System Capacity Assurance Program

Lexington-Fayette Urban County Government

Department of Environmental Quality and Public Works

Division of Water Quality

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The following table is provided to facilitate the reviewer of this Plan in verifying that the requirements set forth in Section VII of the Consent Decree are being fulfilled. The applicable Paragraph and a summary of the requirements from the Consent Decree, and the section or sub-section(s) of this Plan that fulfill each requirement, are provided in the table below.

Consent Decree Paragraph	Summary of Consent Decree Requirements	Section or Sub-Section(s) in this Plan Fulfilling the Requirement
16.B.(i)	Schedule	1.7
16.B.(i)(a)	The technical information, methodology and analytical techniques, including the model or software, to be used by LFUCG to calculate collection transmission and treatment capacity.	4.3
16.B.(i)(b)	The means by which LFUCG will integrate its certification of Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity with LFUCG's approval of application for extension of sewer lines, and LFUCG's acquisition of new or existing sewers from other owners.	4.1
16.B.(i)(c)	The technical information, methodology and analytical techniques, including the model or software to be used by LFUCG to calculate the net (cumulative) increase or decrease in volume of wastewater introduced to the wastewater conveyance and transmission system as a result of LFUCG's authorization of new sewer service connections and increases in flow from existing connections and the completion of: (1) specific projects that add or restore capacity to the WCTS or WWTPs ("Capacity Enhancing Projects"); (2) specific projects that reduce One Hour Peak Flow through the removal of I/I ("I/I Projects"); and (3) permanent removal of connections ("Removal of Connections").	4.2, 5.1, and 5.3
16.B.(i)(d)	An informational management system (IMS) capable of tracking the accumulation of banked credits, earned pursuant to Section VII, Paragraph 16.B.(iii) in the Consent Decree, from completion of Capacity Enhancing Projects, I/I Projects, and Removal of Connections, the capacity-limited portion of the Sewershed in which those credits were earned, and the expenditure of such credits on future increases in flow from new and existing sewer service connections in that capacity limited portion of the Sewershed.	6.2
16.B.(i)(e)	All evaluation protocols to be used to calculate collection, transmission, and treatment capacity including, but not limited to, standard design flow rate rules of thumb regarding pipe roughness, manhole head losses, as-built drawing accuracy (distance and slope), and water use (gallons per capita per day); project flow impact calculation techniques; and metering of related existing One Hour Peak Flows (flows metered in support of analysis and/or manual observation of existing One Hour Peak Flows). LFUCG may identify sewer line segments which have been specifically designed and constructed to operate under surcharge conditions (i.e., with welded or bolted joints or inverted siphons) and identify the level of surcharge for those segments.	5.3 and 6

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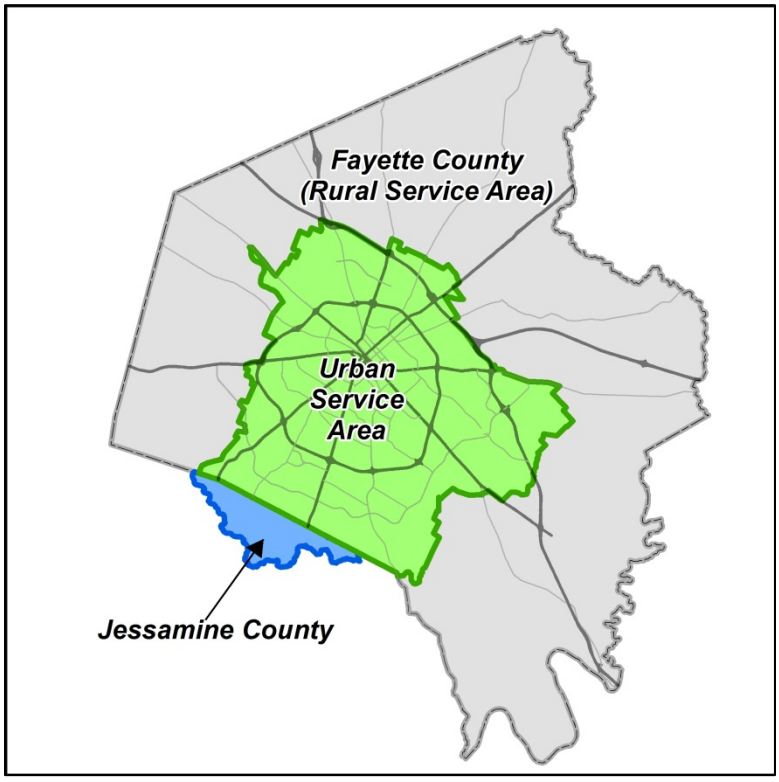
Section 1 – Introduction

1.1. Background

The Lexington-Fayette Urban County Government (LFUCG) provides sanitary sewer service within the urbanized areas of Fayette County. The Urban Service Area (USA) and its location within Fayette County are presented in **Figure 1.1.** LFUCG operates a separate Sanitary Sewer System (no combined sewers) that is comprised of approximately 1,400 miles of sanitary sewer pipes ranging in size from 4 inches to 72 inches in diameter, 34,000 manholes, 82 pump stations, and three (3) wastewater treatment plants (West Hickman, Town Branch, and Blue Sky). As part of a Commonwealth Environmental Project, the Blue Sky wastewater treatment plant will be eliminated with a new pump station. Design of the pump station is currently underway.

LFUCG has a Memorandum of Agreement (MOA) with Jessamine County, Kentucky to accept sanitary sewer discharges into LFUCG's collection system from approximately 430 acres in the northern portion of the county that naturally drains into Fayette County. In the MOA, LFUCG agreed to accept into its Sanitary Sewer System and treat up to 2.0 million gallons per day (MGD) of sewage generated in the service area, calculated on the basis of average daily flows and subject to all terms, conditions, and limitations of the agreement. LFUCG approval is required by means of a site specific agreement with the property owner prior to connection to LFUCG's Sanitary Sewer System. The portion of Jessamine County included in the MOA is shown in blue in **Figure 1.1.**

Figure 1.1. LFUCG's Urban Service Area



1.2. Consent Decree

LFUCG signed a federal Consent Decree with the U.S. Environmental Protection Agency (EPA) and Commonwealth of Kentucky Energy and Environment Cabinet (EEC), formerly the Environmental and Public Protection Cabinet (EPPC), on March 14, 2008 (Lodging Date). The Consent Decree was entered by the Court on January 3, 2011 (Effective Date). The terms of the Consent Decree obligate LFUCG to eliminate sanitary sewer overflows (SSOs) and other unpermitted bypasses and discharges from the wastewater system.

As part of the Consent Decree, LFUCG is required to develop and implement a Capacity Assurance Program. Within two (2) years of the Effective Date of the Consent Decree (January 3, 2013), LFUCG must submit for review, comment, and approval, a Capacity Assurance Program Plan (Plan) to the EPA and EEC. No later than thirty (30) days after approval of the Plan by the EPA, LFUCG must commence implementation of the Capacity Assurance Program, subject to the schedules set forth in the approved Plan.

1.3. Capacity Assurance Program (CAP) Requirements

Section VII.16B of the Consent Decree obligates LFUCG to implement a Capacity Assurance Program (CAP) for their Sanitary Sewer System. Under the CAP, LFUCG may only authorize new connections (flow additions) if adequate capacity can be certified in the collection, transmission, and wastewater treatment systems. In the absence of this certification, new connections may also be authorized by use of a "banked credit system." Under the banked credit system, sanitary sewer improvements from qualifying activities (inflow/infiltration removal, off-line storage, capacity enhancement projects) may be used to offset flow from new connections at an exchange rate (trade ratio) prescribed in the Consent Decree.

This CAP contains the following components.

- The technical information, methodology, and analytical techniques, including the model or software, that LFUCG will use to calculate collection, transmission, and treatment capacity.
- The means by which LFUCG will integrate its certification of Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity with its approval of application for extension of sewer lines and LFUCG's acquisition of new or existing sewers from other owners.
- The technical information, methodology and analytical techniques, including the model or software that will be used by LFUCG to calculate the net (cumulative) increase or decrease in volume of wastewater introduced to the wastewater collection and transmission systems (WCTS) as a result of LFUCG's authorization of new sewer service connections and increases in flow from existing connections and the completion of:
    - Specific projects that add or restore capacity to the WCTS or wastewater treatment plant ("Capacity Enhancing Projects");

  - Specific projects that reduce One Hour Peak Flow through removal of inflow and infiltration ("I/I Projects"); and
  - Permanent removal of sewer connections ("Removal of Connections").

- The information management system (IMS) that LFUCG will use to track: the accumulation of banked credits earned from completion of Capacity Enhancing Projects, I/I Projects, and Removal of Connections; the capacity-limited portion of the Sewershed in which those credits were earned; and the expenditure of such credits on future increases in flow from new and existing sewer service connections in that capacity-limited portion of the Sewershed.

- Evaluation protocols that LFUCG will use to calculate collection, transmission and treatment capacity.

- Identification of those sewer pipe segments that have been specifically designed and constructed to operate under surcharge conditions.

1.4. CAP Purpose

The CAP provides a mechanism by which LFUCG can responsibly manage their Sanitary Sewer System capacity while balancing the needs of land developers, rate payers, and the environment. Upon full implementation, the CAP will serve as the basis by which LFUCG will authorize new connections and flow additions to their WCTS. The CAP is designed to provide LFUCG with the assurance that flow additions or expansion of their WCTS will not exacerbate existing sanitary sewer overflows and unpermitted bypasses. The CAP offers an alternative to a moratorium on new sanitary sewer connections that would otherwise be necessary until elimination of sanitary sewer overflows and unpermitted bypasses could be attained through implementation of LFUCG's Remedial Measures Plan capital sanitary sewer improvements.

1.5. Related Consent Decree Programs

Several other Consent Decree programs initiated by LFUCG are related to the CAP. They include: Sanitary Sewer Assessment; Capacity Assessment; Pumping Station Design, Capacity, and Equipment Condition Adequacy Evaluation; and Remedial Measures Plan development.

1.5.1. Sewer System Assessment

Per the requirements in Section VII.15.B of the Consent Decree, LFUCG performed a Sewer System Assessment (SSA) to identify sources of inflow and infiltration (I/I) and assess the capacity and condition of their sanitary sewer collection and transmission system. On June 6, 2008, LFUCG submitted a Sewer System Assessment Work Plan (SSA Work Plan), outlining analysis methodologies, data collection and management guidance, and an implementation schedule for performing the SSA.

The SSA included: closed circuit television (CCTV) inspection of over 1.3 million linear feet of sanitary sewer pipe, visual inspection of approximately 18,000 manholes, smoke testing of approximately 5 million feet of sanitary sewer pipe, dye testing, night flow isolation, and flow and groundwater monitoring. Information collected during SSA field activities is being used by LFUCG to plan and prioritize their annual I/I removal and collection system rehabilitation efforts.

The SSA was performed by the Sewershed Groups prescribed in the Consent Decree. An SSA Report was prepared for each Sewershed Group that summarized the results and findings from the SSA. The date each SSA Report was submitted to the EPA and EEC is summarized in **Table 1.1**.

Table 1.1. Submission Dates for SSA Reports

Group	Sewersheds	SSA Report Submission Date
One	East Hickman, West Hickman, Wolf Run	4/12/2011
Two	Cane Run, Town Branch	10/13/2011
Three	North Elkhorn, South Elkhorn	4/12/2012

LFUCG received ownership of the Sanitary Sewer System for the Blue Sky Rural Activity Center (RAC) in 2012. Although not explicitly required by the Consent Decree, LFUCG completed an SSA of the WCTS in the Blue Sky RAC in 2012. No Recurring SSOs in the WCTS were identified during the SSA.

1.5.2. Capacity Assessment

LFUCG performed a Capacity Assessment of their collection, transmission, and wastewater treatment systems in accordance with Section VII.15.D of the Consent Decree. A Capacity Assessment Work Plan, detailing how LFUCG would assess the capacity of their WCTS and wastewater treatment plants (WWTPs), was submitted to the EPA and EEC for their review and comment in September 2008.

The Capacity Assessment addressed both existing and future projected conditions for dry weather flow (DWF) and wet weather flow (WWF) conditions under a representative 2-year, 24-hour design storm event. For future conditions, DWF was based on population projections for the year 2035 from Traffic Analysis Zone (TAZ) data and adjusted based on local planning data, traffic analysis studies, and discussions with LFUCG planning personnel. WWF was estimated based on flow monitoring performed in 2008 and 2009 and assumed that system rehabilitation efforts will offset continued deterioration so that there is no net increase or decrease in current I/I rates in the WCTS.

A computerized model of the WCTS was developed to assess sanitary sewer capacity. The model was developed using the MIKE URBAN software distributed by the Danish Hydraulic Institute (DHI). MIKE URBAN is capable of modeling both sanitary and combined sewer systems. The software uses the EPA's Stormwater Management Model (SWMM) 5 engine and is compatible with Geographic Information System (GIS). The models were developed from prior hydraulic modeling of LFUCG's sanitary trunk sewer system performed between 1999 and 2001. Physical sewer dimensions in the earlier models were updated to reflect asset information collected after 2001 and supplemented with field data collected

during SSA field inspections. DWF and WWF information from the earlier modeling was also replaced with analysis of the 2008 and 2009 flow monitoring data and results from the pump capacity evaluations performed as part of the Pump Station Design, Capacity, and Equipment Adequacy Evaluation.

The Capacity Assessment was performed by Sewershed Group and the results documented in the individual SSA Reports introduced in the previous section (see **Table 1.1**). The SSA Reports included maps illustrating the areas within the WCTS where Recurring Sanitary Sewer Overflows (SSOs) and surcharging occur for both DWF and WWF conditions under existing and future flow (2035 population projection) scenarios. Effluent limits and design hydraulic peak flows for each WWTP are also included in the SSA Reports. The West Hickman WWTP and Town Branch WWTP are included in the Group One and Group Two SSA Reports, respectively.

Capacity Assessment work was not performed for the Blue Sky RAC service area because LFUCG did not own the facility until January 2012, approximately 46 months from the Lodging Date. The Capacity Assessment, Hydraulic Model Report, and SSA Reports were submitted for review by the EPA and EEC at 6 months to 48 months from the Lodging date. The WCTS for the Blue Sky RAC is not explicitly modeled in LFUCG's hydraulic model.

1.5.3. Pumping Station Design, Capacity, and Equipment Condition Adequacy Evaluation

LFUCG completed an evaluation of the adequacy of 20 of the 82 pump stations in their WCTS in accordance with Section VII.15.C of the Consent Decree. Pump stations included in the evaluation are documented in Appendix H of the Consent Decree. The pump stations included in Appendix H include all the pump stations identified as Recurring SSO locations in Appendix A of the Consent Decree, with the exception of those where LFUCG had short-term plans to replace or perform a major upgrade (North Elkhorn, South Elkhorn, Dixie, and Deep Springs).

The evaluation summarized the procedures used to address the adequacy of station capacity, critical response time, adequacy of station condition, and adequacy of station design and equipment. The results of the Pumping Station Design, Capacity, and Equipment Condition Adequacy Evaluation were documented in the SSA Reports summarized in **Table 1.1.**

1.5.4. Sanitary Sewer System and WWTP Remedial Measures Plan

In accordance with Section VII.15.G of the Consent Decree, LFUCG developed a Sanitary Sewer System and WWTP Remedial Measures Plan (RMP) that is designed to achieve adequate capacity in the WCTS and LFUCG's WWTPs, such that Recurring SSOs, unpermitted bypasses and overloading at the WWTPs, and WWTP non-compliance will be eliminated for the 2-year, 24-hour design storm.

During RMP development, the hydraulic model developed during the Capacity Assessment was verified and recalibrated, as necessary, to additional flow monitoring performed in 2009 and 2010. Additionally, the model was updated for physical changes to the system resulting from recent upgrades to the North Elkhorn, South Elkhorn, Dixie, and Deep Springs pump stations. The resulting revised hydraulic model was used during RMP development to evaluate and size proposed capital improvements to the WCTS.

The RMP was developed by the Sewershed Groups prescribed in the Consent Decree. An RMP Report was prepared for each Sewershed Group that summarized the analysis methodology, hydraulic model revisions, and a description of the capital improvement projects designed to restore adequate capacity in the WCTS. Conceptual cost opinions and a schedule for implementation of the RMP projects was also included in each report. The date each RMP Report was submitted to the EPA and EEC is summarized in **Table 1.2**.

Table 1.2. Submission Dates for the Sanitary Sewer System and WWTP Remedial Measures Plans

Group	Sewersheds	RMP Report Submission Date
One	East Hickman, West Hickman, Wolf Run	10/12/2011
Two	Cane Run, Town Branch	4/13/2012
Three	North Elkhorn, South Elkhorn	10/12/2012

1.6. Community Approval and Public Outreach

In April 2012, LFUCG established a CAP Task Force to review and evaluate proposed CAP elements. The Task Force consisted of elected Urban County Council Members, LFUCG's Planning Commission and other potentially impacted departments (Planning, Law, Building Inspection, Engineering, etc.), community stakeholders, and the general public. Eleven (11) Task Force meetings were facilitated by the Division of Water Quality (DWQ) and their CAP consultant, Stantec Consulting Services Inc. (Stantec). Proposed CAP elements/features were presented and discussed at Task Force meetings. In addition to complying with Consent Decree requirements, CAP features considered feedback/input from Task Force members and community stakeholders. CAP elements summarized in the CAP Plan were approved by the Task Force. Voting members of the CAP Task Force consisted of six of LFUCG's fifteen Council members and the Commissioner of Planning, Preservation and Development.

Multiple presentations on the proposed CAP were also made to the full Urban County Council (Council). **Table 1.3** summarizes the dates and forum for the CAP presentations to the Council. Similar to the CAP Task Force meetings, all meetings were open to the public and advertised on LFUCG's web site. Council Work Sessions were presided over by the Mayor. Televised meetings were publicly broadcast on LFUCG's government television station (GTV3).

Table 1.3. CAP Presentations to the Urban County Council

Date	Forum	Attendance Open to Public?	Meeting Televised?
8/14/2012	Council Work Session	Yes	Yes
8/25/2012	Council Workshop	Yes	No
10/16/2012	Council Work Session	Yes	Yes
11/13/2012	Council Work Session	Yes	Yes
12/4/2012	Council Work Session	Yes	Yes

A report was prepared that summarized recommendations from the CAP Task Force. The recommendations approved by the Task Force form the basis for this CAP Plan. A Resolution was approved by Council approving the CAP Task Force Report on December 11, 2012. A subsequent ordinance enabling the provisions in LFUCG's Capacity Assurance Program was approved in June 13, 2013. A copy of the Ordinance (#63-2013) is presented in Appendix A.

1.7. CAP Implementation Schedule

Per Section VII, Paragraph 16.B of the Consent Decree, LFUCG must submit the CAP Plan (this document) within two (2) years of the Effective Date for EPA and EEC review, comment, and approval. No later than thirty (30) days after approval, LFUCG must commence implementation of the CAP, subject to the schedules set forth in the approved CAP Plan.

Development of an information management system (IMS) capable of tracking capacity certifications and the accumulation and expenditure of banked credits has been completed. Similarly, calculation of accumulated banked credits from qualifying completed sanitary sewer improvements, as well as determination of credit expenditures for entities on the List of Future Authorized Connections (Section VII.16.B(viii) of the Consent Decree), has begun.

LFUCG proposes to fully implement their CAP within 180 (calendar) days of EPA/EEC approval of the CAP Plan.

1.8. Organization of Report

This CAP Plan is organized into the six sections summarized below. Sections 1 through Section 3 summarize general program information and Consent Decree requirements. Sections 4 and 5 include the technical information, methodology, and analytical techniques for making adequate capacity determinations and calculating banked credit accumulations/expenditures. Section 6 provides specific information relative to full implementation of the CAP.

Section 1 – Introduction

Section 2 – Definitions

Section 3 – Program Description

Section 4 – Capacity Certification Procedures

Section 5 – Approval in Lieu of Certification Procedures

Section 6 – Program Administration

Section 2. Definitions

This section includes definitions for terms relative to the CAP. For any definitions not provided, the definitions included in Section IV of the Consent Decree shall prevail.

*"**Adequate Capacity**"* shall mean Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity as defined in Section VII, Paragraph 16B of LFUCG's Consent Decree.

*"**Adequate Treatment Capacity**"* shall mean that at the time the wastewater treatment plant (WWTP) receives the flow from a proposed sewer service connection(s) or increased flow from an existing sewer service connection(s), when combined with the flow predicted to occur from all other authorized sewer service connections (including those which have not begun to discharge into the Sanitary Sewer System), the WWTP will not be in "non-compliance" for quarterly reporting as defined in 40 C.F.R Part 123.45, Appendix A, and that the new or increased flow to the WWTP will not result in Unpermitted Bypasses or diversions prohibited by the KPDES Permits due to lack of treatment capacity.

*"**Adequate Transmission Capacity**"* shall mean that each Pumping Station through which a proposed additional flow from new or existing sewer service connections would pass to the WWTP receiving such flow, has the capacity to transmit the existing One-Hour Peak Flow passing through the Pumping Station, plus the addition to the existing One-Hour Peak Flow predicted to occur from the proposed connection, plus the addition to the existing One-Hour Peak Flow predicted to occur from all other authorized sewer service connections which have not begun to discharge into the Sanitary Sewer System.

