 | 11A     | 17  |
| 529     | 25 | 4  | 30 | 16 | 10 | 40 | 30 | 11A     | 15  |
| 530     | 50 | 4  | 30 | 16 | 10 | 50 | 30 | 11A     | 19  |
| 531     | 45 | 4  | 30 | 16 | 9  | 50 | 30 | 11A     | 18  |
| 532     | 5  | 32 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |
| 533     | 15 | 36 | 30 | 18 | 9  | 30 | 30 | 11A     | 16  |
| 534     | 25 | 12 | 30 | 16 | 9  | 30 | 30 | 11A     | 15  |

## REFERENCES

- Adams, E.P., Sample, D.J. and L.C. Woehlche, 1984, An Evaluation of Wastewater Reuse Policy Options for the South Florida Water Management District, Technical Publication 84-6.
- Adams, A., 1985, Ground water Supplement to the Wysong-Panasoffee Study, Southwest Florida Water Management District.
- Adams, A., 1983, Water/Wastewater Reuse, Prepared by the Project Development and Management Section, Southwest Florida Water Management District.
- Aller, L., Bennett, T., Lehr, J. H., Petty, R. J. 1985, DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings, National Water Well Association, Worthington, Ohio.
- American Geological Institute, 1976, Dictionary of Geological Terms, Anchor Press, Garden City, New York.
- Anderson, W., and Faulkner, G. L., 1973, Quantity and Quality of Surface Water in Marion County, Florida. Florida Bureau of Geology Map Series 55.
- Anderson, J. R., Hardy, E. E., Roach, J. T., and Witmer, R. F., 1976, A Land Use and Cover Classification System for Use With Remote Sensor Data, USGS Professional Paper - 964.
- Anderson, Warren and Charles P. Laughlin, 1982, Geohydrology of the Floridan aquifer in the Withlacoochee River Basin of the Southwest Florida Water Management District. USGS, WRI DFR 82-331.
- Applin, P. L., and Applin, E. R., 1965, The Comanche series and associated rocks in the subsurface in central and south Florida: U.S. Geological Survey Professional Paper 447,84 p.
- Barr, G. L. and Schiner, G. R., 1984, Potentiometric Surface of the Floridan Aquifer, Southwest Florida Water Management District, May, 1984; U. S. Geological Survey Open-File Report 84-620.
- Beck, B. F. and Sinclair, W. C., 1986, Sinkholes in Florida, an Introduction, The Florida Sinkhole Research Institute, US Geological Survey, Orlando, Florida, Report No. 85-86-4.
- Bouno, A., Spechler, R. M., Barr, G. L., and Wolansky, R. M., 1979, Generalized thickness of the confining bed overlying the Floridan aquifer, Southwest Florida Water Management District: U. S. Geological Survey Water-Resources Investigation 79-1171.

- Bouno, A., and Rutledge, A. T., 1978, Configuration of the Top of the Floridan Aquifer, Southwest Florida Water Management District. WRI 78-34.
- Bradley, J. T., 1972, Climatography of the United States No. 60-8: Climate of Florida, U.S. Dept. Comm, National Oceanic Atmos. Admin.
- Brooks, H. K., 1981, Physiographic divisions of Florida Map Report, Florida Cooperative Extension Service, University of Florida, Gainesville, Florida.
- Broeck, W. B., 1984, Leaking Underground Storage Tanks in Marion County, Florida: Report to the Board of County Commissioners, Marion County, Florida.
- Bureau of Economic and Business Research, College of Business Administration, 1985, 1985 Florida Statistical Abstract: Nineteenth Edition, University Presses of Florida.
- Camp, Dresser and McKee, Inc., 1982, Regional Water Supply Needs and Sources, 1982-1995, Update Report, prepared for WCRWSA.
- Carroll, D., 1970, Rock Weathering: New York, Plenum Press, p101-2.
- Causseaux, K. W., and J. D. Fretwell, 1983, Chloride concentrations in the coastal margins of the Floridan aquifer, SWFWMD, USGS, WRI82-4070.
- Chapter 373, Florida Statutes.
- Chen, C. S., 1965, The Regional Lithostratigraphic Analysis of Paleocene and Eocene Rocks of Florida: Florida Geological Survey Bulletin 45, 105 p.
- Cherry, R. N., J. W. Stewart, and J. A. Mann, 1970, General Hydrology of the Middle Gulf area, Florida, USGS, Report of Investigation, No. 56, 96p.
- Cooper, H. H., Kohout, P. A., Henry, H. R., and Glover, R. E., 1964, Sea Water In Coastal Aquifers: U. S. Geological Survey Water Supply Paper 1613-C, 84 p.
- Corral, M. A., 1983, Distribution of selected chemical constituents in water from the Floridan aquifer, Southwest Florida Water Management District, USGS, WRI Report 83-4041.
- Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T., 1979, Classification of wetlands and deep water habitats of the United States. U. S. Fish Wildlife Service, Olf. Bio. Serv. FWS/OBS-79/31, 103 p.

- Crane, J. J., and Dean, W. G., 1984, Preliminary Hydrocarbon Contamination Assessment, Marion County Groundwater Sites: Department of Operations, FDER.
- Department of Community Affairs, 1986. Minimum Criteria For Review of Local Government Comprehensive Plans and Determination of Compliance. Chapter 9J-5, Florida Administrative Code.
- Duerr, A.D. and Sohm, J.E., 1983, Estimated Water Use in Southwest Florida 1981, and Summary of Annual Water Use, 1970, 1975, and 1977-1981, DFR 83-45, United States Geological Survey: 1985.
- Environmental Policy Institute, 1982. Survey of the Water Conservation Programs in the Fifty States: Model Water Conservation Program for the Nation, Office of Water Research and Technology, Washington, D.C.
- Faulkner, Glen L., 1976, Flow analysis of Karst systems with well developed underground circulation. Karst Hydrology and Water Resources, Water Resources Publications.
- Faulkner, G. L., 1970, Geohydrology of the Cross Florida Barge Canal Area with Special Reference to the Ocala Vicinity, USGS Publication, OF-02340. 222 p.
- Faulkner, G. L., 1973, Geohydrology of the Cross Florida Barge Canal Area With Special Reference to Ocala Vicinity. U. S. Geological Survey Water Resources Investigation 1-73. 117p.
- Fernald, E. A., and Patton, D. J., 1984, Water Resources Atlas of Florida, Florida State University, Tallahassee, Fl, 291p.
- Fisk, D., 1983, Groundwater Flow Boundaries (Draft), Map Suwannee River Water Management District, Live Oak, Florida.
- Florida Department of Environmental Regulation, 1986. State Water Use Plan, FDER, Tallahassee, Florida.
- Florida State Legislature, 1985. Local Government Comprehensive Planning and Land Development Regulation Act. Chapter 163, Florida Statutes.
- Florida Department of Environmental Regulation, 1984, Water Quality Standards, Chapter 17-22, Florida Administrative Code.
- Franks, B. J., 1981, Land Application of Impact on Ground-Water Quality, USGS, Water Resources Investigations 81-3, Tallahassee, FL. 37 p.



- Franks, B. S., 1981, Land Application of Domestic Wastewater in Florida Statewide Assessment of Impact on Ground-Water Quality, USGS Water-Resources Investigation 81-3, Tallahassee, FL, 37p.
- Freeze, R. A. and Cherry, J. A., 1979, Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
- Freeze, R. A., and Witherspoon, P. A., 1966, Theoretical Analysis of Regional Groundwater Flow: 1. Analytical and Numerical Solutions to the Mathematical Model: Water Resources Research, Volume 2, Number 4.
- Fretwell, J. D., 1985, Water Resources and Effects of Development in Hernando County, Florida, US Geological Survey, WRI 84-4320.
- Fretwell, J. D., 1983. Ground-water Resources of Coastal Citrus, Hernando, and Southwestern Levy counties, Florida, USGS, WRI-Report 83-4079, 87p.
- Gant, R. D., 1982, Directory of lakes within the Southwest Florida Water Management District, 1982-83; Southwest Florida Water Management District, Brooksville, FL.
- German, E., 1978, The Hydrology of Lake Rousseau, West-Central Florida, USGS.
- Gilboy, A. E., 1985, Hydrogeology of the Southwest Florida Water Management District, Southwest Florida Water Management District: Technical Report 85-01, 18 p.
- Grubb, H. F., Rutledge, A. T., 1979, Longterm Water Supply potential, Green Swamp Area, Florida, USGS; WRI; 78-99, 1978.
- Hampson, P. S., 1984, Wetlands in Florida, U. S. Geological Survey, Map Series No. 109.
- Healy, H. G., 1975, Terraces and Shorelines of Florida: Florida Bureau of Geology Map Series 71.
- Heath, Ralph C., 1983, Basic Ground-water Hydrology, USGS Water-supply paper 2220.
- Hernando County Planning Department, 1986, Hernando County Proposed Existing Land Use Maps, Hernando County.
- Hernando County Planning Department, 1986, Hernando County Quick Reference Zoning Map, Hernando County.
- Hickey, J. J., 1979, Hydrogeologic data for the South Cross Bayou subsurface injection test site, Pinellas County, Florida: U. S. Geological Survey, Open-File Report 78-575, 87 p.

