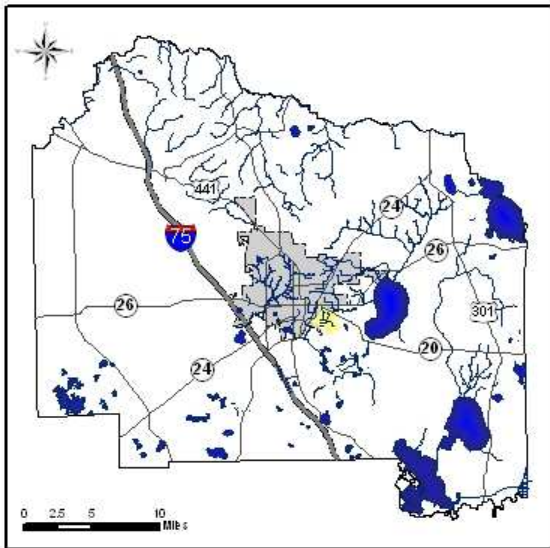


## 5.1 Introduction

The Calf Pond Creek Watershed is located in the southeast quadrant of Gainesville (Figure 5.1). The basin boundary extends north to Hawthorne Road (SR 20), south to SE 30<sup>th</sup> Place, west to Williston Road, and east to SE 27<sup>th</sup> Street (Figure 5.2). Calf Pond Creek flows southeast and empties into Calf Pond, a relatively shallow pond, approximately 8.5 acres in area. In 1939 110 acres of land around and including Calf Pond was purchased by Mr. and Mrs. Alva Leroy and Mabel Grace Blake, who utilized the land for raising cattle (Keene 2002).



**Figure 5.1** Location of the Calf Pond Creek Watershed in Alachua County

The Calf Pond Creek Watershed is a hydrologically closed basin, meaning that surface water flows into the watershed but no surface flow leaves the watershed. The Calf Pond Creek basin encompasses nearly two square miles of residential and agricultural land. Land surface elevation ranges from 135 feet National Geodetic Vertical Datum of 1929 (NGVD) in the upper basin to 80 feet NGVD near Calf Pond.

The Calf Pond Creek Watershed is located along the southern margin of the Northern Highlands physiographic province (White 1970). As land surface elevations decrease toward Calf Pond, the creek crosses the Cody Scarp (toe at 100 feet NGVD) into the Alachua Lake Cross Valley (White 1970). Based on elevation, both the terminus of the creek and Calf Pond are located in the Alachua Lake Cross Valley physiographic province.

Sediments of the Hawthorn Group formations, sands, clayey sands, sandy clays, silts, carbonates (limestone and dolostone), and phosphates are exposed along the stream banks in the lower reaches of the watershed, where more recent deposits have been eroded (Thomas et al 1985, Scott 1988). Surface water in the Calf Pond Creek Watershed either evaporates or is discharged to groundwater via sinkholes within the pond.

Soils in the Calf Pond Creek Watershed are typically sandy throughout. Major soil types include the Myakka sand, Pompano sand, and Tavares sand (Thomas et al 1985). The Tavares sand being moderately well drained, while the Myakka and Pompano are reported to be poorly drained. Small areas of Wauchula-Urban land complex and Newnans sand, the latter being somewhat poorly drained, are reported to be present in the upper portions of the watershed (Thomas et al 1985). Blichton sand, a poorly drained soil with ironstone and phosphatic limestone, is found in the vicinity of Calf Pond. The limestone is indicative of the presence of the Hawthorn Group formations near the surface. The closed stream to sink basin is indicative of the region's karst geology.

Land use in the watershed is primarily low density residential (approximately 55%), with 25% agricultural and silvicultural, 19% natural forest habitat, and approximately 1% commercial. Agricultural lands include pasturelands, croplands, blueberry farms, and tree farms. Residential communities are scattered about the basin and include Lincoln Estates, Live Oak Acres, Greentree Village, and Calf Creek. Institutional uses include The T. B. McPherson Recreation Center and Meadowbrook Park. Commercial facilities in the watershed include four auto repair facilities, all located just south of University Avenue near the creek headwaters, and Suntec Paint and Almond Oil Company on the southwestern edge of the basin. The Florence C&D landfill is currently permitted to receive construction and demolition debris and is the only industrial site within the basin.

## 5.2 Watershed Description

Calf Pond Creek and its tributaries are characterized by several channelized areas (mostly storm drainage canals near residences), natural stream channels, seeps, and wetlands. Baseflow in Calf Pond Creek is a result of surficial and intermediate aquifer seeps and springs within the basin. ACEPD personnel conducted three stream surveys of Calf Pond Creek in 2002.

