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**PLANNING CONSIDERATIONS****3.1 GENERAL**

A plan to help guide the City of Lincoln's wastewater collection and treatment services to future development areas is a fundamental part of the facilities plan update. The amount of land area needed for development has a general correlation to population. Therefore, it can be assumed that as the City's population increases, a proportional amount of additional land will require wastewater collection and treatment services. To help determine the timing of development, this master plan update will look at three planning tiers as explained previously. To summarize, Tier I extends from the present to the year 2040 and is divided into three sub tiers including IA (present - 2020), IB (2025), and IC (2040). Tier II estimates the needs for growth beginning in 2040 and ending in 2060, and Tier III looks beyond the year 2060. Based on projected population and growth tier land requirements wastewater system improvements will be identified.

**3.2 STUDY LIMITS****3.2.1 Geographical Boundaries**

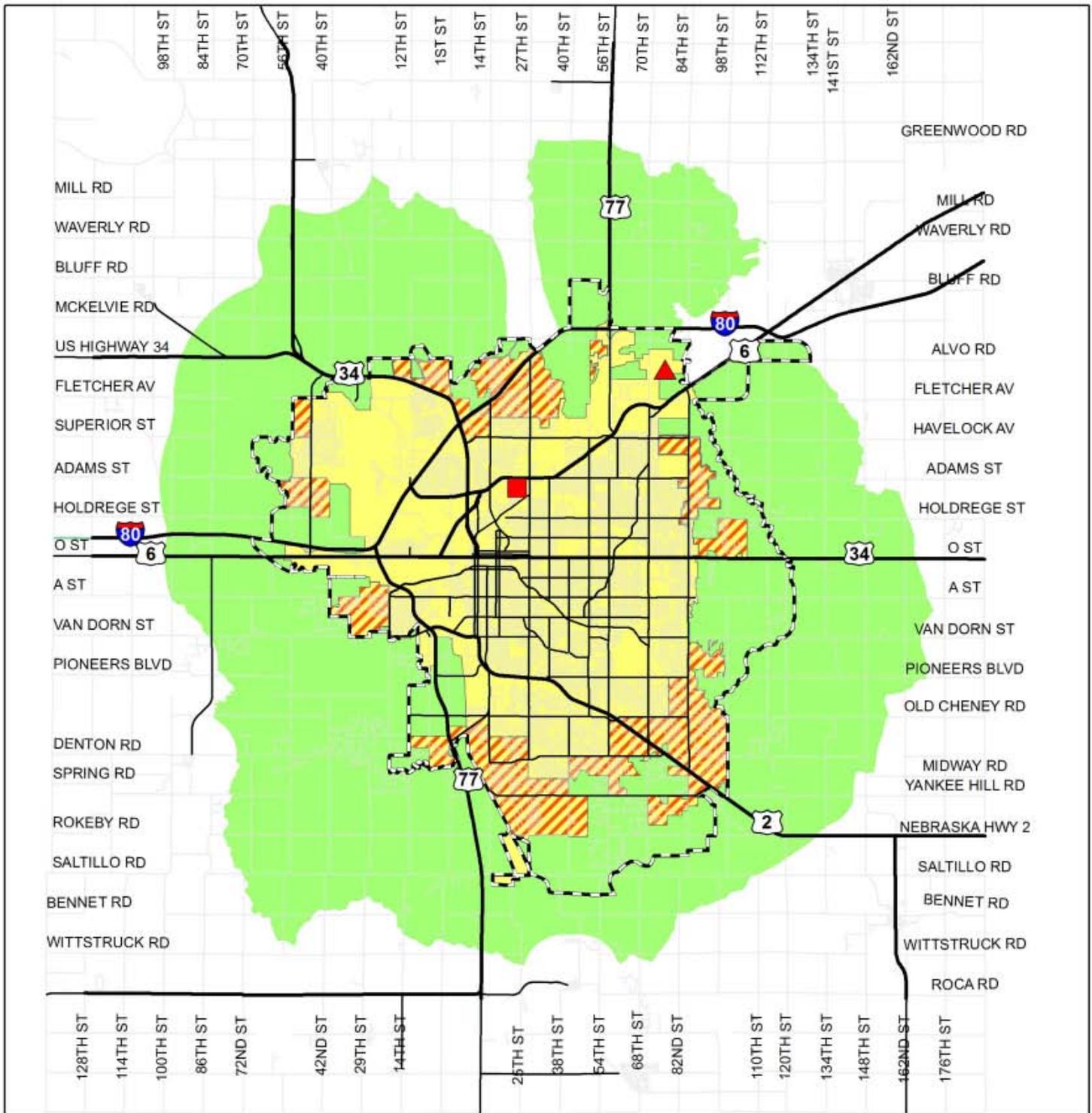
The study area encompasses approximately 185,793 acres (290 square miles). This area includes the existing service area as well as the Tier I, II, and III areas. The current City Service area is approximately 58,880 acres (92 square miles) and consists of 44,009 acres (69 square miles) of developed area and 14,791 (23 square miles) of areas currently under development (Tier IA), as shown in Figure 3.1. It should be noted that the areas presented in the paragraph are gross service areas which include parks, greenways, lakes, airport runways, salt creek tiger beetle habitat, and similar areas that will not contribute to flows to the sanitary sewer system.

