

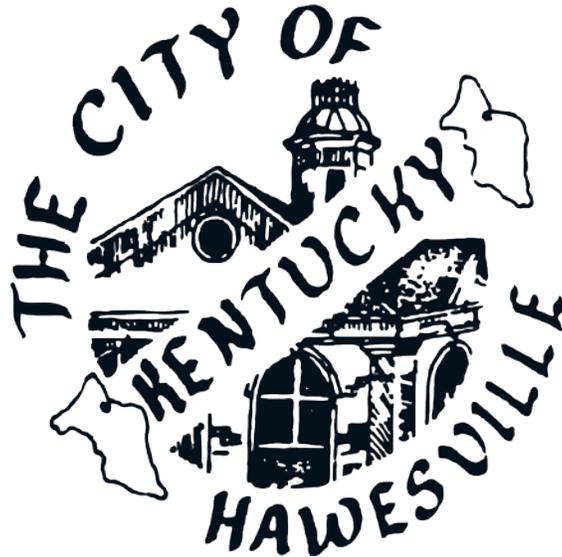
# Regional Facility Plan



Hawesville, Kentucky  
June, 2015

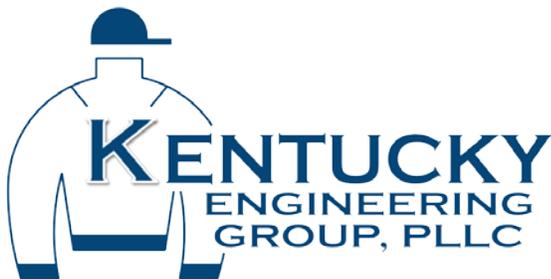


# Regional Facility Plan



## CITY OF HAWESVILLE

Hancock County, Kentucky



Kentucky Engineering Group, PLLC

P.O. Box 1034

Versailles, Kentucky 40383

June 2015

KEG Project No. 15017

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# City of Hawesville Regional Facility Plan



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## SECTION 12: REGIONAL FACILITY PLAN COMPLETENESS CHECKLIST AND FORMS

NONE

## SECTION 1: REGIONAL FACILITY PLAN SUMMARY

### I. Purpose

The Regional Facility Plan (RFP) is required per 401 KAR 5:006. The Kentucky Division of Water (DOW) is the regulatory agency that is responsible for reviewing and approving the RFP. The City of Hawesville commissioned this RFP to fulfill the requirement due to proposed construction of a new treatment facility.

The City of Hawesville desires to plan for future expansion within their current planning boundaries that were established in the RFP of 1977 and amended in 1996. The new planning areas expand the potential expansion of the collection system as well as propose a new WWTP located at the existing WWTP site.

The purpose and scope of the RFP includes the following:

- Replace and decommission the existing Hawesville WWTP.
- Decommission as many package plants, as feasible to help improve the waterways of the Commonwealth.
- Develop a new 20 year RFP in accordance with the updated guidance from DOW, Regional Facility Plan Guidance, 2011.
- Identify opportunities to provide public wastewater collection to areas within Hancock County.
- Solicit participation from the public and local entities regarding RFP.
- Prepare and submit the required Cross Cutter Agencies for their comments regarding the RFP.
- Present the selected alternatives and the costs associated with those alternatives.

### II. Recommended Alternatives

The recommended alternative is to construct a new Contact Stabilization WWTP and provide wastewater treatment to as many customers as financially feasible.

This alternative has many benefits to the citizens of Hawesville and Hancock County. A new WWTP will afford the city to meet current and expected future discharge limits.

# City of Hawesville Regional Facility Plan



### III. Estimated Cost

The RFP will be implemented in a twenty-year time period, depending on the availability of funding sources. The 20 year time period is broken into two different phases: 0-10 year and 11-20 year. The total cost of the entire RFP projects is approximately \$8,250,000 million.

### IV. Planning Agency Commitments

The City of Hawesville has the authority to implement the recommended projects within the proposed planning areas. A KDOW construction permit and required Environmental Permits would have to be secured prior to construction activities.

### V. Implementation

The City desires to implement the selected alternative in the time frames established by the RFP, but this will be dependent upon securing users, easements, funding, and approval from the regulatory agencies. Below is the proposed schedule of implementation:

Planning Area	Estimated Date of Completion
0-10 Year	December 2025
11-20 Year	December 2035

# City of Hawesville Regional Facility Plan



## **SECTION 2: STATEMENT OF PURPOSE AND NEED**

This Regional Facility Plan is being prepared for the City of Hawesville. This report will address the existing wastewater facilities within the City of Hawesville and Hancock County, future demands that are expected within the next 20 years and future wastewater facilities that will be required to meet the future wastewater flows. This report will aim to help the City of Hawesville in planning the construction of a new wastewater treatment plant, expansion of the wastewater collection system and any necessary improvements to the wastewater collection system.

The RFP will updated and replace the original 1976 Regional Facility Plan and the 1996 RFP Update. The RFP will determine the most feasible WWTP to be constructed to serve the existing Planning Areas (PA). The scope shall investigate the means to provide wastewater service to the PA at the least cost, most environmentally sound and the most efficient method.

The RFP has been reviewed and approved by City of Hawesville. Public hearings were held to include the citizens' input into the planning document. Division of Water has reviewed, commented and accepted the report as it is presented in its' final version.

## SECTION 3: PHYSICAL CHARACTERISTICS OF THE PLANNING AREA

The City of Hawesville is located along the Ohio River in the northeastern portion of Hancock County. Hawesville is approximately 76 miles southwest of Louisville and 25 miles northeast of Owensboro, KY. The original Regional Facility Plan for the City of Hawesville was developed in 1977. In 1996 an amendment to the 1977 Regional Facility Plan was commissioned.

