City of Leesburg

GROWTH MANAGEMENT PLAN
DRAINAGE ELEMENT

Ordinance #03-44
Exhibit B
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Prepared For:
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A. INTRODUCTION

The City of Leesburg is committed to maintaining the quality of its surface waters. The purpose of this element is to provide analysis of the available data regarding the surpluses and deficiencies of the existing drainage infrastructure serving Leesburg residents so the City may adequately plan for the requirements of the projected population and future land use needs. The following data inventory and analysis will lay the foundation for the goals, objectives, and policies, which will ensure that drainage and stormwater management needs are met throughout the planning period.

To adequately regulate stormwater, it is necessary to manage both the quantity and quality of surface drainage runoff as it passes over the ground. This is accomplished through attenuation of stormwater runoff in an effort to reduce downstream peak discharge rates. In addition to attenuation, it is necessary for drainage facilities to serve other important functions such as water quality management and aquifer recharge. Stormwater can carry a number of pollutants and is responsible for over half the pollution load entering Florida's waters. As such, management of stormwater provides the important function of maintaining the water quality of the City's lakes, creeks, and natural wetlands.

The incursion of development involves the placement of streets, sidewalks, buildings, and parking lots over soils and native vegetation. As a result, stormwater, which would naturally percolate into the ground, runs off of the impermeable surfaces, carrying with it litter, pesticides, fertilizers, heavy metals, and other pollutants. In more densely developed urban areas, pollutants such as oil and gasoline can also be transported in stormwater runoff. While in more rural areas, agricultural runoff can contain excessive nutrients, which are harmful to wildlife and pollute our drinking water. Therefore, it is important for the City to ensure that development takes place in a manner that is consistent with the appropriate management of stormwater. The appropriate management of stormwater involves: treatment of stormwater prior to discharge into surface waters, floodwater attenuation to ensure that post-development discharge rates do not exceed the pre-development discharge rates, and design of stormwater facilities to promote recharge to the underlying aquifer systems where applicable.

1. Regulatory Framework

To protect the quality of surface waters, the federal government enacted Section 208 of the Water Pollution Control Act for stormwater management. Additionally, Section 405 of the Federal 1987 Clean Water Act required the Environmental Protection Agency (EPA) to establish permit regulations for stormwater. The National Pollutant Discharge Elimination System (NPDES) permit program was established by the EPA for municipal and county stormwater systems. Phase II of the program addresses cities and counties with populations under 100,000 persons. The City of Leesburg, with less than 100,000 residents is permitted by the NPDES and complies with all regulations.

The State of Florida addresses surface water management in Chapter 62-40 of the Florida Administrative Code (F.A.C.) and defines permit requirements and management responsibilities in Chapter 62-25 F.A.C. One of the primary concerns of the State rule is to

be prepared for repeat storm events. Many facilities within the State were only designed with adequate capacity to treat and attenuate a single storm event. The State emphasizes that drainage systems must recover the storm volume within 14 days and the water quality treatment volume within 72 hours after an initial storm event.

The Water Management Districts regulate stormwater management systems via Chapter 40C-42 F.A.C. The Water Management Districts set the criteria for water quality treatment and attenuation of stormwater runoff in ponds or swales and the permitting of these systems. Included in the water quality volume is what is known as the "first flush". The first flush is known to generally contain the majority of stormwater pollutants. The St. Johns River Water Management District (SJRWMD) regulates the permitting of stormwater facilities within the Leesburg area.

2. Terms and Concepts

Stormwater is defined, pursuant to 9J-5.003 (88), Florida Administrative Code (F.A.C.), as "the flow of water which results from a rainfall event." Other definitions, pursuant to 9J-5.003, F.A.C., applicable to this Element are:

Attenuation - To limit stormwater flow to reduce downstream impacts.

Basin – A drainage area with the characteristics of either having a single outfall to the receiving water body or being located adjacent to another basin, and conveying its runoff through a drainage structure.

Closed Drainage Basin - A drainage basin with no positive outfall. The discharge from a closed drainage basin is limited to percolation (and other groundwater flow), evaporation and evapo-transpiration.

Conveyance - Transport of stormwater via pipe and/or open channel system(s).

Design Capacity - The amount of flow a storm sewer system is designed to manage, usually expressed in cubic feet per second for flow and cubic-feet or acre-feet for storage.