*"**Adequate Collection Capacity**"* shall mean that each Gravity Sewer Line, through which the proposed additional flow from new or existing connections would pass, has the capacity to carry the existing One-Hour Peak Flow passing through the Gravity Sewer Line, plus the addition to the existing One-Hour Peak Flow from the proposed connection, plus the addition to the existing One-Hour Peak Flow predicted to occur from all other authorized sewer service connections which have not begun to discharge into the Sanitary Sewer System without causing a Surcharge Condition.

*"**Capacity Assurance Program**"* or *"**CAP**"* shall mean the System Capacity Assurance Program as defined in Section VII, Paragraph 16.B. of the Consent Decree.

*"**Capacity Enhancing Projects**"* shall mean specific projects that add or restore capacity to the WCTS or WWTPs.

*"**Capacity Request**"* shall mean written submission of a request to LFUCG for a Permanent Allocation or Reservation of sewer capacity/credits.

*"**Clean Water Act**"* or *"**CWA**"* shall mean the Clean Water Act, formally entitled the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251-1387.

*"**Consent Decree**"* shall mean the Decree and all attachments Lodged on March 14, 2008 between the United States of America and the Commonwealth of Kentucky (Plaintiffs) v. Lexington-Fayette Urban County Government (Defendant), Civil Action No. 5:06-cv-386, with an Effective Date of January 3, 2011.

*"**Credit**"* shall mean a unit of flow equivalent to one gallon per day (1 gpd).

*"**Credit Bank**"* shall mean the section of LFUCG's wastewater collection and transmission systems that is a distinct drainage or wastewater collection area where banked credit transactions are recorded under the Capacity Assurance Program.

*"**EEC**"* shall mean the Energy and Environment Cabinet of the Commonwealth of Kentucky, formerly the Environmental and Public Protection Cabinet (EPPC).

*"**EPA**"* shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

*"**EPPC**"* shall mean the Environmental and Public Protection Cabinet of the Commonwealth of Kentucky.

*"**Force Main**"* shall mean all sanitary sewer lines that operate under pressure due to pumping of sanitary wastewater at a pump station except for those sanitary sewer lines that serve a single structure or building.

*"**Gravity Sewer Line**"* shall mean a pipe that receives, contains and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity. Gravity sewers are typically not intended to flow full under normal operating conditions.

*"**Group**"* shall mean the Sewershed groups prescribed in the Consent Decree. Specifically, Group One consists of the West Hickman, East Hickman, and Wolf Run Sewersheds; Group Two consists of the Cane Run and Town Branch Sewersheds; and Group Three consists of the South Elkhorn and North Elkhorn Sewersheds.

*"**I/I**"* shall mean the total quantity of water from Infiltration and Inflow without distinguishing the source.

*"**I/I Projects**"* shall mean specific projects that reduce One Hour Peak Flow through the removal of I/I.

*"**Infiltration**"* as defined by 40 C.F.R. § 35.2005(b)(20) shall mean water other than wastewater that enters a Sanitary Sewer System (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes.

*"**Inflow**"* as defined by 40 C.F.R. § 35.2005(b)(21) shall mean water other than wastewater that enters a Sanitary Sewer System (including sewer service connections) from source such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage.

*"**KPDES**"* shall mean Kentucky Pollutant Discharge Elimination System, as established by 401 KAR Chapter 5 and KRS Chapter 224.

*"**Minor Sewer Connections**"* shall mean connections which do not exceed 2,500 gallons per day.

*"**MS4**"* shall mean LFUCG's municipal separate storm sewer system, as that term is defined in 40 C.F.R. § 122.26 (b)(8).

*"**One Hour Peak Flow**"* shall mean the greatest flow in a sewer averaged over a sixty (60) minute period at a specific location expected to occur as a result of a representative 2-year, 24-hour storm event.

*"**Permanent Allocation**"* shall mean the assignment of sewer capacity/credits to a property that is not subject to expiration.

*"**Private Lateral**"* shall mean that portion of a sanitary sewer conveyance pipe, including that portion in the public right of way, that extends from the wastewater main to the single-family, multi-family, apartment, other dwelling unit, business, industry, institution or structure to which wastewater service is or has been provided. Private Laterals do not include connector joints at LFUCG's sewer line.

*"**Pumping Station**"* shall mean all pumping stations owned or operated by LFUCG except for pump stations that serve a single structure or building, and except for the pump station serving Southland Christian Church in Jessamine County.

*"**Recurring SSO**"* shall mean a sanitary sewer overflow (SSO) that occurs in the same location more than once per twelve (12) month rolling period.

*"**Reservation**"* shall mean the temporary assignment of sewer capacity/credits to a property until a Permanent Allocation is made or the temporary assignment expires.

*"**Sanitary Sewer Overflow**"* or *"**SSO**"* shall mean any discharge to waters of the United States from the Sanitary Sewer System through point sources not specified in any KPDES permit (otherwise known as "Unpermitted Discharges"), as well as any release of wastewater from the Sanitary Sewer System to public or private property that does not reach waters of the United States, such as a release to a land surface or structure that does not reach waters of the United States; provided, however, that releases or wastewater backups into buildings that are caused by blockages, flow conditions, or malfunctions in a Private Lateral, or other piping or conveyance system that is not owned or operationally controlled by LFUCG are not SSOs. SSOs include any cross-connections between LFUCG's Sewer System and its MS4 which allows wastewater to pass from the Sanitary Sewer System to the MS4, but does not include exfiltration that does not reach waters of the United States, or land surface or structures.

*"**Sanitary Sewer System**"* shall mean the wastewater collection and transmission systems (WCTS) owned or operated by LFUCG designed to collect and convey municipal sewage (domestic, commercial and industrial) to a WWTP. The Sanitary Sewer System does not include LFUCG's MS4.

*"**Sewershed**"* shall mean a section of LFUCG's wastewater collection and transmission systems (WCTS) that is a distinct drainage or wastewater collection area and designated as such by LFUCG.

*"**Surcharge Condition**"* shall mean the condition that exists when the supply of wastewater resulting from the One-Hour Peak Flow is greater than the capacity of the pipes to carry it and the surface of the wastewater in manholes rises to an elevation greater than twenty-four (24) inches above the top of the pipe or within three (3) feet of the rim of the manhole, and the sewer is under pressure or head, rather than at atmospheric pressure, unless LFUCG has, pursuant to Section VII Paragraph 16.B.(i)(e) of the Consent Decree, identified that pipe segment and manhole is designed to operate in that condition, in which case the identified level of surcharge will be used.

*"**Use of Record**"* shall mean the existing or previous wastewater flow from a property that is represented in the baseline condition of the hydraulic model of the Sanitary Sewer System.

*"**Waiting List**"* shall mean the record of applicants for a specific Credit Bank for which sufficient offsetting credits were unavailable to fulfill the proposed request.

*"**Wastewater Collection and Transmission Systems**"* or *"**WCTS**"* shall mean the municipal sanitary wastewater collection and transmission systems, including all pipes, force mains, gravity sewer lines, lift stations, pumping stations, manholes and appurtenance thereto, which are owned or operated by LFUCG.

*"**WWTP**"* shall mean wastewater treatment plant.

Section 3 – Program Description

This section contains a summary of the specific requirements of LFUCG's Consent Decree requirements and general information relative to LFUCG's CAP. Sections 4 and 5 of the report provide specific details, including the technical information, methodology, and analytical techniques, for making adequate capacity determinations and calculating banked credit accumulations/expenditures.

3.1. Capacity Certifications

LFUCG may authorize new sewer service connections or additional flow from an existing sewer service connection only after it certifies that the analytical procedures in the approved CAP have been used and that LFUCG has determined, based on those procedures, that there is Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity. In all three cases, Adequate Capacity is based on the One-Hour Peak Flow arising from a representative 2-year, 24-hour design storm event.

3.1.1. Adequate Treatment Capacity

LFUCG's certification of Adequate Treatment Capacity must confirm that, at the time the WWTP receives the flow from a proposed sewer connection or increased flow from an existing sewer service connection, when combined with the flow predicted to occur from all other authorized sewer service connections (including those that have not begun to discharge into the Sanitary Sewer System), the WWTP will not be in "non-compliance" for quarterly reporting as defined in the Code of Federal Regulations (40 CFR Part 123.45, Appendix A). The certification of Adequate Treatment Capacity must also confirm that the new or increased flow to the WWTP will not result in unpermitted bypasses or diversions prohibited by the WWTP's Kentucky Pollution Discharge Elimination System (KPDES) permit due to lack of treatment capacity.

3.1.2. Adequate Transmission Capacity

LFUCG's certification of Adequate Transmission Capacity must confirm that each pumping station through which the proposed additional flow from new or existing sewer connections would pass to the WWTP receiving such flow, has the capacity to transmit the One Hour Peak Flow passing through the pump station, plus the addition of the One-Hour Peak Flow predicted to occur from the proposed connection, plus the addition to the existing One-Hour Peak Flow predicted to occur from all other authorized sewer service connections which have not begun to discharge into the Sanitary Sewer System.

3.1.3. Adequate Collection Capacity

Certification of Adequate Collection Capacity must confirm that each gravity sewer line, through which the proposed additional flow from new or existing connections would pass, has the capacity to carry the existing One-Hour Peak Flow passing through the gravity sewer line plus the addition to the existing One-Hour Peak Flow from the proposed connection, plus the addition of the existing One-Hour Peak Flow

predicted to occur from all other authorized sewer service connections that have not begun to discharge into the Sanitary Sewer System without causing a surcharge condition.

For the purposes of determining Adequate Collection Capacity, a surcharge condition is defined as the condition that exists when the supply of wastewater resulting from the One-Hour Peak Flow is greater than the capacity of the pipes to carry it and the surface of the wastewater in manholes rises to an elevation greater than twenty-four (24) inches above the top of the pipe or within three (3) feet of the rim of the manhole, and the sewer is under pressure head, rather than at atmospheric pressure.

An exception to the surcharge condition is permitted for those pipe segments and manholes identified by LFUCG that were specifically designed and constructed to operate in that condition. In those instances, the identified level of surcharge will be used. While LFUCG's Sanitary Sewer System includes some short pipe segments immediately upstream of WWTPs and pump stations that normally operate under a surcharge condition, the only known pipe segments that were specifically designed and constructed to surcharge are limited to siphons. **Table 3.1** summarizes the known siphons in the LFUCG's Sanitary Sewer System, along with their estimated surcharge level.

Table 3.1. List of Known Siphons

No.	WWTP Service Area	Location	Pipe Segment	Estimated Surcharge Level (feet)[1]
1.	Town Branch	Florida Street	CR3_64_CR3_63	2.7
2.	Town Branch	Valley Avenue at Willard Street	TB2_13D_TB2_13	5.0
3.	Town Branch	Upper Street near Vine Street	TB3_139_TB3_1080	4.2
4.	Town Branch	South Broadway at High Street	TB3_24B_TB3_24	3.0
5.	Town Branch	Martin Luther King Boulevard at Short Street	TB3_226A_TB3_226	3.0
6.	Town Branch	South Broadway at Burley Ave.	WR6_118C_WR6_118A	2.6
7.	West Hickman	Stillwater Road at Halifax Street	SE7_273_SE7_272	3.0

[1] Level of surcharge above the pipe crown in the upstream manhole.

3.1.4. Minor Sewer Connections

For minor sewer service connections LFUCG may elect to perform a quarterly capacity analysis by certifying that the Sewershed has adequate capacity to carry the One-Hour Peak Flow and the additional flows generated by all such minor sewer service connections projected to be approved in the subsequent quarter. In areas that can be so certified, LFUCG may approve the projected minor sewer service connections without performing individual capacity certifications for each connection. Minor sewer service connections are defined as connections which do not exceed 2,500 gallons per day (gpd).

3.2. Approval in Lieu of Adequate Capacity Certification

LFUCG may authorize a new sewer service connection, or additional flow from an existing sewer service connection, even if it cannot certify adequate capacity in the collection, transmission and treatment system. Approval in lieu of adequate capacity certification requires LFUCG to certify all of the following:

- LFUCG is in substantial compliance with the Consent Decree;
- The sewer line segment(s), pumping station(s), and/or wastewater treatment systems that do not meet the conditions for certification of adequate capacity have been identified;
- The sewer line segments where Recurring SSOs occur have been identified;
- Capacity Enhancing Projects, I/I Projects, and/or Removal of Connections that will add sewer capacity or reduce the One-Hour Peak Flows to the identified sewer line segment(s), pumping station(s), treatment system(s), and/or Recurring SSO are completed prior to the time proposed additional flow from new or existing sewer connections is introduced to the Sanitary Sewer System, subject to the trade ratios identified in the Consent Decree (refer to Section 3.2.1.);
- A review of specific Capacity Enhancing Projects and I/I Projects has been performed, commencing the first year of the CAP and annually thereafter, to determine if actual added capacity and One-Hour Peak Flow reductions are in line with what LFUCG originally estimated for such projects and the results of the review have been used to adjust future estimates (as necessary); and
- Any new sewer service connection or increase in flow from an existing connection authorized prior to the completion of a necessary added capacity or One-Hour Peak Flow reduction project has been conditioned upon completion of such project prior to the time that the new sewer service connection or flow increase is introduced into the Sanitary Sewer System.

3.2.1. Banked Credit System

Under the Approval in Lieu of Adequate Capacity Certification provision in the Consent Decree, LFUCG may use a “banked credit system” for the sewer line segment(s), pumping station(s), wastewater treatment systems, and /or Recurring SSO for which LFUCG is not able to certify adequate capacity. Flow removal from qualifying activities (Capacity Enhancing Projects, I/I Projects, Removal of Connections) may be used to offset proposed flow increases from new or existing sewer service connections. The amount of flow removal from the Sanitary Sewer System necessary to offset the flow addition is dependent on the type of qualifying activity, the Sewershed where it occurred, and its proximity to a Recurring SSO. The ratio of required flow removal to proposed flow increase is termed the “trade ratio.”

- For Capacity Enhancing Projects that provide for additional off-line storage and/or Removal of Connections, the estimated added capacity resulting from such projects must exceed the amount

of any proposed additional flow by the following factor (trade ratio): 1.5:1 in the West Hickman Sewershed and 1:1 for all other Sewersheds.

- For I/I Projects or Capacity Enhancing Projects, other than those that provide for additional off-line storage and/or removal of connections, the estimated added capacity resulting from such projects must exceed the amount of any proposed additional flow by the following factor:
    - 4:1 in the West Hickman Sewershed when the qualifying activity is related to a Recurring SSO;
    - 3:1 in all other Sewersheds when the qualifying activity is related to a Recurring SSO;
    - 2:1 in all Sewersheds when the qualifying activity is not related to a Recurring SSO.

The trade ratios for LFUCG's CAP are illustrated in **Figures 3.1, 3.2, and 3.3.**

Figure 3.1. Trade Ratios for Off-Line Storage and/or Removal of Connections

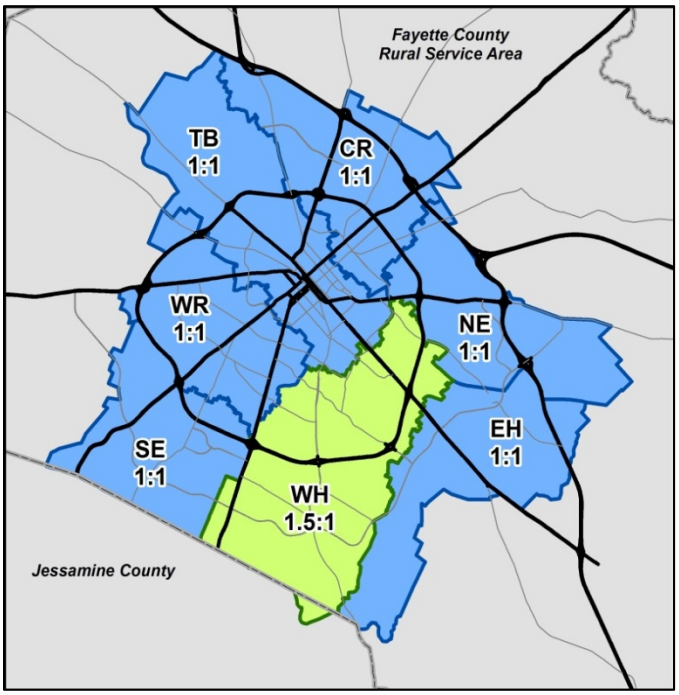


Figure 3.2. Trade Ratios for Capacity Enhancing Projects and I/I Projects Related to a Recurring SSO

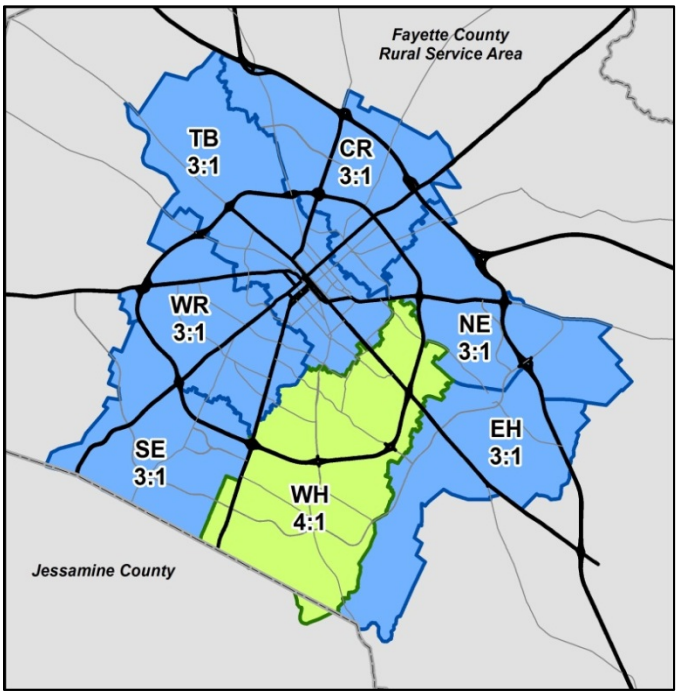
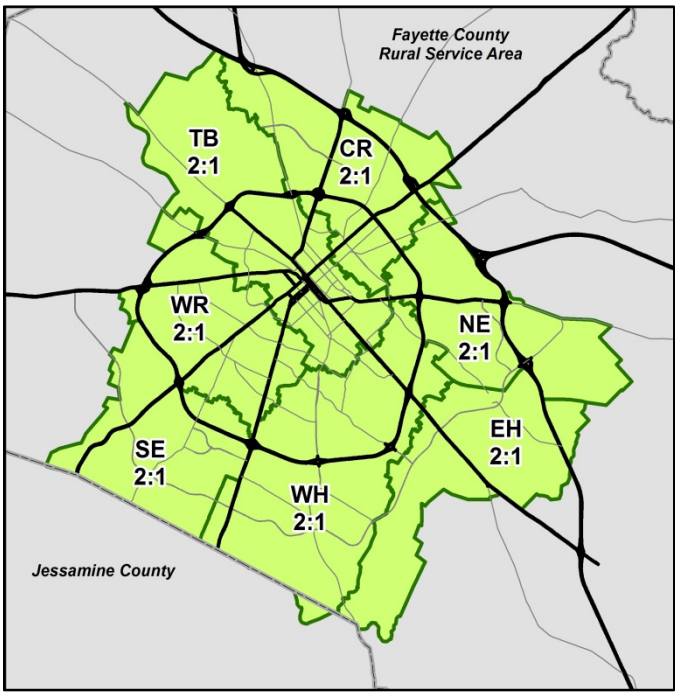


Figure 3.3. Trade Ratios for Capacity Enhancing Projects and I/I Projects Not Related to a Recurring SSO



3.3. Essential Services

LFUCG may authorize a new sewer service connection, or additional flow from an existing sewer service connection, even if it cannot certify adequate capacity for: health care facilities, public safety facilities, public schools, and other facilities as agreed upon in writing by the EPA and EEC. Authorization is also allowed in those cases where a pollution or sanitary nuisance condition exists, as determined by the Fayette County Health Department (or its regulatory successor), as the result of a discharge of untreated wastewater from an on-site septic tank or other discharge point. For any such authorizations, LFUCG will make the appropriate subtraction to the balance of the applicable credit bank. The subtraction may result in a negative balance in the credit bank if sufficient credits are not available to offset the flow increase (including the trade ratio) from the proposed Essential Service facility.

3.4. Existing Illicit Connections

LFUCG may authorize a new sewer service connection, or additional flow from an existing sewer service connection, even if it cannot certify adequate capacity, that eliminates an illicit connection or discharge of wastewater to the stormwater system or to waters of the United States. If the connection was created before the Lodging Date of the Consent Decree, LFUCG is not required to make a subtraction from the balance of the applicable credit bank. If the connection was created after the Lodging Date of the Consent Decree, LFUCG is required to make a subtraction from the balance of the applicable credit bank. In the latter case, the subtraction may result in a negative balance in the credit bank if sufficient credits are not available to offset the proposed flow increase (including the trade ratio) from removal of the illicit connection.