The City of Hawesville is located in the northern portion of Hancock County. The entirety of the planning area, city limits and Hancock County are located within the Green River Watershed. Exhibit 3.1 shows the city limits of Hawesville, Lewisport and Cloverport in relationship to the Hancock County and surrounding county lines. Exhibit 3.2 shows the city limits and the 1996 planning areas of the City of Hawesville. Exhibit 3.3 shows existing service area and collection systems of the City of Hawesville.

Exhibit 3.4 displays the revised planning areas for the City of Hawesville. The planning areas have remained unchanged from the planning areas established in the 1996 Update to the RFP. The City of Hawesville main focus for the 0-10 year planning areas is to construct a new WWTP, reduce I/I through collection system improvements, and lift station replacements. The city's expansion would be in the 11-20 year planning areas unless circumstances accelerate that time frame, new housing developments, businesses, etc.

The biggest issue facing Hawesville as it relates to system expansion is the lack of population density in the non-served areas of the planning area. A large portion of the planning area is agriculture with no sense that it would be developed in the time frame of this plan.

The 0-10 year planning area is composed of the existing service area. The WWTP experiences peak flows that are directly following rain events. Two sewer basins that have been identified as having excessive I/I is the Vastwood Sewer Shed and Clay Street Sewer Shed. By reducing I/I from the collection system it would help reduce the operation cost of the collection system as well as the operation cost of the WWTP.

The 11-20 year planning area is broken into three separate areas within the existing planning area. Area I of the 11-20 planning area is north of Vastwood Sewer Shed, composes the area adjacent to US 60 along Adair Road. Area II of the 11-20 planning area encompasses the unserved area surrounding the intersection of KY 271 and US 60. Area III of the 11-20 planning area is located just south of HWY 1847 Sewer Shed along KY 1389.

Within the planning areas of Hawesville there are two (2) package treatment facilities. Table 3-1 lists the KPDES permits and associated information regarding the permit. It is the intention of the City of Hawesville to eliminate the two package treatment plants within the time frame of this plan, if it is deemed financially solvent. These package plants are shown in Exhibit 3.2 and 3.4, with respect to the existing planning areas and the new planning areas.

Exhibit 3.3 displays the location of the Hawesville WWTP, lift stations, sanitary sewer line, public drinking water intakes and groundwater supply areas.

# City of Hawesville Regional Facility Plan



The City of Hawesville has five (5) ground water wells: two located west of the city along River Road (KY 334) and three (3) located near the Water Treatment Plant on River Street. The Wellhead Protection Areas are depicted on Exhibit 3.3.

100-year floodplain information can be found in exhibits in Section 5.