Design Storm Event - The design storm event is characterized by the frequency, duration, rainfall volume, and distribution of the storm.

Detention Basin or Structure - means a basin or structure, which collects and temporarily stores stormwater for the purpose of treatment through physical, chemical, or biological processes with subsequent gradual release of the stormwater to reduce downstream quality and quantity impacts.

Ditch - An open stormwater conveyance facility with typical side slopes steeper than three units horizontally to one unit vertically.

Drainage Basin - Any land area defined by topographical boundaries from which the runoff collects at a common point and contributes stormwater to a drainage system or receiving waterbody.

Drainage Facilities - means a system of human-made structures designed to collect, convey, hold, divert or discharge stormwater; including, stormwater sewers, canals, detention structures, and retention structures.

Floodplain - An area inundated during a 100-year flood event or identified by the National Flood Insurance Program as an area of flooding on Flood Insurance Rate Maps or Flood Hazard Boundary Maps.

Impervious - Land surfaces which do not allow (or minimally allow) the penetration of water. An increase in the amount of impervious area will increase the rate and volume of runoff from a given drainage basin.

Inlet - A structure which collects stormwater runoff and connects into a conveyance system.

Natural Drainage Features - Naturally occurring features of an area which accommodate the flow of stormwater, such as streams, rivers, lakes, and wetlands.

Outfall - Location where stormwater flows out of a given system. The ultimate outfall of a system is generally a receiving waterbody.

Percolation - The ability of water to pass through a porous medium; in most cases, the soil.

Pervious - Land surfaces which allow the penetration of water. A decrease in pervious area will increase the rate and volume of runoff from a given drainage basin.

Retention - To store stormwater to prevent its discharge into receiving waters or to provide a storage facility for stormwater where no outfall is available.

Retention Basin or Structure - A stormwater facility which has no structural outfall and the discharge from which is limited to percolation, evaporation, and evapo-transpiration.

Sub-basin – A large neighborhood drainage area, which represents the subdivision of a basin on the basis of natural and/or man-made flow patterns within the basin.

Swale - An open stormwater conveyance facility with side slopes typically equal to or greater than three units horizontally to one unit vertically (generally very shallow).

B. DRAINAGE FACILITIES INVENTORY

1. Operational Responsibility

The City of Leesburg, the State of Florida, the Florida Department of Transportation (FDOT), Lake County, and St. Johns River Water Management District are ultimately responsible for maintenance and permitting of the stormwater treatment and conveyance systems within and surrounding the City of Leesburg.

Highways such as U.S. 27, U.S. 441 and S.R. 44, which traverse the City, are completely under the jurisdiction of the FDOT. All stormwater facilities associated with these State highways are designed, operated, and maintained by the FDOT. C.R. 44A, C.R. 44C, 33, and 470, which traverse the City in an east-west direction, are completely under the jurisdiction of Lake County. Likewise, numerous minor and urban collector roads are maintained and operated by the City of Leesburg. In addition to these publicly owned drainage facilities, the City has numerous privately owned drainage facilities which are operated and maintained under a St. Johns River Water Management District Stormwater Permit by either a private company, individual, or homeowners' association. These private

drainage facilities typically serve residential subdivisions, multi-family developments, commercial, industrial and agricultural sites.

2. Analysis of Existing Drainage Facilities

In 1991, the City of Leesburg commissioned the preparation of a three-phase City of Leesburg Stormwater Management Utility Program. The three phases of the report were entitled Program Development, Program Implementation, and Program Operation. This report was commissioned in an attempt to provide a preliminary analysis of Leesburg's drainage facilities and to identify and rank the drainage basins within the Urban Service Area so that more detailed studies could be completed in the future according to the priority ranking of each basin. Phase 3 of the report, Program Operation – Part 1, is a comprehensive summary of the analysis of the City's stormwater facilities. The focus area of the study was limited to the City's 16.7-square mile Urban Service Area as delineated on Map VII-1. The study identifies the primary drainage basins and sub-basins within Leesburg, ranks the basins and sub-basins according to hydrological, hydraulic and water quality ratings, identifies problem areas and provides interim stormwater enhancement strategies prior to the preparation of detailed basin studies. The report includes discussions of the site-specific drainage basin parameters used in the analysis; techniques applied; results of the hydrologic and hydraulic analysis; water quality investigation; and ultimately the priority basin rankings based upon the analysis. The Phase 3, Part 1 report was completed in 1996.