**3.2.2 Wastewater Drainage Basins**

The City of Lincoln's wastewater collection system is currently serving 13 drainage basins, with service in four additional basins planned in the future for a total of 17 basins. These drainage basins are all shown in Figure 3.2.

**3.2.3 Planning Areas**

The drainage basins are further delineated by Utility Planning Zones, which are shown in Figure 3.3. Additionally the overall breakdown of the tier areas is shown graphically in Figure 3.4.



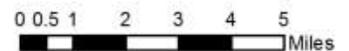
**Legend**

- Existing City <sup>(1)</sup>
- Tier I Priority A <sup>(2)</sup>
- Future Growth Areas
- 2040 Future Service Limit

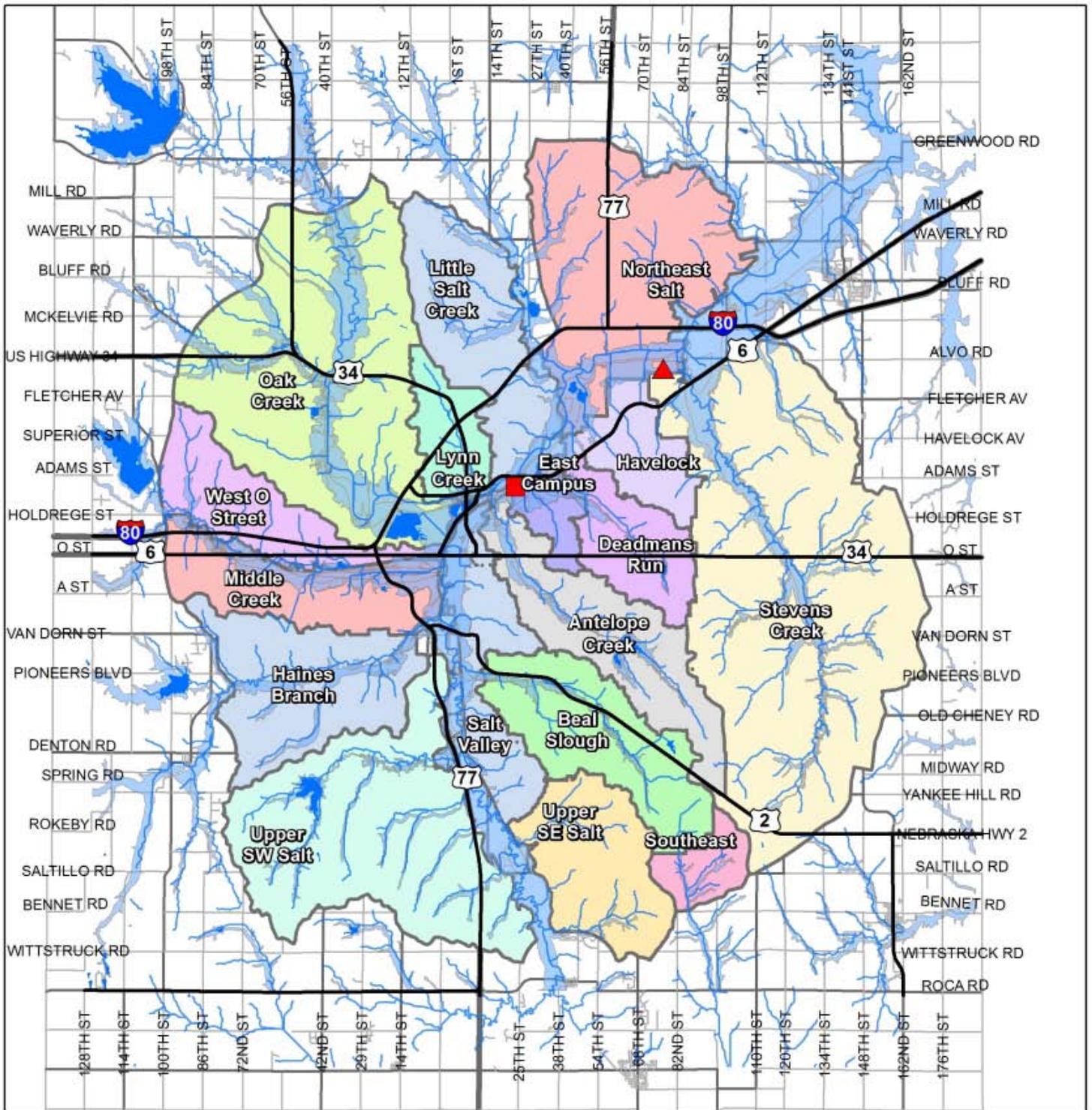
- Theresa St. WWTP
- Northeast WWTP

Notes:

- (1) Land currently developed within the City limits.
- (2) Land projected to be developed by 2020 within City limits.