# City of Hawesville Regional Facility Plan



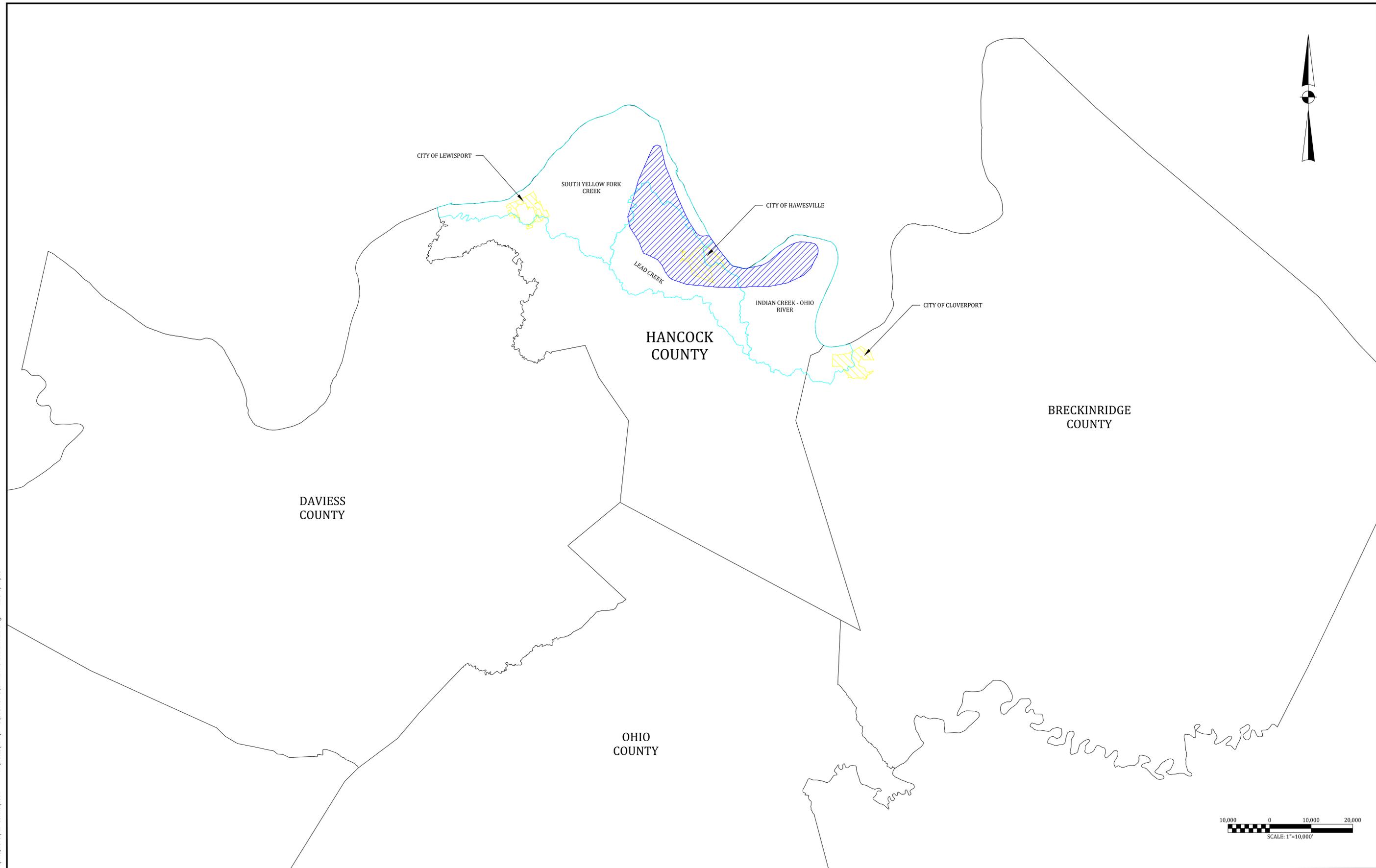
## SECTION 3: PHYSICAL CHARACTERISTICS OF THE PLANNING AREA

Table 3-1 -Existing Package Plants

KPDES Permit #	Owner	Treatment Capacity (MGD)	Receiving Stream	Located in Planning Area(s)
KY0092118	Precoat Metals	Varies <sup>1</sup>	Ohio River	Yes, Existing Service Area
KY0023981	Jackson Mobile Home Park	0.005	Lead Creek	Yes, 11-20 Area IV
KY0006652 4	Hancock County Board of Education – South Hancock Elementary School	0.00375	Unnamed Tributary of Horse Fork	No
KY0025241	City of Lewisport	0.400	Ohio River	No

Note:

- <sup>1</sup> Precoat Metals has four (4) discharge points and different capacities, see permit for specific flow rates.



P:\PROJECTS\Hawesville\15017 - WWTP\Notes\REF\DWG\SECTION 3\EXHIBIT 3-1 AREA MAP.dwg KEG 6/12/15

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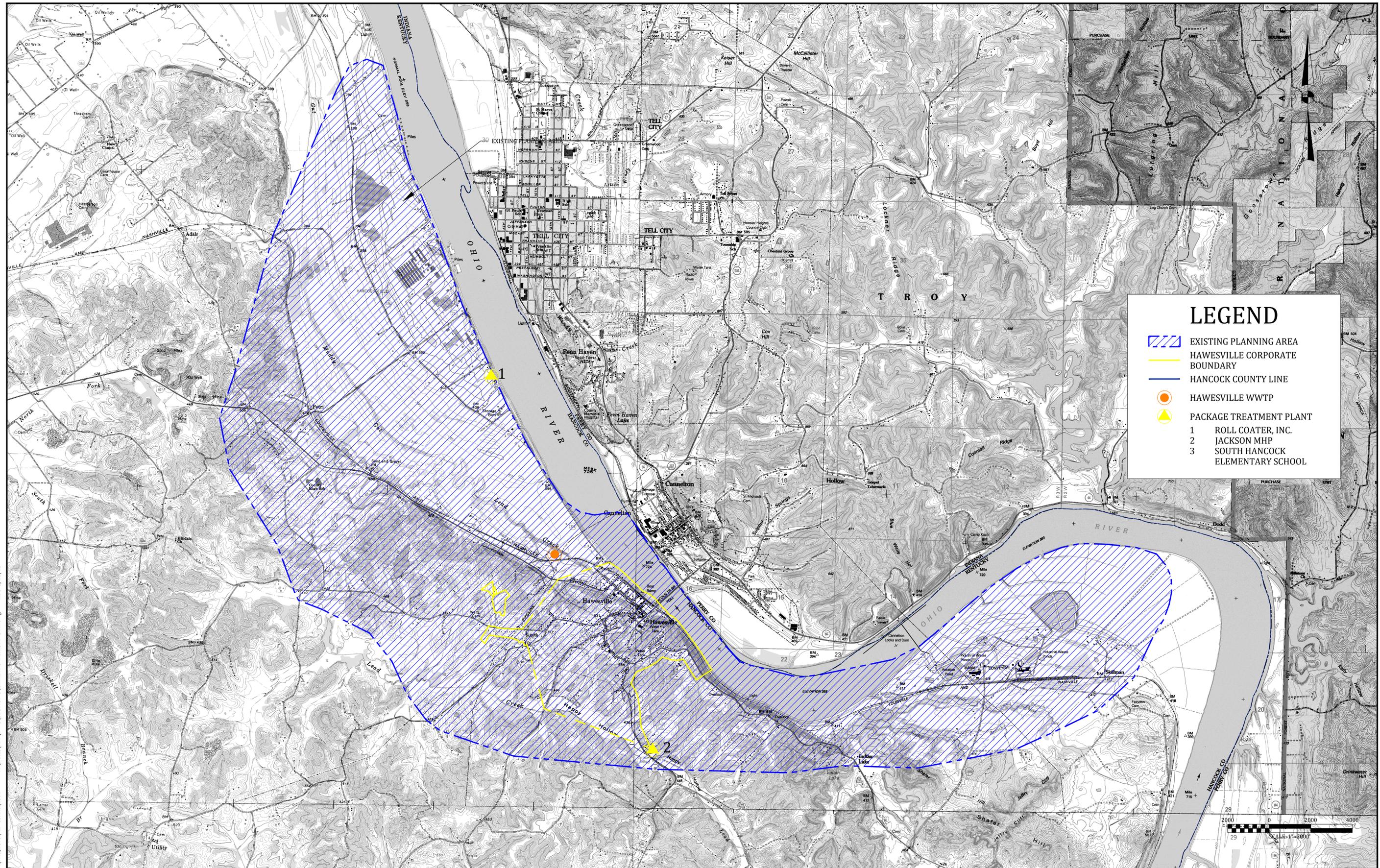
**CITY OF HAWESVILLE**  
 Hancock County, Kentucky