- Hughes, G. H., 1974, Water Balance of Lake Kerr; A Deductive Study of a Land Locked Lake in North Central Florida. Florida Bureau of Geology, Report of Investigations 73. p11-20.
- Jones, K. C., 1985a, Northern Withlacoochee Hydrologic Investigation, SWFWMD.
- Lappenbusch, 1984, Symposium of Ground Water Issues, American Geophysical Society, 175 p.
- Law Engineering, Inc. 1982, Hydrologic Information for Circle Square Ranch, Ocala, Florida.
- Lopez, M., 1983, Hydrobiological Monitoring fo the Morris Bridge Wellfield, Hillsborough County, Florida - A Review: 1977-1982. Environmental Section Technical Report 1983-5, SWFWMD, Brooksville, FL.
- MacNeil, F. S., 1950, Pleistocene Shore Lines in Florida and Georgia: U. S. Geological Survey Professional Paper 221-F, 95-104 p.
- McKee, J. F., and Wolf, N. W., 1963, Water Quality Criteria: California State Water Quality Control Board Publication 3-A, 548 p.
- Miller, J. A., 1984, Hydrogeologic framework of the Floridan aquifer system in Florida and Parts of Georgia, South Carolina, and Alabama: U. S. Geological Survey Professional Paper 1403-B.
- Miller, J. A., 1982, Thickness of the upper permeable zone of the Tertiary limestone aquifer system, southeastern United States: U. S. Geological Survey Open-File Report 81-1179.
- Mills, L. R. and Ryder, P. D., 1977, Saltwater Intrusion in the Floridan Aquifer, Coastal Citrus and Hernando Counties, Florida, 1975: U. S. Geological Survey Water Resources Investigations Open-File Report 77-100.
- Moore, B. E., Bernard P. Sagik and Charles A. Sorcker, 1977, An Assessment of Potential Health Risks Associated with Land Disposal of Residual Sludges in: Proceedings of the Third National Conference on Sludge Management, Disposal and Utilization, December 14-16, 1976, Miami Beach, FL, 210p.
- Moore, D. L., Walker, S.T., Martin, D. W., Rauch, J. T., 1986, Ambient Monitor Network Supplemental Report, SWFWMD.
- Moore, D. L., Walker, S. T., Martin, D. W., Rauch, J. T., 1986, Design and Establishment of a Background Ground-Water Quality Monitor Network in the SWFWMD, SWFWMD with DER.

- Moore, D.L., Martin, D.W., Walker, S.T., and Rauch, J.T., 1986  
Ambient Groundwater Quality Monitoring Program: General  
Water Use Maps and Summary Reports. Southwest Florida Water  
Management District.
- Mycyk, R., 1986, Water Resources Data, Florida Water Year 1984,  
Vol. 3A, U.S.G.S., Report FL-84-3A.
- National Oceanic and Atmospheric Administration, NOAA, 1903-84,  
Climatological data, Florida, annual summaries 1902-83  
(published annually).
- Parker, G. G., Ferguson, G. E., Love, S. K., and Others, 1955,  
Water Resources of Southeastern Florida With Special  
Reference to the Geology and Ground Water of the Miami Area:  
U.S. Geological Survey Water Supply Paper 1255, 965p.
- Perry, R.H. and Chilton, C.H., 1973, Chemical Engineer's  
Handbook, McGraw-Hill Book Company.
- Planning and Performance Evaluation Section of the SWFWMD, 1984,  
Water Conservation Options Inventory (draft), SWFWMD.
- Pride, R. W., Meyer, F. W., and Cherry, R. N., 1966, Hydrology of  
Green Swamp Area in Central Florida; Florida Geological  
Survey Report of Investigations No. 42.
- Puri, H. S. and Vernon, R. O., 1964, Summary of the Geology of  
Florida and a Guidebook to the Classic Exposures, Florida  
Geol. Surv., Sp pub 5, 312p.
- Puri, H. S., 1967, Stratigraphy and Zonation of the Ocala Group:  
Florida Geological Survey Bulletin 38. 248 p.
- Ritter, D.F., 1979, Process GeoMorphology, WM. C. Brown Company  
Publishers, Dubuque, Iowa.
- Rochow, T. F. and Lopez, M., 1984, Hydrobiological Monitoring of  
Cypress Domes in the Green Swamp Area of Lake and Sumter  
Counties, Florida, 1979-1982. Environmental Section  
Technical Report 1984-1 SWFWMD, Brooksville, FL.
- Rochow, T. F., 1985, Hydrologic and Vegetational Changes  
Resulting from Underground Pumping at the Cypress Creek  
Wellfield, Pasco County, FL., Florida Scientist 48:65-80.
- Rohrer, K., 1984, Hydrologic Reconnaissance of Marion County,  
Technical Publication, SJ 84-6. SJWMD, Palatka, Florida.
- Rosenau, J. C., Faulkner, G. L., Hendry, C. W. and Hull, R. W.,  
1977, Springs of Florida, Florida Bureau of Geology and  
Florida Department of Environmental Regulation, Bull 31.

- Russell and Axon and Seaburn and Robertson, 1986, Draft, Sumter County Master Plan for Water Supply, Prepared for the Withlacoochee River Water Supply Authority.
- Russell and Axon, Inc., Seaborn and Robertson, Inc., 1985, Water System Master Plan Study for Hernando County, Prepared for the Withlacoochee Regional Water Supply Authority.
- Russell and Axon, Inc., 1985, Master Plan for Water Supply, Marion County, Prepared for the Withlacoochee Regional Water Supply Authority.
- Rutledge, A. T., 1978, Hydrologic reconnaissance of Tsala Apopka Lake, Citrus County, Florida, USGS, DFR 77-89.
- Ryder, P. A., 1985, Hydrology of the Floridan Aquifer System in West-Central Florida, U.S. Geological Survey Professional Paper 1403-F.
- Ryder, P. A., 1982, Digital Model of Predevelopment Flow in the Tertiary Limestone (Floridan) Aquifer System in West-Coast Florida, U.S. Geological Survey WRI81-54.
- Sather, J. H. and Smith, R. D., 1984, an Overview of Major Wetlands Functions and Values, USFWS FWS/OBS-84/18 68 pp.
- Seaburn and Robertson, Inc., 1985, Hydrologic Aspects of Water Supply Development in Marion County, Florida through 2030. Prepared for the Withlacoochee Regional Water Supply Authority.
- Shampine, W. J., 1975c, Dissolved solids in water from the upper part of the Floridan aquifer in Florida (2d ed.): Florida Bureau of Geology Map Series 14.
- Sinclair, William C., 1978, Preliminary evaluation of the water supply potential of the spring-river system in the Weeki Wachee area and the lower Withlacoochee River, West-Central Florida, USGS, WRI Report 78-74, 40p.
- Sinclair, W. C. and Stewart, J. W., Knutilla, R. L., Gilboy, A. E., Miller, R. L., 1985, Types Features, and Occurrence of Sinkholes in the Karst of West-Central, Florida, US Geological Survey, WRI 85-4126.
- Solley, W.B., Chase, E.B., Mann, W.B. IV, 1983, Estimated Use of Water in the United States in 1980, USGS Circular 1001. Washington, D.C.
- Smith, S. K. and Sincich, F., 1986, Projections of Florida Population by County 1985-2020, Bureau of Economic and Business Research, University of Florida.

- Southwest Florida Water Management District (SWFWMD), 1978, District Water Management Plan (DWMP), Brooksville, FL.
- Southwest Florida Water Management District, 1985. The Green Swamp Project - Engineering Report, SWFWMD.
- Southwest Florida Water Management District, 1987, Aquifer Characteristics Within the Southwest Floridan Water Management District, SWFWMD, Brooksville, FL.
- Stewart, H. G., 1966, Ground-Water Resources of Polk County: Florida Geological Survey Report of Investigations 44, 170 p.
- Stewart, J. W., 1980, Areas of Natural Recharge to the Floridan Aquifer in Florida, Floridan Bureau of Geology, MS 98.
- Stewart, Joel, 1985. An Environmental Evaluation of Direct Water Reuse in the St. Johns River Water Management District, Technical Publication SJ 85-2, March 1985.
- Stieglitz, E.L., Estimated Water Use in the Southwest Florida Water Management District 1982, 1983, 1984 and 1985, Southwest Florida Water Management District, 1984 and 1985.
- Stieglitz, E. L., 1985, Population Estimates and Projections 1980-2020, Southwest Florida Water Management District, Brooksville, FL.
- Stringfield, V. T., and LeGrand, H. E., 1966, Hydrology of Limestone Terraces in the Coastal Plain of Southeastern United States: Geological Society of American, Spec. Paper 93. p 46.
- Taylor, G. F., 1978, Water Resources of the Waccasassa River Basin and adjacent areas, Florida, USGS, WRI No. 77-101.
- Taylor, G. F., 1977, Hydrology of Lake Panasoffkee, Sumter County, Florida, USGS.
- Thabaraj, G.J. and H.L. Rhodes, 1985, Wastewater Reuse in Florida, A Resource Management Perspective, FDER Bureau of Wastewater Management and Grants, Tallahassee, Florida.
- Tibbals, C. H., and Grubb, H. F., Aquifer Test Results, Green Swamp Area, Florida, USGS, WRI 82-35, 1982.
- Tibbals, C. H., 1975, Recharge Areas in the Floridan Aquifer in Seminole County and Vicinity, Florida.
- U. S. Department of Agriculture, Florida Crop and Livestock Reporting Service, 1986.