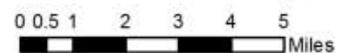


**FIGURE 3.1 – PROJECT STUDY AREA**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA

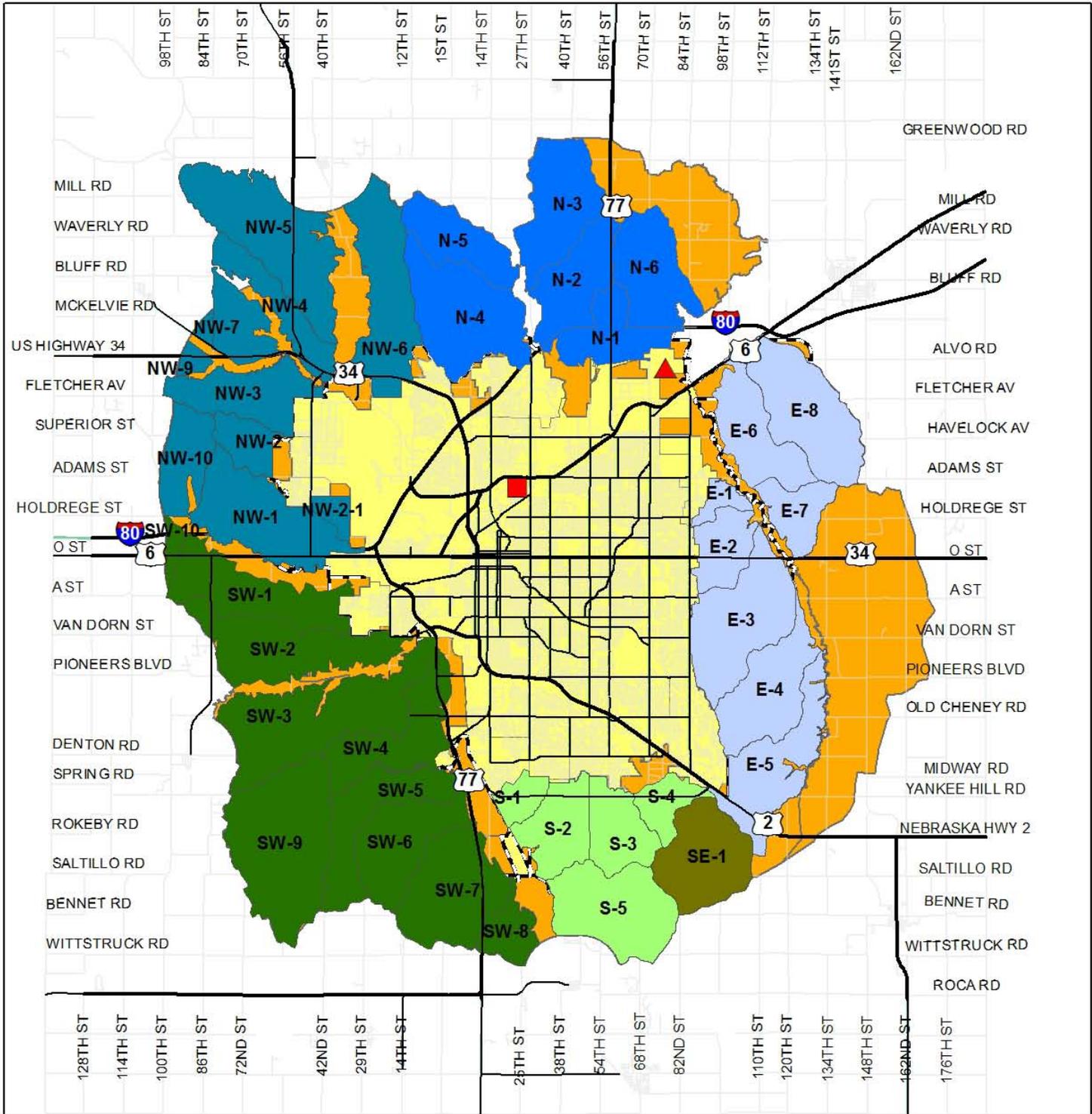


**Legend**

- 100 Year Flood Plain
- Streams and Lakes
- Theresa St. WWTP
- Northeast WWTP



**FIGURE 3.2 – DRAINAGE BASINS**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA



**Legend**

- Existing Service Area <sup>(1)</sup>
- Future Growth Areas
- 2040 Future Service Limit