3.5. Lateral Reconnections Following Temporary Suspension

Any service that is resumed from a newly replaced or repaired private lateral will not be deemed to be a new service connection or an addition of flow from an existing connection.

Section 4 – Capacity Certification

This section presents the technical information, methodology, and analytical techniques that LFUCG will use to make capacity determinations for their CAP. Certification of adequate capacity under the CAP must be made by a professional engineer registered in the Commonwealth of Kentucky and approved by a responsible party of LFUCG as defined in the Kentucky Administrative Regulations (401 KAR 5:060, Section 9(4)) and Code of Federal Regulations (40 CFR 122.22(b)). If adequate capacity cannot be certified, LFUCG may authorize flow increases from new or existing service connections through the Approval In Lieu of Capacity Certification procedures outlined in Section 5.

4.1. Overview

A flow chart illustrating the capacity certification process is presented in **Figure 4.1.** A step-by-step description of the process is described below, with reference to the numbered boxes in the figure. The Capacity Certification process is represented in Step 1 through Step 5. Steps 6 through 12 describe the Approval in Lieu of Capacity Certification (banked credits system) and are discussed in Section 5.

1 – Capacity Request

A customer wanting to increase flow to LFUCG's Sanitary Sewer System from a new or existing service connection must complete a Capacity Request Form. Applicant contact information and specific details regarding the proposed flow increase must be documented on a Capacity Request Form. Information requested on the Capacity Request Form includes: applicant's name, address, phone number and email address; Property Value Administrator (PVA) parcel identification number or address of proposed flow increase; type of development; prior site development usage (for redevelopments); estimated flow increase; preferred connection point to LFUCG Sanitary Sewer System; anticipated schedule for the connection; and other pertinent information relative to the development type necessary to estimate the anticipated flow increase to the Sanitary Sewer System from the proposed development. The governing Preliminary Subdivision Plan, Final Development Plan, or Amended Final Development Plan must also be referenced on the Capacity Request Form.

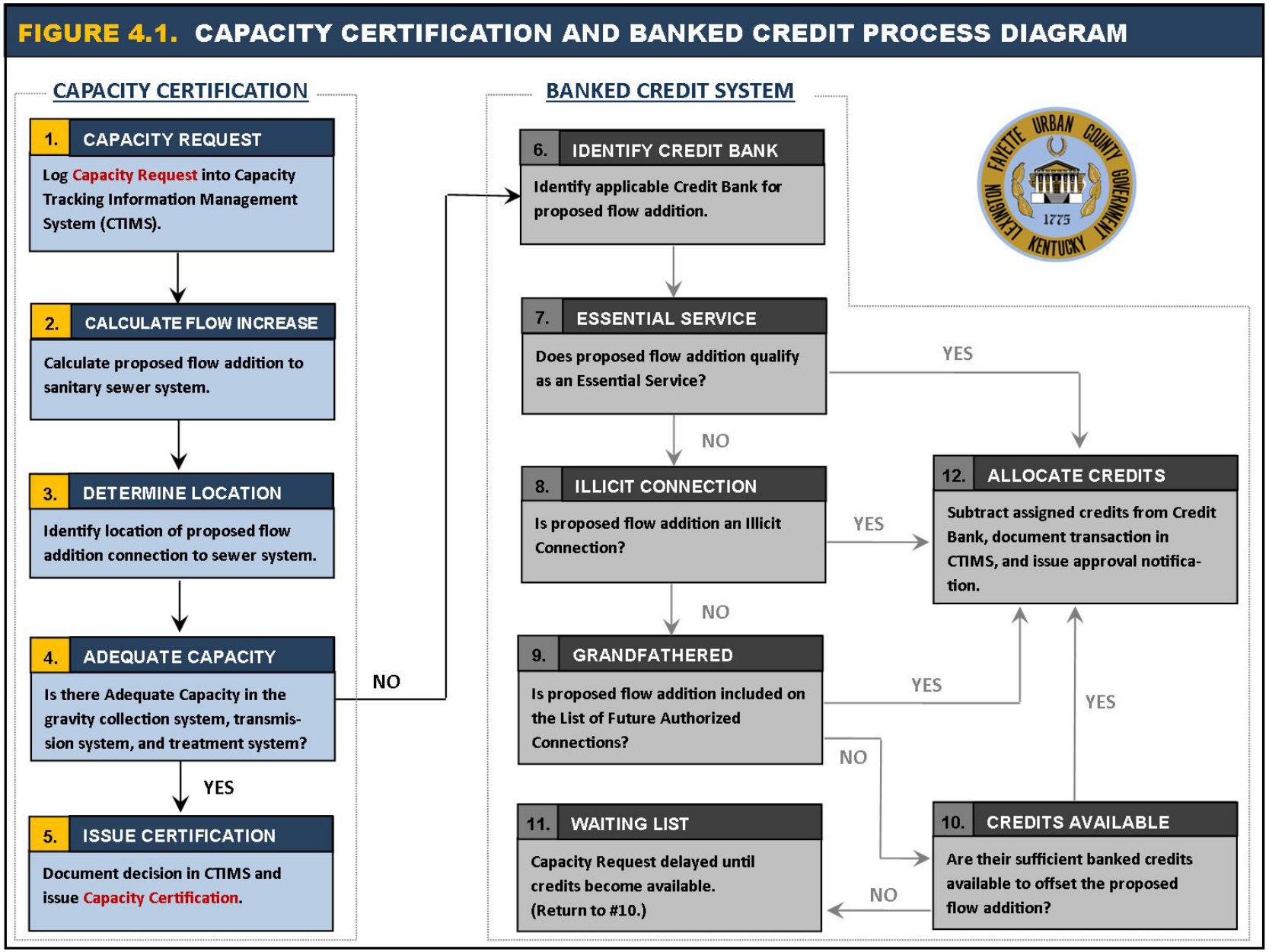
During this step, information contained on the Capacity Request Form will be entered into LFUCG's Capacity Tracking Information Management System (CTIMS).

2 – Calculate Flow Increase

The proposed flow increase from each new or existing sanitary sewer service connection included on the Capacity Request Form will be calculated. If an estimated flow increase is provided by the applicant on the Capacity Request Form, LFUCG will verify it using the procedures summarized in Section 4.2. Flow estimates will be documented in CTIMS.

For redevelopment of property with an existing connection to the WCTS, the Use of Record will be determined from historic water usage records (when available) or estimated using the procedures described in Section 4.2 and the average daily flow values presented in Appendix B. The Use of Record will be documented in CTIMS and the capacity request will be calculated based on the proposed development wastewater flow, less the Use of Record wastewater flow.

FIGURE 4.1. CAPACITY CERTIFICATION AND BANKED CREDIT PROCESS DIAGRAM



3 – Determine Location

The location (i.e. the specific pipe segment or manhole) where the proposed flow increase will enter the WCTS will be determined using the information provided on the Capacity Request Form and the latest version of LFUCG's Geographic Information System (GIS) mapping of the WCTS.

It is anticipated that capacity requests may be made for new commercial and residential developments that involve the construction of public infrastructure. For capacity requests that will connect to public infrastructure that has not yet been constructed at the time of submission of the Capacity Request Form, the first occurring downstream pipe or manhole in LFUCG's GIS mapping where the proposed flow will enter the public sewer system will be identified.

In addition to the pipe segment or manhole where the proposed flow increase will connect to the WCTS, all downstream pump stations and the WWTP that will receive the proposed flow increase will be identified. The location of the proposed flow increase, affected pump stations and WWTP will be documented in CTIMS.

4 – Adequate Capacity

The capacity of the collection, transmission, and treatment systems receiving the proposed flow increase will be reviewed to determine if adequate capacity can be certified in accordance with the requirements outlined in Section 3. The specific analytical techniques LFUCG will utilize to determine adequate capacity in the collection, transmission, and treatment systems are described in Section 4.3.

If Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity can be certified, then proceed to Step 5 (Issue Certification). If adequate capacity cannot be certified in either the treatment, transmission, or collection system, proceed to Step 6 (Identify Credit Bank) to determine if the proposed flow increase can be authorized through approval in lieu of adequate capacity certification (banked credits system).

5 – Issue Certification

In cases where Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity can be certified, LFUCG will issue a written notification to the applicant. The written notification will be the applicant's proof of allocated sanitary sewer capacity and will clearly identify the amount of the authorized flow increase. Proof of allocated sanitary sewer capacity (either by certification of adequate capacity or approval in lieu of capacity certification) is required before LFUCG will issue a tap or building permit. Certification of adequate capacity will be documented in CTIMS.

Maps illustrating the portions of LFUCG's treatment, transmission, and collection system where adequate capacity can be certified are presented in Appendix C. Presently, adequate capacity cannot be certified at LFUCG's WWTPs, as well as a number of pump stations and large sections of the collection system. The capital improvement projects outlined in the Remedial Measures Plans are designed to restore adequate capacity in the WCTS for future flow conditions, based on population projections for the year 2035 from Traffic Analysis Zone (TAZ) data and adjusted based on local planning data, traffic analysis studies, and discussions with LFUCG planning personnel. As the RMP projects are completed, certification of adequate capacity will become possible.

4.2. Estimating Flow Increases

Proposed flow increases from new and existing service connections for single family residences will be estimated based on flow measurement and analyses conducted during the Capacity Assessment. Industry estimates for average daily flows will be used for developments other than a single family residence.

4.2.1. Single Family Residences

The average daily flow from a new single family residence in LFUCG's service area has been determined to be 192 gallons per day (gpd). This average dry weather flow estimate is based on 15 gallons per capita per day (gpcd) for groundwater infiltration, 65 gpcd of sanitary flow for new residential areas, and an average of 2.4 people per household. This information was presented previously in the SSA Reports and RMP Reports submitted to the EPA and EEC.

4.2.2. Flow Increases From Developments Other Than Single Family Residences

Flow increases from new or existing service connections for developments other than single family residences will be calculated based on the average daily flow values in Appendix B. Values in the appendix for multi-family residential buildings (duplexes, apartments, townhomes, etc.) are based on the per capita usages determined for Lexington (identified in Section 4.2.1.) Values in the appendix for non-residential buildings are based on industry estimates and are consistent with estimates adopted in other Consent Decree communities for their CAPs.

4.3. Adequate Capacity Determination

The requirements by which LFUCG may certify adequate capacity were summarized in Section 3. The following paragraphs describe the specific analytical techniques LFUCG will utilize to determine adequate capacity in the collection, transmission, and treatment systems.

4.3.1. Analysis of Treatment System Capacity

Effluent limits and design daily peak ratings for LFUCG's two WWTPs were included in the Group One (West Hickman WWTP) and Group Two (Town Branch WWTP) Sewer System Assessment Reports. Average daily flow ratings of 33.87 million gallons per day (MGD) and 30 MGD were identified for the West Hickman WWTP and Town Branch WWTP, respectively. Both WWTPs were identified with design daily peak hydraulic ratings of 64 MGD. Further evaluation of the wet weather capacity of both WWTPs was performed during RMP development and incorporated into the hydraulic model used to evaluate/size proposed capital improvements. Peak WWF capacities of 70 MGD (West Hickman WWTP) and 71 MGD (Town Branch WWTP) were determined to be allowable without resulting in unpermitted bypasses or KPDES permit noncompliance. Determination of these peak WWF capacities were described in the Group One and Group Two RMP Reports.

The Capacity Tracking Information Management System (CTIMS) will be utilized to track the following:

- WWTP compliance for quarterly reporting (as defined in 40 CFR, Part 123.45, Appendix A)
- WWTP capacities for average daily flow and peak wet weather flows.

CTIMS is described in more detail in Section 6.

The hydraulic model (also discussed in Section 6) will be used to determine average daily and peak inflows into the WWTP from the transmission and collection system.

4.3.2. Analysis of Transmission System Capacity

The hydraulic capacity for the twenty pump stations identified in Appendix H of the Consent Decree was determined as part of the Pump Station Design, Capacity, and Equipment Condition Adequacy Evaluation. Peak capacities for these twenty pump stations were published in the Group One, Group Two, and Group Three SSA Reports. The pump stations included in the Adequacy Evaluation have been incorporated into the hydraulic model.

LFUCG currently operates 82 pump stations. LFUCG maintains a record of the design capacity of their pump stations. Confirmation of the current effective pump station capacity is performed by means of wet well drawdown tests performed annually and after major upgrades. Drawdown tests are performed in general conformance with the Water Environment Federation (WEF) Manual of Practice FD-4, "Design of Wastewater and Stormwater Pumping Stations." Calculated current effective pump station capacities will be documented in CTIMS.

In the hydraulic model, there are currently 38 of LFUCG's 82 pump stations that are modeled explicitly, including the 20 pump stations identified in Appendix H of the Consent Decree. The hydraulic model will be used to assess capacity in the transmission system for those 38 pump stations that are modeled explicitly. For the remaining 44 pump stations, the capacity determination will be done manually. Under the manual method, peak inflow into the pump station from the upstream service area will be estimated using the procedures identified in LFUCG's Sanitary Sewer and Pump Station Manual (and the methods described in Section 4.2). Peak inflows will then be compared with the current effective pump station capacity determined from the most recent drawdown tests to determine the adequacy of capacity. When estimating the peak inflow into the pump station, the proposed flow increase will be added to upstream existing connections and those previously authorized by LFUCG but that have not yet connected to the sewer system.

4.3.3. Analysis of Collection System Capacity

Analysis of collection system capacity will be based on whether the new/existing service connection associated with the proposed flow increase is located in the sanitary trunk sewer system (pipes 12 inches in diameter or greater) or the collector system (pipes less than 12 inches in diameter).

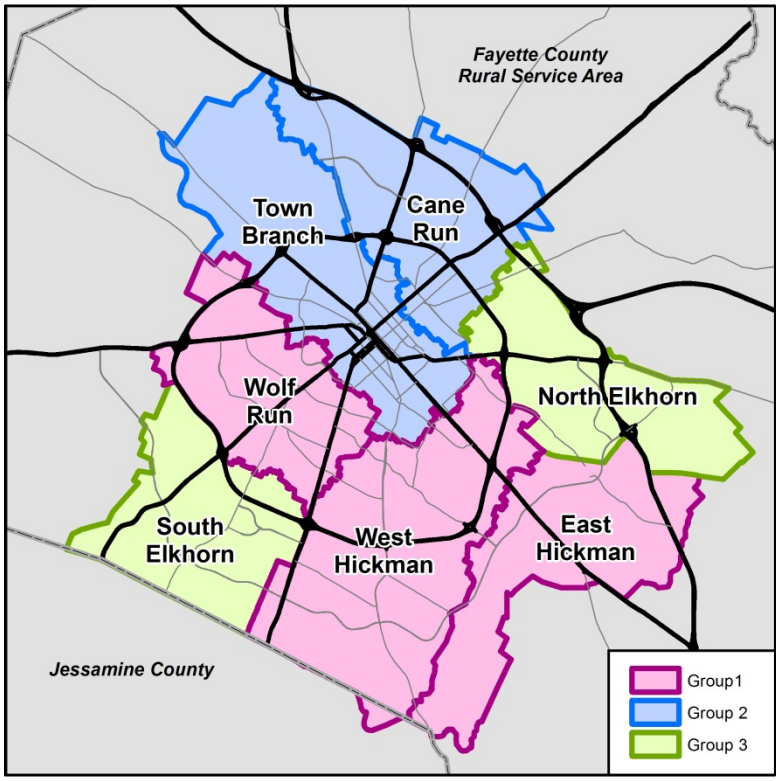
4.3.3.1. Analysis of Trunk Sewer Capacity

The hydraulic model developed during the Capacity Assessment (and later refined during the RMP development) will be used to assess collection system capacity in the trunk sewer system. The hydraulic model includes pump stations subject to overflows and associated force mains, gravity sewer lines that are 12 inches in diameter and greater, Recurring SSO locations, and sewers that affect Recurring SSOs. Requirements for updating the hydraulic model are prescribed in the Consent Decree and included in Section 6 of this Plan.

Maps of each of the seven major Sewersheds in LFUCG's Sanitary Sewer System (**Figure 4.2**) are presented in Appendix C. The maps illustrate the sanitary sewer segments included in the hydraulic

model, and identify where adequate capacity cannot be certified based on the wet weather flows from existing connections for the 2-year, 24-hour design storm event and existing conditions. The maps in Appendix C will be utilized by LFUCG to quickly identify areas where adequate capacity cannot be certified in the collection system. If any of the trunk sewers downstream of a proposed flow increase are labeled with "Inadequate Collection Capacity," then adequate collection capacity cannot be certified and the approval in lieu of adequate capacity certification will be required to authorize proposed flow increases from new or existing connections.

Figure 4.2. LFUCG Sewersheds Within the Urban Service Area



Sanitary sewer segments labeled with "Adequate Collection Capacity" on the maps in Appendix C reflect only those sanitary sewer flows from existing connections. Analysis must still be performed to assess collection system capacity. In those areas, the model will be used to assess whether adequate capacity can be certified with the addition of the proposed flow increase and any previously authorized flow increases that have not yet connected to the Sanitary Sewer System.

4.3.3.2. Analysis of Collector Sewer Capacity

LFUCG has not developed a hydraulic model for its collector sewers (pipe segments less than 12 inches in diameter). Manual calculation of hydraulic capacity will be performed on collector sewers to determine if adequate capacity can be certified. It should be noted that certification of adequate capacity in the trunk sewer will also be required before adequate collection system capacity can be certified.

Manual calculation of hydraulic capacity in collector sewers will be based on comparing estimated peak flows to the calculated peak capacity of the collector sewer. Existing peak flows will be based on apportioning the average dry weather flow in the hydraulic model to the service area upstream of the

collector sewer segment. Estimated peak flows will be calculated as the sum of the existing peak flow with the proposed flow addition and any previously authorized flow increases approved by LFUCG that are not reflected in the existing peak flow estimate. For the purposes of estimating peak flows, a peaking factor will be applied. The magnitude of the peaking factor will be based on the guidelines provided in LFUCG's Sanitary Sewer and Pump Station Manual. Peaking factors in LFUCG's manual are dependent upon the magnitude of the estimated average daily flow rate and range between 2.5 to 5.

The peak capacity of the collector sewer will initially be calculated using Manning's Equation assuming full pipe flow with no surcharging (i.e. atmospheric pressure conditions). The peak capacity of the downstream collector sewer with the lowest grade will be evaluated first. If the capacity of the collector sewer with the lowest grade exceeds the estimated peak flow, then adequate capacity in the collector sewers can be certified. If the peak capacity of the downstream collector with the lowest grade is less than the estimated peak flow, then it will be necessary to perform a more detailed segment-by-segment analysis of the collector sewer system. This analysis may include evaluation of the surcharged condition described in Section 3.1.3.

A small number of collector sewers are included the hydraulic model because they were associated with a Recurring SSO. For flow increases resulting from new or existing connections to collector sewers that are included in the hydraulic model, the procedures outlined in Section 4.3.3.1. will be used to certify adequate collection system capacity.

Section 5 – Approval in Lieu of Capacity Certification

This section presents the technical information, methodology, and analytical techniques that LFUCG will use to authorize flow increases from new or existing service connections under the Approval In Lieu of Capacity Certification (i.e. banked credit system). Under the banked credits system, LFUCG may authorize flow increases (even if adequate capacity cannot be certified) provided that flow removed from qualifying improvements (Capacity Enhancing Projects, I/I Projects, and/or removal of connections) is sufficient to offset the proposed flow increase. The flow removed from qualifying improvements is subject to the trade ratios described in Section 3.2.1.

5.1. Overview

A flow chart illustrating the Approval in Lieu of Capacity Certification process is presented in **Figure 5.1.** A step-by-step description of the process is described below, with reference to the numbered boxes in the figure. Steps 6 through 12 describe the Approval in Lieu of Capacity Certification (banked credits system) process. The Capacity Certification process (described in Section 4) is represented in Step 1 through Step 5.

6 – Identify Credit Bank

The location of the new or existing service connection associated with the proposed flow increase (determined in Step 3) will be used to determine the applicable credit bank. Credit banks are described in Section 5.2. Maps illustrating initial credit bank boundaries are presented in Appendix D.

The credit bank is determined based on the discharge location of the sanitary sewer service connection for the proposed flow increase. The credit bank that first receives the proposed flow increase from the service connection determines the applicable credit bank.

Under the Approval in Lieu of Capacity Certification program, proposed flow increases may only be offset by earned credits available in the credit bank in which they are located. Similarly, flow removal credits earned from qualifying improvements are applied to the balance in the credit bank in which the improvements were made.