**REGIONAL FACILITY PLAN**  
**SECTION 3**  
  
**CORPORATE BOUNDARIES**



PROJECT NO.	15017
SHEET NO.	3.1

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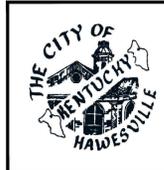
- EXISTING PLANNING AREA
- HAWESVILLE CORPORATE BOUNDARY
- HANCOCK COUNTY LINE
- HAWESVILLE WWTP
- PACKAGE TREATMENT PLANT
  - 1 ROLL COATER, INC.
  - 2 JACKSON MHP
  - 3 SOUTH HANCOCK ELEMENTARY SCHOOL

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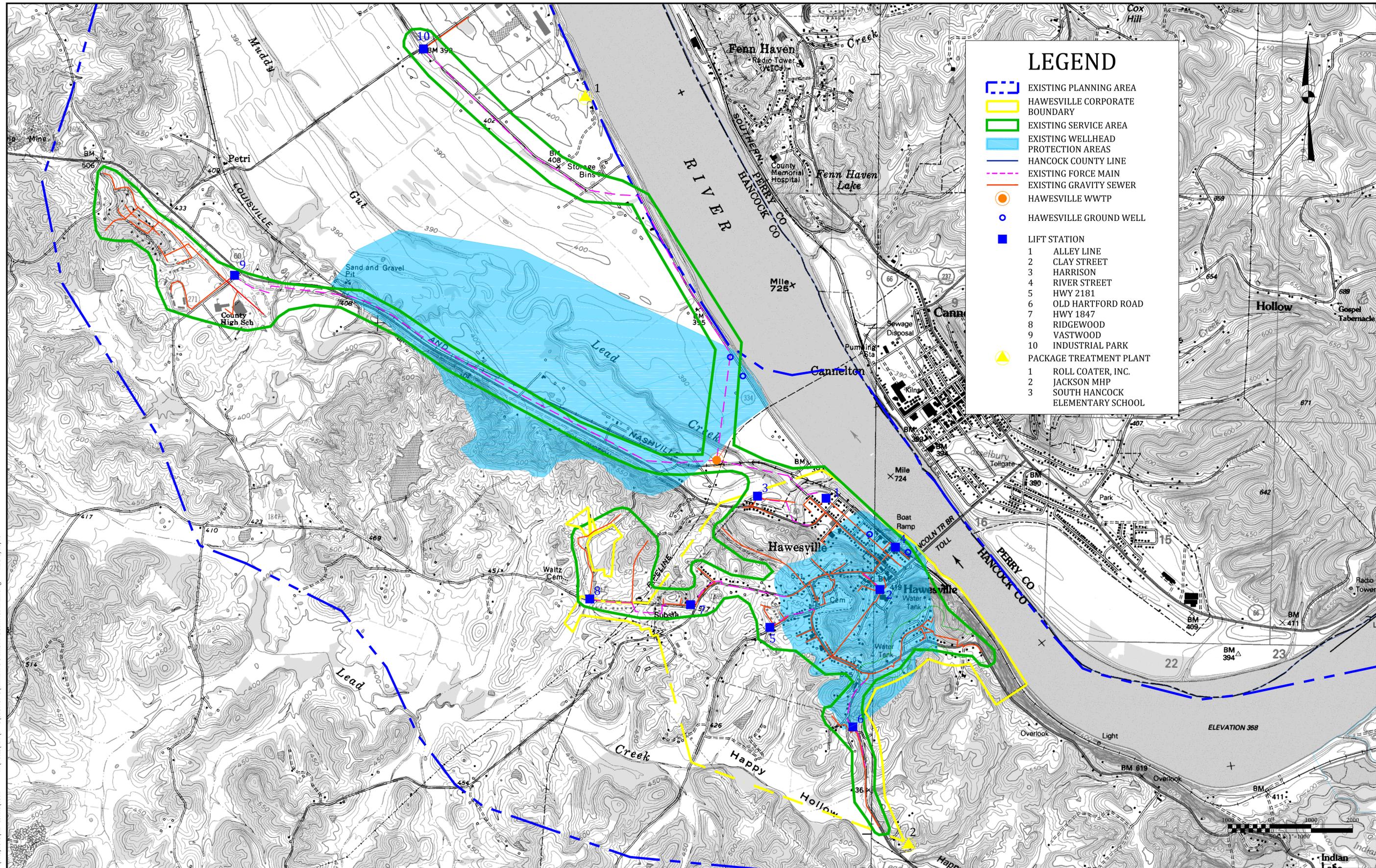
**REGIONAL FACILITY PLAN**  
 SECTION 3  
 EXISTING PLANNING AREAS