a. Drainage Basin Delineation

The drainage study provided a preliminary delineation of basins and sub-basins in the Leesburg Urban Service Area through the use of existing infrastructure construction drawings, City of Leesburg drainage maps, USGS 7.5-minute quadrangle topographic maps (scale: 1inch = 2000 ft.), and personal observations provided by the City of Leesburg Public Works Department Staff. The Urban Service Area consists of a 16.7-square mile area located within the City's most urbanized areas. As illustrated on Map VII-1, 10 primary drainage basins were defined within the Urban Service Area. These primary drainage basins were further divided into 71 sub-basins, which included 55 "open" sub-basins, which have a positive surface discharge, and 16 "closed" sub-basins, which have no positive surface discharge. Open sub-basins generally have a defined point of stormwater discharge, such as a storm sewer pipe or open channel. Discharge from closed sub-basins occurs through infiltration into the ground, evaporation and evapo-transpiration only. The open basins have a combined drainage area of about 13.3 square miles, and the closed sub-basins have a combined drainage area of about 3.4 square miles, which represent about 80 and 20 percent of the Urban Service Area, respectively.

Of the 55 open sub-basins, 26 discharge to Lake Griffin, which borders the study area on the northeast; 16 discharge to Lake Harris, which borders the study area on the southeast; 7 discharge to a large wetland area, which borders the study area on the southwest; and 6 discharge to minor lakes and canals located northwest of the study area. The percentage of the Urban Service Area that discharges to Lake Griffin, Lake Harris, the southwest wetland and the northwest area is 32, 26, 11 and

11 percent, respectively. The remaining portion of the study area (20 percent) is contained within the 16 closed sub-basins.

b. Primary Drainage Basin Inventory

The following information was obtained from the Phase 3 Stormwater Management Utility Program. Inside the City's Urban Service Area as defined within the study, there are 10 distinct drainage basins, as shown on Map VII-1. The following provides a general description of each drainage basin.

(1) Bentley (BE): This basin drains approximately 1,101 acres of land lying on the south side of Lake Griffin, predominantly north of Highway 441, east of Shore Acres Drive and west of C.R. 44. The land area within this basin is comprised of primarily low-density residential land use (49%) with recreation and open space and medium density residential comprising 25% and 22%, respectively. This basin generally discharges into Lake Griffin.

(2) Carver Heights (CH): This basin drains approximately 1,045 acres of land southwest of Lake Griffin. The basin extends slightly south of the Seaboard Coastline right-of-way almost to Veech Road. Medium density residential and commercial land uses comprises 45% and 32% of this basin, respectively. This basin generally discharges into Lake Griffin.

(3) Dyches Lake (DL): The Dyches Lake drainage basin covers approximately 1,167 acres lying northwest of Lake Harris. The basin extends northwesterly past Hwy. 44 to Dyches Lake. The primary land use in this basin is medium density residential, compromising 39% of the land area. This basin discharges into the large wetland which boarders the area to the southwest.

(4) Lake Hollywood (LH): The Lake Hollywood drainage basin covers 807 acres located at the northwest end of Lake Harris. The basin extends north to Magnolia Street and west across Hwy. 27 to near Lone Oak Drive. The Lake Hollywood basin is compromised primarily of medium density residential (60%). This basin discharges into Lake Harris.

(5) Montclair (MO): This basin covers approximately 1,318 acres located west of Downtown Leesburg. The basin is bounded on the east by Lone Oak Drive and stretches north to Meyer Avenue, south past Hwy. 44 and west past Lake Robinson. 79% of the land area within this basin is comprised of commercial land use. This basin generally discharges into minor lakes and canals located in the northwest portion of the study area.

(6) Myrtle Lake (ML): This Basin covers 1,225 acres located west of Lake Griffin. The basin is bounded by C.R. 44C in the south and extends

north to Fruitland Park and west to Myrtle Lake. 87% of the land area within this basin is comprised of commercial land use. This basin generally discharges into minor lakes and canals located in the northwest portion of the study area.

(7) Sunnyside (SS): The Sunnyside drainage basin drains approximately 1,465 acres located at the north end of Lake Harris. This basin ends northerly from Johnsons Point to Tomato Hill and easterly from Cisky Park toward the Airport. Recreation and open space land use comprises 77% of the land area with the Sunnyside basin. This basin discharges into Lake Harris.