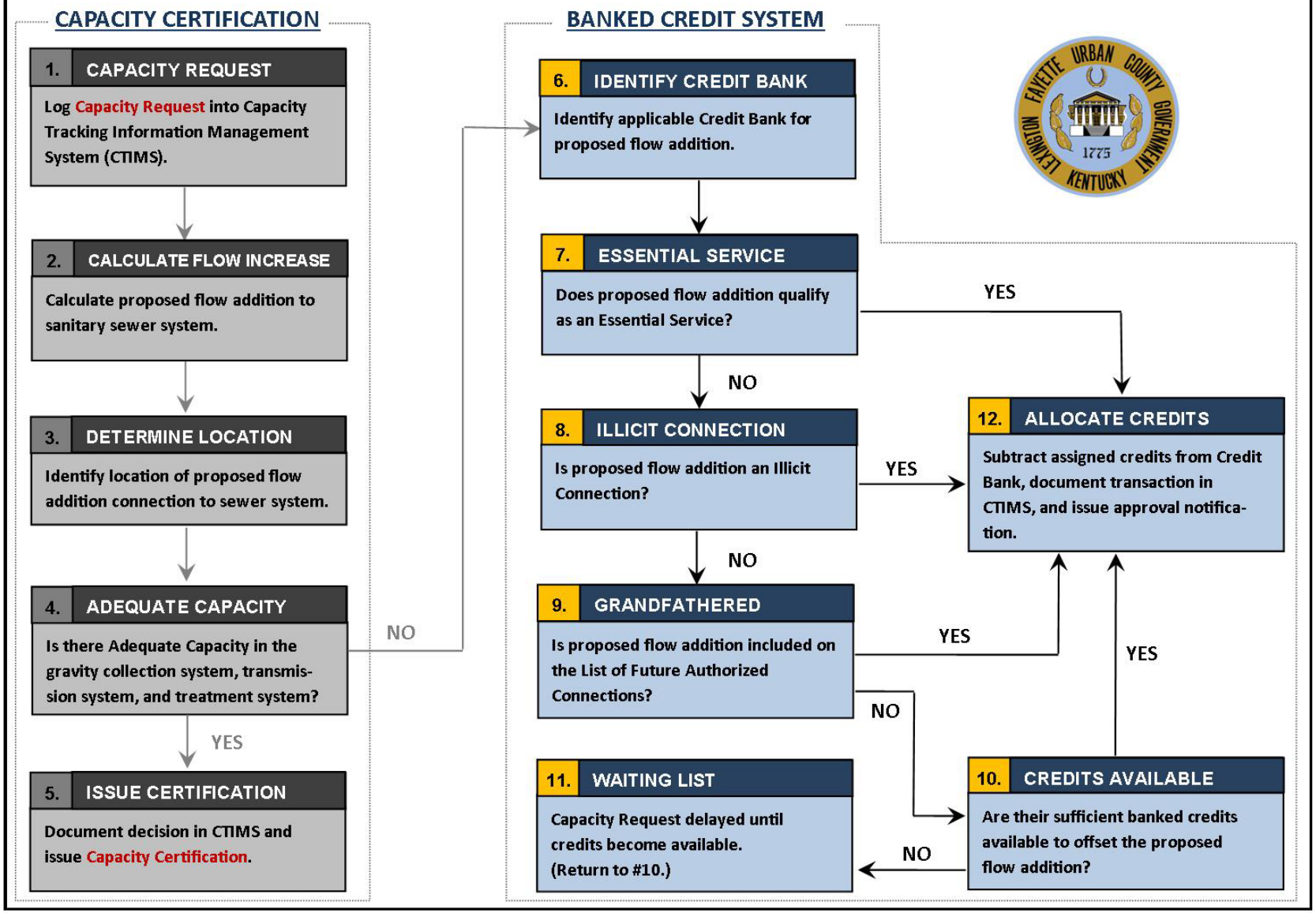
7 – Essential Service

LFUCG may authorize flow increases, even if it cannot certify adequate capacity or there are sufficient earned credits available to offset the proposed flow increase, for Essential Service facilities. If the proposed flow increase is attributed to an Essential Service facility (as defined in Section 3.3.), then proceed to Step 12. If the proposed flow increase is not associated with an Essential Service facility, then proceed to Step 8.

8 – Illicit Connection

LFUCG may authorize a flow increase that eliminates an illicit connection or discharge of wastewater to the stormwater system or to waters of the United States, even if it cannot certify adequate capacity or there are insufficient earned credits available to offset the proposed flow increase.

FIGURE 5.1. CAPACITY CERTIFICATION AND BANKED CREDIT PROCESS DIAGRAM



If the proposed flow increase is associated with removal of an illicit connection, then LFUCG will determine the date the connection was created by reviewing Tap Records and/or Record Drawings. If the connection was made after the Lodging Date of the Consent Decree, a subtraction from the appropriate credit bank must be made. If the proposed flow increase is associated with removal of an illicit connection, then proceed to Step 12.

If the proposed flow increase is not associated with removal of an illicit connection, then proceed to Step 9.

9 – Grandfathered

Per Section VII.16.B.(viii) of the Consent Decree, LFUCG must maintain a List of Future Authorized Connections for flow increases from new or existing service connections, authorized prior to full implementation of the CAP, but that have not yet been introduced into the Sanitary Sewer System. The list must be maintained until full implementation of the CAP. Properties on the List of Future Authorized Connections represent a commitment by LFUCG that sanitary sewer capacity is available for proposed development of the property. Loss of sanitary sewer capacity availability for those properties already in the development process could unfairly result in severe financial hardship for the developer and/or property owner as a result of the onset of the CAP.

LFUCG's List of Future Authorized Connections includes the following:

- Properties that a tap permit has been issued but have not yet connected to the WCTS; and
- Properties that have an approved Preliminary Subdivision Plan, Final Development Plan, or Amended Final Development Plan but have not yet connected to the WCTS.
- Properties that have an approved building permit but have not yet connected to the WCTS.
- Properties that are located in Expansion Area No. 2
- Properties that are located within the wastewater service area of the Boonesboro Manor wastewater treatment plant, but shall not exceed a total capacity of 130,155 gallons per day.

The List of Future Authorized Connections will be included in the quarterly reporting to EPA and EEC identified in Section X.29.A of the Consent Decree.

During this step, LFUCG will determine if the proposed flow increase is included on the List of Future Authorized Connections. If the proposed flow increase is on the list, then proceed to Step 12. If not, then proceed to Step 10.

10 – Credits Available

LFUCG will compare the balance in the credit bank (determined in Step 6) with the proposed flow increase (calculated in Step 2) to determine if sufficient banked flow removal credits are available to offset the proposed flow increase. If the balance exceeds the proposed flow increase, proceed to Step 12. If the bank balance is less than the proposed flow increase, proceed to Step 11.

11 – Waiting List

Capacity requests in locations where adequate capacity cannot be certified and there are insufficient banked credits to offset the proposed flow increase will be placed on a Waiting List. Capacity requests

will remain on the Waiting List until sufficient earned credits become available (through completion of qualifying improvements) or adequate capacity can be certified.

LFUCG will issue a notification letter to applicants whose capacity request is placed on the Waiting List. The notification letter is a temporary suspension of the capacity request and does not authorize the applicant to connect to the WCTS.

LFUCG will actively manage the Waiting List and consider suspended capacity requests when prioritizing their annual I/I removal and collection system rehabilitation program.

12 – Allocate Credits

A subtraction from the balance of the credit bank (in the amount of the proposed flow increase) will be made for Essential Service facilities, illicit connections made after the Consent Decree Lodging Date, and capacity requests arriving via Step 10. The subtraction will be recorded in the bank ledger for the applicable credit bank. A subtraction will not be made for illicit connections created prior to the Consent Decree Lodging Date.

LFUCG will issue a letter notifying the applicant that the proposed flow increase has been authorized by Approval in Lieu of Capacity Certification. The notification letter will clearly identify the amount of the approved flow increase. Proof of allocated sanitary sewer capacity (either by certification of adequate capacity or approval in lieu of capacity certification) is required before LFUCG will issue a tap or building permit.

Allocation of banked credits will be documented in CTIMS and assigned to the parcel(s) identified on the Capacity Request Form (submitted in Step 1).

5.2. Credit Banks

Credit banks have been defined at Recurring SSO locations, wastewater treatment plants, major pump stations, and at capacity–limited trunk sewers. Credit banks were defined in this manner to prevent worsening of existing capacity problems. A similar banking structure was adopted by the Metropolitan Sewer District of Greater Cincinnati (MSDGC) for the CAP. Maps illustrating the 54 credit banks at CAP onset are presented in Appendix D. The maps are organized by LFUCG's seven major Sewersheds.

The WCTS serving the Blue Sky Rural Activity Center (RAC) was defined in a single bank. A Commonwealth Environmental Project prescribed in the Consent Decree requires LFUCG to eliminate the Blue Sky WWTP serving the area and construct a new pump station and force main to convey wastewater from the Blue Sky RAC to LFUCG's existing sewer system within the Urban Service Area boundary and ultimately to the West Hickman WWTP. The bank for the Blue Sky RAC is included on the map for the East Hickman Sewershed in Appendix D.

The capital improvement projects outlined in LFUCG's Remedial Measures Plans will be designed to restore adequate capacity in the WCTS. As Recurring SSOs are eliminated and adequate capacity is restored through completion of RMP improvements and other system rehabilitation activities, the credit banks will be merged into one another. When credit banks are merged, the accumulated balance in each bank will be added to one another.

5.3. Calculating Earned Credits

The following procedures and rates will be utilized to calculate earned credits through specific Capacity Enhancing Projects, I/I Projects, and/or Removal of Connections. The credit rates expressed in the following sections do not include the applicable trade ratios. Trade ratios will be applied to earned credits at the time they are added to the applicable credit bank. Trade ratios for qualifying improvement activities were presented in Section 3.2.1.

Credits earned from qualifying improvement activities will be applied to the balance of the credit bank in which the improvements were completed. Similar to credit expenditures (i.e. subtractions made for credit allocations to capacity requests), credits earned from qualifying improvements activities will be documented in CTIMS.

5.3.1. Capacity Enhancing Projects

Credits may be earned by the following Capacity Enhancing Projects: off-line storage, gravity sewer line improvements, pump station upgrades, and WWTP plant expansion.

No credits will be earned (or expended) for capital improvements that result in diversion of existing sewer connections from one credit bank to another credit bank. The hydraulic model used to evaluate areas of adequate capacity within the WCTS will be updated for capital improvement projects that result in flow diversions.

5.3.1.1. Off-Line Storage

Construction of off-line storage provides additional capacity to the system by storing peak wet weather flows off-line to alleviate downstream capacity constraints. Credits earned through construction of off-line storage facilities will be equal to volume of the tank normalized over a 24-hour period. For example, a ten (10) million gallon equalization facility would provide 10 MGD in earned credits.

5.3.1.2. Gravity Sewer Line Improvements

Replacement of existing sanitary sewers that increase pipe diameter, or construction of parallel relief sewers, will earn capacity enhancing credits based on the magnitude of the increase in the linear storage volume. For example, a 12-inch diameter sewer that is replaced with an 18-inch diameter sewer would earn credits at a rate of 7.3 gallons per linear foot.

5.3.1.3. Pump Station Upgrades

Credits earned from pump station upgrades (replacements or expansions) will be based on the increase in the storage volume of the wet well and other appurtenances. No credits will be earned from increases in pumping or force main capacity.

5.3.1.4. WWTP Upgrades

Upgrades to a WWTP that expands its peak WWF capacity will earn capacity enhancing credits. Determination of capacity enhancing credits will be based on the magnitude of the capacity increase expressed as a flow rate. For example, if the peak WWF capacity of the West Hickman WWTP is increased from 70 MGD to 80 MGD, then 10 MGD of capacity enhancing credits would be credited to the bank immediately upstream of the WWTP. Only WWTP upgrades that increase the peak WWF capacity without resulting in unpermitted bypasses or KPDES permit non-compliance will earn capacity enhancing credits.

5.3.2. I/I Projects

Sanitary sewer improvements that will result in the removal of sources of inflow and infiltration (I/I) will earn credits that can be used to offset flow increases from development activities. The following qualifying activities will earn credits from I/I Projects: replacement of vented manhole lids, repair of manhole defects, removal of inflow sources (downspouts, sump pumps, etc.), rehabilitation of gravity sewer lines, repair of cleanout defects, and comprehensive collection system rehabilitation.

5.3.2.1. Replacement of Vented Manhole Lids

Credits may be earned by replacement of vented manhole lids with solid lids or installation of an inflow dish to reduce I/I in the WCTS. Estimated credits will be based on rates developed by the Metropolitan Sewer District of Greater Cincinnati (MSDGC) for their Short-Term Capacity Plan (STCP), dated November 2001 (and revised in June 2002). The STCP utilizes information reported by Neenah Foundry Company: "A Report on Inflow of Surface Water Through Manhole Covers" (1983).

Credits earned by replacement of vented manhole lids will be based on the manhole's location as defined in **Table 5.1.** The values in the table are consistent with those approved by the EPA for use in the CAPs for MSDGC and the Knoxville Utilities Board (KUB).

Table 5.1. Earned Credits for Replacement of Vented Manhole Lids

Manhole Location	Earned Credits (gpd)
Riparian Zone – Manhole is within 50-feet horizontally of a stream or water body. Manhole is assumed to be subject to one-inch of inundation if located within the riparian zone.	40,000
Paved Area – Manhole is located in a paved, curbed area at a distance from the curb that is less than one-fourth of the total roadway width. Manhole is assumed to be subject to one-eighth of an inch inundation if located within the paved area.	8,000
Non-Riparian Area – Manhole does not fall into one of the other categories listed above, but are flush with the ground surface is assumed to be subject to "splash" conditions.	2,000

5.3.2.2. Repair of Manhole Defects

Rehabilitation of manhole defects will earn credits based upon the I/I severity of the defect, the location of the I/I defect within the manhole, and the physical location of the manhole. The American Society of Civil Engineers, Manual of Practice No. 92 was utilized as the basis of classification. Credits earned from repair of manhole defects is summarized in **Table 5.2**. Values in the table are consistent with those approved by the EPA for use in the CAPs for MSDGC, KUB, and the Louisville and Jefferson County Metropolitan Sewer District (Louisville MSD).

Table 5.2. Earned Credits for Repair of Manhole Defects

Manhole Component	Credits (gpd)											
	Minor I/I (Stain or Weeper)			Moderate I/I (Dripper)			Heavy I/I (Runner)			Severe I/I (Gusher)		
	Riparian	Paved	Non-Riparian	Riparian	Paved	Non-Riparian	Riparian	Paved	Non-Riparian	Riparian	Paved	Non-Riparian
Frame Seal	864	78	328	1,728	156	656	3,456	311	1,313	6,912	622	2,626
Chimney	864	78	328	1,728	156	656	3,456	311	1,313	6,912	622	2,626
Cone	864	78	328	1,728	156	656	3,456	311	1,313	6,912	622	2,626
Wall	432	39	164	864	78	328	1,728	156	656	3,456	311	1,313
Pipe Seal	432	39	164	864	78	328	1,728	156	656	3,456	311	1,313
Bench	432	39	164	864	78	328	1,728	156	656	3,456	311	1,313
Channel	432	39	164	864	78	328	1,728	156	656	3,456	311	1,313

5.3.2.3. Removal of Inflow Sources

Credits earned from the disconnection, removal or redirection of inflow sources in the WCTS are summarized in **Table 5.3**. Values in the table are consistent with those approved by the EPA for use in the CAPs for KUB and Louisville MSD.

Table 5.3. Earned Credits for Removal of Inflow Sources

Type of Connection	Unit	Credits (gpd)
Downspouts	Each	4,000
Driveway or Area Drains	Each	6,000
Foundation Drains/Sump Pumps	Each	4,000

5.3.2.4. Rehabilitation of Gravity Sewers

Rehabilitation of gravity sewer lines, including private laterals, will earn credits based upon the pipe diameter, length rehabilitated, and the location of the gravity sewer line. Credits earned for rehabilitation of gravity sewer lines are summarized in **Table 5.4** and are consistent with those approved by the EPA for use in the CAPs for MSDGC, KUB, and Louisville MSD. Techniques for rehabilitating gravity sewer lines include: pipe lining, replacement, and point repairs. Credits are earned from abandonment of an existing gravity sewer line, provided it is physically disconnected from the WCTS. In cases where an existing gravity sewer is replaced along a new alignment, credits will be earned based upon the diameter and length of the gravity sewer being abandoned, not the new gravity sewer line.

Table 5.4. Earned Credits from Rehabilitation of Gravity Sewers

Location of Gravity Sewer Line	Unit	Credits (gpd)
Riparian Areas	Inch-Diameter × Mile	34,000
Non-Riparian Areas	Inch-Diameter × Mile	60

5.3.2.5. Repair of Cleanout Defects

Defective cleanout caps can present a significant inflow source to WCTS when they are located at or below grade. Approximately one quarter of all defects identified during smoke testing performed during the Sanitary Sewer Assessments were attributed to defective cleanouts.

Credits may be earned from repair or replacement of cleanout caps that are missing, broken, or are grated/slotted such that they can accept surface water into the cleanout pipe. Credits earned from replacement of missing or defective cleanout caps that are located at or below grade is 180 gpd per cleanout.

The credit amount earned through replacement of missing or defective cleanout caps was derived by application of the weir equation (sharp-crested with a weir coefficient of 3.0), assuming a 4-inch

diameter cleanout subject to an inundation depth of one-eighth inch. The resulting flow rate through the cleanout was assumed to occur over a two-hour period, then converted to a volume, and re-normalized over a 24-hour period.

5.3.2.6. Comprehensive I/I Removal

LFUCG may elect to perform comprehensive rehabilitation of the WCTS in specific areas or neighborhoods that have exhibited an excessive wet weather response during prior flow monitoring. Comprehensive I/I removal consists of rehabilitation of all significant defects identified in the collection system within a prescribed area (such as a flow metershed or neighborhood). Comprehensive I/I removal will include a detailed evaluation of the project area and will generally include removal of both public and private I/I sources.

Credits earned from comprehensive I/I removal will be based on the reduction in the post-rehabilitation R-value. The R-value represents that fraction of rainfall that enters the WCTS during wet weather events, or the volume of observed I/I divided by the volume of rainfall occurring in the metered area. R-values will be calculated based on pre-rehabilitation and post-rehabilitation flow monitoring. The total reduction in I/I volume (as calculated from the reduction in pre-/post-rehabilitation R-values) for the 2-year, 24-hour design storm will be normalized over a 24-hour period to determine an equivalent I/I removal flow rate.

Where comprehensive rehabilitation is performed, the reduction in the R-value will initially be assumed to achieve a post-rehabilitation R-value of ten (10) percent. During flow monitoring performed by in 2008 through 2010, LFUCG observed R-values in several areas of well below ten (10) percent. An actual R-value will be calculated upon completion of post-rehabilitation flow monitoring and future adjustments will be made as necessary.

5.3.3. Removal of Connections

Flow permanently removed from the WCTS resulting from disconnection of existing service connections will earn credits based on the actual flow removed from the WCTS. Examples of permanent removal of connections may include redevelopment of an existing building into a parking lot or structure, or purchase and demolition of flood-prone buildings by LFUCG. Earned credits will be calculated based on the average daily flow removed from the WCTS. Average daily flows will be determined from historic water usage records (when available) or estimated using the procedures described in Section 4.2 and the average daily flow values presented in Appendix B.

5.3.4. Special Cases

There may be unique instances of I/I Projects or Capacity Enhancing Projects that may qualify for earning credits, but are not identified in this Plan. Examples may include excessive I/I sources such as an improperly abandoned asset located in or near a creek, a detention basin illegally connected to the sanitary sewer system, or others. If one of these cases is encountered, LFUCG will calculate the proposed earned credits using standard engineering practice (e.g. hydrologic analyses, hydraulic analyses, such

Manning's equation, weir and orifice equations, etc.) or by means of pre- and post-activity flow monitoring data. These special cases will be documented in the Consent Decree Quarterly Reports to the EPA and EEC. All supporting data and calculations used to determine the earned credits will be made available to EPA and EEC upon request.

Section 6 – Program Administration

The following sections briefly summarize the tools and administrative protocols that LFUCG shall utilize to fully implement the CAP.

6.1. Hydraulic Model

The hydraulic model developed during the Capacity Assessment (and updated during RMP development) will be used to assess transmission and collection system capacity. Procedures for certifying adequate capacity were presented in Section 4. Specific model assumptions and analysis methodologies were previously documented in the Capacity Assessment Work Plan, SSA Reports and RMP Reports submitted to the EPA and EEC.

The hydraulic model was developed in the MIKE-URBAN software, distributed by the Danish Hydraulic Institute (DHI), and utilizes the EPA's Stormwater Management Model (SWMM) 5 computational engine. The model is compatible with GIS and can be easily converted to other SWMM-based software platforms, such as PC-SWMM, distributed by Computational Hydraulics International (CHI) Software, with negligible differences in computed results. The current version of the computational engine is SWMM 5.0.022, but will be updated (as necessary) when new versions become available.

Beginning in the first year of CAP implementation (following EPA/EEC approval), LFUCG will perform a review of specific Capacity Enhancing Projects and I/I Projects undertaken to determine if actual added capacity and One-Hour Peak Flow reductions are generally consistent with what was originally estimated. In order to achieve this, LFUCG intends to perform flow monitoring in areas affected by Capacity Enhancing Projects and I/I Projects. Flow monitoring results will be used to evaluate the hydraulic model on an annual basis. LFUCG is currently evaluating the installation of a permanent flow monitoring network to assist in trending the performance of the WCTS. LFUCG may perform interim updates of the hydraulic model upon completion of capital improvement projects to support adequate capacity determinations.