PROJECT NO.  
 15017

SHEET NO.  
**3.2**

PROJECT NO.  
 15017

SHEET NO.  
**3.2**



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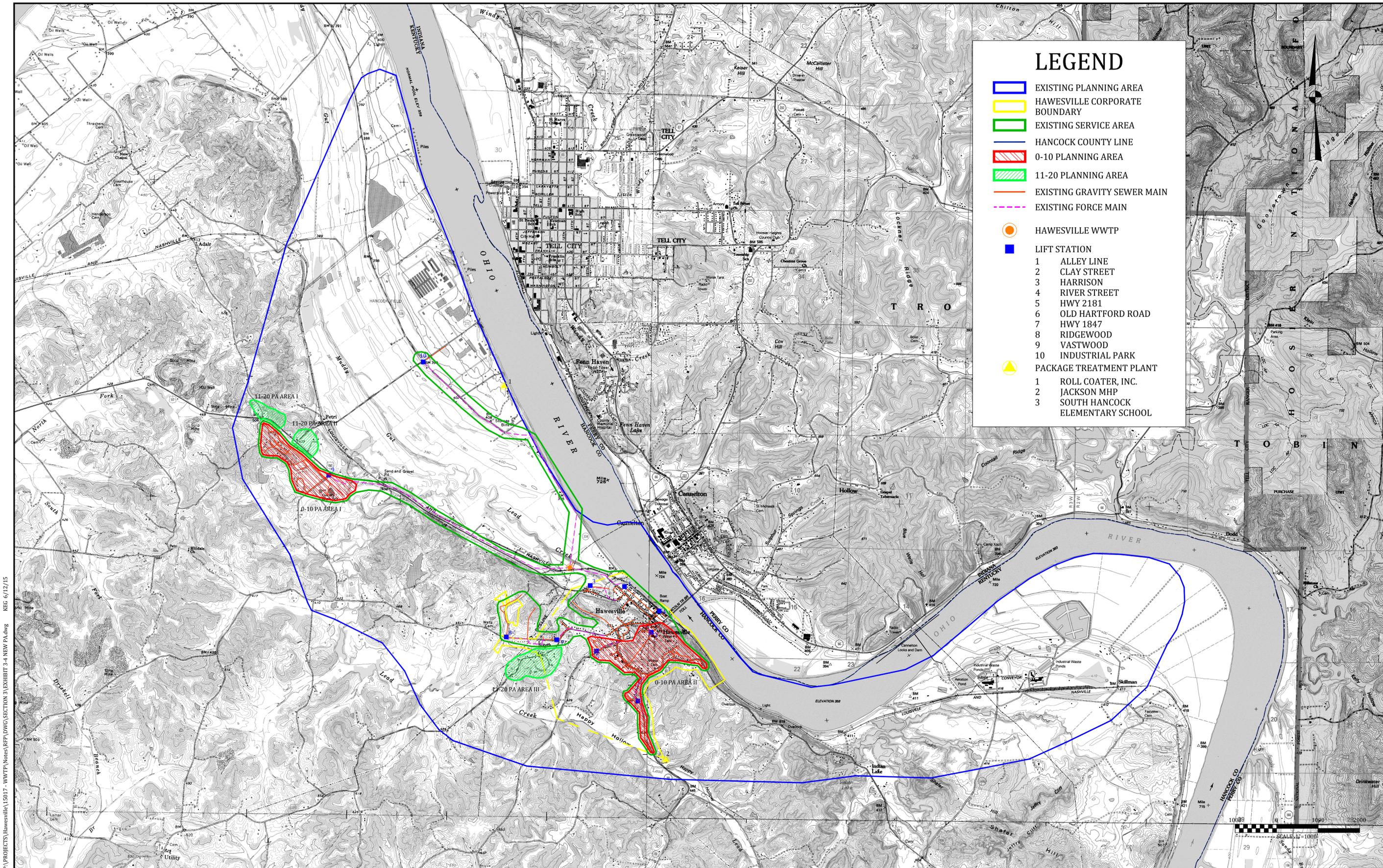
**REGIONAL FACILITY PLAN**  
 SECTION 3  
 EXISTING SERVICE AREA

PROJECT NO.  
 15017

SHEET NO.  
**3.3**

PROJECT NO.  
 15017

SHEET NO.  
**3.3**



### LEGEND

- EXISTING PLANNING AREA
- HAWESVILLE CORPORATE BOUNDARY
- EXISTING SERVICE AREA
- HANCOCK COUNTY LINE
- 0-10 PLANNING AREA
- 11-20 PLANNING AREA
- EXISTING GRAVITY SEWER MAIN
- EXISTING FORCE MAIN
- HAWESVILLE WWTP
- LIFT STATION
  - 1 ALLEY LINE
  - 2 CLAY STREET
  - 3 HARRISON
  - 4 RIVER STREET
  - 5 HWY 2181
  - 6 OLD HARTFORD ROAD
  - 7 HWY 1847
  - 8 RIDGEWOOD
  - 9 VASTWOOD
  - 10 INDUSTRIAL PARK
- ▲ PACKAGE TREATMENT PLANT
  - 1 ROLL COATER, INC.
  - 2 JACKSON MHP
  - 3 SOUTH HANCOCK ELEMENTARY SCHOOL

PA PROJECTS Hawesville 15017 - WWTP Notes (RFP) DWG SECTION 3 EXHIBIT 3-4 NEW PA.dwg REC 6/12/15

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CITY OF  
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Hancock County, Kentucky

**REGIONAL FACILITY PLAN**  
SECTION 3  
  
NEW PLANNING AREAS

PROJECT NO.  
15017

SHEET NO.  
**3.4**

PROJECT NO.  
15017

SHEET NO.  
**3.4**

## SECTION 4: SOCIOECONOMIC CHARACTERISTICS OF PLANNING AREA

### I. Population of Planning Areas

The planning areas for the City of Hawesville extend beyond the corporate boundaries into Hancock County. Population data for both the county and city must be considered valid for the purposes of planning wastewater generation. The population information for the City of Hawesville and Hancock County was obtained from the U.S. Census and the Kentucky State Data Center's population estimates.

Historically, the City of Hawesville has seen growth rate up to 30% and decline rate up to -21% with population ranging from 882 (1960) to 1,262 (1970). Table 4-1 Historical Population Data, show the growth/decline in population since the 1940 U.S. Census and the percentage of change in population.