(8) Tally (TA): The Tally drainage basin covers 540 acres located on the west side of Lake Griffin. The basin stretched westerly from Lake Griffin across Hwy 27 to near Tally Road, south to C.R. 44C and north past South Dixie Ave. 59% of the land area within the Tally basin is comprised of commercial land uses. This basin discharges into Lake Griffin.

(9) Venetian Gardens (VG): The Venetian Gardens drainage basin encompasses 1,233 acres located on the north end of Lake Harris. This basin extends north from Lake Harris to Hwy 441. The basin stretches from the Tomato Hill area in the east, westerly to Venetian Gardens. The land area within the Venetian Gardens basin is comprised of 35% medium density residential and 27% low density residential land uses. This basin discharges into Lake Harris.

(10) Whispering Pines (WP): This Basin encompasses approximately 2,169 acres located on the southwest end of Lake Griffin. The basin stretched from Lake Griffin southwest across the Seaboard Coastline right-of-way to near Magnolia Street and westerly to Hwy. 27. The land area within the Whispering Pines basin is comprised of 44% medium density residential and 40% commercial land uses. This basin discharges into Lake Griffin.

C. STORMWATER FACILITIES ANALYSIS

1. Level of Service

In 1982, the State of Florida began to require that new development provide stormwater treatment in response to concerns over urban stormwater quality and flooding. This provision commonly required the construction of stormwater management facilities such as dry retention ponds, roadside swales, and/or wet detention ponds to allow pollutants to be removed from the runoff. However, development that occurred prior to 1982 did not have these stormwater criteria at the time of construction. This pre-1982 development describes much of the development contained within the City's Urban Service Area. As such, much of the stormwater runoff from Leesburg's urban area receives little to no treatment prior to discharge from an individual site.

Since 1982, the City and the SJRWMD have developed criteria for the management of stormwater runoff. The 10-, 25-, 50- and 100-year, 24-hour storm events were selected in developing the design criteria for drainage facilities. These storm events were selected to provide level of service (LOS) standards for the drainage system facilities developed within the City of Leesburg and are summarized below:

- *Principal arterial bridges* – Protection from 100-year, 24-hour storm event
- *Other bridges* - Protection from 50-year, 24-hour storm event
- *Cross drains* - Protection from 25-year, 24-hour storm event
- *Storm sewers* - Flooding from 10-year, 24-hour storm event
- *Detention/retention structures* - Protection from 25-year, 24-hour storm event
- *Canals, ditches, roadside swales or culverts for stormwater external to developments* – Protection from 25-year, 24-hour storm event.
- *Canals, ditches, roadside swales or culverts for stormwater internal to developments* – Protection from 25-year, 24-hour storm event

Additionally, the City of Leesburg requires stormwater management systems to provide water quality treatment volumes. The criteria requires systems provide the greater volume of:

- 1" of runoff from the developed site; or
- 2.5" runoff from the impervious site area.

This treatment volume is required to be recovered within 72 hours of the storm event through controlled discharge or infiltration.

2. Existing Urban Service Area Facilities Analysis

The Phase 3 report completed by the City provided an analysis of the 10 primary drainage basins within the City's Urban Service Area. The report ranked the priority of the basins for future detailed analysis and drainage improvements. The ranking of each basin was based upon an analysis of its hydrology and hydraulics conditions, a water quality assessment, and in consideration of known flooding problems within the basin. The hydrologic/hydraulic and water quality rankings were combined to produce a final basin ranking. The final ranking was developed by assigning a 2/3 weight to the hydrologic/hydraulic ranking and a 1/3 weight to the water quality ranking. Table VII-1 details the hydrology/hydraulic ranking, the water quality ranking and the final ranking of each basin.

Subsequent to the completion of the stormwater management report, the City of Leesburg, along with the majority of the Central Florida region, experienced heavy rainfall volumes over a three-month period. Increased water levels combined with additional rainfalls identified additional flooding areas within the Tally basin which were not previously noted within the stormwater report. The occurrence of flooding problems in areas previously thought not to have flooding problems resulted in a revision to the basin rankings. The revised basin rankings are also detailed in Table VII-1. It was also noted that a large

percentage of the flooding problems during this period occurred in basins with a high priority ranking. Thus reaffirming the ranking conclusions of the stormwater report.