6.2. Information Management System

Development of an information management system to track adequate capacity certifications and document the accumulation and expenditure of banked credits has been developed. The Credit Tracking Information Management System (CTIMS) will be used by LFUCG to manage CAP implementation.

CTIMS was designed as a web-based application that is available to DWQ, their CAP Consultant, and the other LFUCG departments responsible for CAP implementation. CTIMS will have varying levels of user access allowing for public access to credit balances and credit bank maps, as well as more unrestricted access for persons responsible for processing capacity requests and documenting capacity certifications and credit allocations.

At its core, CTIMS is a graphical user interface that can be used to readily access a geographic information database (geodatabase) where the information necessary to administer the CAP is stored. CTIMS allows the user to access the following information:

- LFUCG's GIS data;

- Subdivision/development plans approved by LFUCG's Planning Commission;
- Information available from the LFUCG Tap-On Desk;
- Sanitary sewer improvement information contained in LFUCG's sanitary sewer asset management system (Accela);
- Manually entered information captured from completed Capacity Request Forms;
- Pump station and WWTP capacity information;
- Previously approved capacity requests and banked credits transactions; and
- Relevant infrastructure information from completed Remedial Measures Plan and other capital improvement projects necessary to calculate earned credits.

CTIMS includes functionality to support storing, tracking, and managing capacity requests in accordance with the procedures outlined in Sections 4 and 5.

6.3. Procedures Manual

A draft CAP Implementation Procedures Manual has been developed that provides detailed guidance and protocols for administering LFUCG's CAP. The Procedures Manual outlines specific responsibilities for LFUCG departments responsible for CAP implementation and identifies authorizations necessary for approving/denying capacity requests. The Procedures Manual also includes detailed instructions for using CTIMS.

The Procedures Manual was developed to allow LFUCG to clearly communicate the requirements for CAP implementation, thereby promoting compliance with the Consent Decree and facilitating proper succession planning and program sustainability. The draft Procedures Manual will be updated, as needed, to reflect changes in CAP implementation protocols.

6.4. Program Controls

The requirements in the Consent Decree prohibit LFUCG from authorizing flow increases from new or existing service connections to the WCTS, unless adequate capacity in the treatment, transmission, and collection system capacity can be certified or the approval in lieu of capacity certification requirements documented in Section 3 are satisfactorily met.

LFUCG's CAP includes several key program controls to prevent unauthorized flow increases to the WCTS.

6.4.1. Building and Tap Permit Issuance

LFUCG authorizes new service connections through issuance of a tap permit. Redevelopment of an existing property where the existing service connection can be salvaged does not require issuance of a new tap permit, unless the new use exceeds the existing tap permit flow rate. However, a building permit is required for the redevelopment.

LFUCG has adopted an Ordinance that prohibits the issuance of a tap or building permit unless written documentation is provided indicating that either certification of adequate capacity has been issued or a banked credit allocation has been made for the subject property of sufficient magnitude to offset the proposed flow increase associated with the development/redevelopment. A copy of the approved Ordinance is provided in Appendix A. As described in Sections 4 and 5, LFUCG will issue a written notification to applicants making a capacity request when adequate capacity is certified or banked credits are allocated. Documentation will also be stored in CTIMS.

Tap permits for residential developments or multi-building commercial/industrial developments are typically requested and issued on an individual basis for parcel(s) or building(s) within a larger, LFUCG approved Development or Subdivision Plan. Prior to issuance of a tap permit, LFUCG's Tap Desk will verify that the total banked credit allocation to a Development or Subdivision Plan has not been expended by previously issued tap permits. CTIMS will have the functionality to effectively track banked credit allocations and issued tap permits to facilitate the reconciliation.

6.4.2. Planning Approval

Under the vast majority of cases, a request for sanitary sewer capacity will not be permitted unless there is an approved Preliminary Subdivision Plan, Final Development Plan, or Amended Final Development Plan. Exceptions may include facilities for State or Federal Agencies. Existing LFUCG ordinances and regulations prohibit approval of these Plans by the Planning Commission (and certification by the Director of Planning) unless the proposed development is in accordance with LFUCG's Zoning Map Atlas and adheres to LFUCG's Land Subdivision Regulations and Design Manuals. Similarly, LFUCG has enacted ordinances and regulations to prohibit issuance of a building permit or a tap permit for any service request unless the permit applicant can provide proof of allocated sanitary sewer capacity or credits.

Appendix A

Ordinance 63-2103

ORDINANCE NO. 63 - 2013

AN ORDINANCE CREATING ARTICLE XIII OF CHAPTER 16 OF THE CODE OF ORDINANCES TO IMPLEMENT A SANITARY SEWER CAPACITY ASSURANCE PROGRAM (CAP) TO ASSURE THAT THE SANITARY SEWER SYSTEM ("SYSTEM") IS ADEQUATE FOR FUTURE CONNECTIONS; DEFINING TERMS; REQUIRING THAT A SANITARY SEWER CAPACITY PERMIT ("PERMIT") MUST BE OBTAINED PRIOR TO ANY FUTURE CONNECTION TO THE SYSTEM AND PROVIDING THAT PERMITS SHALL BE GRANTED FOR PROPERTIES WITH A SEWER USE OF RECORD, PROPERTIES WITH CERTAIN APPROVED PLANS OR PLATS, AND PROPERTIES IN EXPANSION AREA 2; PROVIDING THAT REMODELING PROJECTS SHALL NOT REQUIRE A PERMIT; PROVIDING FOR STAGED CAPACITY ALLOCATION FOR PROPERTIES WITH CERTAIN APPROVED PLANS WITH A MAXIMUM ANNUAL THRESHOLD AS DETERMINED BY A NEGOTIATED AGREEMENT; PROVIDING THAT AN ESSENTIAL SERVICE PROJECT MAY BE GRANTED A PERMIT WITHOUT ADEQUATE CAPACITY UPON A FINDING THAT SUCH ACTION IS JUSTIFIED AND WILL NOT DETRIMENTALLY IMPACT THE CAP; PROVIDING THAT A PROJECT WITH A SIGNIFICANT ECONOMIC IMPACT MAY QUALIFY FOR AN ADMINISTRATIVE CAPACITY APPROVAL IF SUCH ACTION WILL NOT DELAY REMEDIAL MEASURE PLAN PROJECTS; PROVIDING THAT ALL APPLICATIONS AND REQUESTS SHALL BE MADE BY THE PROPERTY OWNER OR DULY AUTHORIZED REPRESENTATIVE; PROVIDING THAT A NON-REFUNDABLE ADMINISTRATIVE FEE OF $450 SHALL BE PAID TO REQUEST A CAPACITY ALLOCATION, CAPACITY PERMIT, OR CAPACITY RESERVATION; PROVIDING THAT SEWER CAPACITY MAY BE RESERVED UPON PAYMENT OF A DEPOSIT TO BE CREDITED TO TAP-ON FEES OR EXACTION FEES; PROVIDING THAT RESERVATIONS OF CAPACITY WILL EXPIRE IN ONE (1) YEAR UNLESS EXTENDED AND PROVIDING THAT A NON-REFUNDABLE ADMINISTRATIVE FEE OF $225 SHALL BE PAID FOR AN EXTENSION; PROVIDING THAT A RESERVATION SHALL BECOME A PERMANENT ALLOCATION UPON CERTIFICATION OF CERTAIN PLANS OR AMENDMENTS; PROVIDING THAT ALL FEES SHALL BE ADJUSTABLE BASED ON THE CONSUMER PRICE INDEX; PROVIDING EXCEPTIONS FOR PAYMENT OF ADMINISTRATIVE FEES FOR CERTAIN PROPERTIES; PROVIDING THAT DETERMINATIONS ON APPLICATIONS AND REQUESTS SHALL BE MADE WITHIN TEN (10) DAYS IF POSSIBLE; PROVIDING AN APPEAL PROCESS FOR APPLICANTS WHO DISAGREE WITH DETERMINATIONS; PROVIDING THAT ALL ACTIONS AND REQUIREMENTS UNDER ARTICLE XIII ARE SUBJECT TO THE PROVISIONS OF THE CONSENT DECREE AND APPROVED CAP; AND PROVIDING THAT A FORMAL REVIEW AND AUDIT OF THE CAP AND COLLECTED FEES SHALL BE PERFORMED EVERY TWO (2) YEARS; AND AMENDING SECTION 5-30 OF THE CODE ORDINANCES TO REQUIRE THAT ADEQUATE SANITARY SEWER CAPACITY EXISTS PRIOR TO ISSUANCE OF ANY BUILDING PERMIT FOR A PROPERTY THAT WILL CONNECT TO THE SANITARY SEWER SYSTEM.

WHEREAS, the mission of the sanitary sewer system of the Urban County Government includes safely and efficiently collecting and conveying sanitary sewage to enhance public health and safety, protect lives and property, and minimize the discharge of sanitary sewage onto private property or into the environment in compliance with applicable federal and state laws; and

WHEREAS, the Urban County Government, the United States Environmental Protection Agency, and the Commonwealth of Kentucky have entered into a Consent Decree in a case styled *United States, et al. v. Lexington-Fayette Urban County*

Government, United States District Court for the Eastern District of Kentucky, Case No. 5:06-CV-00386, that requires LFUCG to implement a sanitary sewer system Capacity Assurance Program (CAP) to assure that no connections are allowed to the sanitary sewer system unless adequate capacity exists in the system to convey the One Hour Peak Flow, as defined below in Section 1; and

WHEREAS, a Task Force, including councilmembers and LFUCG officials was created in April 2012 to assist the Division of Water Quality in developing the CAP; and

WHEREAS, the Task Force held numerous public meetings on the issues related to the CAP which allowed substantial participation by both non-LFUCG stakeholders, including developers, major sanitary sewer users, interested non-development related parties, the general public, and LFUCG stakeholders as the Task Force formulated its recommendations for the CAP; and

WHEREAS, the Urban County Council reviewed the report prepared by the Task Force and the Task Force recommendations and by Resolution No. 722-2012 accepted the Task Force report and approved the recommendations contained therein; and

WHEREAS, Resolution No. 722-2012 provided guidance related to allocation of capacity in the Urban County Government's sanitary sewer system during the interim period before full implementation of the Capacity Assurance Program but also provided that further ordinances were needed to implement the CAP; and

WHEREAS, the Urban County Council has determined that the following amendments to the Code of Ordinances are appropriate to implement the CAP;

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT:

Section 1 – That Article XIII of the Code of Ordinances and Sections 16-301 through 16-306 are hereby created to read as follows:

Section 16-301. – Purpose and Intent.

The intent of this Article is to implement a sanitary sewer system Capacity Assurance Program (CAP) to assure that the sanitary sewer system is adequate for future connections.

Section 16-302. – Definitions.

(a) "Active" in regard to preliminary subdivision plans, preliminary development plans, final development plans, and/or amended final development plans shall mean a plan that has been approved by the Planning Commission and has not expired because activity related to the plan has occurred within the appropriate time period in compliance with the Zoning Ordinance and Land Subdivision Regulations.

(b) "Adequate Capacity" shall mean Adequate Treatment Capacity, Adequate Transmission Capacity, and Adequate Collection Capacity.

(c) "Adequate Collection Capacity" shall mean that each Gravity Sewer Line, through which a proposed additional flow from new or existing connections would pass, has the capacity to carry the existing One-Hour Peak Flow passing through the Gravity Sewer Line, plus the addition to the existing One-Hour Peak Flow from the proposed connection, plus the addition to the existing One-Hour Peak Flow predicted to occur from all other authorized sewer service connections which have not begun to discharge into the Sanitary Sewer System without causing a Surcharge Condition.

(d) "Adequate Transmission Capacity" shall mean that each Pumping Station through which a proposed additional flow from new or existing sewer service connections would pass to the WWTP receiving such flow, has the capacity to transmit the existing One-Hour Peak Flow passing through the Pumping Station, plus the addition to the existing One-Hour Peak Flow predicted to occur from the proposed connection, plus the addition to the existing One-Hour Peak Flow predicted to occur from all other authorized sewer service connections which have not begun to discharge into the Sanitary Sewer System.

(e) "Adequate Treatment Capacity" shall mean that at the time the WWTP receives the flow from a proposed sewer service connection(s) or increased flow from an existing sewer service connection(s), when combined with the flow predicted to occur from all other authorized sewer service connections (including those which have not begun to discharge into the Sanitary Sewer System), the WWTP will not be in "noncompliance" for quarterly reporting as defined in 40 C.F.R Part 123.45, Appendix A and that the new or increased flow to the WWTP will not result in Unpermitted Bypasses or diversions prohibited by the KPDES Permits due to lack of treatment capacity.

(f) "Administrative Capacity Approval" shall mean a waiver of administrative requirements for a Sanitary Sewer Capacity Permit or Sewer Capacity Reservation available to a new business or industry, or an expansion of an existing business or industry, under certain circumstances.

(g) "Capacity Assurance Program" or "CAP" shall mean the System Capacity Assurance Program as defined in Section VII Paragraph 16.B. of the Consent Decree and accepted by the Urban County Council in Resolution No. 722-2012, passed December 11, 2012 and otherwise described in Sections 16-301, *et seq.* in the Code of Ordinances.

(h) "Capacity Request" shall mean written submission of a Sewer Capacity Application to the Division of Water Quality (DWQ) for a Permanent Allocation or Sewer Capacity Reservation.

(i) "Consent Decree" shall mean the Decree and all attachments lodged on March 14, 2008 between the United States of America and the Commonwealth of Kentucky (Plaintiffs) v. Lexington-Fayette Urban County Government (Defendant), Civil Action No. 5:06-cv-386, with an effective date of January 3, 2011.

(j) "Credit" shall mean a unit of flow equivalent to one gallon per day (1 gpd).

(k) "Essential Services" shall mean public schools as defined herein, health care facilities licensed by the Kentucky Cabinet for Health and Family Services and meeting the definition of "health facility" in KRS 216B.015, or a building or facility that is contiguous to or connected to a licensed hospital and which serves as a medical office building, site for delivery of outpatient health services or is otherwise integral to hospital operations or which building or facility is required to have a Certificate of Need under KRS 216B.010, et seq.

(l) "One Hour Peak Flow" shall mean the greatest flow in a sewer averaged over a sixty (60) minute period at a specific location expected to occur as a result of a representative 2-year 24-hour storm event.

(m)"Permanent Allocation" shall mean the assignment of sewer capacity/credits to a property and is not subject to expiration.

(n) "Planning Commission" shall mean the Lexington-Fayette Urban County Planning Commission.

(o) "Public School" shall mean a school which is operated by the state, a political subdivision of the state, a governmental agency within the state, or by a non-profit corporation which has IRS Section 501(c)(3) tax exempt status.

(p) "Remodeling Project" shall mean a project for the remodeling or expansion of an existing residential structure which does not increase the number of dwelling units.

(q) "Sanitary Sewer Capacity Permit" shall mean a document provided by the Division of Water Quality approving a Sewer Capacity Application under Article XIII of Code of Ordinances Chapter 16.

(r) "Sanitary Sewer System" shall mean the WCTS owned or operated by LFUCG designed to collect and convey municipal sewage (domestic, commercial and industrial) to a WWTP.

(s) "Sewer Capacity Application" shall mean the application form completed and filed with the Division of Water Quality to request a Permanent Allocation and/or a Sewer Capacity Reservation.

(t) "Sewer Capacity Reservation" shall mean the temporary assignment of sewer capacity to a property until a "Sanitary Sewer Capacity Permit" is issued upon approval of a Capacity Request.

(u) "Staged Capacity Allocation" shall mean an assignment of sewer capacity with certain conditions to a property based on its development status.

(v) "Tap-on Permit" shall mean a permit to connect to the public sanitary sewer system as provided in Section 16-40 of the Code of Ordinances.

(w)"Use of Record" shall mean the existing or previous wastewater flow from a property that is represented in a baseline condition of the sanitary sewer system hydraulic model plus any future Permanent Allocations assigned to the property by the Division of Water Quality.

Section 16-303. – Sanitary Sewer Capacity Permit/Sewer Capacity Reservation.

(a) A Sanitary Sewer Capacity Permit ("permit") must be obtained prior to any future connection to the sanitary sewer system that will result in additional sanitary sewer flow. An applicant may apply for a single Permit which shall apply to all lots or buildings, as appropriate, on an approved preliminary subdivision plat, final subdivision plat, final development plan or authorized plan amendment.

(b) A permit shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any property that has a use of record in an amount not to exceed the maximum previous wastewater flow from the property.

(c) A permit shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any single family residential, townhouse, or duplex lot for which a building permit has not been previously issued if the lot was created by a final subdivision plat or final development plan recorded or certified, as appropriate, prior to July 3, 2013.

(d) A permit shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any property for which an active preliminary subdivision plan, final development plan, final plat, or authorized plan amendment was submitted to the Planning Commission prior to December 11, 2012 provided the plan is approved and certified by the Urban County Planning Commission not later than July 3, 2013.

(e) A permit shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any property located in Expansion Area 2A, 2B or 2C in Fayette County.

(f) A Remodeling Project shall not require a permit and the Division of Water Quality shall provide written notice of such waiver to the Division of Building Inspection.

(g) A Staged Capacity Allocation shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any residential development property for which an active preliminary subdivision plan, final development plan, or authorized amendments to such plans was not submitted to the Planning Commission prior to December 11, 2012 if the relevant plan or amendment is certified as approved by the Urban County Planning Commission Secretary not later than July 3, 2013. The amount of the Staged Capacity Allocation, up to a maximum annual threshold, shall be determined by a negotiated agreement between the applicant and the urban county government by and through the Division of Water Quality based on the nature and timing of the development.

(h) A Staged Capacity Allocation shall be granted by the Division of Water Quality upon request, after verification by the division of all relevant facts, for any non-residential development property for which an active preliminary subdivision plan, final development plan, or authorized amendments to such plans was not submitted to the Planning Commission prior to December 11, 2012 if the relevant plan is approved and certified by the Urban County Planning Commission not later than July 3, 2013 and all tap-on fees for the property are paid by July 3, 2014. The amount of the Staged Capacity Allocation up to a maximum annual threshold shall be determined by a negotiated agreement between the applicant and the urban county government by and through the Division of Water Quality based on the nature and timing of the development. Any amount of the reserved sewer capacity that has not been used by July 3, 2014 shall expire.

(i) Within ten (10) calendar days after receipt of a Sewer Capacity Application, the division shall notify the applicant, in writing, of its determination to grant or deny the request. If a determination cannot be made within ten (10) calendar days the division will notify the applicant and provide response status updates not less than every ten (10) days until a final determination is made. No application shall be approved without a written determination.

(j)

(1) A project for an Essential Service may be granted a Sanitary Sewer Capacity Permit even though adequate capacity does not exist upon a finding by the Commissioner of Public Works and Commissioner of Planning, Preservation and Development that such action is justified and will not have an unduly detrimental impact on the Capacity Assurance Program.

(2) A project for a new business or industry, or the expansion of an existing business or industry, may qualify for Administrative Capacity Approval of a Sanitary Sewer Capacity Permit only upon a finding by the Commissioner of Finance and Commissioner of Planning, Preservation and Development that the project will have a significant economic impact. Such action shall not result in delay of other planned neighborhood sewer improvements or Remedial Measures Plan (RMP) projects. The Commissioners shall report any Administrative Capacity Approval to the Environmental Quality Committee within thirty (30) days of taking such action.

(3) Any project that is approved pursuant to subsection (a) or (b) must still file all otherwise required applications or forms and pay all applicable fees and deposits, unless such fee or deposit is waived as provided elsewhere in this Article.

(k) All applications or requests made pursuant to this section shall be made by the owner of the subject property or by the owner's duly authorized representative. Written verification of representative status will be required prior to acceptance of any application or request.

Section 16-304. – Capacity Requests/Sewer Capacity Reservations.

(a) A sewer Capacity Request may be made for any development property that has an approved preliminary subdivision plan, final development plan, authorized plan amendment, or a final subdivision plat which has been certified as approved by the Planning Commission Secretary.

(b) A Sewer Capacity Reservation request may be made for any development property for which a preliminary development plan, preliminary subdivision plan, final development plan, or authorized plan amendment, has been submitted to the Planning Commission.

(c) To formally request a Staged Capacity Allocation, a Sanitary Sewer Capacity Permit or a Sewer Capacity Reservation for any development property, including Administrative Capacity Approval or Essential Services eligible properties, a Sewer Capacity Application shall be completed and filed with the division of Water Quality and a non-refundable administrative fee of $450 shall be paid, except as provided in subsection (e) of this section. An applicant may file a Sewer Capacity Application which applies to all lots or buildings, as appropriate, on a preliminary subdivision plat, final subdivision plat, final development plan or authorized plan amendment.

