Chapter 6 EXISTING CONDITIONS
LEVEL OF SERVICE ANALYSIS

6.1 Introduction

This chapter briefly describes the level of service (LOS) methodology used to analyze the Lower Sweetwater Creek (LSC) watershed and the existing conditions LOS deficiencies within the study area. Figures 6-1 to Figure 6-6 contain a graphical representation of the LSC level of service analysis for various storm events up to 100-yr/24-hr frequency while Table 6.1 shows all the results in each junctions identified in connectivity diagram network. However, the discussion will be limited up to County’s ultimate (target) 25-year 24-hour LOS.

Discussion areas include the following topics below:

Level of Service Methodology
Level of Service Designations

The LOS designations are discussed for the LSC systems listed below:

Peppermound Creek
Lower Sweetwater Creek South System
Lower Sweetwater Creek North System
Henry Street Canal West System
Henry Street Canal East System

6.2 Level of Service Methodology Determination

The Hillsborough County Comprehensive Plan, Stormwater Management Element contains definitions for level of service flood protection designations. According to these definitions, a storm return period and duration (i.e. 25-year/24-hour) and letter designation (i.e. B) are needed to define the level of flood protection (i.e. 25-year/24-hour level B). The flood level designations contained in the Comprehensive Plan are A, B, C and D, A being the highest level and D being the lowest. However, these criteria are somewhat subjective. Therefore, it is necessary to establish quantitative criteria by which to assign LOS designations. An allowable tolerance that is demographically representative for Hillsborough County before flooding can be classified was assigned to LOS designations A-D as shown in Table 6.2 below. This table contains the interpretation of the Comprehensive Plan definitions used in the LOS analysis herein.
Table 6.2  Level of Service Definition Interpretations

<table>
<thead>
<tr>
<th>Level</th>
<th>HC Comprehensive Plan Definitions</th>
<th>Master Plan Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No significant street flooding</td>
<td>No flooding</td>
</tr>
<tr>
<td>B</td>
<td>No major residential yard flooding</td>
<td>Street flooding is 3” or more above the crown</td>
</tr>
<tr>
<td>C</td>
<td>No significant structure flooding</td>
<td>Site flooding is 6” or more</td>
</tr>
<tr>
<td>D</td>
<td>No limitation on flooding</td>
<td>Structure flooding</td>
</tr>
</tbody>
</table>

The LOS designations contained in the Comprehensive Plan contain the assumption that sites are higher than roads and structures are higher than sites. However, this is not always the case. The LOS analysis methodology used herein evaluates road, site and structure landmark elevations independently.

The Comprehensive Plan contains estimated Adopted (existing conditions) and Ultimate (proposed) LOS designations for several watersheds in Hillsborough County. According to the Comprehensive Plan, the 25-year/24-hour level B is the target LOS for all areas of Hillsborough County except for the Rocky/Brushy Creek and Sweetwater Creek watersheds. One goal of this WMMP is to update the LOS designation for LSC with the results of a formal LOS analysis for this watershed. The LOS analysis for existing conditions is contained in this chapter.

6.2.1 Establishment of Landmark Elevations

In order to evaluate the LOS for a watershed, landmark elevations must first be determined. These elevations refer to landmarks contained in the LOS definitions, including roads, sites and structures. Landmark elevations are established for every subbasin in the watershed. These landmarks then serve as a tool for determining the level of service for the subbasin, and on a broader scale, the system and the watershed. The landmark elevations established for LOS analysis are the critical or lowest landmark elevations in a subbasin. The critical landmark elevations are reflective of the worst case flooding that could occur in a subbasin. These are obtained from survey data and from topographic analysis. Every subbasin in the watershed is examined for the critical structure, site and road elevation as shown in Table 6.3. Table 6.3 contains landmark elevations determined for each LSC subbasin in the unincorporated portion of Hillsborough County. These landmark elevations reflect the flood depth tolerance contained in Table 6.2.
6.2.2 Comparison of Computed Results and Landmark Elevations

Using flood protection LOS designation criteria described and contained in Table 6.2, the landmark elevations for each subbasin are compared to the computed results of the hydraulic model. In general, computed result for the most downstream junction was used for comparison with landmark elevations. Table 6.3 compares the difference between established landmark elevations and computed water surface elevations for the 2.33-yr/24-hr, 5-yr/24-hr, 10-yr/24-hr, 25-yr/24-hr, 50-yr/24-hr and 100-yr/24-hr storm events. The water surface profiles from model results for LSC main channel and Henry Street Canal are also shown in Exhibit 6-1 and 6-2, respectively. All model inputs and summarized outputs are listed in Appendix A & B.