**Utility Planning Zones**

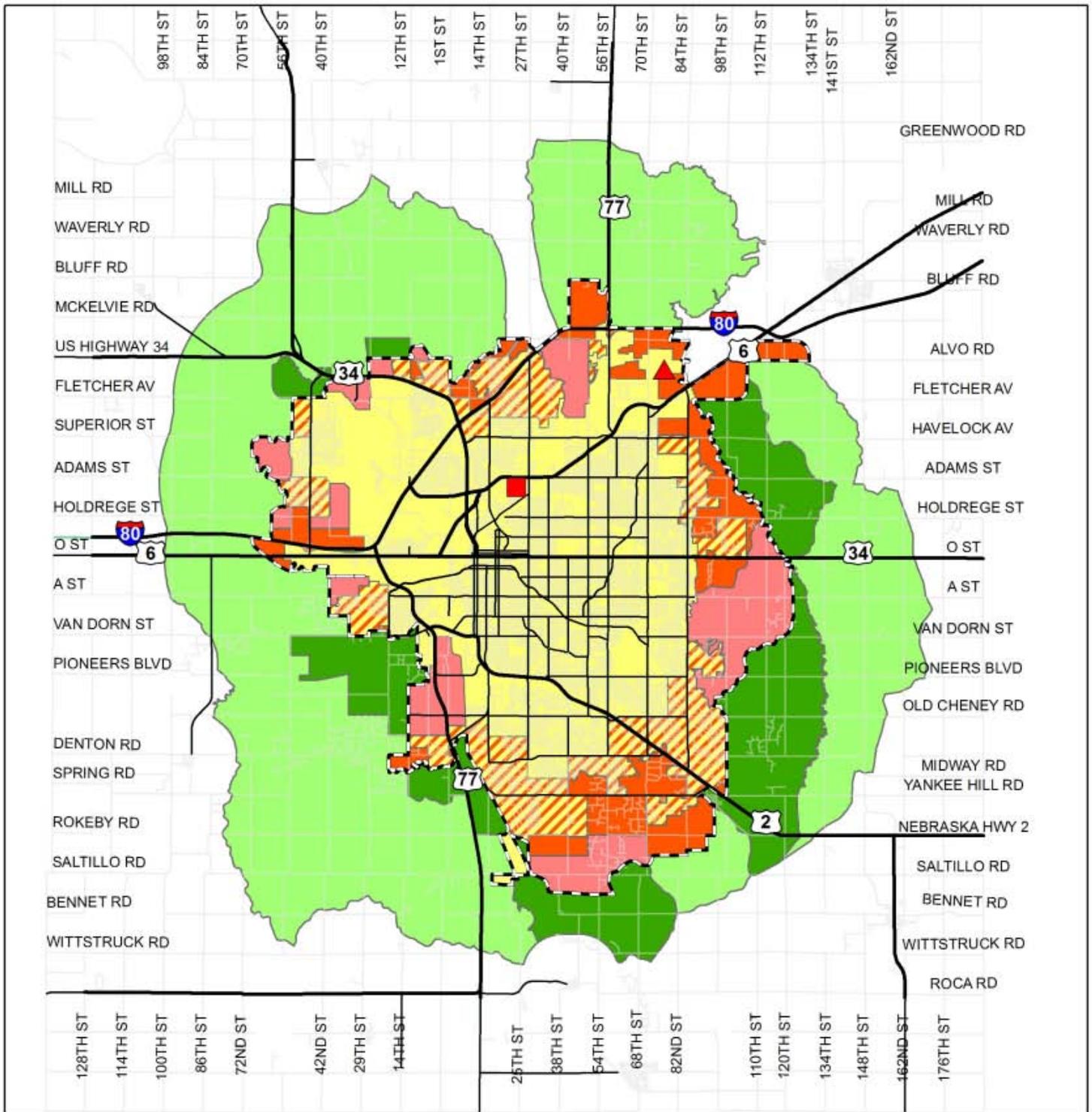
- East Zones
- South Zones
- North Zones
- Southeast Zones
- Northwest Zones
- Southwest Zones

Notes:

(1) Represents all land within City limits which includes Tier IA.

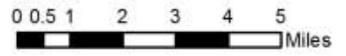


**FIGURE 3.3 – UTILITY PLANNING ZONES**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA



**Legend**

- Existing City
- Tier I Priority B (2025)
- Tier I Priority A (Developing)
- Tier I Priority C (2040)
- Tier II (2060)
- Tier III
- 2040 Future Service Limit
- Theresa St. WWTP
- Northeast WWTP



**FIGURE 3.4 – PLANNING GROWTH TIERS**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA

### **3.2.4 100 Year Floodplain Areas**

There are several creeks and waterways that are located within the City and Study Area boundaries. Shown in Figure 3.5 are the 100-year floodplains associated with these waterways. The City of Lincoln has enacted a floodplain management program, which restricts growth within the 100-year floodplain. This was accomplished by creating ordinances that prohibit the subdivision of land parcels or platting within the 100-year floodplain unless certain restrictive conditions are met. Zoning ordinances also prohibit encroachments in the floodway and impose certain construction requirements in the floodway fringe. The City has given jurisdictional authority to the Building and Safety Department to enforce these ordinances. Based on these regulations, it is anticipated that development within the 100-year floodplain will be minimal in the foreseeable future.