- U. S. Department of Agriculture (USDA), Soil Conservation Service, Soil Survey of Marion County, Florida.
- U. S. Environmental Protection Agency, 1977, National secondary drinking water regulations: Federal Register, v. 42, no. 62, March 31, p 17143-17146.
- U. S. Geological Survey, 1967 (Modified 1974) Hydrologic Unit Map-1974, State of Florida.
- U. S. Geological Survey (USGS), 1985, Water Resources Data Florida Water Year 1985, U. S. Geological Survey Water Data Report FL-85-3A, Southwest Florida Surface Water and St. Johns Water Management District FL-85-1A.
- Vernon, R. O., 1951, Geology of Citrus and Levy Counties Florida, Florida Geol. Surv., Bull 33, 256p.
- Viessman, W., Knapp, J. W., Lewis, G. L., Harbaugh, T.E., 1977, Introduction to Hydrology, New York, Harper and Row. 704p.
- Visher, F. N. and Hughes, G. H., 1975, The differences between rainfall and Potential Evaporation in Florida, U.S. Geol. Surv. Map Series No. 32, 2nd ed.
- Wetterhall, W. S., 1964, Geohydrologic Reconnaissance of Pasco and Southern Hernando Counties, Florida, Florida Geological Survey, RPI-34.
- Wetzel, R. G., 1983, Limnology, 2nd Edition, Saunders Publishing Company.
- White, William A., 1970, Geomorphology of the Florida Peninsula, Florida Bureau of Geology, Bull. 51, 164p.
- Winston, G.O., 1976, Florida's Ocala Uplift is not an Uplift, Bull. of the AAPG, V.60, P. 992-994.
- Wolansky, R.M. and Garbade, J. M., 1981, Generalized Thickness of the Floridan aquifer, Southwest Florida Water Management District, U. S. Geological Survey, OFR80-1288.
- Wolfe, S. H., Reidenauer, J. A., Means, D. B., 1986 (Draft), An Ecological Characterization of the Florida Big Bend.
- Wyrick, Granville G., 1960, The Ground Water Resources of Volusia County, Florida: Florida Geological Survey Report Inv. 22, 65 p.
- Yobbi, D. K., 1983, Trends and fluctuations in the potentiometric surface of the Floridan aquifer, west-central Florida, 1961-80: U. S. Geological Survey Water Resources Investigations 82-4086.

Yon, J. W. and Hendry, C. W., 1972, Part I - Suwannee Limestone  
in Hernando and Pasco Counties, Florida: Florida Bureau of  
Geology Bulletin 54, 42p.

# Spring Hill incorporation effort losing steam

By Larry Bugg

The pro-incorporation forces of Spring Hill are fighting an uphill battle in their attempt to get their issue on the ballot of a referendum.

Recently, State Rep. Chuck Smith, D-Brooksville, said he has not scheduled any public hearings on incorporation because he has not found enough support for a change. There would have to be hearings held this month to warrant a referendum on June 8.

The issue of incorporation was brought before Spring Hill voters in 1986 and voted down by a 3-1 margin.

Francis Carello, the president of the pro-incorporation Committee for Self-Government in Spring Hill, said he has 400 people who have put in writing their support for incorporation. The group sent out 15,000 pamphlets in late February showing the benefits of turning Spring Hill into a city.

"I don't know how many people we need to force a referendum," Carello said. "We have had good response from people, including financial support from individuals who favor incorporation.

"The only person who can make this happen is Representative Smith. No one else could push this issue. There's still two months before a possible election. Mr. Smith has everything he needs from us."

Carello said the committee's finance chairman, Allen Brodd, is working on a projected budget for the proposed city of Spring Hill. Carello said the projected budget should be complete in a few weeks.

Tony Mosca Jr., one of the most outspoken critics of the pro-incorporation movement, said he laughed when he heard that Smith was questioning the incorporation movement's strength.

"I feel very happy that Chuck Smith is listening."

Please see INCORPORATION, page 3



# INCORPORATION

From page 1

Mosca said. "He's quite convinced there is a strong movement against incorporation. I've talked to him several times. He's told me these people (the pro-incorporation people) will have to show him a lot."

Mosca said his group, Citizens Against Incorporation, has more than 3,000 signatures of people who oppose incorporation.

He said his group will meet Thursday, March 30 at 7 p.m. at the Knights of Columbus, 10470 Spring Hill Drive. Mosca said everyone is welcome to attend the meeting including pro-incorporation people.

While the pro-incorporation group seems to be

fighting a losing battle, Mosca said he does not count them out.

"The incorporation movement is alive and well," he said. "They're still out there. They're probably not giving people specific answers."

Mosca said he thought there was not a strong enough tax base for Spring Hill to be able to support a city. He said the residential area of Spring Hill actually has relatively few businesses.

Mosca also said that one of the community's needs, more police, can be met through a multi-service tax assessment of \*10-12 per lot.

## Meeting set to discuss Spring Hill incorporation

News staff report

The Committee against Incorporation will hold an open meeting on the issue of Spring Hill incorporation Thursday, March 30 at 7 p.m. at the Knights of Columbus, 10470 Spring Hill Dr.

Tony Mosca Jr., the chairman of the committee, said supporters of incorporation as well as members of the committee and the general public are invited to attend the meeting.

## LEGAL NOTICE

*Prep's Ex 2*

Application for an original water and/or sewer certificate:

Notice is hereby given pursuant to Section 367.041, Florida Statutes, of the application of CONROCK UTILITY COMPANY to operate water and/or sewer utility to provide service to the following described lands in Hernando County, Florida:

TOWNSHIP 22 SOUTH, RANGE 19 EASTSection 12

All the land lying in said Section 12.

Section 13

All the land, LESS the West 1/2 of the West 1/2 of the Southwest 1/4, of said Section 13.

Section 24

All the land lying in said Section 24.

Section 25

All the land, LESS the lands lying South of State Road 50, of said Section 25.

TOWNSHIP 22 SOUTH, RANGE 20 EASTSection 7

All the land lying in said Section 7.

Section 8

All the land lying in said Section 8.

Section 9

All the land, LESS the North 1/2 of the North 1/2, of said Section 9.

Section 15

All the land, LESS the East 1/2, of said Section 15.

Section 16

All the land lying in said Section 16.

Section 17

All the land lying in said Section 17.

Section 18

All the land lying in said Section 18.

Section 19

All the land lying in said Section 19.

Section 20

All the land lying in said Section 20.

Section 21

All the land lying in said Section 21.

Section 22

All the land lying in said Section 22.

Section 23

The West 1/2 of the West 1/2, of said Section 23.

Section 26

All the land, LESS the East 1/2, of said Section 26.

Section 27

All the land lying in said Section 27.

Section 28

All the land lying in said Section 28.

Section 29

All the land lying in said Section 29.

Section 30

All the land, LESS lands lying South of State Road 50, of said Section 30.

TOWNSHIP 22, RANGE 20 EAST (CON'T)

Section 32

All the land, LESS lands lying South of State Road 50, of said Section 32.

Section 33

All the land, LESS lands lying South of State Road 50, of said Section 33.

Section 34

All the land lying in said Section 34.

Section 35

All the land lying in said Section 35.

Section 36

All the land lying in said Section 36.

TOWNSHIP 22 SOUTH, RANGE 21 EAST

Section 31

The West 2/3 of the West 1/2 and the South 2/3 of the South 1/2, of said Section 31.

Any objection to the said application must be made in writing within twenty (20) days from this date to the Director, Division of Records and Reporting, Florida Public Service Commission, 101 East Gaines Street, Tallahassee, Florida 32399-0870. A copy of said objection should be mailed to the applicant whose address is:

CONROCK UTILITY COMPANY  
701 North Florida Avenue  
Lakeland, Florida 33801

EXHIBIT "A"

NOTICE OF INTENT AFFIDAVIT

Conrock Utility Company Application

Rec'd in Ex-3

SUNCOAST NEWS

Published Wednesday and Saturday  
New Port Richey, Pasco County, Florida

State of Florida } ss  
COUNTY OF PASCO

Before the undersigned authority personally appeared \_\_\_\_\_

Lori A. Landess, who on oath says

that she is the Advertising Representative of the Suncoast News, a Semi-Weekly newspaper published at New Port Richey, in Pasco County, Florida; that the attached copy of advertisement, being a Application in the matter of CONROCK UTILITY COMPANY in the Hernando Court, was published in said newspaper in the issues of March 15, 22, 29, 1989

Affiant further says that the said Suncoast News is a newspaper published at New Port Richey, in said Pasco County, Florida, each Wednesday and Saturday, in said Pasco County, Florida; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Lori A. Landess

Sworn to and subscribed before me this 30th day of March A.D. 1989.

NOTARY PUBLIC, STATE OF FLORIDA.  
MY COMMISSION EXPIRES: FEB. 24, 1992.

BONDED BY NOTARY PUBLIC UNDERWRITERS.



Margie L. Proch

Notary Public

Hernando Co. Legals

Application for an original water and/or sewer certificate:

None is hereby given pursuant to Section 387.041, Florida Statute, of the application of CONROCK UTILITY COMPANY to

operate water and/or sewer utility to provide service to the following described lands in Hernando County, Florida:

Township 22 South, Range 18 East

Section 12

All the land lying in said Section 12.

Section 13

All the land, LESS the West 1/4 of the West 1/4 of the Southwest 1/4, of said Section 13.

Section 24

All the land lying in said Section 24.

Section 25

All the land, LESS the lands lying South of State Road 50, of said Section 25.

Township 22 South, Range 20 East

Section 7

All the land lying in said Section 7.

Section 8

All the land lying in said Section 8.

Section 9

All the land, LESS the North 1/4 of the North 1/4, of said Section 9.

Section 15

All the land, LESS the East 1/2, of said Section 15

Section 16

All the land lying in said Section 16.

Section 17

All the land lying in said Section 17.

Section 18

All the land lying in said Section 18.

Section 19

All the land lying in said Section 19.

Section 20

All the land lying in said Section 20.

Section 21

All the land lying in said Section 21.

Section 22

All the land lying in said Section 22.

Section 23

The West 1/2 of the West 1/4, of said Section 23.

Section 26

All the land, LESS the East 1/2, of said Section 26.

Section 27

All the land lying in said Section 27.

Section 28

All the land lying in said Section 28.