3. Identified Flooding Problem Areas

In order to identify the problems areas within the City's Urban Service Area, several staff members of the Public Works Department who were most familiar with the City's drainage systems were interviewed as part of the Phase 3 Stormwater Analysis. At the conclusion of the interviews, 67 flood problem areas had been identified. The location of the problem areas and the drainage basin within which they are located are delineated within the Stormwater Management Utility Program. The problem flooding areas have various causes, some of which are listed below.

a. Drainage Problem Causes

- Older stormwater collection systems, such as those located in the Whispering Pines and Carver Heights Basins, have become undersized as new development has occurred in the upper portions of the basin. As a result, peak runoff events exceed the capacity of the existing system, causing localized flooding in adjacent roadways and property. In addition, high water velocities tend to cause erosion at the perimeter of culvert inlets and on the side banks of open channels, which may become steep and unstable.

- In the past, development in the Urban Service Area was allowed in areas where ground elevations are low in relationship to the downstream water body, making these areas prone to flooding. The relatively high tailwater conditions occurring at these locations severely limits the ability of larger conveyance facilities to eliminate these flooding problems.

- In the past, certain conveyance facilities may have been improperly designed or constructed, or both, leading to the inefficient use of channel cross-sections and siltation problems in open channels and storm sewer pipes and culverts. Accordingly, facilities of this type require frequent maintenance so that their hydraulic capacities remain adequate.

- The Urban Service Area contains numerous natural depression areas that tend to retain stormwater runoff until it infiltrates into the ground or that hold the runoff for a period of time, reducing the downstream peak discharge. Accordingly, these natural depressional areas provide a strong benefit to the stormwater collection system. In the past, many of these natural depressional areas have been filled for development, increasing downstream discharges and drainage problems, or have been developed without prior filling, causing drainage problems within the depressional area.

- Portions of the Urban Service Area rely on roadside swales to collect and discharge stormwater runoff. However, it is not uncommon for these swales to be filled in or blocked in some manner (e.g. driveways) because their importance to the surface drainage system is not always evident to the adjacent property

owner. As a result, adjacent roadways and properties may experience increased flooding.

In addition to the known problem flooding areas, Leesburg contains various areas which have been identified as areas of 100-year flooding as identified by National Flood Insurance Rate Maps. Flood zone maps found in the Conservation Element of this Growth Management Plan identify these areas. The City of Leesburg protects the flood zones by mandating that no development shall result in an increase in the 100-year flood elevation. Development and placement of fill within the floodplain is allowed provided an equal volume of compensating storage is provided above the ordinary high water table and below the 100-year flood elevation. In addition, the City requires that fill placed within the floodplain shall not reduce the capacity of the floodway or increase the base flood elevation, either upstream or downstream.

4. Future Demand and Facility Improvements

The Phase 3 Stormwater Report prioritized Leesburg's ten (10) primary basins for future analysis. To date, detailed drainage analyses have been completed for three of the ten primary basins: Carver Heights, Whispering Pines, and the Tally basin. The drainage improvements recommended within these studies have been constructed for the Carver Heights basin only. Drainage improvements for the Whispering Pines and Tally basins are currently in the funding stages. Preliminary design and modeling for the Tally basin is presently underway. The Capital Improvements Program contains a list of the specific capital drainage improvements planned during the immediate planning period.

As the priority basins identified within the City's Master Stormwater Plan are further analyzed and proposed drainage facilities improvements are constructed, many of the drainage issues and problem areas identified above should be alleviated to the extent required to meet the desired LOS established by the City of Leesburg.

In addition to ranking the primary basins, the Phase 3 Stormwater Report provided interim stormwater recommendations which could be implemented immediately to enhance the function and performance of the City's drainage facilities. These recommendations included the following:

a. Street Sweeping Program

The primary function of a street sweeping program is to remove trash, tree organic materials, and pollutant solids from roadways within the Urban Service Area. Currently, the City's street sweeping program sweeps all City streets and the Airport six (6) times per year. The City has estimated that 362 cubic yards and 1,000 cubic yards were collected through street sweeping in 2000-2001 and 2001-2002 respectively.

b. Swale Maintenance Program

Portions of the Urban Service Area rely on roadside swales for collection and transmission of stormwater runoff. These swales, which also provide water quality benefits through infiltration, often become filled in or blocked in some manner over time. Regular maintenance and citizen education would ensure the proper

functioning of these facilities. Currently, the City cleans and restores swales on an as needed basis. The City cleaned/restored 19,300 linear feet of swale in 2000-2001 and 3,300 linear feet of swale in 2001-2002.