### 5.2.1 The Main Channel

The main channel of Calf Pond Creek begins south of SE 7<sup>th</sup> Avenue and east of SE 15<sup>th</sup> Street. As it flows south, the main channel is joined by three tributaries, Laterals A, B, and C (Figure 5.2). Lateral A flows east from SE 15<sup>th</sup> Street and joins the main channel in the vicinity of SE 22<sup>nd</sup> Avenue. Lateral B flows east from SE 15<sup>th</sup> Street and joins the main channel near SE 18<sup>th</sup> Avenue. Lateral C begins in the vicin-

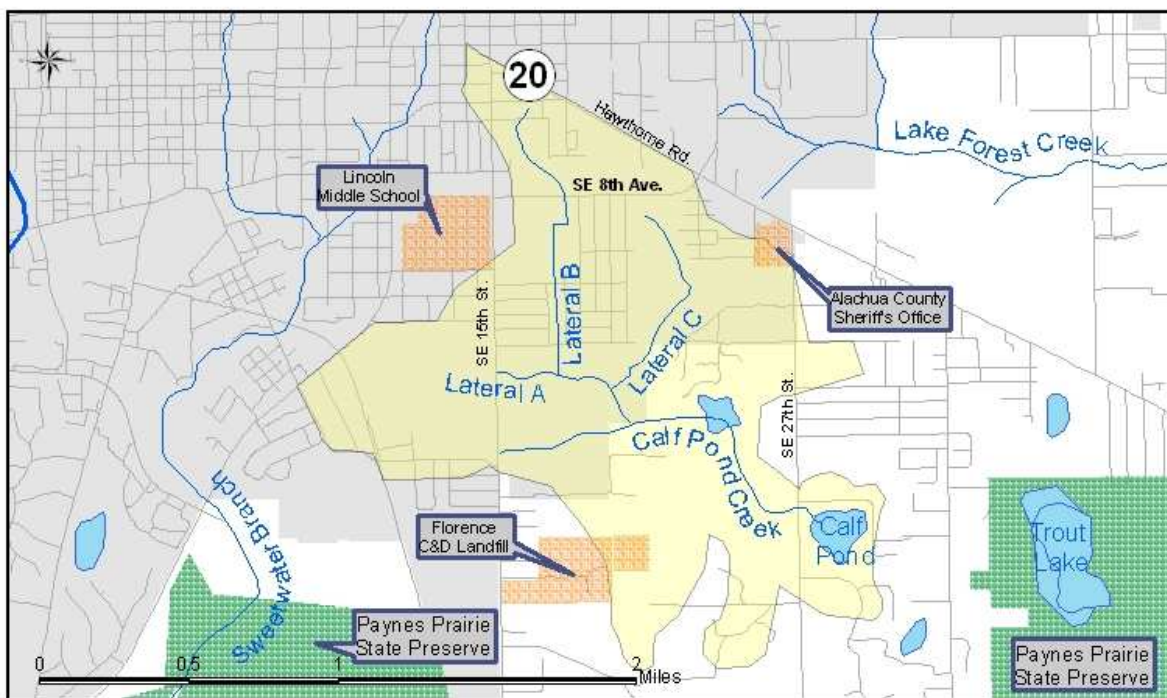


Figure 5.2 Notable features in the Calf Pond Creek Watershed

ity of SE 11<sup>th</sup> Avenue and flows southwest to join the main channel near SE 18<sup>th</sup> Avenue. The main channel continues to flow southeast and becomes braided as it flows into a wetland south of SE 22<sup>nd</sup> Avenue. Two channels emerge from the wetland; the first discharges to a forested wetland to the southwest, and the second continues flowing southeast under SE 27<sup>th</sup> Street and into Calf Pond.



**Calf Pond**

### **5.2.2 SE 7<sup>th</sup> Avenue to the Confluence with Laterals B and C**

The surface flow of Calf Pond Creek originates between SE 7<sup>th</sup> Avenue and SE 8<sup>th</sup> Avenue, just south of Hawthorne Road (SR 20), and flows south through the Lincoln Estates subdivision to SE 15<sup>th</sup> Avenue. Creek banks through this residential area are 10 to 13 feet high and moderately stable. The main channel crosses SE 15<sup>th</sup> Avenue at the Lincoln Estates entrance and continues south where it converges with Laterals B and C. The creek is intermittently dry in this area with stable banks 8 to 10 feet high. The creek is surrounded by remnants of an old blueberry farm and natural dry scrub and grasses.

### **5.2.3 SE 27<sup>th</sup> Avenue and SE 24<sup>th</sup> Place**

The area surrounding Calf Pond Creek, in the vicinity of SE 27<sup>th</sup> Avenue and SE 24<sup>th</sup> Place lacks intensive development. As a result, stream banks are relatively low, stable, and protected by vegetative cover consisting of both native and exotic species. Streambed erosion is slight and sand smothering is moderate.