Section 29

All the land lying in said Section 29.

Section 30

All the land, LESS land lying South of State Road 50, of said Section 30.

Township 22, Range 20 E

Section 32

All the land, LESS land lying South of State Road 50, of said Section 32.

Section 33

All the land, LESS land lying South of State Road 50, of said Section 33.

Section 34

All the land lying in said Section 34.

Section 35

All the land lying in said Section 35.

Section 36

All the land lying in said Section 36.

Township 22 South, Range 20 East

Section 31

The West 1/2 of the West 1/2 and the South 1/2 of the South 1/2, of said Section 31.

Any objection to the said application must be made in writing twenty (20) days from this date to the Director, Division of Records and Reporting, Florida Public Service Commission, 101 East Gause Street, Tallahassee, Florida 32309-0870. A copy of said objection should be mailed to the applicant whose address is:

CONROCK UTILITY COMPANY

701 North Florida Avenue

Lakeland, Florida 33801

AFFIDAVIT

STATE OF FLORIDA  
COUNTY OF PASCO

I, Rod L. Pomp of Rod L. Pomp Corporation acting as agent for Conrock Utility Company do solemnly swear that I have sent notice by certified mail to the agencies of the water and sewer utilities within a 4 mile radius of Section 22 South, Township 21 East, Range 31 East, Hernando County, Florida, a list which was provided by the Public Service Commission (see attached).

  
-----  
ROD L. POMP

Sworn to and subscribed before me this 17th day of April, A.D., 1989.

  
NOTARY PUBLIC

MY COMMISSION EXPIRES:

Notary Public, State of Florida  
My Commission Expires Sept. 26, 1992

01/24/89

LIST OF WATER AND SEWER UTILITIES WITHIN A 4 MILE RADIUS OF  
225 21E 31  
IN HERNANDO COUNTY  
VALID FOR 60 DAYS

PAGE 1

COUNTY: HERNANDO

UTILITY NAME

MANAGER

ROLLING ACRES ENTERPRISES, INC. (WJ204)  
6128 SPRINGLAKE HIGHWAY  
BROOKSVILLE, FL 34601-

OSWALD C. THOMAS, CR.  
(904) 796-1526

01/24/89

LIST OF WATER AND SEWER UTILITIES WITHIN A 4 MILE RADIUS OF  
225 21E 31  
IN HERNANDO COUNTY  
VALID FOR 60 DAYS

PAGE 2

LOCAL COMMISSIONS

HERNANDO COUNTY COMMISSION  
P.O. BOX 1660  
BROOKSVILLE, FL 33512

WITKLADOCHEE REGIONAL PLANNING COUNCIL  
1241 S.W. 10TH STREET  
OCALA, FL 32670

ALL INCORPORATED TOWN AND  
CITY GOVERNMENT WITHIN 4  
MILES

City of Brooksville  
26 S. Brooksville Avenue  
Brooksville, FL 34601

STATE OFFICIALS

STATE OF FLORIDA PUBLIC COUNSEL  
C/O THE HOUSE OF REPRESENTATIVES  
THE CAPITOL  
TALLAHASSEE, FL 32399-1300

DIVISION OF RECORDS AND REPORTING  
FLORIDA PUBLIC SERVICE COMMISSION  
101 E. GAINES STREET  
TALLAHASSEE, FL 32399-0870

EXHIBIT "D"

PAGE 2 OF 4

**SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent the card from being returned to you. The return receipt fee will be added to the amount of the postage paid. Additional postage for additional services is available. Contact your post office for details.

1.  Show to whom delivered, date, and addressee's address.  Registered Delivery  (Extra charge?)

2.  Registered Delivery  (Extra charge?)

3. Article Addressed to:  
 CITY OF BROOKSVILLE  
 26 S. BROOKSVILLE AVENUE  
 BROOKSVILLE, Florida 326012

4. Article Number  
 P 744 992 752

Type of Service:  
 Registered  Insured  
 Certified  COD  
 Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Addressee's Address (ONLY if requested and fee paid)

6. Signature - Agent  
*[Signature]*

7. Date of Delivery  
 3/14/79

PS Form 3811, Mar. 1987 U.S.D.O. 1987-178-200 DOMESTIC RETURN RECEIPT

**SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent the card from being returned to you. The return receipt fee will be added to the amount of the postage paid. Additional postage for additional services is available. Contact your post office for details.

1.  Show to whom delivered, date, and addressee's address.  Registered Delivery  (Extra charge?)

2.  Registered Delivery  (Extra charge?)

3. Article Addressed to:  
 STATE OF FLORIDA PUBLIC COUNSEL  
 C/O THE HOUSE OF REPRESENTATIVES  
 THE CAPITOL  
 TALLAHASSEE, FLORIDA 32399-1300

4. Article Number  
 R 744 992 754

Type of Service:  
 Registered  Insured  
 Certified  COD  
 Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Addressee's Address (ONLY if requested and fee paid)

6. Signature - Address  
 X *[Signature]*

7. Date of Delivery  
 MAR 13 1989

PS Form 3811, Mar. 1987 U.S.D.O. 1987-178-200 DOMESTIC RETURN RECEIPT

**SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent the card from being returned to you. The return receipt fee will be added to the amount of the postage paid. Additional postage for additional services is available. Contact your post office for details.

1.  Show to whom delivered, date, and addressee's address.  Registered Delivery  (Extra charge?)

2.  Registered Delivery  (Extra charge?)

3. Article Addressed to:  
 HERNANDO COUNTY COMMISSION  
 P. O. BOX 1660  
 BROOKSVILLE, FLORIDA 32612

4. Article Number  
 P 744 992 751

Type of Service:  
 Registered  Insured  
 Certified  COD  
 Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Addressee's Address (ONLY if requested and fee paid)

6. Signature - Agent  
 X *[Signature]*

7. Date of Delivery  
 3/14/79

PS Form 3811, Mar. 1987 U.S.D.O. 1987-178-200 DOMESTIC RETURN RECEIPT

**SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent the card from being returned to you. The return receipt fee will be added to the amount of the postage paid. Additional postage for additional services is available. Contact your post office for details.

1.  Show to whom delivered, date, and addressee's address.  Registered Delivery  (Extra charge?)

2.  Registered Delivery  (Extra charge?)

3. Article Addressed to:  
 DIVISION OF RECORDS AND REPORTING  
 FLORIDA PUBLIC SERVICE COMMISSION  
 101 E. GAINES STREET  
 TALLAHASSEE, FLORIDA 32399-0870

4. Article Number  
 P 744 992 755

Type of Service:  
 Registered  Insured  
 Certified  COD  
 Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Addressee's Address (ONLY if requested and fee paid)

6. Signature - Address  
 X *[Signature]*

7. Date of Delivery  
 MAR 19 1989

PS Form 3811, Mar. 1987 U.S.D.O. 1987-178-200 DOMESTIC RETURN RECEIPT

4-30-83 394  
 "D" BIBIHXE







## Green Engineering Associates, Inc.

- Consulting Engineers -

806 West Meridian Ave.

P.O. Box 1996, Dade City, Florida 33526-1996

(904) 567-1958 • (904) 567-1959

*Repts 5-26*

Gentlemen:

This letter and the enclosed brochure are intended to introduce the firm of Green Engineering Associates, Inc., and the services that we offer our clients.

Green Engineering was begun in 1974 and incorporated in June 1982. It has offices located at 806 W. Meridian Avenue, Dade City, Florida.

GEA serves clients throughout the Southeast, with its main concentration being Central Florida. Clients are those involved in the construction and/or engineering field, which includes owners, builders, and developers of commercial, industrial and residential projects.

GEA offers complete construction and engineering management consulting services by representing owners and developers as consulting engineers and managers. GEA offers maximum services for all projects undertaken by utilizing the services of its own competent staff and by complementing this staff with the services of affiliated specialists whenever it is required for the betterment of the project.

Our range of services includes:

### Planning

Engineering planning services include the development of concepts for communities and such diverse projects as residential developments, commercial and industrial facilities, transportation systems and facilities, utilities systems, recreational facilities and public works facilities involving environmental, social, economical and technical considerations.

### Preliminary Reports

These services include preparation of a preliminary engineering study and report to indicate clearly the problems involved and the alternate solutions available. These studies may include financial and fiscal investigations, schematic layouts and sketches, and uses for future development and construction, and a cost estimate for the project.



Design services include:

#### Preliminary Design

1. Consultation and advice as to the necessity of obtaining other services, such as property, boundary, right-of-way, profiles, cross sections, horizontal and vertical surveys, topographic and utility surveys, soil and foundation engineering services, hydrographic surveys, laboratory services, and analysis of materials.
2. Preparation of preliminary design documents consisting of design criteria, drawings and outline specifications to develop and establish the scope of the project.
3. Preparation of revised cost estimates, if required.

#### Final Design

1. Preparation of detailed construction drawings and specifications.
2. Assistance in the preparation of documents which may be required for approval by governmental agencies who have jurisdiction over the design criteria.
3. Advice to the Client on any adjustment of the cost estimate caused by changes in scope, design requirements or construction costs, and the furnishing of revised cost estimates based on the completed drawings and specifications.
4. Preparation of proposal forms, notice to bidders and assistance in the preparation of contract documents.
5. Assistance to the Client in obtaining and evaluating bids and awarding of contracts.

#### Professional Services During Construction

The services consist of periodic site visits and or inspections as required by governmental agencies to determine if the work is in conformance with the contract documents; reviewing shop drawings and data submitted in accordance with plans and specifications; approval of pay estimates; representing the Client in interpreting plans and specifications; final inspection and certification of the completed work.