6.3 Level of Service Designations

LOS designations are assigned in three levels of detail: subbasin, system and watershed. Subbasins were aggregated into seven systems (Peppermound Creek, Lower Sweetwater Creek South, Lower Sweetwater Creek North, Henry Street Canal West, and Henry Street Canal East) according to general conveyance system and drainage patterns. For each return period storm event, the LOS designation is first determined for the subbasin. Then the LOS is determined for the individual systems based on the aggregated subbasins comprising the system. Finally, the LOS designation is determined for the overall watershed. The LOS of the LSC watershed is reflective of the worst case system and the LOS of the system is reflective of the worst case subbasin. Figures 6-1 to 6-6 contain a graphical representation of the LSC level of service analysis for the 2.33-yr/24-hr, 5-yr/24-hr, 10-yr/24-hr, 25-yr/24-hr, 50-yr/24-hr, and 100-yr/24-hr storm events.

It is important to be aware of the limits of the methodology used for in the LOS analysis. Most landmark elevation information was taken from topographic maps, some of which are approximately 20 years old. In addition, the LOS analysis may not identify flood protection deficiencies for secondary systems (local storm sewer system) contained in a subbasin since only the major systems and laterals are contained in the hydraulic model. Conversely, since only the critical landmark elevations were identified in each subbasin, areas within a subbasin may contain a higher LOS than that assigned.

6.3.1 Peppermound Creek System (PCS)

South of the Town N’ Country System lies the Peppermound Creek System. The general location of the PCS is south of Hillsborough Ave., north of Memorial Ave., east of Webb Road and west of Kelly Road.

The PC System has a LOS C for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, Localized street and site flooding will occur in the PCS. General locations of predicted street and site flooding are listed
Street flooding during the 25-year/24 hour storm event:
- Halifax Drive
- Town N’ Country Blvd
- Winston Avenue
- Springside Lane
- Tanglewood Lane
- Glenview Lane
- Cornwall Lane

Site flooding during the 25-year/24 hour storm event:
- Northeast of Halifax Drive and Dell Drive intersection
- Near Cornwall Lane and Halifax Drive intersection
- North and south of Tanglewood Lane
- Near Town N’ Country Plaza Shop Center

### 6.3.2 Lower Sweetwater Creek South System (LSCSS)

The Lower Sweetwater Creek South System (LSCSS) is located just east of the PCS. The LSCSS’ general location is north of Memorial Highway and South of Hillsborough Avenue. Kelly Road borders LSCSS system on the west and Eisenhower Boulevard on the east.

The LSCSS has a LOS B for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, local street flooding will occur on Bray Road.

### 6.3.3 Lower Sweetwater Creek North System (LSCNS)

Lower Sweetwater Creek North System (LSCNS) is located east of Town N’ Country and north of LSCSS. The general location of the LSCNS is south of Fountain Avenue and north of the Henry Street Canal. Hanley Road borders the LSCNS system on the west and Sweetwater Creek on the east.

The LSCNS has a LOS C for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, Localized street and site flooding will occur in the LSCNS. In the LSCNS’ Hanna Avenue and Armand Drive are predicted to have localized flooding and localized site flooding is predicted to occur along Comanche Avenue southeast of the confluence with Canal A.

### Town N’ Country Lateral
The Town N’ Country Lateral is located in the northeast portion of the Lower Sweetwater Creek North System. The general system boundaries are Jackson Springs Road on the north and Hillsborough Avenue on the south. Webb Road borders the system on the west and Hanley Road on the east.