c. Drainage Facilities Maintenance

Removal of sediments and organic material from inlet grates and catch basins maintains the capacity of the drainage facilities while reducing the quantity of pollutants and organics discharged into the receiving water bodies. The City cleans storm inlets on a regular basis. The City has cleaned 2,760 and 2,000 inlets in 2000-2001 and 2001-2002 respectively.

d. Preservation of Natural Depressional Areas

Numerous natural depressional areas exist throughout the Urban Service Area. These areas retain stormwater runoff infiltrating a portion of the runoff into the ground thereby providing water quality benefits as well as reducing downstream peak discharge rates. Preservation and/or acquisition of these areas should be considered.

e. Stormwater Best Management Practices

Stormwater BMP's, such as proper erosion control measures, inlet protection, etc., could be adopted to improve the quality of stormwater runoff and reduce the quantity of organics and suspended solids within runoff.

5. Capital Stormwater Improvements Funding

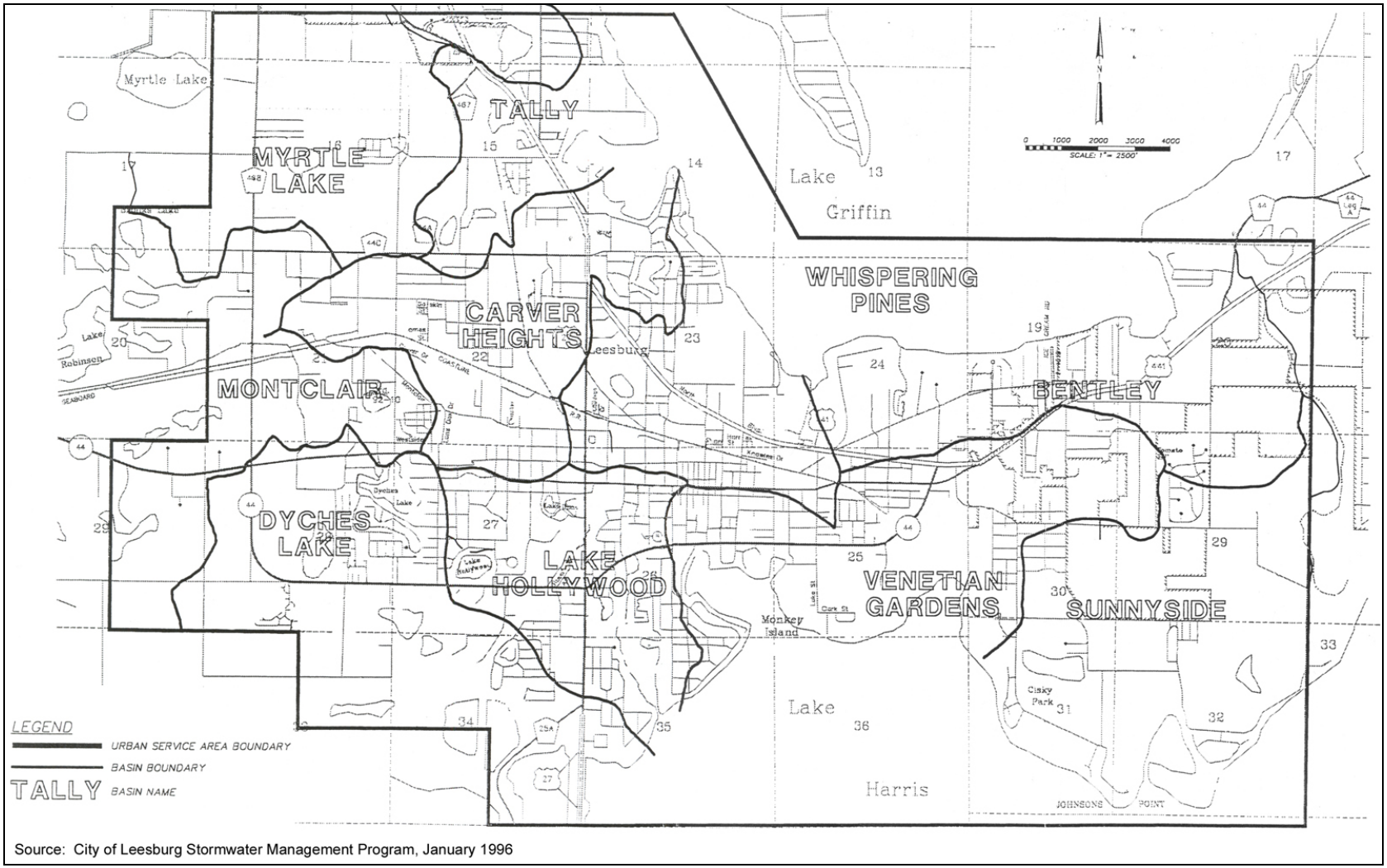
To fund required stormwater improvements, the City initiated a stormwater utility fee structure in 1991. Since that time, the City has developed and implemented a more equitable system, which takes into account land use and amount of impervious area when calculating the required fees. Thereby increasing the fee amount for commercial and industrial uses which generate larger stormwater runoff volumes with greater pollutant loadings.