#### Additional Services

Resident Services - When it is desired to provide more extensive representation on site during construction, the Consultant will furnish resident project services.

GEA PROJECTS

Subdivisions:

|                |                            |                              |
|----------------|----------------------------|------------------------------|
| Citrus -----   | Mason Creek                |                              |
| Hernando ----- | Carillon Pines             | Spring Hill Unit 3           |
|                | Kass Circle                | Spring Hill Unit 22, Tract A |
|                | Lindsey Acres              | Talisman Estates, Phase 1    |
| Pasco -----    | Alan-Hill                  | Oak Knoll                    |
|                | Chalfont Heights           | River Trace (Apartments)     |
|                | Eloian Developments I & II | Ryals Corner                 |
|                | Gene's Junction            | SR 54 Industrial Park        |
|                | Grandview Grove            | Timber Run                   |
|                | Heather Place              | Wedgewood Manor              |
|                | Heron Country Estates      | Willow Run                   |
|                | Hilltree                   |                              |
| Polk -----     | Saddle Creek Village       |                              |

Mobile Home Parks:

|                    |                           |
|--------------------|---------------------------|
| Hernando -----     | Southway Villas Annex II  |
|                    | Southway Villas Annex III |
|                    | Southway Villas Annex IV  |
|                    | Sunnybrook                |
| Hillsborough ----- | Prahl                     |
| Pasco -----        | Fisherman's Cove          |
|                    | Timber Lake Estates       |
|                    | Van's                     |
|                    | Zephyr Ridge              |

RV Travel Trailer Parks:

|                |                           |                          |
|----------------|---------------------------|--------------------------|
| Hernando ----- | Hernando Hills RV Park    |                          |
| Pasco -----    | Citrus Hill RV Park       | Smith's RV Park          |
|                | Hicks Travel Trailer Park | Southern Charm RV Park   |
|                | Jim's RV Park             | Town & Country RV Resort |
|                | Morgan's RV Park          | White's RV Park          |

Miscellaneous Projects:

|                 |   |
|-----------------|---|
| Buildings ----- | American Condominium Park Recreation Building - Pasco   |
|                 | American Condominium Park Laundry Building - Pasco      |
|                 | Church of God Addition - Pasco                          |
|                 | Con Ed Building - Pasco                                 |
|                 | Dade City Glass - Dade City, Pasco                      |
|                 | Dade City Transmission - Pasco                          |
|                 | Darby Farm Plant - Pasco                                |
|                 | East Pasco Medical Center Addition - Zephyrhills, Pasco |
|                 | Friedman Dental Office Addition - Dade City, Pasco      |
|                 | Friendship Missionary Baptist Church Addition - Pasco   |

Buildings ----- Geddes Tri-Plex - Zephyrhills - Pasco  
(Continued) Green Hills Recreation Building Addition  
Helen's Dance Studio Addition - Zephyrhills, Pasco  
Hicks Recreation Building Addition - Pasco  
Hockaday Methodist Church Addition - Pasco  
Jim's Recreation Building Addition - Pasco  
Johnny's Bar-B-Que Addition - Dade City, Pasco  
Lake Grove Recreation Building - Orange  
Mulkey Car Wash - Pinellas  
Nicholson Building - Pasco  
Oakley Truck Terminal/Offices - Polk  
RV Garage Facility - Zephyrhills, Pasco  
Reonicke Office Complex - San Antonio, Pasco  
St. James Church - Brooksville, Hernando  
St. John's Church Addition - Dade City, Pasco  
St. Leo City Hall - St. Leo, Pasco  
Smith's Recreation Building - Pasco  
Southern Charm Recreation Building - Pasco  
Sunstate Title Addition - Dade City, Pasco  
Taco John's Building - Zephyrhills, Pasco  
Temple Oaks Duplex - Hillsborough, Pasco  
Timber Lake Estates Mini Recreation Building, Pasco  
Timmons Car Wash - Zephyrhills, Pasco  
Town & Country RV Resort Recreation Building - Pasco  
Wedgewood Clubhouse/Pool - Zephyrhills, Pasco  
Wedgewood Plaza - Zephyrhills, Pasco  
White's Recreation Building - Pasco  
Zephyr Egg Layer Houses - Pasco  
Zephyr Egg Processing Plant - Pasco  
Zephyr Egg Residences - Pasco, Polk  
Zephyr Shores Clubhouse Addition - Pasco  
Zephyrhills Bottled Waters Office/Warehouse - Zephyrhills, Pasco  
Zephyrhills Parachute Center - Pasco

Drainage Studies ----- Silver Oaks Golf Course - Permitting - Pasco

Feasibility Studies --- Caleffe - 160 Acres - Lake  
Kelley Acres - 300 Acres - Hernando  
Lindell - 100 Acres - Pasco  
Price - 113 Acres - Hernando  
Shields - 35 Acres - Hernando  
Zephyrhills Bottled Waters - Pasco

Management/  
Construction ----- Alpha Village Phase 3 - Pasco  
Berkeley Manor S/D - Hernando  
Lindsey Acres S/D - Hernando  
St. Anne's Church - Hernando  
Southway Villas Annex's - Brooksville  
Sumter Oaks - Sumter  
Sunnybrook Mobile Home Park - Hernando  
Timber Lake Estates - Pasco  
Zephyrhills Bottled Waters - Zephyrhills, Pasco

Master Plans ----- Baird's Mobile Home Park East - 70 Acres - Hernando  
County Line Mobile Home Park - 70 Acres - Pasco  
Gore Master Plan - 200 Acres - Pasco  
Kick-A-Ha Woods Estates - 160 Acres - Hernando  
Sunnybrook Mobile Home Park - 100 Acres - Hernando  
The Villages of Saddle Creek - 300 Acres - Polk  
Wilgo - 150 Acres - Pasco

Site Plans ----- Amparo Offices - Pasco  
Budget Inn - Hernando  
Bushnell Car Wash - Sumter  
CNH Facility - Dade City, Pasco  
Clinton Commercial Center - Pasco  
Community National Bank - Zephyrhills, Pasco  
Dade City Apartments - Dade City, Pasco  
Dade City Board of Realtors - Dade City, Pasco  
Dade City Car Wash - Dade City, Pasco  
Dade City Glass - Dade City, Pasco  
Dade City Junction Plaza - Pasco County  
Darby Farms Plant - Pasco  
Embassy Plaza - Dade City, Pasco  
First National Bank of Pasco - Dade City, Pasco  
First National Bank of Pasco - Zephyrhills, Pasco  
Friedman Dental Office Addition - Dade City, Pasco  
Gibbs Mini Warehouses - Pasco  
Gold Key Realty - Zephyrhills, Pasco  
Heather Plaza - Dade City, Pasco  
Hill's Mobile Home Sales Lot  
Islander Commercial - Pasco  
Jones Office/Warehouse Complex - Dade City, Pasco  
Lindsay Mini Warehouses - Dade City, Pasco  
Manor Place - Pasco  
Medical Arts Building - Zephyrhills, Pasco  
Murphy Warehouses - Hernando  
Northside Park 1 - Pasco  
Northside Park 2 - Pasco  
Oakley Funeral Home - Pasco  
Oak View Plaza - Pasco  
Pattie Electric Warehouse - Pasco  
RV Garage Facility - Zephyrhills, Pasco  
Ridge Manor Apartments - Hernando  
River Plam - Martin  
Roenicke Offices - San Antonio, Pasco  
SR 52 Car Wash - Pasco  
St. Leo City Hall - St. Leo, Pasco  
San Antonio Lumber Company - Pasco  
Southtown Square - Pasco  
Sunstate Title - Dade City, Pasco  
The Landings - Dade City, Pasco  
Timber Lake Estates Clubhouse - Pasco  
Timmons Car Wash - Zephyrhills, Pasco  
Townview Apartments - Zephyrhills, Pasco  
Townview Square Shopping Center - Zephyrhills, Pasco

Site Plans ----- Wedgewood Plaza - Zephyrhills, Pasco  
(Continued) West Edge Industrial Park - Pasco  
West 54 Centre - Pasco  
Withrow Professional Center - Brooksville, Hernando  
Zeagle Facility - Pasco  
Zephyrhills Bottled Waters - Zephyrhills, Pasco  
301 Commercial - Pasco

Utilities ----- Sewage Lagoons  
Abraham Dairy - Pasco  
Reagan Dairy - Pasco  
Rucks Dairy - Pasco  
Zephyr Egg Farm - Pasco

Sewage Treatment Plants

Citrus Hill RV Park - Pasco  
E-How-Kee Camp - Hernando  
Fisherman's Cove Mobile Home Park - Pasco  
Hicks Travel Trailer Park - Pasco  
Jim's RV Park - Pasco  
Morgan's RV Park - Pasco  
RV Corral - Polk  
Smith's RV Park - Pasco  
Southern Charm RV Park - Pasco  
Sunny Skies Park - Pasco  
Timber Lake Estates - Pasco  
Town & Country RV Resort - Pasco  
Village Water - Polk  
White's RV Park - Pasco

Water Treatment Plants

Alan Hill S/D - Pasco  
Citrus Hill RV Park - Pasco  
Morgan's RV Park - Pasco  
Prahil's Mobile Home Park - Hillsborough  
Smith's RV Park - Pasco  
Southern Charm RV Park - Pasco  
Sparton Electronics - Hernando  
Timber Lake Estates - Pasco  
Town & Country RV Resort - Pasco  
United Driving Schools - Hernando

Other

Heritage Village - Water & Sewer System - Pasco  
Industrial Park Utilities - Engineer of Record - Polk  
Lyman Sewer Extension - Pasco  
Zephyrhills Bottled Waters - Transmission Line - Pasco

Other ----- Driftwood Irrigation System - Pasco  
D.N.R. Reclamation - 100 Acres - Polk  
Kirkland Mining Mitigation - Pasco  
Landscaping Unlimited Mitigation - Pasco  
Pugh Mining Project - Hillsborough  
Race Track - Pasco  
SR 54 Industrial Park Mitigation - Pasco  
Stadium - Weeki Wachee - Hernando

ROBERT F. GREEN, P.E.