Current population projections for growth show that Hancock County is expected to have a moderate growth rate in the next 20 years, as shown in Table 4-2.

The planning areas are broken down into two separate time frames: 0-10 year and 11-20 year. Each of these area populations are based upon house counts of each area. The house counts were then multiplied by persons per household (pphh), which for Hancock County is 2.58 pphh, which will provide the population equivalent to be served. Table 4-3 lists the information obtained from the house counts in relationship to the planning area. These new customers will not be served immediately but will come "on-line" within the planning area timeline.

Table 4-4 projects the population of the existing customers of Hawesville collection system and proposed customers within the planning area(s). Planning area populations are calculated based upon the assumption that at the end of the planning period, all of the potential customers will be served. By making this assumption, this will take into consideration that all flow is considered in determining adequate capacity at lift stations and the WWTP.

### II. Industrial and Commercial Customers

The City of Hawesville has a number of commercial customers and three (3) industrial customers. Some of the existing commercial customers are high user of water or producer of wastewater. The City of Hawesville accepts no industrial wastewater (process water). The city does conduct sampling of industrial customers to ensure the quality of the wastewater being discharged to the collection system.

Since the 1996 Amendment to the 1976 201 Facilities Plan, was approved, wastewater collection system has been expanded to serve the industrial corridor along KY 344 and KY 271. A lift station was installed at the intersection of KY 344 and KY 271 to serve Southwire, Century, Big River RECC and other industrial customers in the vicinity. Currently Big River RECC currently is at minimum staff and discharging little above the minimum flows.

The City of Hawesville and Century Aluminum of Hawesville are in current negotiations to connect the industry to the Industrial Park Sewer Shed via a lift station and force main. This project is

# City of Hawesville Regional Facility Plan



expected to be completed by the end of the year (2015). Century currently purchases water from the city with their average consumption of 45,000 gallons per day. Century will only discharge non-process wastewater to the city's collection system.

Although the City of Hawesville provides wastewater treatment for industrial customers, the city only accepts domestic non-process wastewater. At this time the city does not desire to accept process wastewater.

### **III. Economic and Social Impact**

The economic impact of this plan is not deemed to be significant for the City of Hawesville. Currently the city is providing sanitary sewer service within the corporate boundary and immediate surrounding areas. Growth of the customer base will be realized with the expansion of the wastewater collection system as the public interest dictates.

One social impact may be achieved by removing the inconvenience of surcharging, overflows and/or odors for residents that have been affected. This will be achieved by removing SSOs, CSOs and improving the existing collection system to handle future flows by removing I/I, undersized infrastructure (lines, pumps, etc.) and repairing existing infrastructure.

**SECTION 4: SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREAS**

**Table 4-1 Historical Population Data**

Year <sup>1</sup>	City of Hawesville	Percent Change
2010	945	-2.67%
2000	971	-2.70%
1990	998	-3.81%
1980	1036	-21.81%
1970	1262	30.11%
1960	882	-4.88%
1950	925	3.14%
1940	896	

Note:

<sup>1</sup> Population data from U.S. Census Bureau.

**SECTION 4: SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREAS**

**Table 4-2 Projected Population Data**

Year	Hancock County	Percent Change
2015	8,716	
2020	8,843	1.46%
2025	8,936	1.05%
2030	8,996	0.67%
2035	9,007	0.12%
Total - Change	291	3.33%

Note: Population data from Kentucky State Data Center.

**SECTION 4: SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREAS**

**Table 4-3 Projected Population of Planning Areas**

Year	0-10 Year Planning Area	11-20 Year Planning Area	Percent Change <sup>3</sup>
2015 (Households) <sup>1</sup>	0	52	
2015 (Persons) <sup>2</sup>	0	134	
2025	0	137	2.52%
2035	0	138	0.79%

Note:

<sup>1</sup> Household counts provided by field house counts.

<sup>2</sup> Population data was calculated based upon house counts multiplied by 2.58 persons per household.

<sup>3</sup> Population data for planning areas were obtained via house counts. Projections of growth/loss based upon growth/loss of Hancock County from Kentucky State Data Center.

**SECTION 4: SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREAS**

**Table 4-4 Current and Projected Population Served**

	2015	2025	2035
Existing Customers <sup>1</sup>	1,393	1,428	1,440
0-11 PA <sup>3</sup>		0	0
11-20 PA <sup>3</sup>			138
<b>Total Population Served</b>	<b>1,393</b>	<b>1,428</b>	<b>1,578</b>

Note:

<sup>1</sup> Population data from number of existing customers multiplied by 2.58 persons per household, 2010 U.S. Census.

<sup>2</sup> Population data is based upon number of sewer customers multiplied by 2.52 persons per household.

<sup>3</sup> Population data from house counts.

<sup>4</sup> Growth/loss of population based upon projections from the Kentucky State Data Center.

## SECTION 5: EXISTING ENVIRONMENT IN THE PLANNING AREA

### I. Physical

#### *Wetlands*

A review of the U.S. Fish and Wildlife Wetlands Inventory shows that there are a multiple freshwater ponds, freshwater emergent, freshwater forested/shrub, lakes, other and one river that lie within the planning area. The wetlands do not impact the existing wastewater collection system and or any future sewer improvements that would be constructed within the wetlands. See Exhibit 5.1 located at the end of this section for the USFWS Wetlands Inventory Map.

#### *Floodplains*

A review of the FEMA Floodplains map for the City of Hawesville reveals there are areas within the planning area that are classified as being in a flood hazard zone. The flood hazard zones are primarily along the Ohio River, effected from Ohio River and streams that flow directly into either of the rivers. See Exhibit 5.2 thru 5.3 at the end of this section for the FEMA Map.