### **5.2.4 Lateral A Tributary**

Lateral A tributary emerges from a 4-foot diameter reinforced concrete pipe (RCP) culvert near SE 15<sup>th</sup> Street and SE 22<sup>nd</sup> Avenue, and flows east via a channelized ditch. Heavy sand smothering and moderate to heavy streambed scouring indicate accelerated erosion in this area. Bank heights range from one to four feet and are moderately unstable. One particularly eroded area near the McPherson Recreation Center has severely scoured banks and substantial sand deposits in the streambed. The riparian zone in this area consists of concrete tennis courts, loose soil, and grasses. Further downstream toward the confluence with Calf Pond Creek, the riparian zone is composed of cropland and open fields.

## **5.3 Physical Habitat and Biology**

A Habitat Assessment and BioRecon were conducted by ACEPD and WAV personnel in 2001 on Calf Pond Creek just upstream of SE 27<sup>th</sup> Street. This site scored 137 out of 160 possible points, or 86%, on the Habitat Assessment. This site scored low on substrate availability with less than 10% quality habitat coverage. BioRecon results rated the creek as impaired most likely due to the lack of suitable macroinvertebrate habitat and the intermittent nature of the stream (Table 5.1). In addition, the ri-

parian zone was fragmented, reducing its quality as a buffer. The creek is intermittent during droughts, primarily due to the small size of the watershed and typical low flows. During low rainfall periods, the creek often consists of disconnected pools of water.

**Table 5.1 BioRecon scores for Calf Pond Creek in October 2001**

Metric	Target Value	CPC27
Taxa Richness	≥ 18	<b>16</b>
EPT	≥ 4	<b>2</b>
FL Index	≥ 10	<b>7</b>
Metrics Passed		<b>0</b>
Biological Condition		<b>Impaired</b>

**5.4 Pollution Sources**

**5.4.1 Point Sources**

Calf Pond Creek flows through several commercial and industrial areas where potential point sources of pollution may exist. The only point source currently re-



**Calf Pond Creek during the dry season**

corded is the Florence C&D Landfill located along the western fringe of the watershed. The Florence Landfill is an unlined, private landfill that accepts construction and demolition waste. Approximately one-third of the landfill is located in the Calf Pond Creek Watershed. Samples from surficial aquifer monitoring wells at the landfill have shown sulfate concentrations exceeding the 250 mg/L drinking water standard (Dominion, Inc. 2001).

There is the potential for additional point sources of pollution in the commercial areas of the watershed. Four automobile repair facilities are located north of the main channel on the south side of University Avenue. Also located in the watershed are Almond Oil Company, a petroleum distributor for Citgo gas stations which stores and supplies home heating oil, kerosene, and diesel products; and Suntec Paint, a paint manufacturer and paint factory outlet since 1947. A local drycleaner, Air-Way Dry Cleaners, could also pose a threat to the watershed; however, it is listed as an “honor roll member” among Gainesville dry cleaners as having no violations of the Alachua County Hazardous Materials Management Code (ACEPD 2001a).

**5.4.2 Nonpoint Sources**

Calf Pond Creek flows through residential, agricultural, and silvicultural areas, where the potential exists for nonpoint pollution inputs into the creek. Fertilizers, pesticides, and herbicides are common pollutants from these land uses. Storm runoff from major roads, including University Avenue, Hawthorne Road, and Williston Road, can transport petroleum products, sediment, and other harmful

substances directly into Calf Pond Creek and its tributaries. Additionally, there is the potential for increased stream bank erosion and sediment loads due to clear cutting in silvicultural areas and the loss of riparian buffers in agricultural areas.

## 5.5 Baseflow Water Quality

In February 2002, ACEPD personnel began sampling Calf Pond Creek, just upstream of SW 27<sup>th</sup> Street (CPC27) and Calf Pond proper (CALFP). Calf Pond Creek was dry for an extended period between April through June 2002, and sampling was curtailed at both sites in August 2002. Stormwater sampling was not conducted in the Calf Pond Creek Watershed.

### 5.5.1 Field Parameters

Dissolved oxygen, pH, specific conductance, and turbidity for both Calf Pond Creek and Calf Pond (Table 5.2) are typical for the streams and lakes surveyed in this study. These conclusions, however, are based on a much smaller data set due to limited sampling within the Calf Pond Creek Watershed.