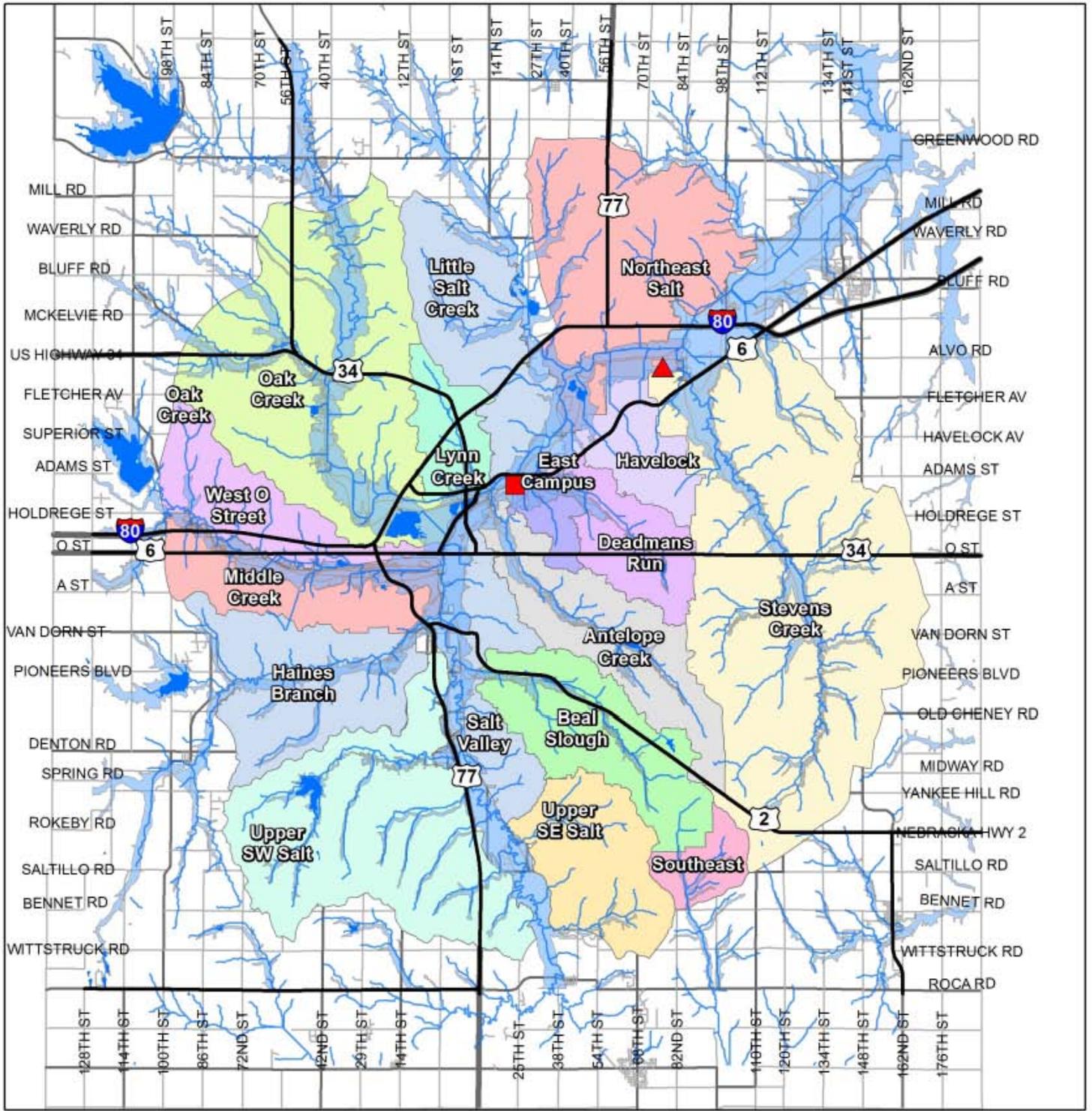
### **3.3 PLANNING AGENCIES**

The Wastewater Facilities Master Plan Update will be used by many different groups within the City, and certain agencies outside the City, to formulate plans to manage growth in the Lincoln area. To that end, a concerted effort was made to keep the City Planning Department involved and informed during the preparation of this update.