#### *Topography*

The topography of Hancock County is typical of the perimeter of the Western Kentucky coal field. It is hilly to rolling except near the Ohio River, where wide alluvial flats are present. Locally, particularly in the northeastern part of the county, massive, resistant sandstones contribute to a more rugged terrain characterized by gorge-like valleys and steep, rocky cliffs.

The topography in the western part of the county is more subdued, presenting less variety and fewer prominent features than the eastern part. The hills are lower and more gently sloping, and the valleys have wider bottoms.

The highest elevation in the county is on a ridge about 1 mile east-southeast of Easton, where 840 foot contours are recorded. The greatest local relief is along the Ohio River bluffs, where differences in elevation between the river and the adjacent ridgetops are approximately 300 feet.

The lowest elevation is the Ohio River. The normal pool elevation of the river below Cannelton Locks and Dam is 358 feet. The normal pool elevation upstream from the dam is 383 feet. Floodplain elevations are generally 390 to 400 feet.

The elevation of Hawesville, at the courthouse, is 419 feet. Other elevations are Easton, 563 feet; Lewisport, 394 feet; Pellville, 536 feet; and Roseville, 518 feet.

#### *Geology*

Hancock County is located in the northeast corner of the Western Kentucky coal field, along the Ohio River. The City of Hawesville is situated on a large bend along the Ohio River Valley and is the Hancock County seat. The geology of Hancock County and Hawesville can be characterized by being covered mainly by of rocks of the Pennsylvanian age. The Pottsville Escarpment, an eastward-

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facing cuesta developed as a result of resistant Caseyville sandstones and conglomerates, approximately follows the eastern border of the county.

The oldest rocks exposed in the county are late Mississippian in age. The Glen Dean Limestone crops out for a short distance along the Ohio River near the northeastern corner of the county along the Breckenridge County line. Tar Springs sandstone is also exposed in the same area, as well as in low hills along KY 3199 (Old US 60) near the eastern boundary of the Planning Area. Soft clay shales of Mississippian Age occupy a narrow north-south belt adjacent to the Hancock-Breckinridge County Line. Elsewhere in the county the bedded rocks are Pennsylvanian sandstones, siltstones, conglomerates and shales with a few thin coals, clays and limestones. Alluvial sands and gravels obscure Paleozoic rocks along most of the county. The structure of Hancock County is essentially a homocline, with the dip of the strata being to the west. Within Hancock County there does exist a few faults within the county.

## *Groundwater*

Hancock County has three providers of public drinking water, City of Hawesville, City of Lewisport and East Daviess County Water Association, serving approximately 95% of all residents of the county. The City of Hawesville provides public drinking water to approximately 1,100 persons in Hancock County. The city utilizes ground wells located along River Road on the Ohio River. The City of Lewisport utilizes ground wells located near the Ohio River for their raw water source. East Daviess County Water Association purchases their potable water from Owensboro Municipal Utilities.

Groundwater from shallow bedrock aquifers is generally soft to moderately hard, but may contain undesirable amounts of iron. Most water from the alluvium is generally harder and contains more iron than water from the bedrock aquifers. Iron and common salt (saline water) are the main naturally occurring constituents most often encountered in objectionable amounts in groundwater. At a minimum, all water supplies should be treated to eliminate bacterial contamination. It is also advisable to have any residential water source tested at least once a year.<sup>1</sup>

Salt water (saline water) is found below fresh groundwater at variable depths throughout the entire state of Kentucky. Depths to the saline groundwater range from 50 feet or less down to 2,000 feet below land surface in Kentucky. "Salinity" is defined as a measure of the quantity of dissolved mineral matter or total dissolved solids (TDS) in water, reported in parts per million (ppm) or milligrams per liter (mg/L); the two forms of measurement are usually equivalent. The term "salt" or "table salt" as used by most people is pure sodium chloride. Sodium and chloride are generally the major component of saline waters in Kentucky, but are not the only constituents. Water having a TDS concentration of less than 1,000 ppm is classified as fresh and water having a TDS concentration of 1,000 ppm or more is classified as saline.<sup>1</sup>

Being aware of the depth to saline groundwater is valuable when planning a water-supply well. Drilling a well too deep through the freshwater interval may cause a good well to be unsuitable for various uses. Care must be taken to prevent contamination of the freshwater zones by the deeper saline waters. Properly constructed water wells will screen the production zone in the targeted aquifer and isolate all other zones by casing and properly grouting and cementing of the space outside the casings in the boreholes.<sup>1</sup>

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In Hancock County the fresh-saline interface ranges from elevations of 200 feet mean sea level near the Ohio River up to 300 feet in the remainder of the county. This corresponds to a depth of 150 feet and greater below the level of the principal valley bottoms throughout the county.<sup>1</sup>

According to the Kentucky Division of Water, Groundwater Branch, Hancock County has areas of moderate to moderate-high sensitivity to groundwater pollution. The hydrogeologic sensitivity of an area is defined as the ease and speed with which a contaminant can move into and within a groundwater system. The sensitivity assessment addressed only the naturally occurring hydrogeologic characteristics of an area.

Within the planning area there are streams listed on the 303(d) list. Table 5-1 at the end of this section lists all streams that are listed on the 303(d) of the water reports in the Draft 2014 303(d) List.

### *Surface Water*

The planning area of the City of Hawesville is located within the Green and Tradewater Rivers Basin Management Unit and is comprised of three separate watersheds: South Yellow Fork Creek, Lead Creek and Indian Crreek-Ohio River. There are many unmaed tributaries within the planning area that ultimately discharge into the Ohio River. The surface waters within the planning area are not classified as impaired streams and no TMDLS have been developed within the area. The planning area does not have a Source Water Area Protection Plan (SWAPP) but the City of Hawesville does have a Wellhead Protection Area, as shown on Exhibit 3.3.