(d) If a Sewer Capacity Reservation is granted, the reservation will be effective upon payment of a reservation deposit in an amount equal to twenty-five percent (25%) of the estimated tap-on fee associated with the reservation. If a Sewer Capacity Reservation is granted for properties in Expansion Area 1 or 3, the reservation shall be in effective upon payment of a reservation deposit in an amount equal to twenty-five percent (25%) of the estimated sanitary sewer capacity exactions in the subject area or in such other amount determined by a development agreement between the applicant and the urban county government pursuant to Article 23C-7(d) of the Zoning Ordinance based on the applicant's participation in system improvement construction within the subject development. The amount of the reservation deposit shall be credited in full toward the payment of the final tap-on fee or exaction fee as appropriate. The length of the reservation period shall not exceed one (1) year after which the reservation shall expire unless extended as provided herein. Prior to expiration of the reservation, an extension shall be granted upon payment of an additional non-refundable administrative fee of $225. The extension shall not exceed an

additional one (1) year unless a longer extension is justified based on the timing of the applicant's construction of system improvements under a development agreement pursuant to Article 23C-7(d) of the Zoning Ordinance. If a Sewer Capacity Reservation expires one-half (1/2) of the reservation deposit shall be refunded. For developments requesting capacity where a reservation has expired, a new Sewer Capacity Application form must be completed and filed with the Division of Water Quality and a new non-refundable administrative application fee and reservation deposit, if applicable, shall be due for the subject property.

(e) A Sewer Capacity Reservation shall become a Permanent Allocation upon certification by the Urban County Planning Commission Secretary of the approval of the preliminary subdivision plan or final development plan, or authorized amendments thereto as may be applicable for the subject property or issuance by the urban county government of a tap-on permit, for the subject property, whichever occurs first.

(f) All rates and fees set forth in this section shall be adjustable each July 1 beginning on July 1, 2014 by an amount based upon the Consumer Price Index for All Urban Consumers, the U.S. City Average ("CPI-u") published monthly by the Bureau of Labor Statistics. These rates shall be adjusted up if so indicated by a factor determined by averaging the monthly CPI-u published for the 12-month period ending, and including, April of the year before the July 1 adjustment.

(g) No administrative fee for Sewer Capacity Applications or deposit for Sewer Capacity Reservations shall be due for the following:

1) Any Remodeling Project;
2) Any construction project that will result in less than 45 gallons per day (gpd) increase in sanitary sewer usage;
3) Any property that qualifies for Sanitary Sewer Capacity Permit or a Sewer Capacity Reservation pursuant to subsections 16-303(b), (c), (d), or (e);
4) Any property that is currently paying a sewer user fee that is directed by the Fayette County Health Department to connect to the sewer system to eliminate an illicit connection.

(h) The Sewer Capacity Reservation deposit for any development property that qualifies for a Administrative Capacity Approval under Section 16-303(i)(2) may be waived at the discretion of the urban county government.

(i) All applications or requests made pursuant to this section shall be made by the owner of the subject property or by the owner's duly authorized representative. Written verification of representative status will be required prior to acceptance of any application or request.

(j) Within ten (10) calendar days after receipt of a Capacity Request or an application for a Staged Capacity Allocation, a Sanitary Sewer Capacity Permit or a Sewer Capacity Reservation, the division shall notify the applicant, in writing, of its determination to grant or deny the requested action. If a determination cannot be made within ten (10) calendar days the division will notify the requestor and provide response status updates not less than every ten (10) days until a final determination is made. No request or application shall be approved without a written determination.

Section 16-305. Appeals.

Any applicant who disagrees with a sewer capacity/reservation/allocation/waiver determination on its application made under this Article may appeal to the Commissioner of Environmental Quality and Public Works. Such appeal shall be made in writing and shall state the grounds for the appeal. Any technical data which supports

the appeal shall be provided with the appeal. The Commissioner shall render his decision within thirty (30) days from receipt of the appeal and supporting documents.

Section 16-306. Compliance with Consent Decree

All actions and requirements under this Article shall be subject to the provisions of the Consent Decree and the urban county government's Capacity Assurance Plan as approved by the United States of America pursuant to the Consent Decree. Where any conflict exists between this Article and the Consent Decree or approved Capacity Assurance Plan, the Consent Decree or Capacity Assurance Plan shall control.

Section 16-307. Review; Audit

An independent formal review and audit of the Capacity Assurance Program and collected fees shall be performed on or before July 3, 2015 and every two (2) years thereafter and the audit reports shall be sent to the urban county council.

Section 2 – That Section 5-30 of the Code of Ordinances be and hereby is amended to read as follows:

(a) Prior to the issuance of any building permit for the construction or expansion of an apartment building or any commercial or industrial building or related blacktopping, or for any residential building where no previous building permit has been issued in the subdivision unit in which said residential lot is located from the date of the enactment of this section, the Director, Division of Building Inspection shall:

(1) Obtain a certificate from the urban county engineer that such construction, including related blacktopping shall not materially cause stormwater damage. In areas where stormwater problems are known to exist, including but not limited to floodplains, areas of alluvial soils, and environmentally sensitive areas, the urban county engineer may require a stormwater study. Based on that study, additional stormwater management features may be required. The stormwater study shall be prepared in conformance with the Division of Water Quality Stormwater Technical Manual by a professional engineer licensed in the State of Kentucky.

(2) If deemed necessary, certify upon consultation with the director, Division of traffic engineering, that curb cut regulations have been complied with, and that the construction and related property use will not unreasonably interfere with traffic flow.

(b) No building permit for the construction of any structure that will require connection to the urban county government sanitary sewer system or the re-modeling or expansion of any existing structure that will result in an increase in sanitary sewer usage shall be issued unless the Division of Building Inspection can verify via the urban county government's database or evidence provided by the applicant that a Sanitary Sewer Capacity Permit as defined in Section 16-302(q) has been issued for the subject property or a waiver has been granted because the project is a Remodeling Project as defined in Section 16-302(p).

Section 3 – That this Ordinance shall become effective on the date of its passage.

PASSED URBAN COUNTY COUNCIL: June 6, 2013

MAYOR

ATTEST:

CLERK OF THE URBAN COUNTY COUNCIL

PUBLISHED: June 13, 2013-1t

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Appendix B

Dry Weather Flow Rates

Appendix B – Dry Weather Flow Rates

Flow increases from new or existing service connections will be calculated based on the average daily flow values in Table B.1. Residential values are based on the per capita usages determined for Lexington (discussed in Section 4.2.1. of the CAP Plan). Non-residential facilities or developments are based on industry standards and are consistent with the values used in the CAP for Knoxville Utilities Board (KUB). Unique facilities or those not fitting the categories in the table will be determined based on industry standards and approved by LFUCG's Division of Water Quality.

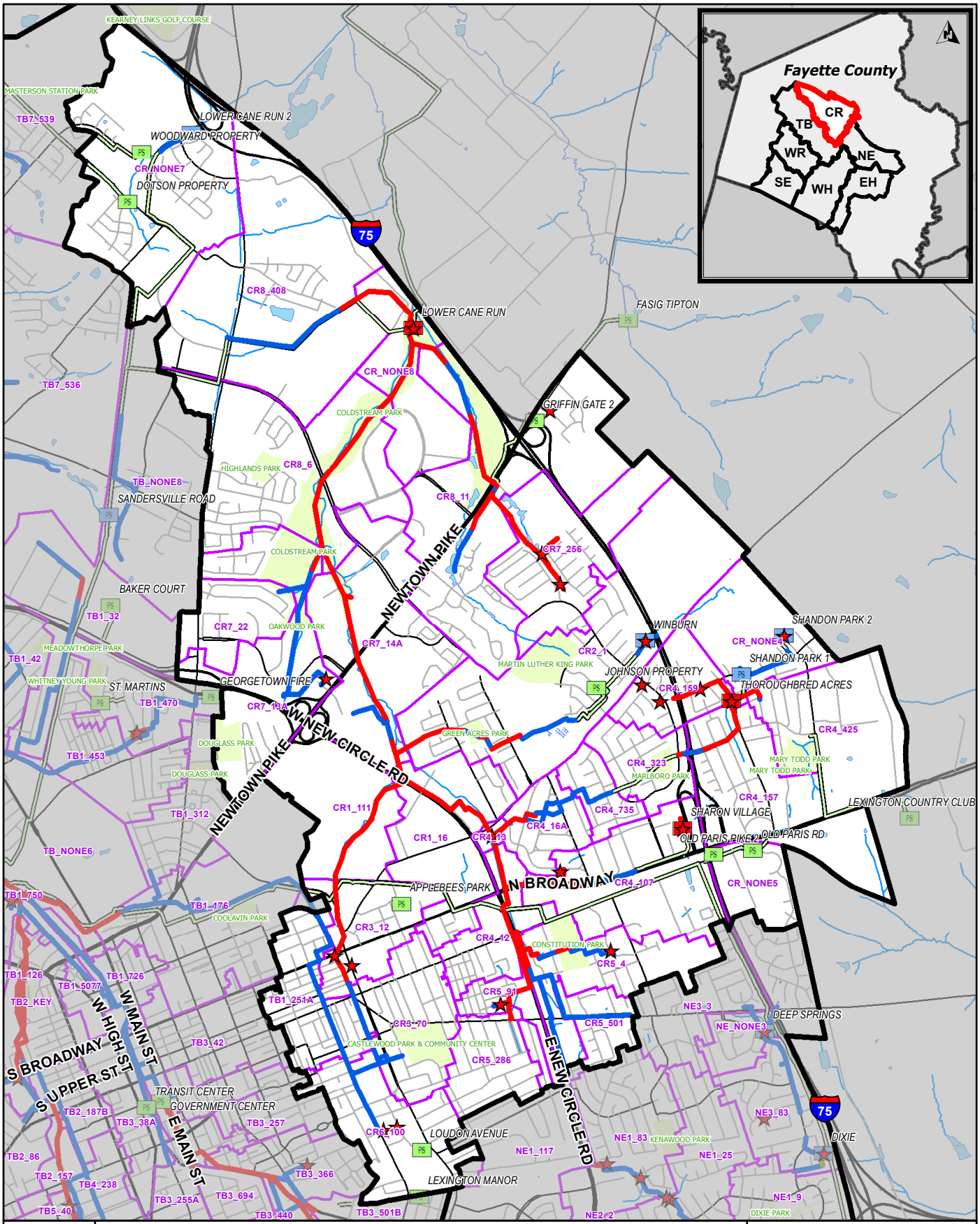
Table B.1. Dry Weather Flow Rates for Calculating Flow Additions

Development or Facility Type	Unit	Dry Weather Flow (gallons per day)
Single Family Residence	Unit	192
Duplex	Building	384
Efficiency Apartment	Unit	100
1 bedroom Apartment	Unit	138
2 bedroom Apartment	Unit	175
3 or 4 Bedroom Apartment	Unit	192
Townhome	Unit	192
Hospital	Bed	300
Nursing Home	Bed	150
University Dorm (utilizing water efficient plumbing)	Capita	25
University Dorm	Capita	75
Cafeteria	Capita	2.5
Catering hall	Capita	7.5
Schools	Student	20
Non-Medical Office	SF	0.06
General Industrial	SF	0.04
Medical Arts (e.g. doctor's office)	SF	0.1
Theatre	Seat	5
Bowling Alley	Lane	100
Church	Capita	1.5
Restaurant (with dishwasher)	Seat	30
Restaurant (fast food)	Seat	20
Wet Store (food processing)	SF	0.15
Dry Store	SF	0.03
Market	SF	0.05
Service Station	Pump (2 hoses)	300
Shopping Center	SF	0.02
Warehouse	SF	0.02
Country Club	SF	0.3
Swimming Pool	Capita	20
Laundry	Washer	425
Hotel/Motel	Units	138
Bar/Lounge/Disco	Seats	15

Development or Facility Type	Unit	Dry Weather Flow (gallons per day)
Barber Shop/Beauty Salon	Chair/Station	200
Car Wash	Bays	6,840
Other (i.e. not covered by any other facility type in the table)	Determined based upon sound engineering judgment and commonly accepted design practice.	

Appendix C

Capacity Maps



Appendix C.1. Capacity Map ~ Cane Run

2-year, 24-hour Design Storm; Existing Conditions

1 " = 3,600 '

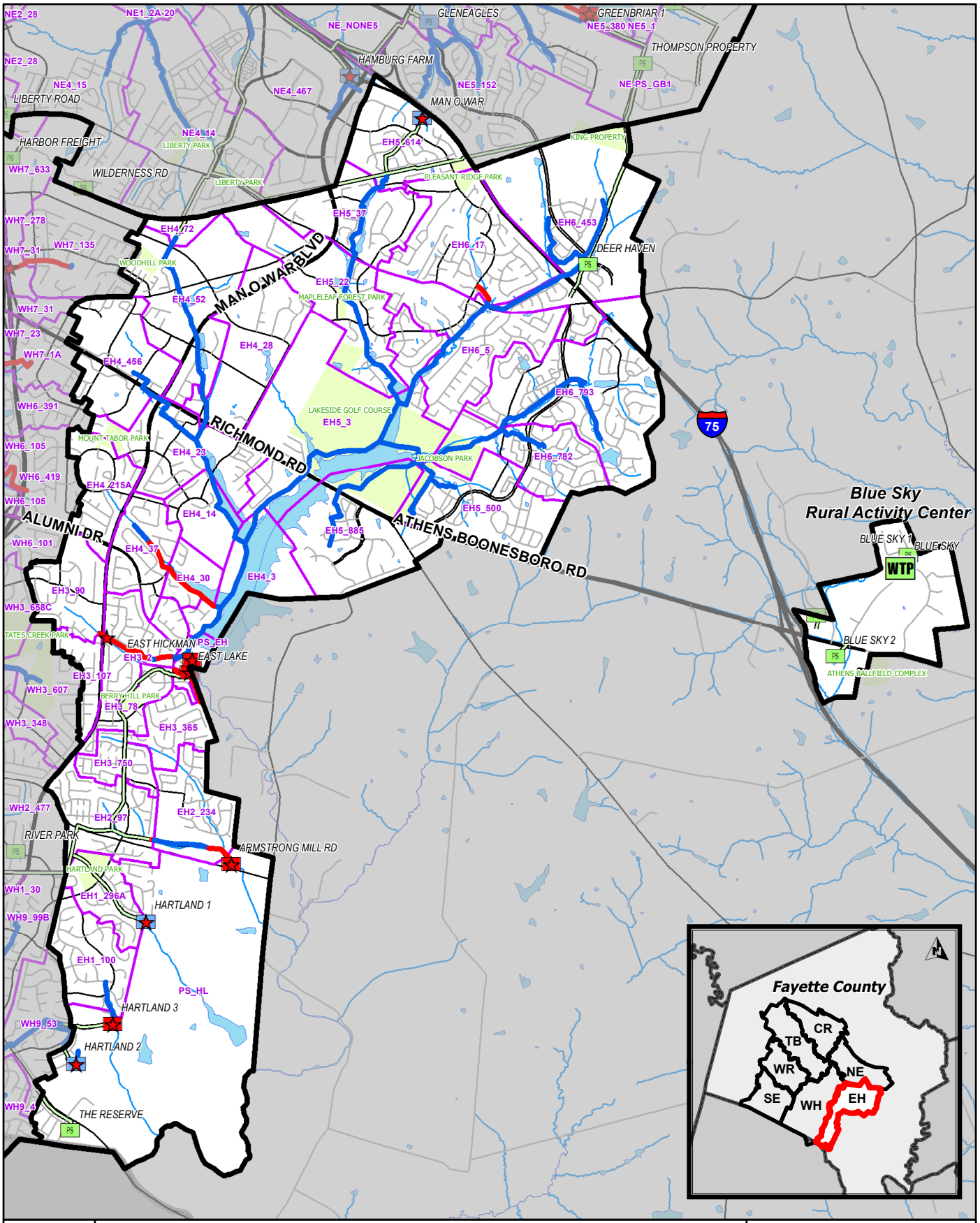
PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

SANITARY SEWERS
- Adequate Collection Capacity
- Inadequate Collection Capacity
- Force Main

- Appendix A SSO
- Metersheds
- Major Sewershed

Stantec

March, 2014



Appendix C.2 Capacity Map ~ East Hickman

2-year, 24-hour Design Storm; Existing Conditions

1 " = 4,300 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

SANITARY SEWERS
- Adequate Collection Capacity
- Inadequate Collection Capacity
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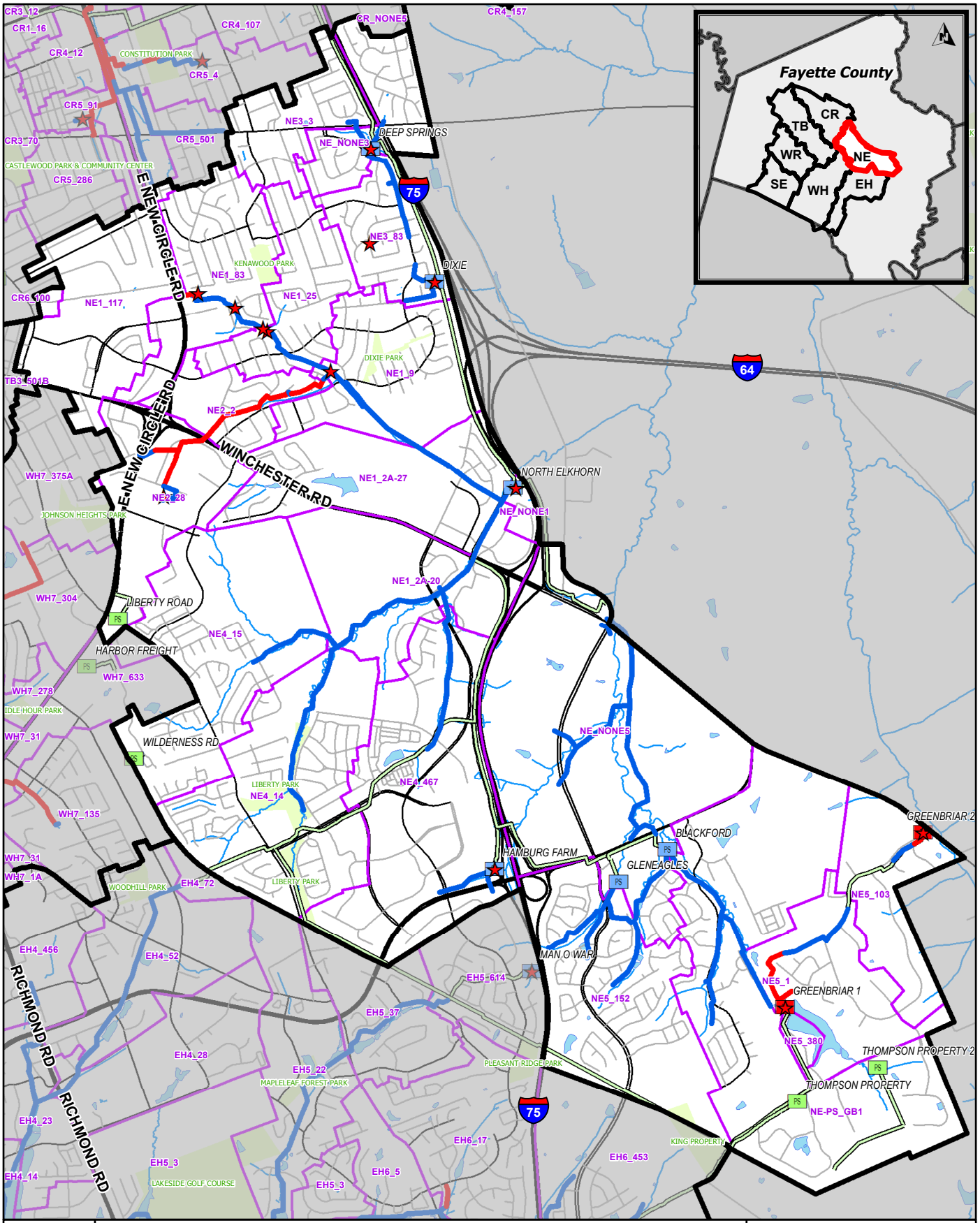
Stantec