### **3.4 EXISTING LAND USAGE**

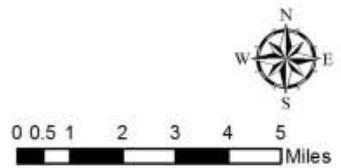
The City of Lincoln and Lancaster County are using the 2040 Comprehensive Plan to guide their planning and land use activities. The land use plans reflect an approach to addressing the following basic concerns of the community:

- Continues development of downtown as the heart of the community, a center of employment, culture, entertainment, and government.
- Development of a compact and generally contiguous urban form for the City of Lincoln.
- Development of a roadway network around the perimeter of the City of Lincoln.
- Development of infrastructure such as roads, water, sewer, parks, stormwater, schools, libraries, and open space concurrent with land development.
- Development of detailed sub-area plans for developing areas of the City, the urban environment, and the rural environment.



**Legend**

- 100 Year Flood Plain
- Streams and Lakes
- Theresa St. WWTP
- Northeast WWTP



**FIGURE 3.5 – 100 YEAR FLOOD PLAIN**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA

- Development of a close relationship between the Comprehensive Plan, land use regulations, and the Capital Improvement Program.
- Development of multiple public use corridor for trails, parks, stormwater drainage, utilities, etc.
- Consideration of the natural and man made environments in all development actions.

The existing and future land use plans within the City of Lincoln will direct growth to specific drainage basins to ensure orderly expansion and to control expenditures for wastewater infrastructure improvements. The plans acknowledge that Lincoln's existing neighborhoods are important resources that must be protected and, if necessary revitalized. The plans seek to maximize benefits from land already within the urban area through infill development on underutilized sites. These strategies emphasize reliance on maximum feasible utilization of existing public facilities including roadways, utilities, schools, and libraries before constructing new public facilities in other locations. In some instances, rebuilding or expanding deficient facilities within the existing urban area will be necessary.

### **3.5 FUTURE LAND USE**

As the City's population has grown historically, new land areas have been developed to accommodate the growth. The 2040 Comprehensive Plan outlines the anticipated land use on these new development areas. Therefore, wastewater planning decisions should incorporate enough flexibility to accommodate possible variations in future growth conditions within the City. The Comprehensive Plan addressed growth in detail and provides specific direction for planned growth and should be referenced for further information relating to this issue.

### **3.6 POPULATION**

The following section presents historical and projected population data used to evaluate the growth trend in the City of Lincoln and Lancaster County area for consideration in design.

#### **3.6.1 Historical Population**

Historical population data, as listed by the U.S. Bureau of Census, is presented in Table 3.1 below for the City of Lincoln.

<b>Table 3.1 Historical Population From 1880 to 2010 <sup>(1)</sup> Wastewater Facilities Master Plan Update – 2014 City of Lincoln, Nebraska</b>			
<b>Year</b>	<b>Population</b>	<b>Year</b>	<b>Population<sup>(1)</sup></b>
1880	13,003	1950	98,884
1890	55,154	1960	128,521
1900	40,169	1970	149,518
1910	43,973	1980	171,932
1920	54,948	1990	191,972
1930	75,933	2000	225,581
1940	81,984	2010	258,379