### *Soils*

Soil scientists have determined that there are about 3 major associations located within Hancock County.

The first soil association is Elk-Otwell-Ginat Association that can be described as nearly level to sloping, deep, well drained to poorly drained, medium-textured soils on stream terraces and floodplains. The larger area that the association was discovered extends from the Daviess-Hancock County Line to near Hawesville. The small area of E-O-G association is located in the northeastern part of Hancock County. It is an area of low ridges separated by flats. The ridges are roughly parallel to each other and to the Ohio River. The Elk and Otwell soils are on ridges, and the Ginat soils are on flats. Elk soils are deep, are well drained and are mostly nearly level to sloping. They are brown and have a moderately fine textured subsoil. Otwell soils have a deep fragipan, are moderately well drained and are mostly nearly level or gently sloping. Ginat soils have a fragipan, are poorly drained and are nearly level. They are gray and have a medium-textured or moderately fine textured subsoil.

The second soil association is Loring-Memphis-Belknap Association that can be described as gently sloping to steep, deep, well drained and moderately well drained, medium-textured soils on uplands and nearly level, deep, womewaht poorly drained, medium-textured soils on floodplains. This association is located in an area of uplands south and east of Lewisport. The Loring and Memphis soils are on uplands and the Belknap soils are on floodplains. Both the Loring and

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Memphis soils are on side slopes and the Memphis soils are also on hilltops. The Loring soils have a fragipan and are moderately well drained. The Memphis soils are deep and well drained. The Belknap soils are nearly level and are medium textured throughout. Their subsoil contains grayish mottles, a characteristic of somewhat poorly drained soils.

The third soil association is Wellston-Frondorf-Zanesville association that are gently sloping to steep, well drained and moderately well drained, deep and moderately deep, medium-textured soils on uplands. This association is in the central and southern parts of Hancock County. It is a hilly area of gently sloping to steep soils on uplands. The soils formed in a thin layer of loess and in material weathered from sandstone, siltstone and shale. Wellston soils are mostly sloping to moderately steep and are on the sides of hills. They are deep over bedrock; are well drained; and have a brown, medium textured or moderately fine textured subsoil. Frondorf soils are strongly sloping to steep and are also on the sides of hills. They are moderately deep over bedrock; are well drained and have a brown, moderately fine textured subsoil that contains fragments of sandstone. Zanesville soils are gently sloping and sloping and are on the tops of hills. They have fragipan; are well drained or moderately well drained; and have a brown, medium-textured subsoil.<sup>2</sup>

## II. Biological

Within the planning area there are multiple species of animals and plants can be found. Table 5-2 lists the animals that are known to exist or have been known to exist within Hancock County that are federally listed as endangered.

The majority of the proposed sanitary sewer infrastructure in this plan encompasses rehabilitation and replacement of the existing sanitary system. Most of the proposed work will involve trenchless technologies and or construct activity on previously disturbed areas which will have a relatively low environmental impact.

## III. Cultural

There are no foreseen archaeological and historical resources that may be affected by this plan. The majority of the work planned is in areas that were previously disturbed with the original installation, site work or a combination of both.

## IV. Other Resource Features

The City of Hawesville is located along the Ohio River with various industries located within the confines of the county.

The only drinking water source located in the planning area are the groundwater wells for the City of Hawesville. No known outstanding natural resource waters or shellfish beds exist within the planning area.

<sup>1</sup> *Ground Water Resources of Hancock County by Kentucky Geological Survey.*

<sup>2</sup> *Soil Survey of Daviess and Hancock Counties, Kentucky, USDA, Natural Resource Conservation Service, 1974*

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**Table 5-1 Streams Listed on 303(d) List**

Stream Name	Mile Point	Designated Use(s)	Pollutant(s)	Suspected Sources
Blackford Creek	10.15 to 18.1	Warm water aquatic habitat	Sedimentation/Siltation	Channelization, Loss of Riparian Habitat, Stream bank Modifications/Destabilization
North Branch of South Fork of Panther Creek	0 to 4.2	Warm water aquatic habitat	Cause Unknown	Crop Production (Crop Land or Dry Land), Habitat Modification – other than Hydromodification
Ohio River	720.8 to 676.8	Fish Consumption	Dioxin (including 2, 3, 7, 8-TCDD)	Source Unknown
Ohio River	720.8 to 676.8	Primary Contact Recreation Water	Escherichia coli	Source Unknown
Ohio River	720.8 to 676.8	Fish Consumption	PCB in Water Column	Source Unknown

**Table 5-2 Endangered Species**

<b>Group</b>	<b>Species</b>	<b>Common Name</b>	<b>Legal Status<sup>1</sup></b>
Mammals	Myotis sodalist	Iniana bat	E
	Myotis septentrionalis	Northern long-eared bat	P
Mussels	Plethobasus cooperianus	Orangefoot pimpleback	E
	Lampsilis abrupt	Pink mucket	E
	Obovaria retusa	Ring pink	E
	Plethobasus cyphus	Sheepnose	E
	Pleurobema clava	Clubsheel	E
	Pleurobema plenum	Rough pigtoe	E
	Potamilus capax	Fat Pocketbook	E
	Cyprogenia stegaria	Fanshell	E
Birds	Sterna antillarum athalassos	Interior least tern	E

Notes

<sup>1</sup> E = Endangered, T = Threatened, P = Proposed, C = Candidate, CH = Critical Habitat