PRESIDENT

Robert F. Green, P.E., is a registered Professional Engineer in the states of Florida, Georgia, North Carolina and Colorado.

He received his educational background in Civil Engineering and Construction at the University of New York, Erie County Technical Institute and ICS.

His professional experience in Civil Engineering has been primarily in the field of land development and highways, which includes the design and supervision of developments, highways and related projects, from conception to completion. Several years of municipal project design and construction supervision experience were attained while design engineer for the Cities of Gainesville and West Palm Beach, and as City Engineer for the Cities of St. Leo and Brooksville. Highway design experience includes secondary, primary and interstate roads.

He has been associates with several leading design firms:

- Gee & Jenson Consulting Engineers, Inc.
- Buchart-Horn Consulting Engineers
- DeLeuw, Cather & Associates
- Kunde & Associates
- General Development Corporation
- Construction-Engineering Associates, Inc. - Vice President (Principal)
- Diversified Consultants, Inc. - President (Principal)
- Robert F. Green & Associates, Inc. - Owner
- Coastal Engineering Associates, Inc. - Chief Engineer
- Green Engineering Associates, Inc. - President (Principal)

His land development, design and supervision experience has been on the following:

Subdivisions: (Counties)

|                   |                             |                            |
|-------------------|-----------------------------|----------------------------|
| Brevard -----     | St. Johns                   |                            |
| Broward -----     | Coral Gate                  | Lauderhill North           |
|                   | Coral Springs               | Ramblewood                 |
|                   | Coquina Lakes               | Ramblewood South           |
|                   | Forest Hills                |                            |
| Citrus -----      | Mason Creek                 |                            |
| Collier -----     | Everglades Shores           |                            |
| Hernando -----    | Berkeley Manor              | Hernando Airport Ind. Park |
|                   | Burwell Estates             | Kass Circle                |
|                   | Carillon Pines              | Lindsey Acres              |
|                   | Gulf Coast Commercial       | Nottingham Forest          |
|                   | Heather Place IV            | Spring Hill Unit 3         |
|                   | Heather Sound               | Spring Hill Unit 22, TRA.  |
|                   | Heather Walk                | Talisman Estates - Phase 1 |
| Hillsborough ---- | Arabian Acres               |                            |
| Highlands -----   | Spring Lake Village II - IV |                            |
| Indian River ---- | Sebastian Highlands         |                            |
|                   | Vero Beach Highlands        |                            |

|                    |   |   |
|--------------------|---|---|
| Lee -----          | Lehigh Acres - Parkwood<br>- Orange Grove Park  |   |
| Martin -----       | Hobe Sound<br>Port Malabar  |   |
| Orange -----       | Walt Disney World Projects  |   |
| Osceola -----      | Buena Ventura Lakes   |   |
| Palm Beach -----   | Boca Raton West<br>Fairway Village<br>Wellington  |   |
| Pasco -----        | Alan-Hill<br>Chalfont Heights<br>Eloian Dev. 1 & 2<br>Gene's Junction<br>Grandview Grove<br>Heather Place<br>Heron Country Estates<br>Hilltree  | Oak Knoll<br>Peachtree Village<br>River Trace (Apts.)<br>Ryals Corner<br>SR 54 Industrial Park<br>Timber Run<br>Wedgewood Manor<br>Willow Run   |
| Polk -----         | Anderson Estates<br>Creek Run<br>Executive Manor<br>Florida Village<br>Hallam Estates<br>Harbour Estates<br>Itchepackessa Creek<br>Lake Marianna Estates<br>Lake Pierce Estates<br>Lake Tennessee Estates<br>Mandarin | Maplewood<br>Marker-Pearson<br>Meadowood<br>Mustange Village Ind. Park<br>Norriswood<br>Peace River Oaks<br>Saddle Creek Villages<br>Sandy Ridge Industrial Park<br>Springtree Industrial Park<br>Stonebridge |
| Putnam -----       | Whispering Pines  |   |
| St. Lucie -----    | Port St. Lucie  |   |
| Sarasota -----     | Port Charlotte  |   |
| Seminole -----     | North Orlando Ranches   |   |
| Volusia -----      | Ridgecrest  |   |
| Grand Bahama Is. - | Bell Channel Bay<br>Freeport Ridge<br>Greening Glade  | Lucayan Knoll<br>Yeoman Wood  |

Mobile Home Parks: (Counties)

|                    |  |   |
|--------------------|--|---|
| Alachua -----      | Whitney Mobile Home Park                               |   |
| Hernando -----     | Baird Mobile Home Park<br>Cloverleaf<br>Lakeside Acres | Southway Villas II, III, & IV<br>Sunnybrook |
| Hillsborough ----- | Prahl Mobile Home Park                                 |   |
| Pasco -----        | Fisherman's Cove<br>Timber Lake Estates                | Van's<br>Zephyr Ridge                       |

RV Travel Trailer Parks: (Counties)

|                |  |  |
|----------------|--|--|
| Hernando ----- | Hernando Hills   |  |
| Pasco -----    | Citrus Hill<br>Hick's Travel Park<br>Jim's RV Park<br>Morgan's RV Park | Smith's RV Park<br>Southern Charm<br>Town & Country RV Resort<br>White's RV Park |
| Polk -----     | Saddlebag Lake   |  |



Highways:

Interstate: Connecticut - Route 8  
Pennsylvania - LR 11012 through Johnstown  
North York Spur - municipal  
New York Thruway - R/W acquisition  
Florida ----- I-75 - 7 miles rural through Sarasota - Manatee  
I-75 - 3 miles rural/municipal - Pinellas County  
(4 interchanges)

Primary: Pennsylvania - LR 190 through Abbottstown - preliminary design  
LR 10330 Lewistown - preliminary design -  
22 miles rural  
Florida ----- U.S. 301 - Broward County - 5 miles rural  
ALA - Palm Beach County - 10 miles R/W  
U.S. 441 (SR 7) Broward County - 5 miles rural

Secondary: Florida ----- SR 70 - Manatee County - 1 1/2 mile rural  
SR 711 - Martin County - 7 miles  
Monroe County - 50 miles miscellaneous  
Sunland Access Road - Dade County  
Duval Street - Key West - Monroe County  
Sample Road - Broward County - 5 miles rural/  
municipal  
University Drive - Broward County - 5 miles  
municipal

Others: Niagara Thruway - Utility Location  
Coral Springs District - Broward County - 18  
miles of roads & 17 miles of canals  
East Country Water Control District - Lee County -  
4 miles of roads/canals  
Valencia Drainage District - Orange County  
Disney World - North-South Entrance Rd. - 4 miles  
Peripheral Roads - 5 miles  
Campground Roads & Site Work  
Hernando County Road Bond Program  
Ridge Manor Roads - misc.  
Hernando Beach Roads - misc.  
Spring Hill Drive - 5 miles  
WPA Road - 2 miles  
Knuckey Road - 7 miles  
Istachatta/Nobleton Road - 2 miles  
Sunshine Grove Road - 2 miles  
Powell/California Roads - 6 miles

Miscellaneous Projects:

Airport ----- Freeport International - preliminary design

Buildings ----- American Condominium Park - Recreation Building - Pasco  
American Condominium Park - Laundry Building - Pasco  
Church of God Addition - Pasco  
Collins Car Wash - Polk  
Con Ed Building - Pasco  
Dade City Glass - Dade City, Pasco  
Dade City Transmission - Pasco  
Darby Farms Plant - Pasco  
East Pasco Medical Center Addition - Zephyrhills, Pasco  
Friedman Dental Office Addition - Dade City, Pasco  
Friendship Missionary Baptist Church Addition - Pasco  
Geddes Tri-Plex - Zephyrhills, Pasco  
Green Hills Recreation Building Addition - Pasco  
Heather Sound Multi-Family - Hernando  
Helen's Dance Studio Addition - Zephyrhills, Pasco  
Hicks Recreation Building Addition - Pasco  
Irrigation South Offices - Polk  
Jim's Recreation Building Addition - Pasco  
Johnny's Bar-B-Que Addition - Dade City, Pasco  
Lake Grove Recreation Building - Orange  
Lykes Memorial Library Addition - Brooksville, Hernando  
Mulkey Car Wash - Pinellas  
Nicholson Building - Pasco  
Oakley Truck Terminal - Polk  
Paradise Restaurant - Pasco  
RV Garage Facility - Zephyrhills, Pasco  
Reonicke Offices - San Antonio, Pasco  
St. James Church - Brooksville, Hernando  
St. John's Church Addition - Dade City, Pasco  
St. Leo City Hall - St. Leo, Pasco  
Savannah Restaurant - Pasco  
Smith's Recreation Building - Pasco  
Southern Charm Recreation Building - Pasco  
Sun State Title Addition - Dade City, Pasco  
Taco John's Building - Zephyrhills, Pasco  
Teltronics Building - Polk  
Temple Oaks Duplex - Hillsborough  
Timber Lake Estates Mini Rec. Building - Pasco  
Timmons Car Wash - Zephyrhills, Pasco  
Town & Country Recreation Building - Pasco  
Wedgewood Manor Clubhouse/Pool - Zephyrhills, Pasco  
White's Recreation Building - Pasco  
Zephyr Egg Layer Houses - Pasco  
Zephyr Egg Processing Plant - Pasco  
Zephyr Egg Residences - Pasco, Polk  
Zephyr Shores Clubhouse Addition - Pasco  
Zephyrhills Bottled Waters Offices/Warehouse - Zephyrhills, Pasco  
Zephyrhills Parachute Center Building - Pasco