The Town N’ Country System has a LOS C for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, localized street and site flooding will occur in the Town N’ Country System. General locations of predicted street and site flooding are listed below.

Street flooding during the 25-year/24 hour storm event:
- Clifton Street
- Golden Drive
- Hanley Road
- Henry Street
- Ambassador Avenue
- Town N’ Country Boulevard
- Powhattan Avenue
- Santa Monica

Site flooding during the 25-year/24 hour storm event:
- On the corner of Hanley Road and TNC-1 lateral
- On the north side of TNC-1 lateral just west of Hanley Road
- On Clifton Street just northeast of confluence
- East of Sawyer Road along Clifton Street on north and south side
- Along Golden Drive on north and south side of Henry Street Canal
- East of Golden Drive and Henry Street Intersection
- South of George Road and Hillsborough Avenue Intersection

Structure flooding during the 25-year/24 hour storm event:
- East of Sawyer Road along Clifton Street
- Along Golden Drive on south side of Henry Street Canal
- East of Golden Drive and Henry Street Intersection

### 6.3.4 Henry Street Canal West System (HSCWS)

The Henry Street Canal West System (HSCWS) is located just east of the LSCNS. The HSCWS’ general location is north of Hillsborough Avenue and south of Sligh Avenue. George Road borders HSCWS system on the west and the Manhattan Avenue borders the HSCWS system on the east.
The HSCWS has a LOS D for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, localized structure, site, and street flooding will occur. General locations of predicted street, site and structure flooding are listed below.

Street flooding during the 25-year/24 hour storm event:
- George Road
- Hillsborough Avenue
- Yorkshire Road
- Southern Comfort Boulevard
- Benjamin Road
- Johns Road
- Alvarez Road
- Hesperides Avenue
- Occident Street

Site flooding during the 25-year/24 hour storm event:
- West of Benjamin just north of Henry Street Canal

### 6.3.5 Henry Street Canal East System (HSCES)

The Henry Street Canal East System (HSCES) is located just east of HSCWS. The HSCES’ general location is north of the Henry Street Canal and south of Sligh Avenue. The Manhattan Avenue borders HSCES system on the west and the Egypt Lake borders HSCES system on the east.

The HSCES system has a LOS D for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts that during the 25-year/24 hour storm event, localized street, site, and structure flooding will occur in the HSCES system. General locations of predicted street, site and structure flooding are listed below.

Street flooding during the 25-year/24 hour storm event:
- Hanna Avenue
- Idlewild Avenue
- North Street
- Lambright Street
- Dale Mabry
- Blossom Street
- Idlewild Avenue

Site flooding during the 25-year/24 hour storm event:
- South of Pine Crest Manor Boulevard along Blossom Street
- Southeast of Church Street and Sligh Intersection
Northeast of Dale Mabry and Lambright intersection
South of Lambright and east of Dale Mabry
West of Himes and Idlewild Avenue
East of Dale Mabry and north of Idlewild

Structure flooding during the 25-year/24 hour storm event:
South of Pine Crest Manor Boulevard along Blossom Street
Northeast of Dale Mabry and Lambright Street Intersection
West of Himes Avenue and north of Idlewild Avenue

Egypt Lake Lateral (ELL)

Egypt Lake Lateral (ELL) is located in the northeastern corner of the LSC watershed. The ELL is bordered by the city of Tampa on the south and HSCES on the west. The general street boundaries are Himes Avenue on the west, Armenia Avenue on the east, Kirby Street on the north and Henry Street on the south.

The ELL has a LOS C for the 25-year/24 hour storm event. The Hillsborough County Modified EXTRAN model predicts during the 25-year/24 hour storm event, localized street and site flooding will occur in the ELL system. General locations of predicted street, site and structure flooding are listed below.

Street flooding during the 25-year/24 hour storm event:
Larmont Avenue
Idlewild Street
Burke Street
Woodlynne Road
Friend Avenue

Site flooding during the 25-year/24 hour storm event:
South of Kirby Street and east of Tampania Avenue