(1) Population Data from 2030 Comp Plan, 2040 Comp Plan and 2010 Census

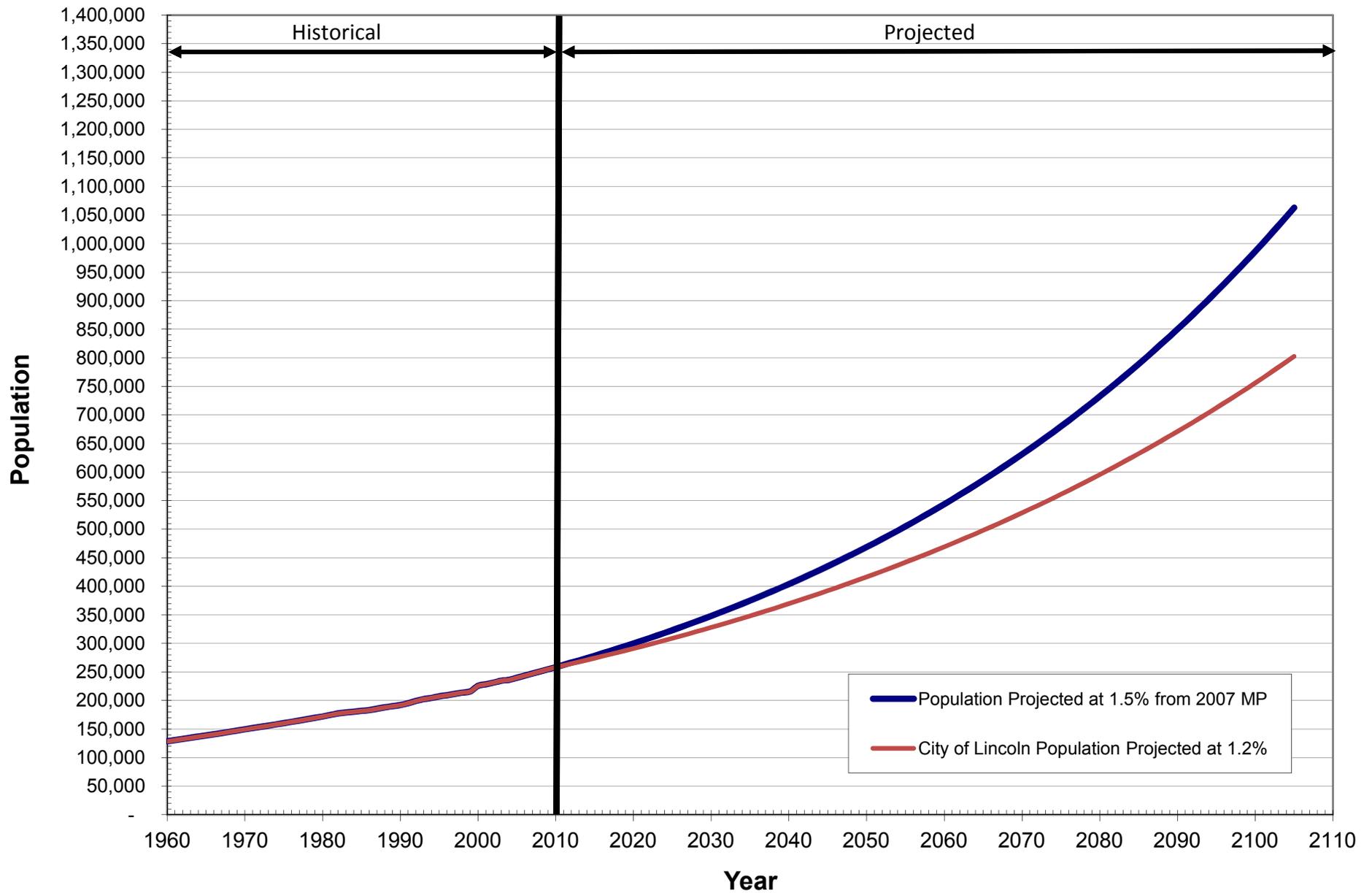
### 3.6.2 Projected Population

It is anticipated that the City of Lincoln’s population will continue to grow. The population growth indicated in the 2040 Lincoln/Lancaster County Comprehensive Plan is based on an assumed 1.2% annual population growth rate. Therefore, for the purposes of this study, the 1.2% growth rate referenced in the 2040 Lincoln/Lancaster County 2040 Comprehensive Plan will be utilized. It should be noted that the 1.2% population projection is lower than the 1.5% population projection used in the 2007 Master Plan Update. Table 3.2 shows population through the Tier II planning period based on an annual growth rate of 1.2 percent. Figure 3.6 illustrates both the historical and projected growth trend for the City of Lincoln.

<b>Table 3.2 Population Projections from 2010 to 2060 <sup>(1)</sup> Wastewater Facilities Master Plan Update - 2014 City of Lincoln, Nebraska</b>			
<b>Year</b>	<b>Population</b>	<b>Year</b>	<b>Population<sup>(1)</sup></b>
2010	258,379	2040	369,549
2020	291,113	2050	416,368
2030	327,995	2060	469,119

**Notes:**

1. Population projections adopted from 2030 and 2040 Lincoln/Lancaster County Comprehensive Plans, at an annual growth rate of 1.2 percent.
2. 2010 population from U.S. Census estimate.