Development of  
Regional Impact (DRI) - Springtree - 2,800 Acres - Polk

Drainage District ----- West Lakeland Water Control District - Polk

Drainage Studies ----- Deltona - 15,000 Acres - Polk  
Silver Oaks Golf Course (Permitting) - Zephyrhills, Pasco  
Whispering Oaks - 207 Acres - Hernando

Feasibility Studies --- Caleffe - 160 Acres - Lake  
Cape Florida - Dade  
Kelley Acres - 300 Acres - Hernando  
Lindell - 100 Acres - Pasco  
Posey - 100 Acres - Hernando  
Price - 113 Acres - Hernando  
Shields - 35 Acres - Hernando  
Zephyrhills Bottled Water - Pasco  
Orangewood - 2,400 Acres - Orange

Golf Courses ----- Buenaventura Lakes - Osceola  
Springtree - Polk  
Wild Kingdom - Lake

Master Plans ----- Buenaventura Lakes - 2,300 Acres - Osceola  
Baird Mobile Home Park - 70 Acres - Hernando  
County Line Mobile Home Park - 70 Acres - Pasco  
Coquina Lakes - 100 Acres - Broward  
Gore Plan - 200 Acres - Pasco  
Jack Apple Communities - 460 Acres & 270 Acres - Hernando  
Kick-A-Ha Woods Estates - 160 Acres - Hernando  
Springtree - 3,800 Acres - Polk  
Sunnybrook Mobile Home Park - 100 Acres - Hernando  
The Villages of Saddle Creek - 300 Acres - Polk  
Wild Kingdom - 900 Acres - Lake

Management/  
Construction ----- Alpha Village - Phase 3 - Pasco  
Berkeley Manor S/D - Hernando  
Lindsey Acres S/D - Hernando  
St. Anne Church Site - Hernando  
Southway Villas Mobile Home Park - Brooksville, Hernando  
Sumter Oaks - Sumter  
Sunnybrook Mobile Home Park - Hernando  
Timber Lake Estates - Pasco  
Zephyrhills Bottled Waters - Zephyrhills, Pasco

Site Plans ----- Anapro Offices - Pasco  
Budget Inn - Hernando  
Bushnell Car Wash - Sumter  
CNH Facility - Dade City, Pasco  
Central Carting, Inc. - Pasco  
Clinton Commercial - Pasco  
Community National Bank - Zephyrhills, Pasco  
Dade City Apartments - Dade City, Pasco  
Dade City Board of Realtors - Dade City, Pasco  
Dade City Glass - Dade City, Pasco  
Dade City Junction Plaza - Pasco  
Darby Farms - Pasco

Site Plans ----- Embassy Plaza - Dade City, Pasco  
(Continued) First National Bank - Dade City, Pasco  
Friedman Dental Office Addition - Dade City, Pasco  
Gibbs Mini Warehouses - Pasco  
Gold Key Realty - Zephyrhills, Pasco  
Heather Plaza - Dade City, Pasco  
Hill's Sales Lot - Pasco  
Islander Commercial - Pasco  
Jones Office/Warehouse - Dade City, Pasco  
Karl Kalinsky Car Lot - Pasco  
Lindsay Mini Warehouses - Dade City, Pasco  
Manor Place - Hernando  
Medical Arts Building - Zephyrhills, Pasco  
Murphy Warehouses - Hernando  
Northside Park I - Pasco  
Northside Park II - Pasco  
Oakley Funeral Home - Pasco  
Passerin Commercial - Hernando  
Pattie Electric Warehouses - Pasco  
Oakview Plaza - Pasco  
RV Garage Facility - Zephyrhills, Pasco  
Ridge Manor Apartments - Hernando  
River Palm - Martin  
Roenicke Offices - San Antonio, Pasco  
SR 52 Car Wash - Pasco  
St. Leo City Hall - St. Leo, Pasco  
San Antonio Lumber Company - Pasco  
Southtown Square - Pasco  
Sunstate Title - Dade City, Pasco  
The Landings - Dade City, Pasco  
Timber Lake Estates Clubhouse - Pasco  
Townview Apartments - Zephyrhills, Pasco  
Townview Square Shopping Center - Zephyrhills, Pasco  
Wedgewood Plaza - Zephyrhills, Pasco  
West Edge Industrial Park - Pasco  
Withrow Professional Center - Brooksville, Hernando  
Zeagle Facility - Pasco  
Zephyrhills Bottled Waters - Zephyrhills  
301 Commercial - Pasco

Utilities ----- Sewage Lagoons  
Abraham Dairy - Pasco  
Reagan Dairy - Pasco  
Rucks Dairy - Pasco  
Zephyr Egg Farms - Pasco

Sewage Treatment Plants  
Buenaventura Lakes S/D - Osceola  
Citrus Hill RV Park - Pasco  
E-How-Kee Camp - Hernando  
Fisherman's Cove Mobile Home Park - Pasco  
Hicks Travel Trailer Park - Pasco

Utilities ----- Sewage Treatment Plants (Continued)  
(Continued)

Jim's RV Park - Pasco  
Morgan's RV Park - Pasco  
RV Corral - Polk  
Smith's RV Park - Pasco  
Southern Charm RV Park - Pasco  
Sunny Skies Park - Pasco  
Timber Lake Estates - Pasco  
Town & County RV Resort - Pasco  
Village Water, Ltd. - Polk  
White's RV Park - Pasco

Water Treatment Plants

Alan-Hill S/D - Pasco  
Averett Mobile Home Park - Polk  
Buenaventura Lakes S/D - Osceola  
Citrus Hill RV Park - Pasco  
Lakeside Acres Mobile Home Park - Hernando  
Morgan's RV Park - Pasco  
Prahls Mobile Home Park - Hillsborough  
Smith's RV Park - Pasco  
Southern Charm RV Park - Pasco  
Sparton Electronics - Hernando  
Timber Lake Estates - Pasco  
Town & County RV Resort - Pasco  
United Driving Schools - Hernando

Other

Heritage Village Water & Sewer - Zephyrhills, Pasco  
Industrial Park Utilities - Engineer - Polk  
Lyman Sewer Extension - Pasco  
Zephyrhills Bottled Waters Transmission Line - Pasco

Other ----- D.N.R. Reclamation - 100 Acres - Polk  
Driftwood Irrigation System - Pasco  
Earthwork Study - 5,000 Acres/35 miles of roads - Broward  
Garbage Transfer Station - West Palm Beach  
Kirkland Mining Mitigation - Pasco  
Landscaping Unlimited Mitigation - Pasco  
Parking Lot - Disney World - 160 Acres - Orange  
Pugh Mining - Hillsborough  
Race Track - Pasco  
Reclamation - Agrico Mines - Polk  
SR 54E Industrial Park Mitigation - Pasco  
Stadium - Weeki Wachee - Hernando  
Tennis Courts - Palm Beach College - Palm Beach  
City of West Palm Beach - Palm Beach  
City of Gainesville - Alachua  
Private - Polk  
Utility Relocation - I-75 - Pinellas

Robert F. Green is a member of:

American Planning Association  
American Society of Civil Engineers  
Florida Engineering Society  
National Society of Professional Engineers

Robert F. Green currently sits on the Dade City Zoning Board of Adjustments and is a member of the Zephyrhills Ad Hoc Committee for Water & Sewer.

ROD L. POMP  
VICE PRESIDENT

Rod L. Pomp has a B.A. in Business Administration from Duey Business College, Rolla, MO and a B.S. in Civil Engineering and Management from Columbia Pacific in California.

His professional experience spans 25 years in construction and development. Ten of these years were in governmental wherein his primary responsibility was in administration of development review and code compliance. During his tenure in government he held positions in zoning administration; building inspections, as both permitting and inspection manager; and the position of Flood Program Administrator under the Federal Emergency Management Agency Program for Pasco and Hernando counties in Florida.

He has been associated with the following construction and development firms:

- U.S. Army, Combat Construction Engineers
- New Phase Electric
- Landel Corporation (Vice President)
- Century Construction and Design (General Manager)
- Dayton-Central Electric (President) Principal
- S.L. Pomp Corporation Contractors-Architects (Vice President)
- Resource Development & Management (Vice President)
- Rod L. Pomp Corporation Construction Engineers (President)
- Green Engineering Associates, Inc. (Vice President)

In land development, he has design and supervisory experience in the following:

Subdivisions: (Counties)

- Pasco ----- San Angela Gardens
- Victor Cavall Estates
- Hudson Lake Estates
- Hernando ----- West Lake Estates
- West Lake Phase II Commercial
- Posey's Gulf Landings
- Kent Woods

Mobile Home Parks: (Counties)

- Pasco ----- Sunburst Hills Mobile Estates
- Timber Lake Estates
- Sand Hills

RV Travel Trailer Parks: (Counties)

- Pasco ----- Bacon's RV's
- White's RV Park
- Hernando ----- Topic RV Park

Buildings: (Counties)

Pasco ----- Clark's Produce  
Ardizone's Service Garage  
Bob Allen Chevrolet  
Zephyr Square  
San Ann Cyclery  
Chalfont Apartments  
Dick Jarrett Ford  
Sacred Heart Day Care  
Petit's Day Care  
Skeleton Key Marina  
Hillsborough ----- Atlas Door Sales

Drainage Projects: (Counties)

Pasco ----- Darby Farms - 12.18 Acres  
Hernando ----- S.A. Williams Properties - 187 Acres  
St. Lucia ----- River Palm ACLF - 3 Acres  
Pasco ----- Timber Lake Estates - 80 Acres

Wastwater Plants:

Pasco ----- Sunny Skies MHP  
Valdosta, GA ----- Grand Lakes Estates

Water Plant:

Hernando ----- Conrock Utilities

Miscellaneous Projects:

Kent Woods - Feasibility Study - 38 Acres  
Conrock Utilities - Feasibility Study - 2,589 miles  
Sunburst Hills RV Park - Feasibility Study - 78 Acres

Rod L. Pomp is a member of:

American Planning Association  
Florida Professional Land Surveyors Society  
State Association of Flood Plan Managers  
Former Chairman of Pasco County Code Enforcement Board  
Former President of Optimist International

He has registration for:

Florida Real Estate Salesman  
Florida Professional Regulation Construction Licensing



DAVID F. FREDERICK

David F. Frederick is a drafting technician with experience in graphic presentation and layout of various types of engineering projects.