March, 2014



Appendix C.3. Capacity Map ~ North Elkhorn

2-year, 24-hour Design Storm; Existing Conditions

1 " = 3,300 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

SANITARY SEWERS
- Adequate Collection Capacity
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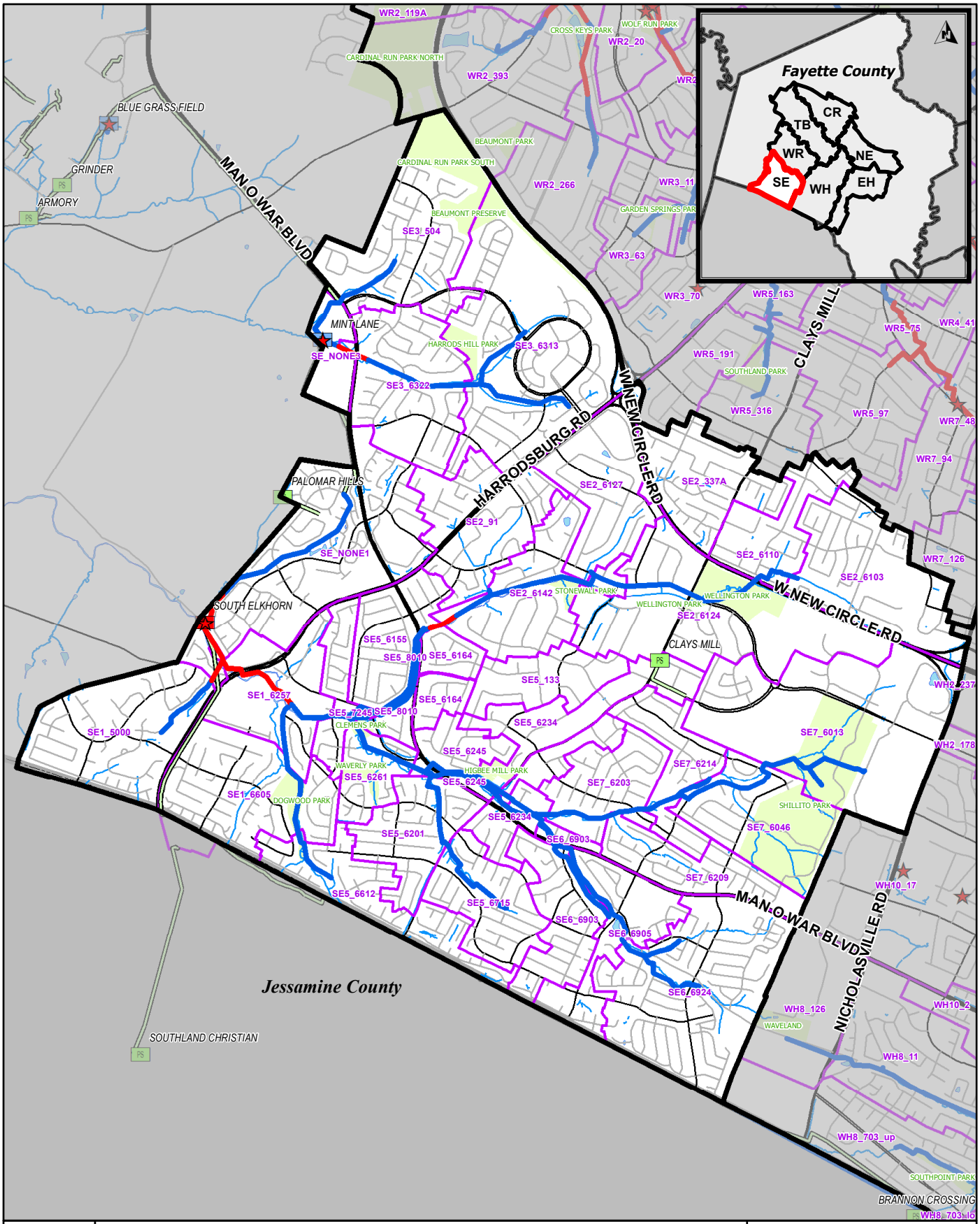
March, 2014



Appendix C.4. Capacity Map ~ South Elkhorn

2-year, 24-hour Design Storm; Existing Conditions

1 " = 3,400 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

SANITARY SEWERS
- Adequate Collection Capacity
- Inadequate Collection Capacity
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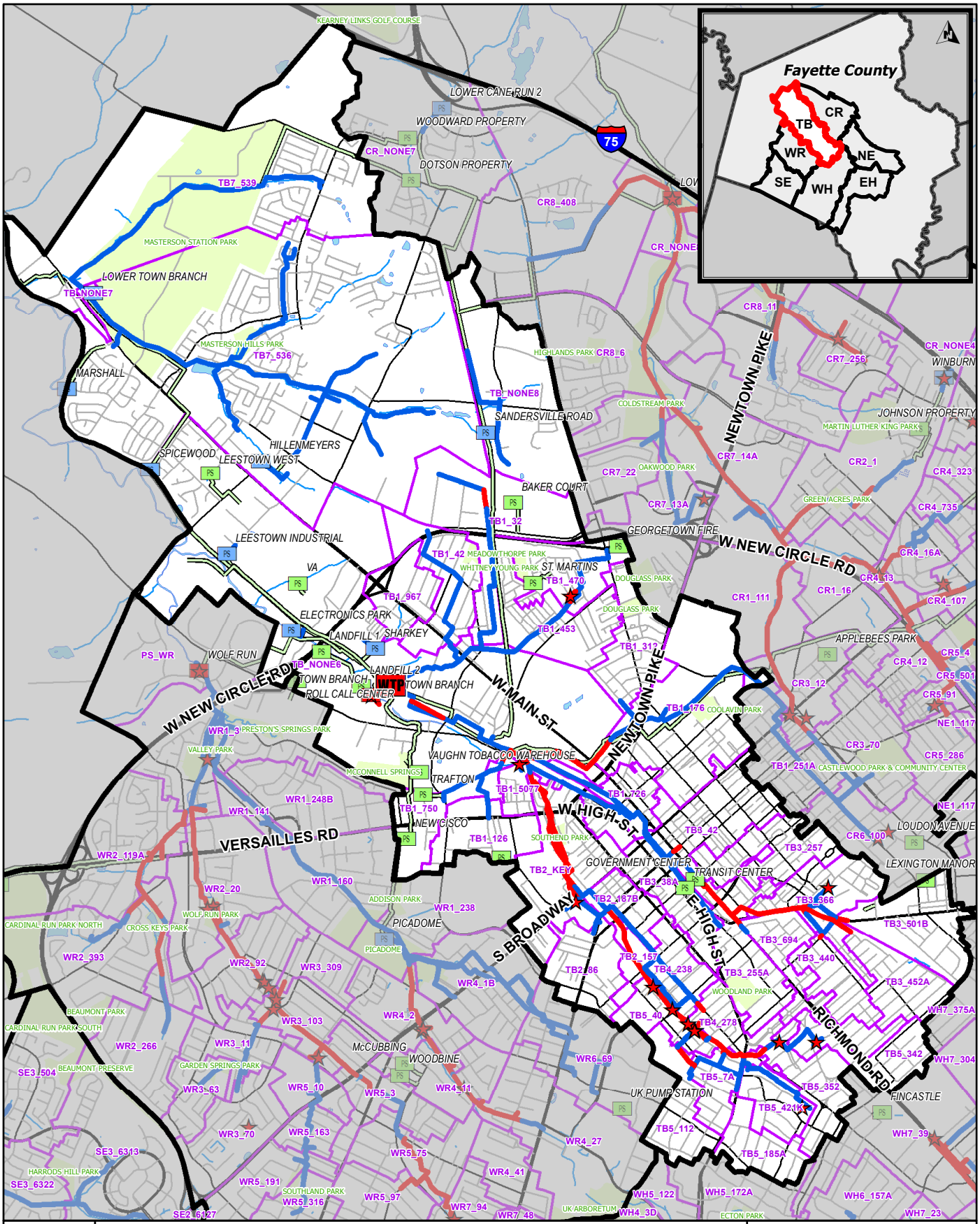
Stantec

March, 2014



Appendix C.5. Capacity Map ~ Town Branch

2-year, 24-hour Design Storm; Existing Conditions

1 " = 4,300 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

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- Adequate Collection Capacity
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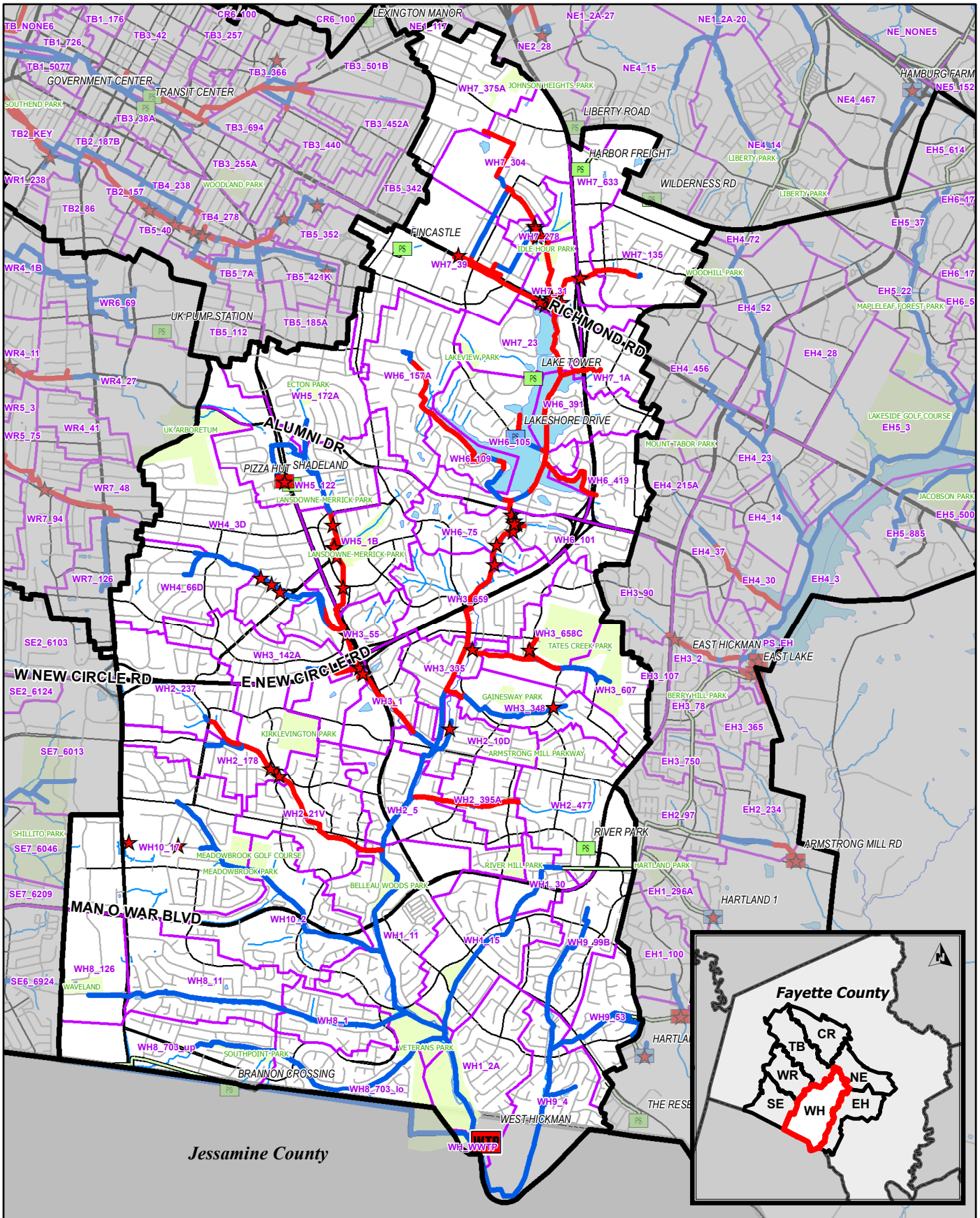
March, 2014



Appendix C.6. Capacity Map ~ West Hickman

2-year, 24-hour Design Storm; Existing Conditions

1 " = 4,400 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

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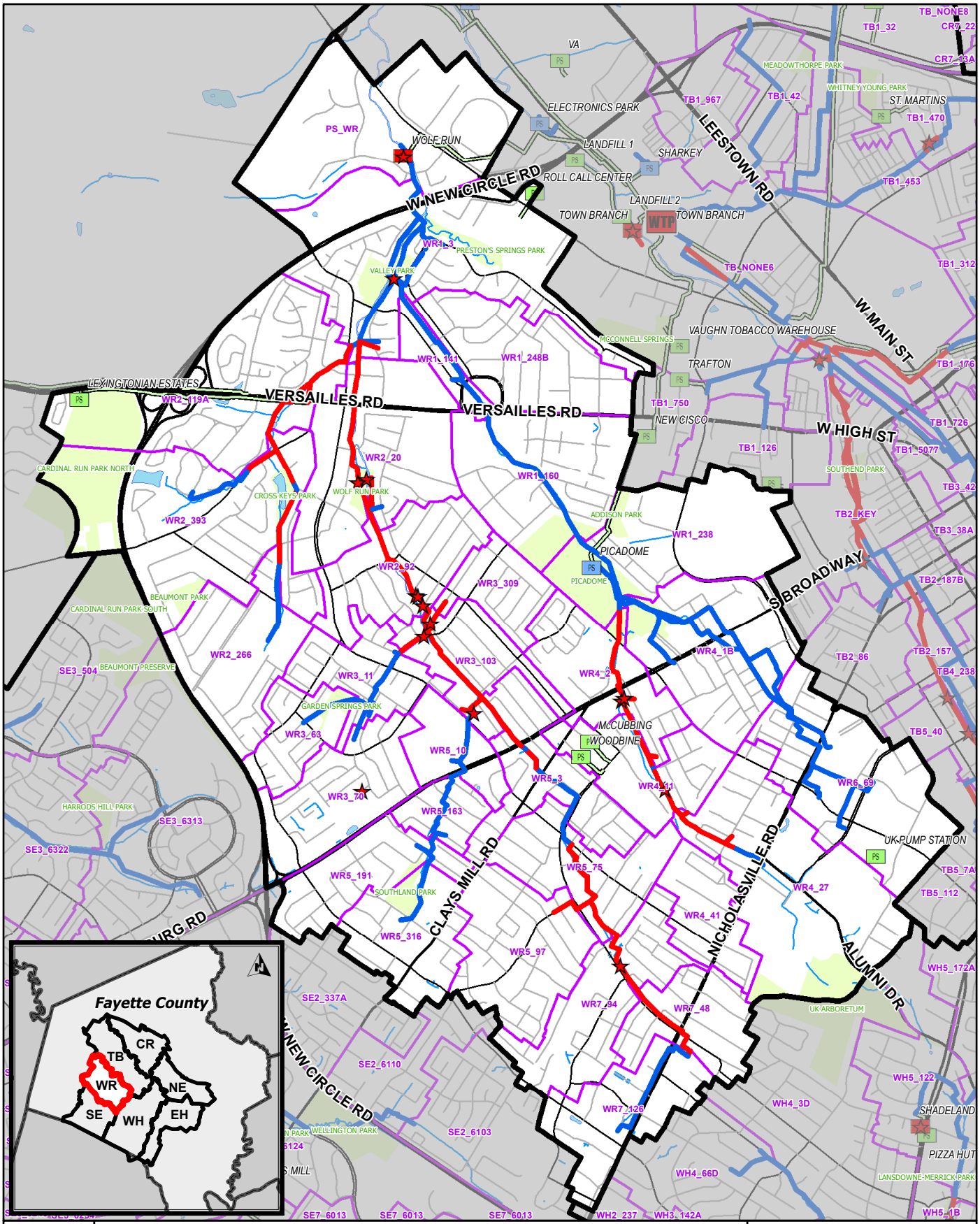

Appendix C.7. Capacity Map ~ Wolf Run

2-year, 24-hour Design Storm; Existing Conditions

1 " = 3,100 '

PUMPS STATIONS/WWTPs
- Adequate Capacity
- Inadequate Capacity
- Not Modeled Explicitly

SANITARY SEWERS
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- Metersheds
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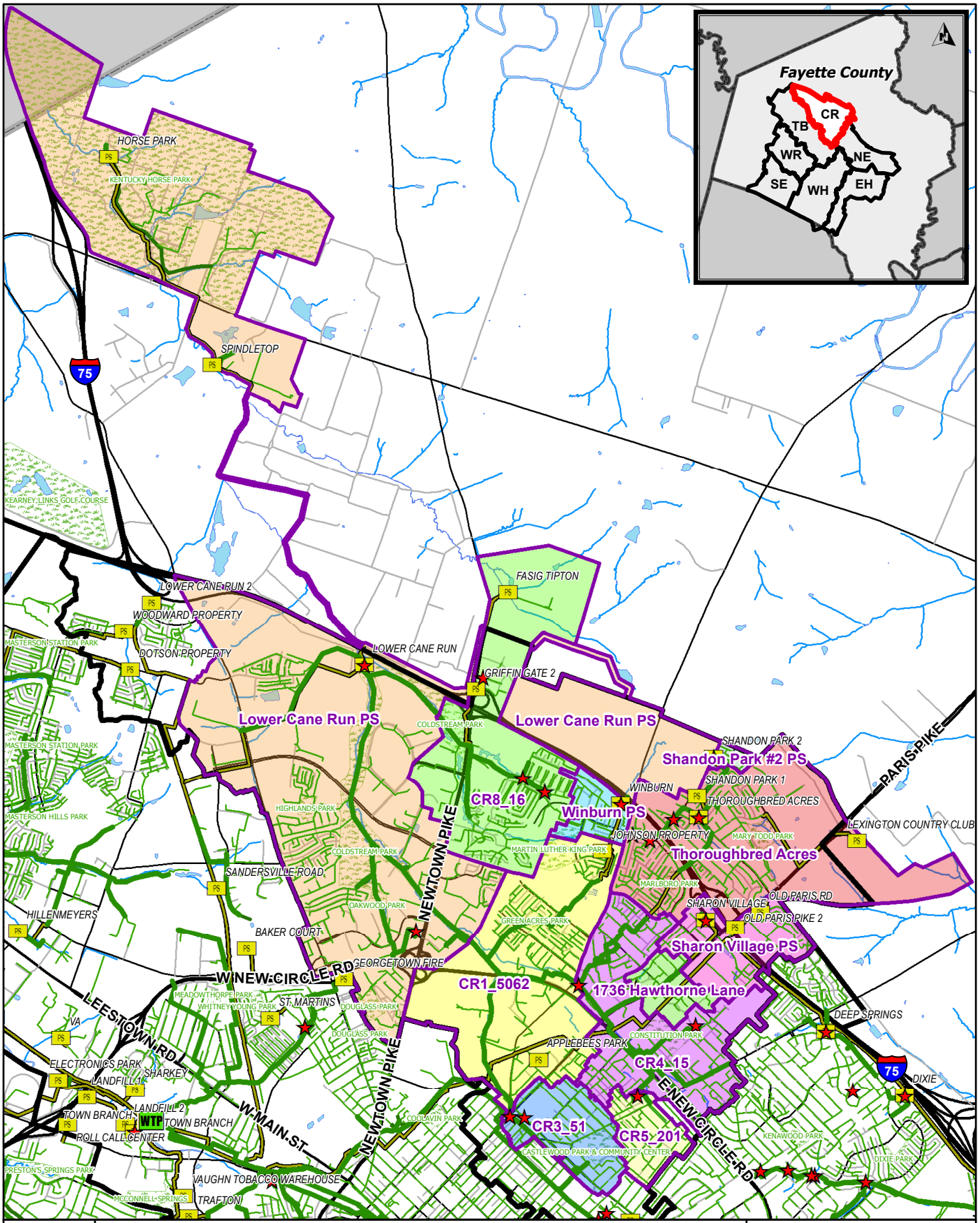
Stantec

March, 2014

Appendix D

Bank Maps



Appendix D.1. Bank Map ~ Cane Run

Initial Areas for the Banking Credit System

1 " = 4,800 '

WTP Wastewater Treatment Plant

PS Pump Station

Modeled Trunk Sewer

Collector Sewer

Force Main

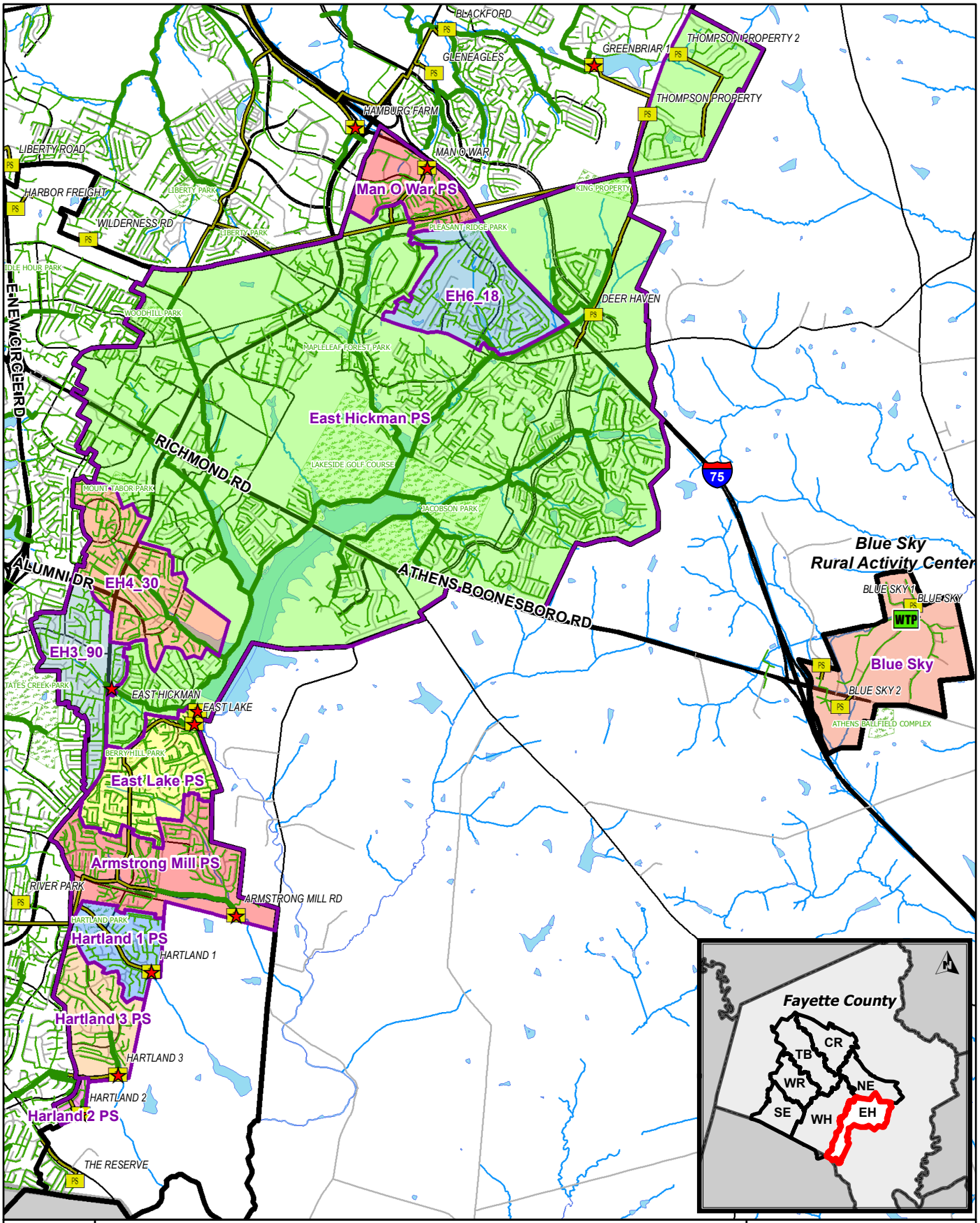
Appendix A SSO

Credit Banking Unit

Major Sewershed

Stantec

March, 2014



Appendix D.2. Bank Map ~ East Hickman

Initial Areas for the Banking Credit System

1 " = 4,300 '