Table VII- 1: Primary Basin Rankings

Basin	H/H Ranking	WQ Ranking	Basin Score	Final Basin Ranking	Adjusted Basin Ranking
Carver Heights (CH)	1	2	1.3	1	1
Whispering Pines (WP)	2	5	3.0	2	3
Lake Hollywood (LH)	4	1	3.0	3	4
Venetian Gardens (VG)	3	7	4.3	4	5
Montclair (MO)	5	3	4.3	5	6
Dyches Lake (DL)	6	8	6.7	6	7
Tally (TA)	8	6	7.3	7	2
Myrtle Lake (ML)	9	4	7.3	8	8
Bentley (BE)	7	9	7.7	9	9
Sunnyside (SS)	10	10	10.0	10	10

Source: City of Leesburg Phase 3 – Part 1 Report by CH2M Hill, 1996
H/H – Hydrology/Hydraulic
WQ – Water Quality

Map VII- 1: Urban Service Area & Primary Drainage Basin Delineation



Source: City of Leesburg Stormwater Management Program, January 1996

D. GOALS, OBJECTIVES, AND POLICIES

GOAL 1: Provide a stormwater management system of appropriate capacity to protect the life and property of the citizens of Leesburg, as well as decreasing adverse environmental impacts attributable to stormwater runoff.

Objective 1.1: ***Flood Control.*** The City shall achieve and maintain the following adopted stormwater management level of service standards that shall meet or exceed state and federal regulations for stormwater quality and quantity.

Policy 1.1.1: New development and redevelopment issued a development order shall meet the standards established by the Stormwater Management Ordinance, Chapter 28 of the City Code of Ordinance as follows:

- Principal arterial bridges – Protection from 100-year, 24-hour storm event
- Other bridges - Protection from 50-year, 24-hour storm event
- Cross drains - Protection from 25-year, 24-hour storm event
- Storm sewers - Flooding from 10-year, 24-hour storm event
- Detention/retention structures - Protection from 25-year, 24-hour storm event
- Canals, ditches, roadside swales or culverts for stormwater external to developments – Protection from 25-year, 24-hour storm event.
- Canals, ditches, roadside swales or culverts for stormwater internal to developments – Protection from 25-year, 24-hour storm event

Policy 1.1.2: New development and redevelopment issued a development order shall meet the standards established for water quality by the Stormwater Management Ordinance, Chapter 28 of the City Code of Ordinance.

Policy 1.1.3: At a minimum, the peak post-development runoff rate for stormwater management system shall not exceed the peak pre-development runoff rate for a 3.5-inch, one-hour storm event. The recovery time for the retained volume shall be less than 72 hours.

Policy 1.1.4: If downstream facilities (from the positive outfall of the development) are inadequate to convey the peak discharge for the design storm event, the development shall be required to accommodate its proportion of basin runoff rate above the downstream systems actual capacity.

Policy 1.1.5: Stormwater treatment shall be required to serve the development through a stormwater treatment system which is site-specific; or serve sub-areas of the City and, if applicable, Lake County. Regardless of the

area served, the stormwater treatment system must provide a level of treatment which meets the requirements of the Florida Administrative Code (F.A.C.), the City of Leesburg Code of Ordinance, and the criteria of the St. Johns River Water Management District.

Objective 1.2: ***Stormwater Master Plan.*** The City shall maintain a Stormwater Master Plan which establishes high water elevations, addresses existing deficiencies, and coordinates the construction of new and replacement facilities.