Mr. Frederick received his educational background in Computer Aided Drafting and Design Technology at the Tampa Technical Institute in Tampa, Florida.

His professional experience as a drafting technician includes diversified aspects of various engineering projects. These engineering projects include subdivisions, mobile home parks, recreational vehicle (RV) parks, commercial buildings, water treatment and distribution, and wastewater collection, transmission and treatment facilities.

His association and experience has been solely with Green Engineering Associates, Inc. under the supervision of Mr. Robert F. Green, P.E.

His graphic presentation and layout experience has been of the following:

Subdivisions: (Counties)

|             |                  |                       |
|-------------|------------------|-----------------------|
| Pasco ----- | Alan-Hill        | SR 54 Industrial Park |
|             | Chalfont Heights | Townview Apartments   |
|             | Mischa Lane      | Wedgewood Manor       |
|             | Oak Knoll        | Zephyr Ridge          |

Mobile Home Parks: (Counties)

|                    |                           |
|--------------------|---------------------------|
| Hernando -----     | Southway Villas Annex III |
|                    | Southway Villas Annex IV  |
| Hillsborough ----- | Prahl's                   |
| Pasco -----        | Fisherman's Cove          |
|                    | Timber Lake Estates       |
|                    | Van's                     |

Recreational Vehicle (RV) Parks: (Counties)

|             |                        |
|-------------|------------------------|
| Pasco ----- | Citrus Hill RV Park    |
|             | Morgan's RV Park       |
|             | Smith's RV Park        |
|             | Southern Charm RV Park |
|             | White's RV Park        |

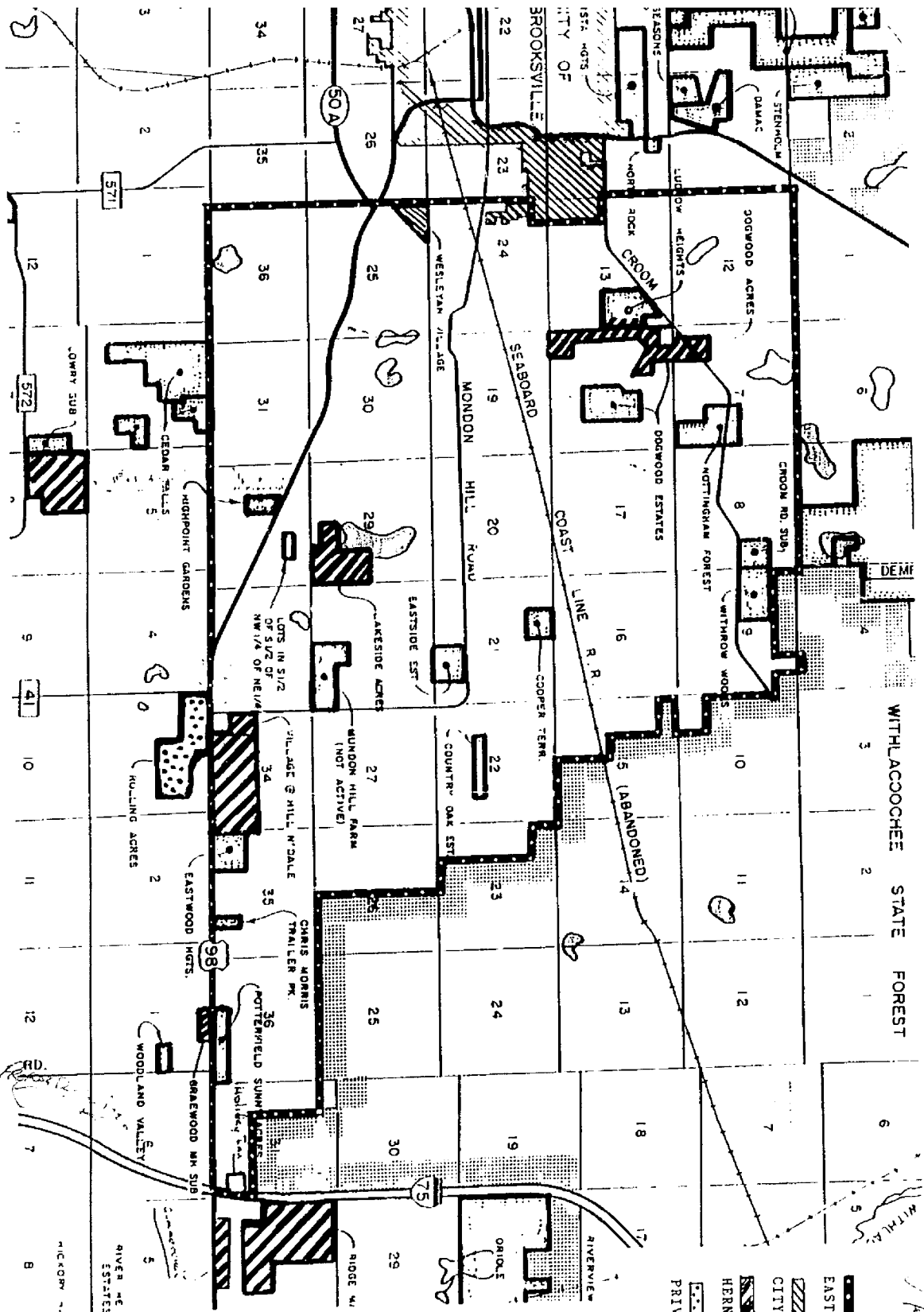
Miscellaneous Projects:

Buildings ----- Bailey Trucking Addition - Pasco  
Bushnell Car Wash - Sumter  
Dade City Glass - Dade City, Pasco  
Dade City Transmission - Dade City, Pasco  
Friedman Dental Office Addition - Dade City, Pasco  
Friendship Missionary Baptist Church Addition - Pasco  
Green Hills Recreation Building - Pasco  
Hicks Recreation Building Addition - Pasco  
Lake Grove Recreation Building - Orange  
Oakley Terminal - Polk  
RV Garage Facility - Zephyrhills, Pasco  
St. John's Church Addition - Dade City, Pasco  
Southern Charm Recreation Building - Pasco  
White's Recreation Building - Pasco  
Zephyr Egg Layer Houses - Pasco  
Zephyr Egg Processing Plant - Pasco  
Zephyr Egg Residence - Pasco  
Zephyrhills Bottled Waters Office/Warehouse - Zephyrhills, Pasco  
301 Commercial - Pasco

Site Plans ----- Amparo Offices - Pasco  
Clinton Commercial Center - Pasco  
Community National Bank - Zephyrhills, Pasco  
Dade City Board of Realtors - Dade City, Pasco  
Dade City Junction Shopping Center - Pasco  
First National Bank of Pasco - Dade City, Pasco  
Gibbs Mini Warehouses - Pasco  
Gold Keys Realty - Zephyrhills, Pasco  
Heather Plaza - Pasco  
Jones Office/Warehouse Complex - Dade City, Pasco  
Medical Arts Building - Pasco  
Northside Park 2 - Pasco  
Oakley Funeral Home - Pasco  
Oak View Plaza - Pasco  
Pattie Electric Warehouse - Pasco  
SR 52 Car Wash - Pasco  
San Antonio Lumber - Pasco  
Southtown Square - Pasco  
Sunstate Title Addition - Dade City, Pasco  
Townview Square Shopping Center - Zephyrhills, Pasco  
Wedgewood Plaza - Zephyrhills, Pasco  
West Edge Industrial Park - Pasco

Utilities ----- Sewage Lagoons  
Zephyr Egg Farms - Pasco

Sewage Treatment Plants  
Citrus Hill RV Park - Pasco  
Morgan RV Park - Pasco



*10/22/22-14*

- LEGEND**
- PROPOSED CONCRETE
  - EAST SERVICE AREA.
  - AREAS SERVED BY CITY OF BROOKSVILLE
  - AREAS SERVED BY HERNANDO COUNTY UTILITIES
  - AREAS SERVED BY PRIVATE UTILITY

BY: R. ALAN HOLBACH, ENGINEERING COORDINATOR  
HERNANDO COUNTY UTILITIES DEPARTMENT

DRAWING IN  
SUPPORT OF  
INTERROGATORY  
NO. 4

ACK \_\_\_\_\_  
AFA \_\_\_\_\_  
APP \_\_\_\_\_  
CAF \_\_\_\_\_  
CMU \_\_\_\_\_  
CTR \_\_\_\_\_  
EAG \_\_\_\_\_  
LEG 1 \_\_\_\_\_  
LIN 6 \_\_\_\_\_  
OPC 1 \_\_\_\_\_  
RCH \_\_\_\_\_  
SEC 1 \_\_\_\_\_  
WAS 1 \_\_\_\_\_  
OTH \_\_\_\_\_