Table 5.2 Median field parameter values for samples collected from Calf Pond and Calf Pond Creek

Parameter	Units	CPC27	CALFP
Water Temp (WTEMP)	°C	17.3	26.6
pH	SU	7.49	7.66
Sp. Conductivity (COND)	uS/cm	227	229
Turbidity (TURB)	NTU	2.3	4.3
Dissolved Oxygen (DO)	mg/L	7.28	7.73

Samples were collected from Calf Pond Creek (CPC27) in February, March, and July 2002, and from Calf Pond (CALFP) from February through July 2002

### 5.5.2 Nutrients

Nutrient data for Calf Pond Creek and Calf Pond show median concentrations that are similar to the Newnans Lake Watershed streams that flow through wetlands including Lake Forest Creek at CR 329B (Table 5.3).

Table 5.3 Median total nutrient concentrations for samples collected from Calf Pond and Calf Pond Creek

Nutrient	Units	CPC27	CALFP
Nitrate plus nitrite (NO <sub>x</sub> -T)	mg/L	0.082	0.011
Total ammonia (NH <sub>4</sub> -T)	mg/L	0.017	0.018
Total Kjeldahl Nitrogen (TKN)	mg/L	0.662	1.267
Total Nitrogen (TN-T)	mg/L	0.797	1.274
Orthophosphate (PO <sub>4</sub> -T)	mg/L	0.075	0.017
Total phosphorus (TP-T)	mg/L	0.124	0.074

Samples were collected from Calf Pond Creek (CPC27) in February, March, and July 2002, and from Calf Pond (CALFP) from February through July 2002

### 5.5.3 Coliform Bacteria

The single sample collected for fecal coliform bacteria in Calf Pond Creek showed 4 colony forming units (CFU)/100ml, well below the maximum allowable one-time limit of 800 CFU/100mL (FDEP 1996a). No odors related to potential coliform bacteria were noted during the stream survey.

## 5.6 Ecosystem Health

### 5.6.1 Biological Integrity

Plant species in the riparian zones of Calf Pond Creek include slash pine (*Pinus elliottii*), longleaf pine (*Pinus palustris*), water oak (*Quercus nigra*), scrub oak (*Quercus inopina*), southern magnolia

(*Magnolia virginiana*), red maple (*Acer rubrum*), and sweetgum (*Liquidambar styraciflua*) with an understory of wax myrtle (*Myrica cerifera*), blueberry (*Vaccinium* sp.), and southern elderberry (*Sambucus canadensis*). Vegetation surrounding Calf Pond includes live oak (*Quercus virginiana*), water oak, slash pine, hickory (*Carya* sp.), red maple, willow (*Salix* sp.), exotic Chinese tallow (*Sapium sebiferum*), and blue flag iris (*Iris virginica*).

Several stretches along the main channel appear to be undisturbed by human activity. Diverse riparian habitats along Calf Pond Creek include forested wetlands, mixed hardwood forest, upland pine-turkey oak (*Quercus laevis*) associations, croplands, and pasturelands. The watershed supports typical urban animals, including raccoon, opossum, and armadillos, while the more wooded areas are home to deer populations.

The riparian habitat diversity, stream sinuosity, and low, stable banks in areas with little human disturbance suggest that further BioRecon analyses should be conducted during higher flow conditions to determine whether impairment is due to low flow or poor habitat conditions.

### 5.6.2 Physical Integrity

Approximately 60% of Calf Pond Creek is artificially channelized, while the rest of the creek retains its natural sinuosity. The channelized areas of the creek are located in the northern portions of the watershed, between SE 7<sup>th</sup> Avenue and the junction of Laterals B and C, and along portions of Lateral A. These channelized areas show problems of erosion and sand smothering. The remaining 40% of the creek flows

naturally through mixed farmland, upland, and wetland areas before it becomes channelized again as it flows under SE 27<sup>th</sup> Street, prior to entering Calf Pond.

### 5.7 Hydrology

Calf Pond Creek is characterized by low flow. While only three flow measurements were made on Calf Pond Creek, the mean flow was 0.40 cfs (Appendix F). This limited dataset provides no indication as to the magnitude of stormflows. It is clear, however, that the stream has intermittent flow, and during low rainfall periods is comprised of disconnected pools of water.

### 5.8 Summary

Inadequate riparian buffer widths and riparian vegetation quality and the potential for point source pollution (Florence Land-fill) and nonpoint source pollution (stormwater runoff) are the main concerns in this watershed.

Activities are underway through the WAV program and Adopt A River to promote public education to help retain the aesthetics and ecological functions of the watershed. Both organizations have been conducting public information activities in the form of storm drain (curb) marking and creek cleanups in the watershed.

Improvements to stream buffer widths and vegetative quality need to be undertaken. It is essential to maintain existing good quality native vegetative buffers. Efforts should also be made to remove invasive exotic species, to reduce in-stream erosion, and to provide greater upper basin storage for stormwater. Based on ACEPD stream segment inventories, no major restoration activities requiring large capital expenditures are indicated.