Policy 1.2.1: The City shall maintain a detailed inventory and analysis of the existing drainage facilities within its municipal boundaries in the City's Stormwater Master Plan.

Policy 1.2.2: The City shall maintain a digital map of the drainage facilities within the City and require new developments to provide copies of their stormwater design for incorporation into the City's digital map.

Policy 1.2.3: At a minimum, the City shall utilize the expertise of a professional engineer to run models of the City's stormwater system based upon critical design storm events and update the Stormwater Master Plan every five (5) years. Areas that have been annexed into or adjacent to the City's Urban Service Area since the time of the last study shall also be included in this analysis.

Policy 1.2.4: The Stormwater Master Plan shall include review of stormwater quality discharged into surface water bodies and recommendations for needed improvements.

Policy 1.2.5: The Stormwater Master Plan shall establish priorities for stormwater system replacements, insuring correction of existing drainage facility deficiencies, and providing for future facility needs.

Policy 1.2.6: The City shall maintain its stormwater utility fund and shall adjust the rate fees every three (3) years to provide for inflation and increase construction costs.

Policy 1.2.7: Annually, the City shall rely on the Stormwater Master Plan to prepare the City's annual budget for funding of stormwater facility replacement and deficiency upgrades.

Policy 1.2.8: The City shall utilize the Stormwater Master Plan for preparation of the five (5) year Capital Improvement Plan to correct existing deficiencies and prepare for future stormwater demands.

Objective 1.3: ***Flood Plain.*** The City shall restrict development within the 100-year floodplain to those uses, which will not adversely affect the capacity of the floodplain to store water.

Policy 1.3.1: The City Code of Ordinances shall require compensating storage volumes for floodwater displaced by development. Compensating storage volumes shall be provided above the high water table elevation and below the elevation of the 100-year flood.

Policy 1.3.2: The City shall require the finished floor elevation of all structures within the flood plain to be a minimum of eighteen (18) inches above the 100-year flood elevation and twelve inches above the crown of the adjacent street.

Policy 1.3.3: Where feasible, the floodplain shall be reserved for conservation, open space and recreation uses to preserve the natural flow of runoff.

Policy 1.3.4: The City shall strive to protect and/or acquire natural depressional areas within its Urban Service Area to protect existing flood storage volumes.

Objective 1.4: ***Development Impacts.*** The City shall protect natural resources and the existing municipal stormwater network from the impacts of development and construction.

Policy 1.4.1: The City will continue to maintain a stormwater utility fee to provide funding for the maintenance and operations of stormwater facilities within the City of Leesburg. The City shall update the stormwater utility fee every three years.

Policy 1.4.2: The City shall review detailed calculations for new projects prepared by a registered professional engineer which show that retention and detention will be accomplished to meet the adopted level of service, and that there will be no negative impacts to downstream water quality or quantity.

Policy 1.4.3: The City shall review the characteristics and limitations of soil types for new projects with regard to percolation and infiltration.

Policy 1.4.4: The City shall review the impacts of proposed topographical changes for new development.

Policy 1.4.5: The City shall review the impact proposed stormwater system shall have on adjacent native vegetation and/or wetlands.

Policy 1.4.6: The City shall require that erosion and sediment control practices be utilized to protect water bodies, wetlands and watercourses from siltation during construction activities.

Policy 1.4.7: The City shall require adequate easements for stormwater system maintenance and conveyance.

Policy 1.4.8: New developments and redevelopment will be required to accommodate upland flow, which presently discharges through the site.

Objective 1.5: ***Intergovernmental Coordination***. The City of Leesburg shall educate citizens and coordinate with applicable jurisdictions to address stormwater issues of mutual concern and to provide adequate levels of service.

Policy 1.5.1: The Stormwater Master Plan shall be developed in coordination with Lake County and regulatory agencies, such as the Florida Department of Environmental Protection, the St. Johns River Water Management District, and the Florida Department of Transportation.

Policy 1.5.2: The Stormwater Master Plan process will include public participation review of the plan by affected citizens and City Advisory Committees.

Policy 1.5.3: Maintain a complaint monitoring system to log complaints and initiate work orders for corrective actions and audit monthly activity reports generated for performance evaluation.

Policy 1.5.4: The City will support the St. Johns Water Management District's Surface Water Improvement and Management (SWIM) program regulations, with specific emphasis on Lake Griffin and Lake Harris.