WTP Wastewater Treatment Plant

PS Pump Station

Modeled Trunk Sewer

Collector Sewer

Force Main

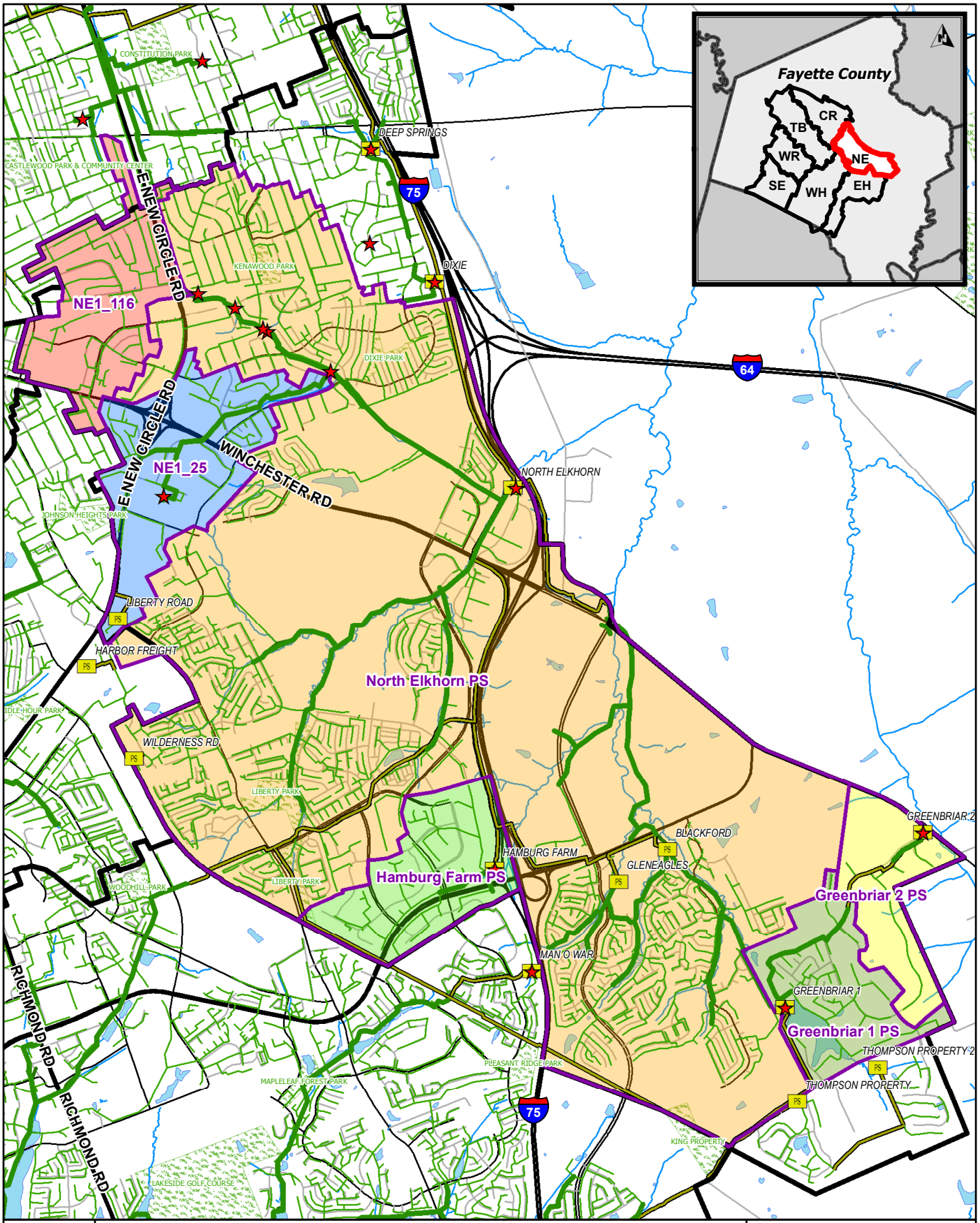
Appendix A SSO

Credit Banking Unit

Major Sewershed

Stantec

March, 2014



Appendix D.3. Bank Map ~ North Elkhorn

Initial Areas for the Banking Credit System

1 " = 3,300 '

WTP Wastewater Treatment Plant

PS Pump Station

Modeled Trunk Sewer

Collector Sewer

Force Main

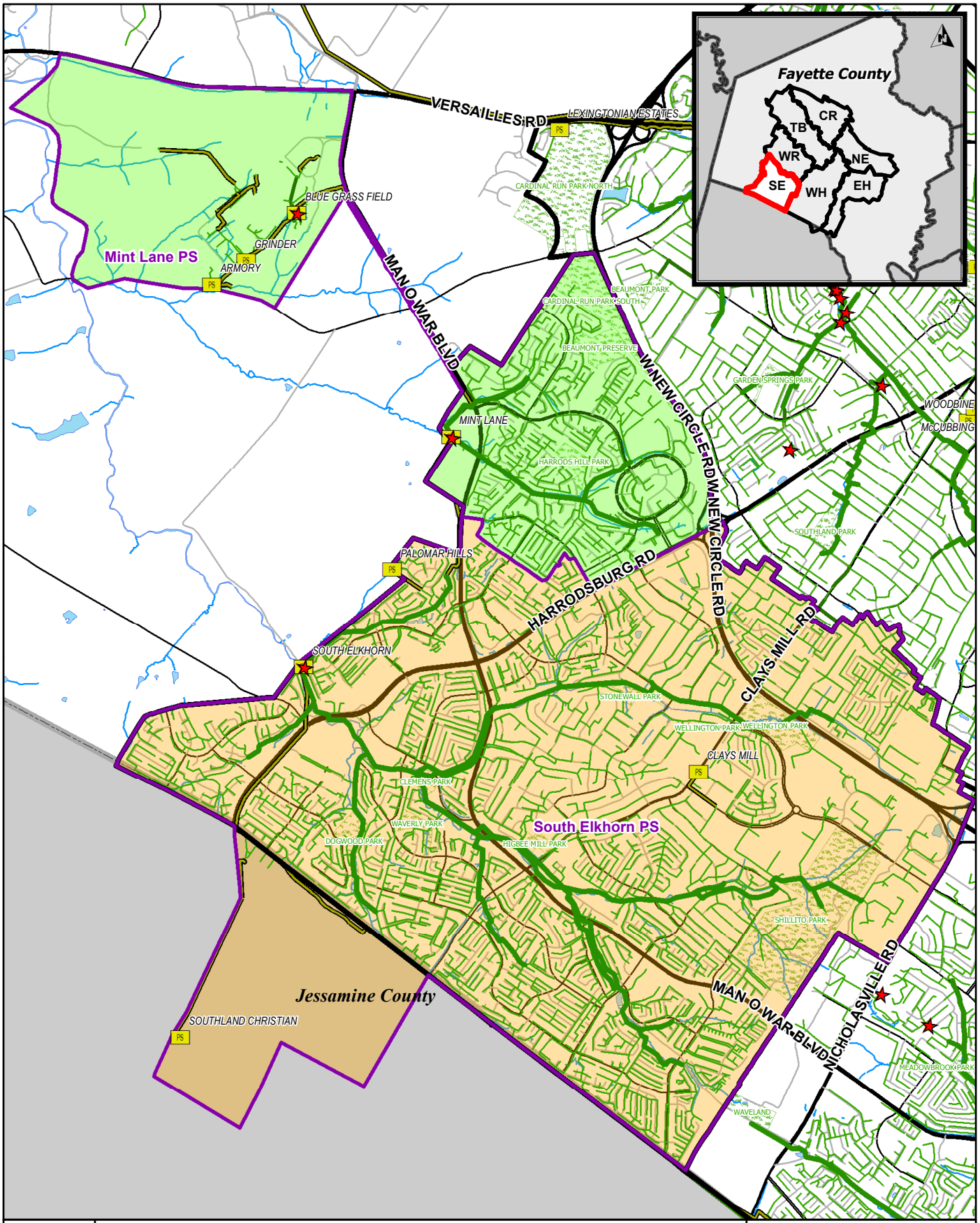
Appendix A SSO

Credit Banking Unit

Major Sewershed

Stantec

March, 2014



Appendix D.4. Bank Map ~ South Elkhorn

Initial Areas for the Banking Credit System

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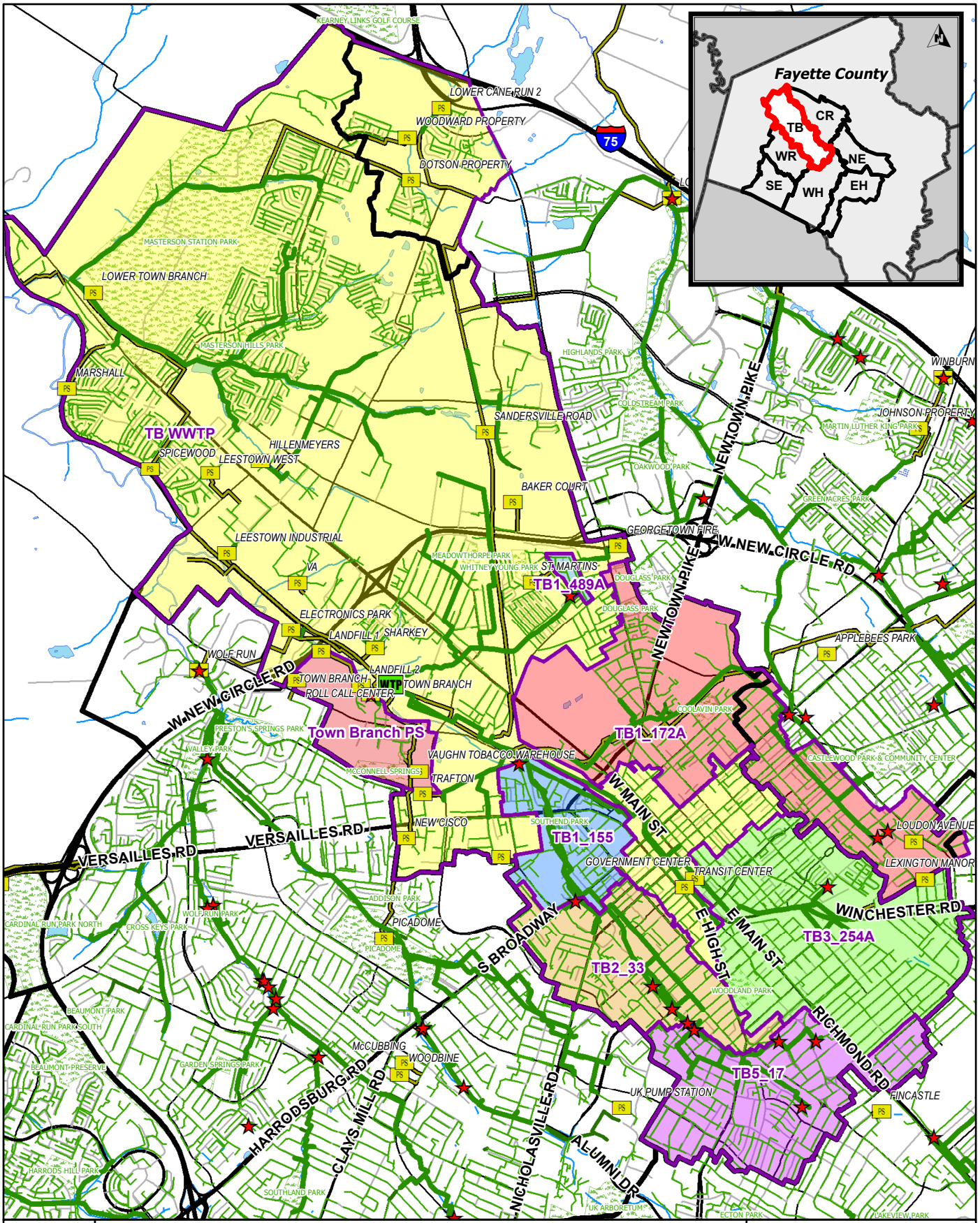

Appendix D.5. Bank Map ~ Town Branch

Initial Areas for the Banking Credit System

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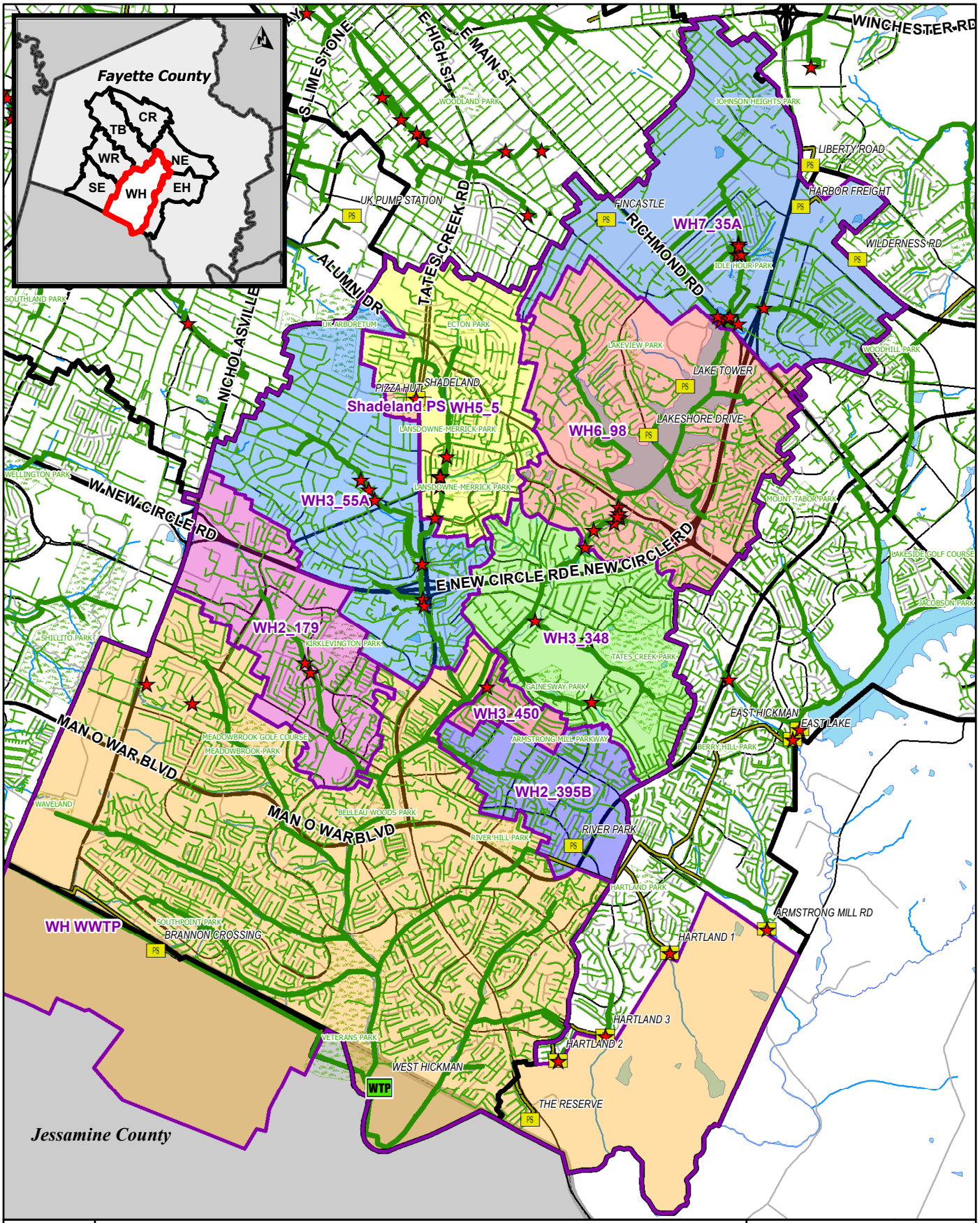

Appendix D.6. Bank Map ~ West Hickman

Initial Areas for the Banking Credit System

1 " = 4,400 '

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Major Sewershed

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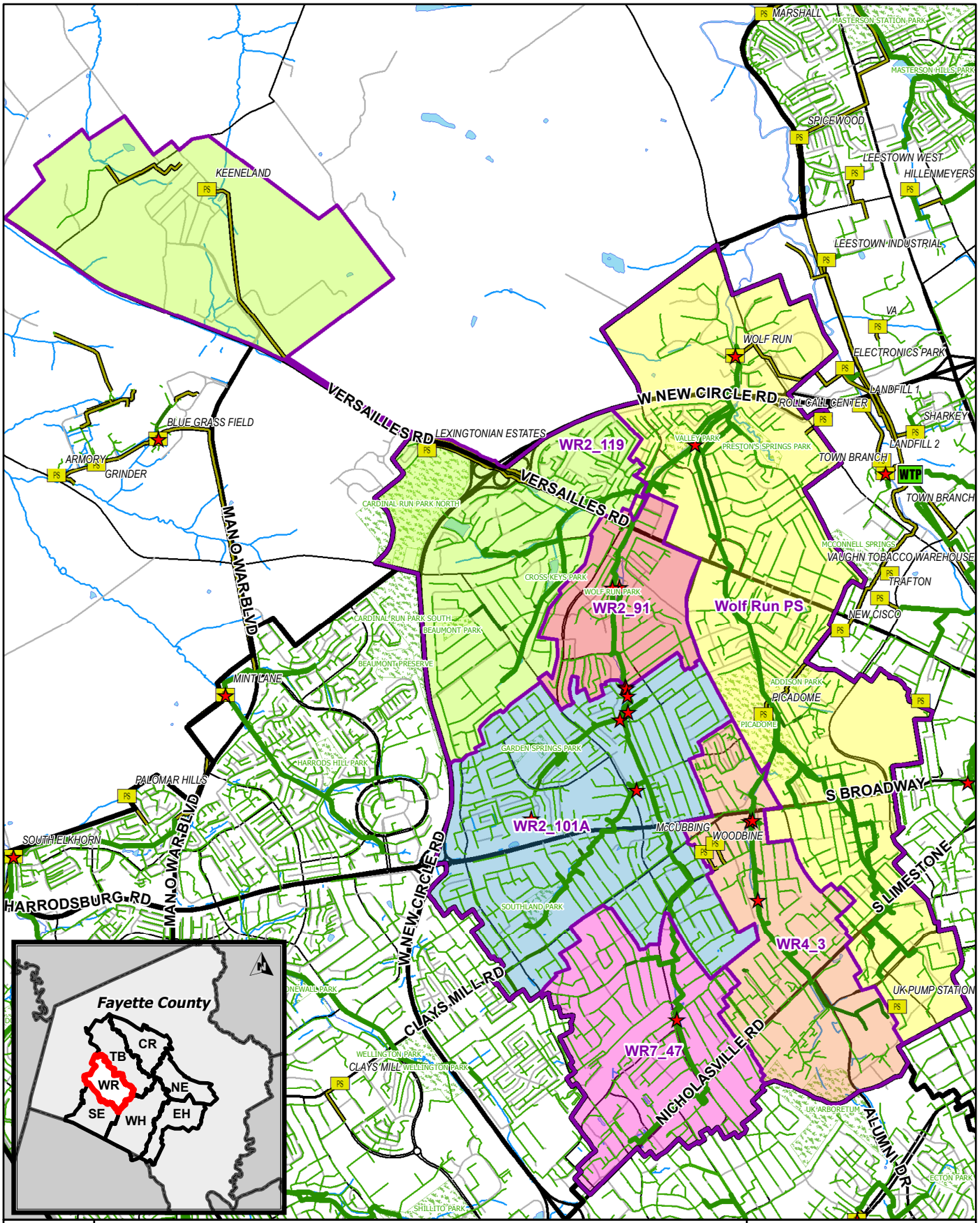
March, 2014



Appendix D.7. Bank Map ~ Wolf Run

Initial Areas for the Banking Credit System