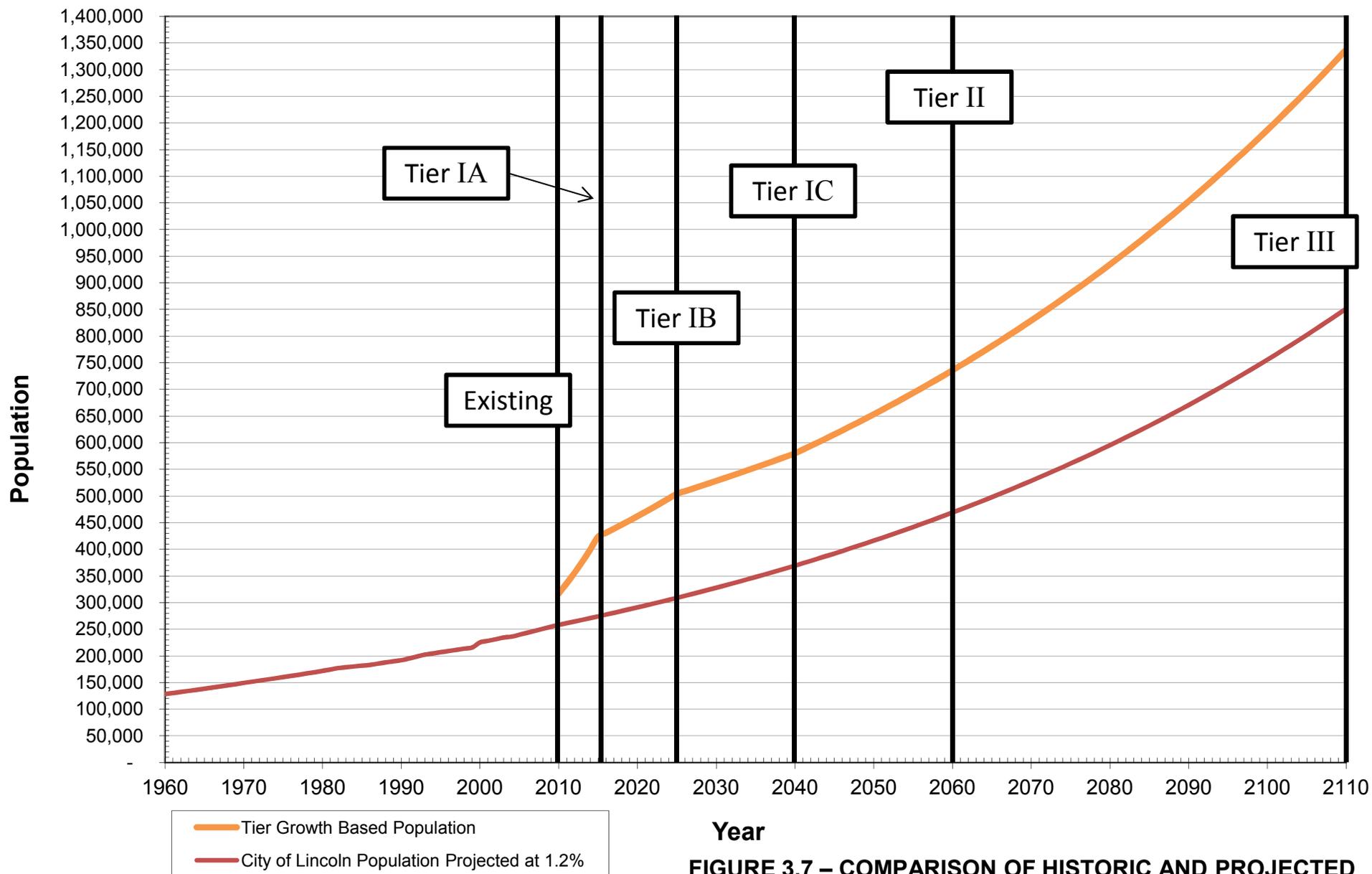


**FIGURE 3.6 – PROJECTED POPULATION GROWTH**  
 WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
 CITY OF LINCOLN, NEBRASKA

### 3.6.3 Comparison of Land Inventory to Projected Population

The area of new land developed needed to pace the projected population growth is outlined in Table 3.3 below. This area is compared to the amount of land identified in each growth tier. As outlined in Table 3.3, and shown graphically in Figure 3.7, there is more land available for development in the current growth tiers than would be consumed by the projected population, at the parameters noted.

<b>Table 3.3      Acreage Calculations Based on Population Wastewater Facilities Master Plan Update - 2014 City of Lincoln, Nebraska</b>					
<b>Year</b>	<b>Population Projections (1)</b>	<b>Population Projections Based on Tier Area (2)</b>	<b>Area Based on Projected Population Acres (2)</b>	<b>Area Identified in the Current Growth Tiers Acres (3)</b>	<b>Area Percent Difference</b>
2010 - Existing	258,379	316,864	35,866	44,009	20.39%
Tier IA – Developing (4)	274,258	423,360	38,091	58,800	42.75%
Tier IB - 2025	309,005	504,091	42,917	70,013	47.99%
Tier IC - 2040	369,549	579,962	51,326	80,550	44.32%
Tier II - 2060	469,119	735,730	65,155	102,185	44.26%
Tier III - 2110	851,743	1,337,710	118,298	185,793	44.39%
<b>Notes:</b>					
1. Population projections adopted from 2030 and 2040 Lincoln/Lancaster County Comprehensive Plan, at an annual growth rate of 1.2 percent.					
2. Based on 3 units per acre and 2.4 people per unit = 7.2 people per acre. Values from Lincoln Planning Department.					
3. Acres from Lincoln Planning Department.					
4. Developing time period assumed from present through 2015.					



**FIGURE 3.7 – COMPARISON OF HISTORIC AND PROJECTED POPULATION BASED ON AVAILABLE LAND FOR DEVELOPMENT**

WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014  
CITY OF LINCOLN, NEBRASKA